



Yojna IAS

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SEPTEMBER 2023

WEEKLY CURRENT AFFAIRS

YOJNA IAS WEEKLY CURRENT AFFAIRS

11/9/2023 TO 17/9/2023

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CURRENT AFFAIRS

SEPTEMBER 2023

FLEX-FUEL TECHNOLOGY

This article covers "Daily Current Affairs" and the topic details "Flex-fuel Technology". The topic "Flex-fuel Technology" has relevance in the "Science and Technology" section of the UPSC CSE exam.

For Prelims:

What is Flex-fuel Technology? Its benefits?

For Mains:

GS2: Science and Technology

Why in the news?

Toyota recently introduced a prototype of the Innova Hycross featuring a hybrid powertrain that can operate on flex-fuel.

FLEX-FUEL TECHNOLOGY

- **Flex-fuel technology enables a vehicle to utilise multiple fuel types or even fuel mixtures**, distinguishing it from conventional gasoline-powered cars.
- Flexible fuel vehicles (FFVs) have an internal combustion engine and can operate on gasoline and any blend of gasoline and ethanol up to 83%.
- The current configuration involves a combination of gasoline and either ethanol or methanol.
- This capability is achieved by installing a fuel mixture sensor and utilising specialised engine control module (ECM) programming.

- These components detect and seamlessly adapt to varying ratios of specified fuels, ensuring the vehicle's adaptability to different fuel sources.

HISTORICAL DEVELOPMENT AND PREVALENCE

- The concept of flex-fuel technology originated in the early 1990s when the automotive industry sought innovative solutions for fuel diversification.
- Its initial application can be traced back to the 1994 Ford Taurus, which marked a significant milestone in adopting this technology.
- As of 2017, the adoption of flex-fuel technology had expanded significantly, with approximately 21 million flex-fuel vehicles in operation worldwide.

CHANGES IN CONVENTIONAL GASOLINE-POWERED CARS

- Flex-fuel vehicles share many components with traditional petrol-powered cars.
- Special ethanol-compatible components are essential to adapt to ethanol or methanol's unique chemical properties and energy content.
- **Fuel pump and fuel injection system:** Modifications to components like the fuel pump and fuel injection system are necessary for ethanol compatibility.
- **The engine control module (ECM)** undergoes calibration to accommodate the higher oxygen content of ethanol.
- **Exhaust systems** are equipped with modified catalysts to reduce hydrocarbon emissions.
- **Fuel filter and lines:** Adjustments are made to the vehicle's fuel filter and pipes to ensure optimal performance with flexible fuel options.

PROS OF FLEX-FUEL TECHNOLOGY

- **Environmental Benefits:** Ethanol blending in flex-fuel vehicles significantly reduces harmful pollutants, including carbon monoxide, sulphur, carbon, and nitrogen oxides.
- **Decreased Dependency on Imports:** Blending ethanol helps decrease the dependency on oil imports for fueling vehicles, enhancing energy security and reducing foreign oil dependence.
- **Improved Acceleration:** Many flex-fuel cars exhibit improved acceleration performance when operating on higher ethanol blends, enhancing driving dynamics.

CONS OF FLEX-FUEL TECHNOLOGY

- **Reduced Fuel Efficiency:** Flex-fuel vehicles typically experience a 4-8% reduction in fuel efficiency when using ethanol as a primary fuel source, as their engines are optimised for petrol.
- **Water-Intensive Crop Production:** Ethanol blending relies on source crops such as sugarcane, which are known to be water-intensive, potentially posing environmental and sustainability challenges.
- **Dependency on Specific Crops:** A significant portion of ethanol production, over 90% in India as of 2019-20, is derived from crops like sugarcane, which can have political implications due to their importance in certain states.

BENEFITS OF ETHANOL BLENDING IN INDIA

The National Biofuel Policy 2018 in India aims for a 2025 target of 20% blending of ethanol in petrol.

- **Reduction in Oil Imports**
 - Ethanol blending in India has significantly reduced the oil import bill, saving billions of rupees and enhancing energy security.
 - In 2020-21, ethanol blending reduced 26 million barrels of petrol and saved Rs 10,000 crore.
- **Future Savings**
 - The expected implementation of E20 by April 2025 in India is estimated to result in annual savings of Rs 35,000 crore in oil import costs.
- **Electrified Flex-Fuel Vehicles**
 - Electrified flex-fuel vehicles are being introduced to address fuel efficiency challenges, combining the benefits of a flex-fuel engine with an electric powertrain.

Sources:

Toyota's flex-fuel prototype: How it will work, what advantages it offers | Explained News – The Indian Express

Q1. With reference Flex Fuel Technology, consider the following statements:

1. Flex-fuel vehicles (FFVs) have an internal combustion engine and can operate on

gasoline and any blend of gasoline and ethanol up to 83%.

2. Flex-fuel technology was developed recently when the automotive industry sought new ways to diversify fuel sources.
3. Modifications to components like the fuel pump and fuel injection system are unnecessary for ethanol compatibility in flex-fuel vehicles.

Which of the statements given above is/are NOT correct?

- (a) 1 and 2 only
- (b) 2 and 3 only
- (c) 3 only
- (d) None

Answer: (b)

Q2. Consider the following :

1. Ethanol blending in India aims for a 2025 target of 20% blending of ethanol in petrol.
2. Ethanol blending in India has significantly reduced the oil import bill, resulting in billions of rupees in savings and enhanced energy security.
3. Reduced Fuel Efficiency and reduced acceleration are some of the drawbacks of Flex-Fuel Technology.

How many of the abovementioned statements are correct?

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

Answer: (b)

Q3. Discuss the significance of flex-fuel technology and ethanol blending in India's automotive sector and energy policy.

ERG CHECH 002

This article covers “Daily Current Affairs” and the Topic details “Erg Chech 002”. The Topic “Erg Chech 002” has relevance in the Science and Technology section of the UPSC CSE exam.

FOR PRELIMS:

About Erg Chech 002?

FOR MAINS:

GS 2: Science and Technology

WHY IN THE NEWS:

In May 2020, researchers came across distinctive rocks in the Sahara Desert containing distinct greenish crystals. These rocks were identified as remnants from the early Solar System.

These particular rock fragments are part of the Erg Chech 002 meteorite, representing the oldest volcanic rock ever found, with an estimated age dating back approximately 4.56556 billion years.

ABOUT ERG CHECH 002

- Erg Chech 002 is categorized as an “ungrouped achondrite,” and its origin is from melted planetesimals, with the specific parent body unknown.
- Analysis of Erg Chech 002 revealed a high concentration of lead-206 and lead-207, as well as the presence of undecayed uranium-238 and uranium-235.
- Comparisons with other achondrites, particularly volcanic angrites, showed that aluminum-26 dispersion in the early Solar System was irregular.

KEY FINDINGS:

- Aluminum-26 has a relatively short half-life of approximately 717,000 years, making it challenging to directly detect in significant quantities within a 4.6-million-year-old space rock like Erg Chech 002.
- However, when Aluminum-26 undergoes decay, it transforms into Magnesium-26, a stable and non-radioactive isotope of Magnesium.
- This conversion process from Aluminum-26 to Magnesium-26 can be employed as a dating method, serving as a clock for space rocks like Erg Chech 002. It helps determine the initial amount of Aluminum-26 in these rocks.
- To effectively use the Aluminum-26-Magnesium-26 decay system as a dating tool, it's cru-

cial to understand whether Aluminum-26 was uniformly distributed throughout the solar nebula responsible for the formation of the solar system's planets, asteroids, and comets.

- The researchers studied Erg Chech 002, an achondrite rock formed from melted planetesimals. They combined their findings with data on angrite meteorites, a rare subset of achondrites. Achondrites are meteorites that exhibit signs of having undergone melting and share similarities with volcanic rocks found on Earth.
- Detailed examination of rocks containing distinctive greenish crystals has confirmed their extraterrestrial origin, signifying their connection to the early Solar System.
- These rocks are fragments of the Erg Chech 002 meteorite, which is the oldest volcanic rock ever identified.
- Chondrites represent the most common class of meteorites, accounting for more than 85% of all meteorite falls.

SOURCE:

<https://www.space.com/meteorite-4-billion-years-early-solar-system>

Q.1 Recently seen in the news, “Erg Chech 002” is :

- (a) A space mission of ESA.
- (b) A new Russian ICBM
- (c) A meteorite
- (d) USAs new station in Arctic

ANSWER: C

Q.2 With reference to Erg Chech 002, consider the following statements:

1. It represents the oldest volcanic rock ever identified.
2. Its age was identified by using the Aluminum-26-Magnesium-26 decay system as a dating tool.

Which of the statements given above is/are correct?

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2

(d) Neither 1 nor 2

ANSWER: C

Q.3 Discuss the significance of the Erg Chech 002 meteorite in planetary science, focusing on its role in dating early Solar System events. How does its discovery contribute to our knowledge of celestial body formation and the challenges in studying such ancient space rocks?

AFRICAN UNION

This article covers "Daily Current Affairs" and the topic details "African Union". This topic has relevance in the "International Relations" section of the UPSC CSE exam.

FOR PRELIMS:

What is the African Union?

FOR MAINS:

GS2: International Relations

WHY IN THE NEWS?

The African Union became a member of the G-20 on September 9th at the G20 New Delhi Leaders' Summit, just three months after India proposed it.

AFRICAN UNION (AU)

- The African Union (AU) is a regional organisation comprising 55 African member states.
- It was established on July 9, 2002, as the successor to the Organization of African Unity (OAU), founded in 1963.
- The AU aims to foster "*an Integrated, Prosperous, and Peaceful Africa, driven by its own citizens.*"
- The African Union's administrative body, the **African Union Commission**, is headquartered in **Addis Ababa, Ethiopia**.
- Collectively, the member states of the AU boast a gross domestic product (GDP) of **\$3 trillion** and a population of approximately **1.4 billion people**.



HISTORICAL CONTEXT

- In May 1963, 32 Heads of independent African States gathered in Addis Ababa, Ethiopia, to sign the Charter establishing the Organisation of African Unity (OAU).
- **Pan-African Vision**
 - The OAU embodied the pan-African vision of a **united, liberated, and self-determined Africa**, as articulated in its Charter.
 - The founding fathers of OAU recognised **freedom, equality, justice, and dignity** as essential objectives for African aspirations.
 - There was an emphasis on **fostering cooperation** among African states and understanding among Africa's peoples.

OBJECTIVES OF THE OAU

- Eradicating the remnants of colonisation and apartheid.
- Fostering unity and solidarity among African nations.
- Coordinating development efforts.
- Safeguarding sovereignty and territorial integrity.
- Promoting international cooperation.
- **Effective Forum for African Unity**
 - The OAU served as a platform for African nations to unify their positions on global issues.
 - It enabled them to defend Africa's interests in international fora effectively.

- **Transition to the African Union (1999)**

- On September 9, 1999, the OAU's Heads of State and Government issued the **Sirte Declaration**.
- This called for establishing the African Union to accelerate integration, address multifaceted challenges, and enable Africa to assert its global role.

OBJECTIVES OF THE AFRICAN UNION (AU):

- **Promoting stronger unity and solidarity** among African nations and their populations.
- Accelerating **political and socio-economic integration** of the continent.
- **Addressing multifaceted social, economic, and political challenges** in African nations.
- Advocating for **peace, stability, and security** in the region.
- Protecting and advancing **human rights**.

ACHIEVEMENTS OF THE AFRICAN UNION (AU):

- **Successful Peacekeeping:**
 - The AU effectively deploys peacekeeping missions against terrorism in various regions, including the Sahel and northern Mozambique.
 - It has prevented violence in Burundi, the Central African Republic, Comoros, Darfur, Somalia, South Sudan, Sudan, and Mali.
- **Diplomatic Conflict Resolution:**
 - The AU's diplomatic efforts resolved conflicts, such as brokering a peace deal between the Ethiopian Government and the Tigray People's Liberation Front (TPLF) in South Africa.
- **African Continental Free Trade Area (AfCFTA):**
 - The AU established the **African Continental Free Trade Area (AfCFTA)** in 2021, the **world's largest new free trade area since the WTO's creation in 1994**.
 - AfCFTA aims to increase intra-African trade, potentially boosting Africa's income by \$450 billion by 2035 and raising intra-African exports by over 81%, per World Bank estimates.

SHORTCOMINGS OF THE AU:

- **Ineffective Response to Coups:**
 - The AU has struggled to prevent coups in Africa, with over 200 coups occurring on the continent since the 1960s.

- The organisation typically relies on diplomatic pressure, such as suspending membership, rather than military intervention to address these situations.
- **Financial Dependency:**
 - The AU faces challenges getting member countries to pay their annual dues, leading to financial instability.
 - It often relies on external funding, impacting its autonomy and effectiveness.

POTENTIAL OUTCOMES OF AU'S G20 INCLUSION:

- **Global Trade and Finance Redesign:**
 - The AU's permanent seat in the G20 provides an opportunity to advocate for a global trade, finance, and investment architecture that benefits the world.
 - This position allows the AU to demand a redesign of these systems, potentially leading to more equitable outcomes.
- **Voice and Visibility:**
 - Inclusion in the G20 gives African interests and perspectives a platform for voice and visibility on the global stage.
 - This can empower the AU to represent African concerns and contribute to global discussions effectively.

Sources: G20 becomes G21 as India takes lead in bringing African Union to global table | India News – The Indian Express

Q1. With reference to African Union, consider the following statements:

1. The African Union (AU) is a regional organisation comprising 55 African member states.
2. India is an observer state in the African Union.
3. The African Union was established in 1963 to eliminate the colonialism and apartheid.

Which of the statements given above is/are NOT correct?

- (a) 1 and 2 only
- (b) 2 and 3 only
- (c) 3 only
- (d) None

Answer: (b)

Q2. Consider the following:

1. The African Union Commission is headquartered in Pretoria, South Africa.
2. The Sirte Declaration called for establishing the Organisation of African Unity (OAU), a precursor to the African Union.
3. The African Continental Free Trade Area (AfCFTA) is the world's largest free trade area since the establishment of the World Trade Organization (WTO).

How many of the abovementioned statements are correct?

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

Answer: (d)

Q3. Analyse the implications of the African Union's inclusion in the G20 for Africa's representation and influence on the global stage.

VINOBA BHAVE

This article covers "Daily Current Affairs" and the topic details "Vinoba Bhave". This topic has relevance in the History section of the UPSC CSE exam.

FOR PRELIMS:

About Vinoba Bhave?

FOR MAINS:

GS 1: History

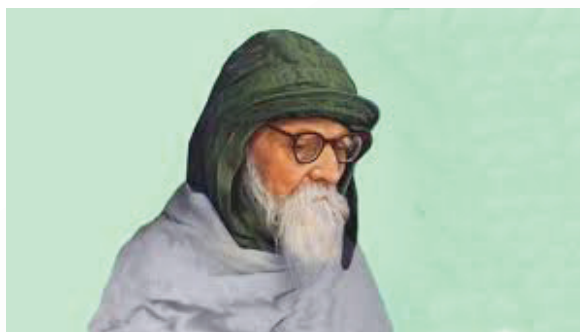
Contributions of Vinoba Bhave?

WHY IN THE NEWS:

Prime Minister Narendra Modi on Monday paid tributes to Acharya Vinoba Bhave on his birth anniversary

ABOUT VINOBA BHAVE:

- Vinoba Bhave, originally named Vinayak Narahari Bhave, was born on September 11, 1895, in Gagoji (now known as Gagode Budruk), Maharashtra, India.
- His father, Narahari Shambhu Rao, was a skilled weaver employed in Baroda, while his mother, Rukmani Devi, was a deeply religious woman.
- Bhave's upbringing was characterised by a family that embraced modern rationalism, fostering a mindset of critical thinking and pragmatism.



SPIRITUAL AWAKENING

- At a young age, Vinoba Bhave was exposed to spiritual concepts and discussions, primarily influenced by his mother's religious beliefs.
- His profound spiritual awakening occurred when he read the Bhagavad Gita, a sacred Hindu scripture, which had a lasting and transformative effect on his life.

ASSOCIATION WITH MAHATMA GANDHI

- In 1916, Vinoba Bhave's life took a momentous turn when he came across Mahatma Gandhi's speech at Banaras Hindu University. Deeply moved, he decided to discontinue his studies and reached out to Gandhi through a letter, leading to their eventual meeting at the Kochrab Ashram in Ahmedabad.

ROLE IN INDIA'S FREEDOM STRUGGLE

- Vinoba Bhave actively participated in civil disobedience movements and endured imprisonment. During the 1940s, he was incarcerated for five years due to his nonviolent resistance against British colonial rule.

- In 1940, Mahatma Gandhi selected him as the first individual Satyagrahi, emphasising his growing national stature.

RELIGIOUS AND SOCIAL WORK

- **Sarvodaya Movement:** He championed the Sarvodaya movement, aiming to uplift the lives of ordinary Indians in villages by integrating strong spiritual foundations.
- **Bhoodan Movement:** Initiated in 1951, the Bhoodan Movement focused on soliciting land donations from landowners to distribute to landless individuals, addressing land reform issues and rural poverty.
- **Advocate for Nonviolence and Compassion:** Vinoba Bhave actively campaigned against cow slaughter, promoting nonviolence and compassion as central societal principles.

LITERARY CONTRIBUTIONS

- Vinoba Bhave was a prolific writer and translator known for his efforts to make Sanskrit texts accessible to the ordinary person.
- He translated the Bhagavad Gita into Marathi, making the revered scripture more understandable for a wider audience.
- His work **“Talks on the Gita”** has been translated into multiple languages and continues to serve as a source of inspiration for readers worldwide.

LATER LIFE

- In his later years, Vinoba Bhave resided at his **Brahma Vidya Mandir ashram in Paunar, Wardha district, Maharashtra**, where he continued his spiritual and social work.
- Vinoba Bhave passed away on November 15, 1982. His death came after he embraced **“Samadhi Maran” or “Santhara,”** a practice in Jainism where an individual voluntarily refrains from consuming food and medicine.

CRITICISM

- Vinoba Bhave faced criticism from certain quarters, including acclaimed author V.S. Naipaul, who questioned his rationality and noted what he considered an excessive imitation of Mahatma Gandhi’s ideals.
- Bhave’s support for Indira Gandhi’s government during the Indian Emergency (1975-1977) drew controversy. It earned him the nickname **“Sarkari Sant”** (Government Saint), as some saw his stance aligning with the government’s actions during that period.

AWARDS AND RECOGNITION

- **First Recipient of Ramon Magsaysay Award:** In 1958, Vinoba Bhave became the inaugural

recipient of the international Ramon Magsaysay Award for Community Leadership, recognizing his outstanding contributions to society.

- Posthumous Bharat Ratna: He was posthumously awarded the Bharat Ratna, India's highest civilian honor, in 1983, acknowledging his significant and enduring impact on the nation's social and spiritual landscape.

Source: <https://theprint.in/india/pm-modi-pays-tributes-to-vinoba-bhave/1756912/>

Q.1 Vinoba Bhave is related to which of the following:

1. Sarvodaya Movement
2. Bhoodan Movement
3. Tibhagha Movement

Choose the correct answer:

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

ANSWER: B

Q.2 With reference to Vinoba Bhave, consider the following statements:

1. One of his famous literary work is "Talks on the Gita".
2. He performed Santhara.

Which of the statements given above is/are correct?

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

ANSWER: C

Q.3 Discuss the life, contributions, and legacy of Vinoba Bhave in the context of India's struggle for independence and social reform.

EARTHQUAKES

This article covers "Daily Current Affairs" and the topic details "Earthquakes". This topic has relevance in the "Geography" section of the UPSC CSE exam.

FOR PRELIMS:

What is Earthquake?

What are its causes?

FOR MAINS:

GS1: Geography

WHY IN THE NEWS?

On September 8th, Morocco was struck by the most devastating earthquake ever recorded, claiming the lives of over 2,400 individuals and reducing numerous residences and structures to debris.

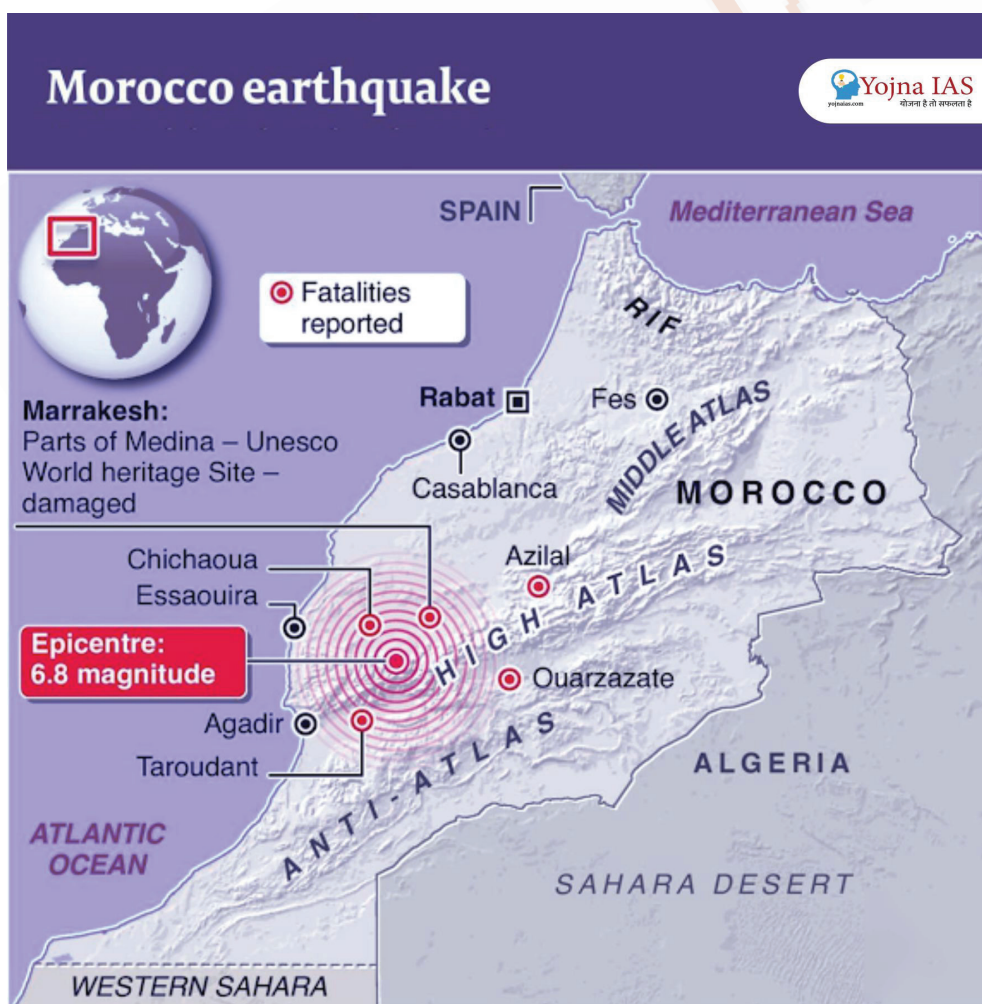
UNDERSTANDING EARTHQUAKES:

- **Definition:** An earthquake is a powerful shaking of the Earth's surface triggered by movements beneath its crust.
- **Hypocentre:** The point beneath the Earth's surface where the earthquake originates is the hypocentre.
- **Epicentre:** The epicentre is the location directly above the hypocentre on the Earth's surface.
- **Cause:** Earthquakes occur when two tectonic plates abruptly slide past each other, releasing accumulated elastic strain energy. This energy transforms into seismic waves, resulting in ground shaking.
- **Measurement:** Earthquakes are assessed using various scales:
 - **Moment Magnitude Scale (M_w):** Measures the total moment release based on fault movement distance and force.

- **Richter Scale (Magnitude Scale):** Gauges energy released, ranging from 0 to 10.
- **Intensity Scale/Mercalli Scale:** Evaluates visible damage on a scale from 1 to 12.
- Earthquakes pose a significant challenge as they cannot be predicted accurately, and no early warning systems currently exist.

MORE ABOUT MOROCCO EARTHQUAKE:

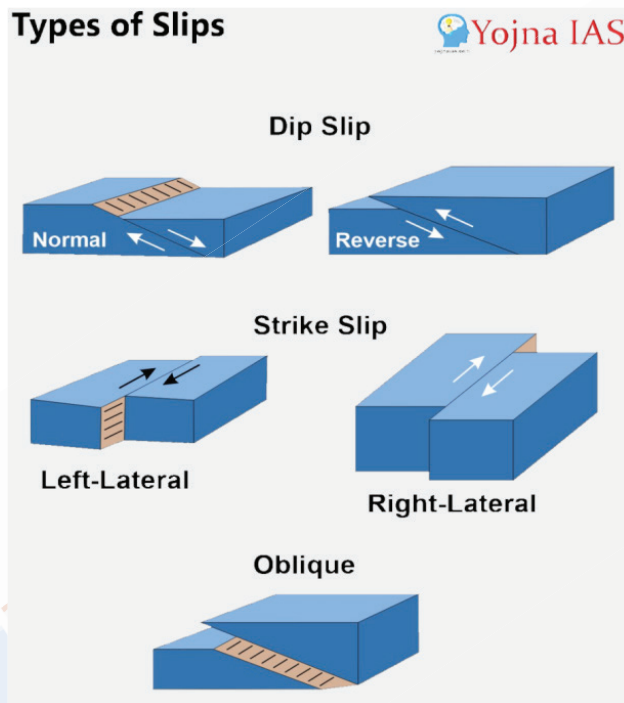
- **Epicentre and Magnitude:** The earthquake's epicentre was situated in the High Atlas Mountain range, approximately 72 kilometres from Marrakech. It registered a magnitude of 6.8, categorising it as a "strong" earthquake.
- **Shallow Depth:** Notably, the quake occurred at a relatively shallow depth beneath the Earth's surface. According to the US Geological Survey (USGS), the focus was recorded at 18.5 km, while Morocco's seismic agency estimated it at 11 km. Shallow earthquakes are more destructive as they transfer greater energy to the surface than deeper quakes.
- While earthquakes of this size are infrequent in the region, they are not unprecedented. The US Geological Survey notes Morocco has experienced immense, damaging earthquakes in the western Mediterranean.



UNDERSTANDING THE MOROCCO EARTHQUAKE CAUSE:

- **Tectonic Plate Convergence:** The seismic activity in Morocco can be attributed to the northward convergence of the African plate with respect to the Eurasian plate along a complex plate boundary.
- **Faulting Explanation:** The earthquake resulted from oblique-reverse faulting occurring at a shallow depth within the Moroccan High Atlas Mountain range.

WHAT IS FAULTING?



- **Fault Definition:** A fault represents a fracture or zone of fractures between rock blocks, enabling their relative movement, and potentially causing earthquakes during rapid shifts.
- **Fault Types:** Faults are classified based on their dip (angle with respect to the surface) and slip direction:
- **Dip-Slip Faults:** These move along the dip plane direction.
- **Strike-Slip Faults:** They exhibit horizontal movement.
- **Oblique-Slip Faults:** Combining characteristics of dip-slip and strike-slip faults.
- **Reverse Faulting:** This term denotes a situation where the upper block, positioned above the fault plane, moves upward and over the lower block.
- **Oblique-Reverse Faulting:** Also known as oblique-thrust faulting, this geological faulting type involves vertical and horizontal movement of rocks on one side of the fault plane due to compressional forces. It is frequently observed in areas where tectonic plates converge.

EARTHQUAKE VULNERABILITY IN INDIA:

- **Geographical Location:** India's landmass is penetrating into the Eurasian plate, making the country prone to earthquakes of moderate to very high intensity.
- **Seismic Zoning:** According to the Bureau of Indian Standards (BIS), more than 58.6 per cent of India's landmass is prone to earthquakes of moderate to very high intensity. The seismic zoning in India was revised after the Killari earthquake in 1993, with the low hazard zone or Seismic Zone I being merged with Seismic Zone II.
- **Population Density and Urbanization:** Densely populated areas, extensive unscientific constructions, and unplanned urbanisation have increased risks associated with earthquake hazards.
- **Specific Regions:** The Andaman & Nicobar Islands frequently experience damaging earthquakes due to being situated on an inter-plate boundary. Regions in the Himalayan foothills are vulnerable to liquefaction and landslides due to earthquakes.

CHALLENGES IN EARTHQUAKE PREDICTION:

- **Predictive Complexity:** Accurately forecasting earthquakes necessitates the detection of preliminary signals originating from within the Earth, signifying an impending significant seismic event. Additionally, these signals must exclusively manifest before major earthquakes, avoiding false alarms for minor surface movements.
- **Equipment Limitations:** Currently, the absence of appropriate equipment capable of identifying such precursory signals poses a significant hurdle in earthquake prediction, even if these signals indeed exist.

Sources:

Morocco earthquake kills more than 2,000 people, survivors sleep rough as homes destroyed | World News – The Indian Express

Q1. What geological faulting type involves vertical and horizontal movement of rocks on one side of the fault plane due to compressional forces and is frequently observed in areas where tectonic plates converge?

- (a) Dip-slip faulting
- (b) Strike-slip Faulting
- (c) Oblique- reverse Faulting
- (d) Normal Faulting

ANSWER: (c)

Q2. Consider the following statements about earthquakes:

1. The hypocentre is the point on the Earth's surface directly above the earthquake's origin.
2. The Richter Scale measures visible damage caused by an earthquake.
3. The Moment Magnitude Scale (Mw) measures the total moment release based on fault movement distance and force.

How many of the statements are correct?

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

ANSWER: (a)

Q3. In light of recent earthquakes in Morrocco, discuss the Geological and Geographical Factors Influencing Earthquake Vulnerability in India.

CANNABIS

This article covers "Daily Current Affairs" and the Topic details "Cannabis". This Topic has relevance in the Public Health section of the UPSC CSE exam.

FOR PRELIMS:

About Cannabis?

FOR MAINS:

GS 2: Public Health

Benefits of Cannabis Cultivation?

Concerns Related to Cannabis Cultivation in India?

Way Forward?

WHY IN THE NEWS:

Himachal Pradesh Government is considering to legalise Cannabis cultivation

WHO'S DEFINITION OF CANNABIS

- According to the World Health Organization (WHO), cannabis is a term encompassing various psychoactive preparations derived from the Cannabis sativa plant.
- WHO identifies cannabis as the most extensively cultivated, trafficked, and misused illicit drug worldwide.
- Cannabis plant species are typically dioecious, with male and female plants. Unpollinated female plants yield a substance known as hashish.
- The primary psychoactive component in cannabis is Delta9 tetrahydrocannabinol (THC).

NDPS ACT, 1985 DEFINITION

- As per the Narcotic Drugs and Psychotropic Substances (NDPS) Act of 1985, a “cannabis plant” encompasses all plants of the cannabis genus.
- ‘Charas’ is the separated resin extracted from the cannabis plant, covering separated resin forms, whether crude or purified. This definition also includes concentrated preparations and resin-like hashish oil or liquid hashish.
- ‘Ganja’ is defined as the flowering or fruiting tops of the cannabis plant but explicitly excludes seeds and leaves.
- The NDPS Act prohibits any mixture, with or without neutral materials, of charas and ganja or any beverage derived from them.
- The Act specifically excludes seeds and leaves from its provisions due to their minimal THC content.

BENEFITS OF CANNABIS CULTIVATION:

Expanding Hemp Cultivation

- Hemp, a variant of Cannabis sativa, has significant industrial and medicinal applications.
- In Himachal Pradesh, hemp cultivation currently occurs illegally under the NDPS Act of 1985.

Economic Advantages

- Legalizing and regulating hemp cultivation can provide substantial economic benefits.
- Revenue Generation: Cannabis cultivation can generate revenue for Himachal Pradesh, contributing to the state's finances.
- Alternative Income Source: It offers an alternative income source for local communities, potentially reducing dependence on traditional agriculture.

Diverse Applications

- Beyond recreational use, cannabis has various applications:
 - Phytoremediation: Cannabis can help in soil and environmental cleanup.
 - Fiber and Cloth: Hemp fibers are used in textile and cloth manufacturing.
 - Medicinal Uses: Cannabis has medicinal properties, including pain management and anti-inflammatory properties.
 - Pulp and Paper Industry: Hemp can be utilized in the pulp and paper industry.

Preserving Traditional Practices

- Hemp has a history of traditional uses in Himachal Pradesh, such as rope and textile making from hemp fibers, shoe manufacturing, and seed consumption.
- Legalization can help revive and preserve these traditional practices disrupted by the ban on cultivation.

SCIENTIFIC RESEARCH

- Legalizing cannabis for medicinal, industrial, and scientific purposes allows for research into its potential benefits and applications.
- It can harness the plant's medicinal properties for the betterment of healthcare.



CONCERNS RELATED TO CANNABIS CULTIVATION IN INDIA

- **Drug Addiction:**

- Nearly 95% of drug addicts in Himachal Pradesh use cannabis and its derivatives.
- Critics argue that legalizing cultivation might encourage youth to experiment with cannabis, potentially leading to addiction issues, and hampering their socio-economic contributions.

- **Health Risks:**

- Cannabis use can have adverse health effects, such as impaired cognitive function, respiratory problems (when smoked), and an increased risk of mental health disorders.
- Widespread cannabis use raises concerns about public health, especially among vulnerable populations.

- **Psychiatric Issues:**

- Prolonged and excessive cannabis use can contribute to psychiatric problems like anxiety, depression, and psychosis.
- Legalizing cultivation may exacerbate these issues without adequate mental health support and education.

- **Illicit Market:**

- The illicit cannabis market may persist alongside legal cultivation.
- Continued illegal production and distribution could lead to increased criminal activities, perpetuating the challenges faced by law enforcement.

- **Enforcement Challenges:**

- Regulating cannabis cultivation and use presents enforcement challenges.
- Establishing legal limits, enforcing age restrictions, and preventing diversion to the illicit market requires a robust and well-funded regulatory framework.

WAY FORWARD

- **Comprehensive Regulation:** Develop a balanced regulatory framework that enables medical access while preventing misuse.
- **In-Depth Research:** Conduct thorough research on cannabis, including its medicinal benefits, economic potential, and health risks.
- **Robust Framework:** Create a strong regulatory system addressing drug abuse, health concerns, and criminal activities, with clear guidelines for licensing, oversight, age restrictions, product labelling, and quality control.

SOURCE:

<https://www.thehindu.com/news/national/other-states/himachal-pradesh-inches-closer-to-cannabis-cultivation/article67291491.ece>

Q.1 The term “Delta9 tetrahydrocannabinol (THC)”, recently seen in the news is:

- (a) A chemical used in Detergents
- (b) An Enzyme used in Gene Editing
- (c) A psychoactive component
- (d) An Enzyme used in SARS-COV-2 Vaccine

ANSWER: C

Q.2 Consider the following statements regarding cannabis:

1. All parts of Cannabis are prohibited under the NDPS Act 1985.
2. The primary psychoactive component in cannabis is cannabidiol (CBD).
3. Legalising cannabis cultivation can help in textile Production.

How many of the above statement/s is/are correct?

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

ANSWER: B

Q.3 Cannabis legalization is a complex issue that involves economic, social, and health considerations. Discuss the potential benefits and challenges of legalizing cannabis cultivation in India

EASTERN ECONOMIC FORUM

This article covers "Daily Current Affairs" and the Topic details "Eastern Economic Forum". This Topic has relevance in the Economy section of the UPSC CSE exam.

FOR PRELIMS:

About Eastern Economic Forum?

FOR MAINS:

GS 2: Economy

Significance of Vladivostok-Chennai Maritime Corridor for India?

WHY IN THE NEWS:

The 8th Eastern Economic Forum for 2023 was held in Vladivostok from the 10th to the 13th of September.

ABOUT EASTERN ECONOMIC FORUM:

- The Eastern Economic Forum is an international event that takes place annually in Vladivostok, Russia. It serves as a crucial international platform for building and strengthening relationships within the Russian and global investment communities.
- The forum also provides a comprehensive expert evaluation of the economic potential of the Russian Far East, its investment opportunities, and the business conditions within its advanced special economic zones.

INDIA'S PARTICIPATION IN THE 8TH EASTERN ECONOMIC FORUM 2023:

- Shri Sarbananda Sonowal, the Union Minister of Ports, Shipping & Waterways and Ayush, represented India at the Eastern Economic Forum in Russia.
- Shri Sonowal spoke at the session on the Eastern Maritime Corridor, exploring possibilities of the Northern Sea Route and establishing a Trans-shipment Hub in the Bay of Bengal to further strengthen bilateral relations.
- The Vladivostok-Chennai Maritime Corridor is a proposed sea route covering approximately 5,600 nautical miles, or about 10,300 km. This corridor aims to increase bilateral trade between India and Russia. The new sea route connects the eastern port cities of India and Russia.
- **The corridor is expected to cover the Sea of Japan, East and the South China Sea through the Malacca Strait to reach the Bay of Bengal.** The areas of economic engagement with Russia include transport, energy, agriculture, industry, and space.

The Vladivostok-Chennai Maritime Corridor holds significant importance for India for several reasons:

- **Efficiency and Connectivity:** This sea route, spanning approximately 5,600 nautical miles, connects the eastern port city of Chennai in India to Vladivostok in Russia. It reduces transport time to just 24 days, compared to over 40 days currently taken to transport goods from India to Far East Russia via Europe.
- **Trade and Investment Opportunities:** The corridor opens doors to a world of trade and investment opportunities. It paves the way for a mutually beneficial exchange of goods, resources, and expertise between India and Russia.
- **Geostrategic Importance:** The corridor aims to counterbalance China's growing influence in Southeast Asia. It poses significant security and economic challenges to China's Maritime Silk Road.
- **Energy Security:** The corridor presents an opportunity for India to diversify its energy sources by importing natural resources from Russia's Far East region. This could reduce India's dependence on Middle Eastern countries and ensure a more secure, stable energy supply chain.
- **Infrastructure Development and Employment Opportunities:** The development of this corridor could lead to significant infrastructure development and create employment opportunities in the region.
- **Strengthening Bilateral Relations:** The corridor is expected to strengthen the bilateral relations between India and Russia. It ensures connectivity between the two major ports, which will give impetus to the cooperation between India and the Russian Far East.

SOURCE:

<https://www.thehindu.com/news/international/india-russia-exploring-use-of-northern-sea-route-eastern-maritime-corridor/article67304566.ece>

Q.1 Consider the following statements:

1. Vladivostok lies in the western part of Russia.
2. Chennai Vladivostok maritime corridor is one of the prominent Ancient trading routes.

Which of the statements given above is/are correct?

(a) 1 only

(b) 2 only

- (c) Both 1 and 2
(d) Neither 1 nor 2

ANSWER: D

Q.2 Consider the following statements about the Chennai Vladivostok corridor:

1. It passes through the South China Sea.
2. It is a part of the Ancient silk route.

Which of the statements given above is/are correct?

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

ANSWER: A

Q.3 The Vladivostok-Chennai Maritime Corridor is a significant development in India's trade and foreign relations. Discuss the potential impact of this corridor on India's economic, strategic, and geopolitical standing.

PROPOSED ADDITIONAL TAX ON DIESEL VEHICLES

This article covers "Daily Current Affairs" and the topic details "Proposed Additional Tax on Diesel Vehicles". This topic has relevance in the "Indian Economy" section of the UPSC CSE exam.

FOR PRELIMS:

Diesel Vehicles

What are the advantages of Diesel Vehicles?

FOR MAINS:

GS3: Indian Economy

WHY IN THE NEWS?

Recently, Road Transport Minister Nitin Gadkari emphasised shifting away from petrol and diesel fuels. He mentioned that if the use of diesel vehicles and generators persists, he might suggest a 10% GST increase as a “pollution tax” to the Finance Minister. However, he later clarified that there is currently no such government proposal.

THE PUSHBACK AGAINST DIESEL IN INDIA

- **Government’s Green Goals:** The Indian government aims to reduce greenhouse gas emissions and generate 40% of its electricity from renewables to achieve net-zero emissions by 2070.
- **Taxation Strain:** The government currently levies a 28% tax on diesel cars, accompanied by additional cess based on engine capacity.
- **Emissions Dilemma:** Diesel engines produce elevated levels of nitrogen oxides (NO_x), raising environmental apprehensions. The 2015 Volkswagen scandal further exacerbated diesel’s global reputation.
- **Fuel Efficiency Factor:** Although diesel engines provide superior fuel economy and torque, the price distinction between diesel and petrol has shrunk since fuel price deregulation in 2014.
- **Expensive upgrades:** The transition to BS-VI emission norms from April 1, 2020, and the expensive upgrades required for diesel engines to comply with these standards prompted carmakers to exit the diesel market. They argued that skipping from BS-IV to BS-VI made diesel models economically unviable.

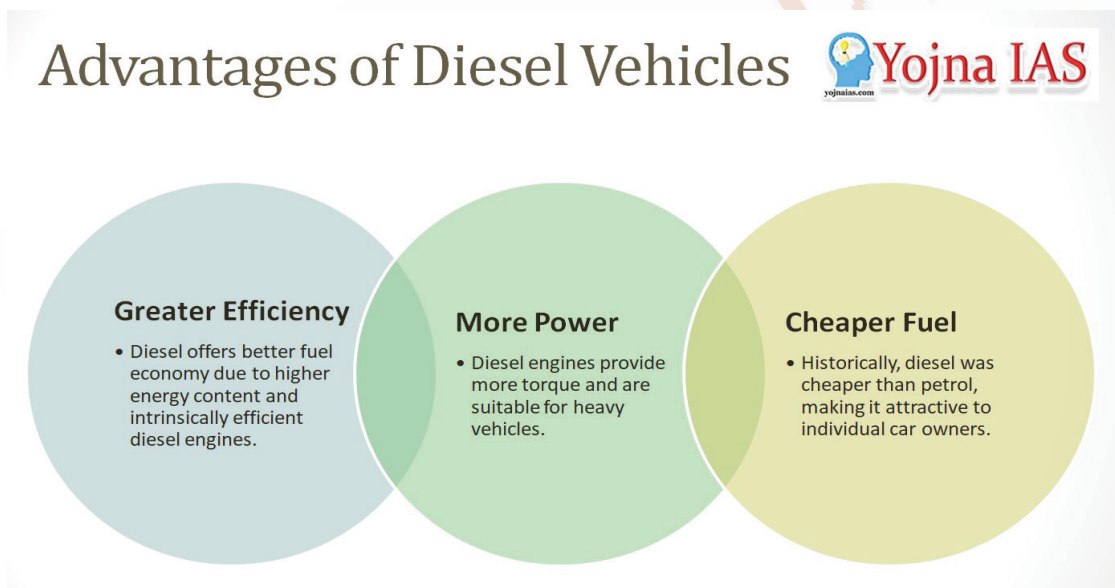
STATUS OF DIESEL VEHICLES IN INDIA:

- **Diesel’s Significant Share:**
 - Diesel constitutes approximately 40% of India’s petroleum product consumption, as per estimates from the Petroleum Planning & Analysis Cell.
- **Transportation Dominance:**
 - Around 87% of total diesel sales serve the transport sector, with trucks and buses making up about 68% of diesel sales in India.
 - Three states, namely Uttar Pradesh, Maharashtra, and Haryana, collectively account for nearly 40% of diesel sales in the country.
- **Impact on Diesel Cars**
 - Maruti Suzuki, India’s largest car manufacturer, ceased production of diesel vehicles on April 1, 2020, and does not plan to re-enter this market.

- Tata Motors, Mahindra, and Honda no longer produce 1.2-litre diesel engines; they now offer diesel options only for 1.5-litre or larger engines.
- While some diesel variants are still available from Hyundai, Kia, and Toyota, most automakers have significantly reduced their diesel offerings since 2020.
- This has led to a decrease in the contribution of passenger vehicles to overall diesel demand, dropping from 28.5% in 2013 to 16.5%.

ADVANTAGES OF DIESEL VEHICLES

- **Greater Efficiency:** Some individual users prefer diesel due to better fuel economy. Diesel has higher energy content per litre, and diesel engines are intrinsically efficient, utilizing higher compression ratios and no spark plugs.
- **More Power:** Diesel engines offer more torque, and are less prone to stalling, making them favoured for heavy vehicles and haulage.
- **Cheaper Fuel:** Historically, lower diesel prices than petrol were a significant attraction for individual car owners, with a substantial price difference of up to Rs 25 per litre at its peak.



WAY FORWARD:

- **Promote electric vehicles (EVs):** EVs are a clean and efficient alternative to diesel vehicles. The government can offer incentives to encourage people to switch to EVs, such as subsidies, tax breaks, and preferential parking.
- **Improve public transportation:** Public transportation is a more sustainable way to travel than private vehicles. The government can invest in expanding and improving public transportation options, such as buses, trains, and metros.

- **Implement congestion pricing in cities:** Congestion pricing charges drivers a fee to enter certain areas during peak traffic times. This can help to reduce traffic congestion and encourage people to use public transportation or other alternatives.

Sources:

‘Say bye to diesel’: Centre warns automakers of higher taxes in pollution fight – The Hindu

Q1. With reference to Diesel Vehicles, consider the following statements:

1. Diesel has a higher energy content per litre, making it intrinsically efficient.
2. Diesel engines offer more torque, making them better suited for towing and hauling heavy loads.
3. Diesel engines are generally less loud when compared to gasoline engines.

Which of the statements given above is/are correct?

- (a) 1 and 2 only
- (b) 2 and 3 only
- (c) 3 only
- (d) None

Answer: (a)

Q2. Consider the following :

1. Taxing the use of fuels, such as biodiesel and ethanol
2. Implementing congestion pricing in cities
3. Encourage CNG and LPG
4. Enforce stringent emission standards

How many of the above measures can help reduce diesel consumption in India?

- (a) Only one
- (b) Only two
- (c) Only three

(d) All Four

Answer: (c)

Q3. Discuss the factors that have led to the pushback against diesel in India and the way forward to reduce diesel consumption in the country.

DRAFT NATIONAL STRATEGY FOR ROBOTICS (NSR)

This article covers "Daily Current Affairs" and the Topic details "Draft National Strategy for Robotics (NSR)". This Topic has relevance in the Science and Technology section of the UPSC CSE exam.

FOR PRELIMS:

About National Strategy for Robotics (NSR)?

FOR MAINS:

GS 3: Science and Technology

Key Recommendations?

Main Challenges in India's Robotics Sector?

WHY IN THE NEWS

The Ministry of Electronics and Information Technology (MeitY) has extended an invitation for public input and feedback from various stakeholders regarding the draft "National Strategy for Robotics (NSR)."

Aim: The Draft National Strategy for Robotics (NSR) aims to strengthen all aspects of the innovation cycle within robotic technology, accompanied by the establishment of a robust institutional framework to ensure effective implementation of these initiatives.

Objectives:

- Establish India as a Global Leader in Robotics by 2030
- Reinforce Make in India 2.0 Initiatives for Enhanced Integration in the Global Value Chain

Nodal Agency: Ministry of Electronics and Information Technology (MeitY) to Lead the Effort through the 'National Robotics Mission' (NRM)

Core Sectors: Prioritizing Robotics Automation in Key Sectors

- Manufacturing
- Agriculture
- Healthcare
- National Security

Measures: Stimulating Innovation in Robotics by:

- Fiscal and Non-Fiscal Interventions by NRM
- Development of Funding Mechanisms for Robotics Start-ups
- Promotion of Robotic Exports

KEY RECOMMENDATIONS:

- **Strong Regulatory Framework:** Establish a robust regulatory framework led by the Robotics Innovation Unit (RIU) under the Ministry of Electronics and Information Technology (MeitY).
- **Centers of Excellence (CoEs) in Robotics:** Create CoEs for foundational and applied robotics research. Encourage private sector participation in priority sectors for experimental prototyping and initial commercialization.
- **Support for Startups:** Provide support to startups, harness research potential in higher education institutions, and develop dedicated robotics industrial zones.
- **Public Procurement Policy:** Implement a Public Procurement Policy for Robotics, wherein the central government becomes a major buyer of Indian-made robotic systems, incentivizing domestic production with a minimum local content requirement.

MAIN CHALLENGES IN INDIA'S ROBOTICS SECTOR:

- **Import Dependence:** India heavily depends on importing robotics components, primarily from China and Japan, which raises concerns about self-reliance and supply chain vulnerabilities.
- **Expensive Hardware:** High costs associated with robotics hardware components pose a significant barrier to the widespread adoption of robotics technology, particularly for small and medium-sized enterprises (SMEs).
- **Limited Research and Development:** Insufficient investments in research and development (R&D) impede progress in robotics technology. The lack of a robust R&D ecosystem hampers innovation and indigenous development of advanced robotics solutions.

SOURCE:

<https://www.meity.gov.in/writereaddata/files/Draft-National-Strategy-Robotics>.

Q.1 With reference to the Draft National Strategy for Robotics (NSR), consider the following statements:

1. It aims to establish India as a Global Leader in Robotics by 2030
2. Ministry of Science and Technology to Lead the Effort through the 'National Robotics Mission' (NRM)

Which of the statements given above is/are correct?

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

ANSWER: A

Q.2 Discuss the key objectives and recommendations outlined in the Draft National Strategy for Robotics (NSR) in India. Analyze the significance of this strategy in promoting innovation.

NATIONAL JUDICIAL DATA GRID (NJDG)

This article covers "Daily Current Affairs" and the topic details "National Judicial Data Grid (NJDG)". This topic has relevance in the "Polity and Governance" section of the UPSC CSE exam.

FOR PRELIMS:

What is National Judicial Data Grid (NJDG)?

FOR MAINS:

GS2: Polity and Governance

WHY IN THE NEWS?

Recently, Chief Justice D.Y. Chandrachud publicly announced in the Supreme Court about integrating the Supreme Court with the National Judicial Data Grid (NJDG).

NATIONAL JUDICIAL DATA GRID (NJDG)

- NJDG is an online database containing information about orders, judgments, and case details from 18,735 District and subordinate Courts, High Courts and now Supreme Court.
- It's an integral part of the eCourts Project and can be accessed at <https://njdg.ecourts.gov.in/>
- NJDG provides real-time updates and detailed data, including information from the Taluka (sub-district) level to the Supreme Court of India.
- NJDG is developed as part of Phase II of the e-Courts project, a Centrally Sponsored Scheme.
- The platform is a collaborative effort between the National Informatics Centre (NIC) and the in-house software development team of the Computer Cell, Registry of the Supreme Court.
- It integrates data from over 18,735 computerised courts across India.

BENEFITS OF NATIONAL JUDICIAL DATA GRID (NJDG)

- NJDG serves as a monitoring tool to track and reduce case backlogs. For example, in the Supreme Court in 2023, there are 64,854 pending cases, largely due to legacy cases.
- It identifies bottlenecks in the judicial process. For instance, a sudden increase in land disputes can prompt policymakers to strengthen relevant laws.
- NJDG generates insights into specific areas of law. It's linked with Land Records data from 26 States for land disputes, providing valuable information for decision-makers.

EASE OF DOING BUSINESS RECOGNITION:

- The World Bank acknowledged the effectiveness of the National Judicial Data Grid in its Ease of Doing Business report for 2018.
- It was praised for its role in generating case management reports, simplifying the enforcement of contracts.

DATA ACCESSIBILITY:

- In line with the National Data Sharing and Accessibility Policy (NDSAP) announced by the Government of India, the NJDG provides an Open Application Programming Interface (API).
- Central and State Government agencies can access NJDG data using a departmental ID and access key, facilitating institutional litigants in evaluating and monitoring cases.
- There are plans to extend this accessibility to non-institutional litigants in the future.

RECENT ADDITION:

- NJDG has recently incorporated a feature to specify the reasons for case delays.
- This addition is valuable as it allows tracking the judiciary's challenges during case adjudication.
- It enables decision-makers to take targeted steps to address the growing backlog of cases.

THE E-COURTS INTEGRATED MISSION MODE PROJECT:

- The e-Courts Integrated Mission Mode Project is a Government of India initiative to enhance access to justice through technology.
- It falls under the national e-Governance project of the Department of Justice, Ministry of Law and Justice.
- The project's inception is rooted in the 'The National Policy and Action Plan for Implementation of ICT in the Indian Judiciary – 2005,' established by the e-Committee of the Supreme Court of India.
- Its primary objective is computerising district and subordinate courts to offer improved services to litigants, lawyers, and the judiciary.
- The project has been executed through a three-phase approach:

| Phase | Objectives |
|---------------------------------------|---|
| Phase I (2011-2015) | Computerise 14,249 district and subordinate courts Launch of the national e-courts portal (ecourts.gov.in). |
| Phase II (2015-2023) | Computerise 18,735 district and subordinate courts, create NJDG |
| Phase III (Commencing in 2023) | Establish a unified technological platform for the judiciary, digitise all court records, universalise e-filing and e-payments, create virtual courts and eSewa Kendras |

SOURCES:

Supreme Court information a click away as it joins National Judicial Data Grid – The Hindu

Q1. With reference to the National Judicial Data Grid (NJDG), consider the following statements:

1. NJDG provides real-time updates and detailed data, including information from the Taluka (sub-district) level to the Supreme Court of India.
2. NJDG is developed as part of Phase I of the e-Courts project, a Centrally Sponsored Scheme.
3. NJDG does not integrate data from computerised courts but relies on manual data entry.

Which of the statements given above is/are NOT correct?

- (a) 1 and 2 only
- (b) 2 and 3 only
- (c) 3 only
- (d) None

Answer: (b)

Q2. Consider the following:

1. National Judicial Data Grid (NJDG) is a monitoring tool to track and reduce case backlogs, particularly in legacy cases.
2. NJDG generates insights into specific areas of law, notably in cases related to land disputes.
3. NJDG provides an Open Application Programming Interface (API) facilitating data access for government agencies and institutional and non-institutional litigants.

How many of the abovementioned statements are correct?

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

Answer: (b)

Q3. How do initiatives like the National Judicial Data Grid (NJDG) and the e-Courts Project contribute to making justice more accessible and efficient in India?

