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1. Eurasian Economic Union (EAEU)

- **Prelims** Eurasian Economic Union (EAEU)
- Mains GS 2 International Relations

Why in the news?

• The FIrst round of negotiations for a free trade agreement (FTA) between India and the Eurasian Economic Union (EAEU), which includes Russia, is likely to take place in early November.

Eurasian Economic Union (EAEU)

- What is it?: The Eurasian Economic Union (EAEU) is an economic union established to promote economic integration and cooperation among member states, primarily focusing on Russia, Kazakhstan, Belarus, Armenia, and Kyrgyzstan.
- **Launch**: 2015
- Aim: To create a common market similar to the European Union, facilitating the free
 movement of goods, services, capital, and labor among its members, while
 promoting economic stability, shared infrastructure, and a unified regulatory
 framework.

• Objectives

- → Economic Integration: Develops a single economic space among member states, fostering closer economic ties and harmonizing economic policies.
- → Free Movement: Allows the free flow of goods, services, capital, and labor to support seamless trade and employment across member states.
- → Unified Regulations: Establishes common regulations in areas like customs, competition, and technical standards to simplify business and trade within the region.

• India and EAEU:

- → Trade Opportunities: An India-EAEU Free Trade Agreement (FTA) could open new trade routes and markets for Indian goods, especially in pharmaceuticals, agriculture, and information technology.
- → Energy Security: India could gain easier access to EAEU's vast energy resources, including oil and natural gas from Russia and Kazakhstan, enhancing India's energy security.
- → Connectivity Initiatives: India aims to improve connectivity with the EAEU through the International North-South Transport Corridor (INSTC), enhancing trade efficiency.

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2. Venezuela

- **Prelims** Location of Venezuela
- Mains GS 2 International Relations

Venezuela



Why in the news?

 As per officials India is set to start pilot projects in Venezuela in "priority areas" such as agriculture, pharmaceuticals and digital public infrastructure.

Venezuela

- Location: It is a South American country.
- · Capital: Caracas
- Bordering Countries: Guyana, Brazil, and Colombia.
- Bordering Waterbodies: Caribbean Sea and the Atlantic Ocean.
- · Rivers: Orinoco River
- · Grasslands: Llanos
- Waterfall: Angel Falls, the world's highest waterfall.



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3. Right To Information Act, 2005

- Prelims Right to Information Act, 2005
- Mains GS 2 Polity

Right to Information (RTI) Act



Why in the news?

 Despite the issues existing such as late OTPs and Payment failures, the number of online RTI queries showed a rise.

Right to Information (RTI) Act

- The RTI Act came into force with effect from October 2005.
- RTI is an act of the parliament of India which sets out the principles and techniques in regards to citizens' right to information. It supplanted the previous Freedom of Information Act, 2002.
- Ministry Department of Personnel and Training, Ministry of Personnel, Public Grievances and Pensions.
- Objective Empower the citizens, promote transparency and accountability in the working of the Government, contain corruption, and make our democracy work for the people in real sense.

Significance of Act

 It protects the fundamental rights to Freedom of Expression and Speech under Article 19(1)(a) and Right to Life and Personal Liberty under Article 21 guaranteed by the Constitution.

Exceptions Under Second Schedule of Act

- Security agency like Intelligence Bureau , Research and Analysis Wing, Directorate of Enforcement, National Technical Research Organisation
- · Strategic Forces Command
- Defence Research and Development Organisation (DRDO) and Border Roads Development Board
- · Computer Emergency Response Team (CERT In)



Difference between RTI Act, 2005 and RTI Amendment Act, 2019

Term	Quantum of salary	De
CHIEF information	CIC pay equivalent	IF
commissioner (CIC)	to CECs, Central ICs	re
and information	and state CIC to	10
commissioners will	election commis-	be
have a tenure of	sioners and state ICs	sa
five years	to chief secretary	rec

the tenure of all information commissioners (ICs) at state and central level SALARIES and allowances of these officers will be determined by the Central government

■ IF such officials are

receiving pension or other retirement benefits, their salaries will be reduced by an amount equal to the pension

THESE provisions have been removed

Source: PRS Legislative Research



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4. Nationally Determined Contributions(NDC)

- Prelims Nationally Determined Contributions(NDC)
- Mains GS 3 Environment

Why in the news?

Ahead of the COP 30 scheduled to take place in Brazil, only 29 out of the 195
Countries have submitted their updated NDC goals, the top emitters staying aloof
from submitting their NDCs.

Nationally Determined Contributions(NDC)

- What are Nationally Determined Contributions (NDCs)?
 - → **Definition**: NDCs are climate action plans submitted by countries under the Paris Agreement (2015), outlining their targets for reducing greenhouse gas (GHG) emissions and adapting to climate impacts.
 - → Nature: Not legally binding targets but binding obligation to submit, update, and report progress.

Features

- → **Bottom-up approach**: Each country sets its own targets considering national circumstances.
- → Global stocktake: Every 5 years, collective progress is assessed.
- → **Progression principle**: Each new NDC must be more ambitious than the previous one.
- → Transparency mechanism: Monitoring, reporting, and verification (MRV) required.

• India's NDCs

- **→** First NDC (2015):
 - ★ Reduce emissions intensity of GDP by 33–35% from 2005 levels by 2030.
 - ★ Achieve 40% cumulative electric power capacity from non-fossil fuel sources by 2030.
 - ★ Create an additional carbon sink of 2.5–3 billion tonnes CO₂ equivalent through forest and tree cover.



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→ Updated NDC (2022):

- ★ 45% reduction in emissions intensity of GDP by 2030 (from 2005 level).
- ★ 50% cumulative electric power capacity from non-fossil fuels by 2030
- ★ Reaffirmation of forest carbon sink goal.
- ★ Alignment with Panchamrit announced at COP26 (Glasgow, 2021):
 - ❖ Net zero by 2070.
 - ❖ 500 GW non-fossil capacity by 2030.
 - ❖ 1 billion tonnes reduction in carbon emissions by 2030.
 - ❖ 50% energy from renewables by 2030.
 - Reduction of carbon intensity of economy by 45% by 2030.

• Significance

- → Helps India balance development and climate commitments.
- → Strengthens India's leadership in climate diplomacy (e.g., International Solar Alliance, LiFE Mission).
- → Provides a framework for green growth, clean energy transition, and sustainable development.

Challenges

- → Financing gap: Need for climate finance (\$2.5 trillion till 2030).
- → Technology transfer issues.
- → Energy security vs. emission reduction.
- → Monitoring and enforcement capacity.



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5. Sarnath

- Prelims Sarnath
- Mains GS 1 Art and Culture

Why in the news?

 Ahead of the visit of the UNESCO team to Sarnath, Archeological Survey of India proposed for a new plaque at the site which gives the credit of preserving the site to a local ruler instead of the British.

Sarnath

- Location: Situated 8km from Varanasi in Uttar Pradesh
- What is its Importance: The location where Buddha delivered his first sermon.
- Historical Significance: Tied to Mauryan period and spread of Buddhism.
- Architectural Significance:
 - → Ashokan Pillar and its Lion Capital was erected here as a memorial for Buddha's first sermon by Ashoka.
 - → Stupas, monasteries and other structures here showcase the evolution of Buddhist architecture.
 - → The famous **Gupta period** (5th cent CE) sculpture of the Buddha Shakyamuni in the **Dharmachakra Pravartana mudra** uncovered during the excavations at Sarnath
 - → The **Dhamek Stupa** is a huge stupa in Sarnath.
- <u>National emblem</u>: The Lion capital of Sarnath pillar was adopted as the National emblem of India.

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6. Radar Technology

- Prelims Radar Technology
- Mains GS 3 Science and Technology

Why in the news?

 With the procurement of a range of advanced air defence (AD) radars, the Indian Army has begun the process of plugging gaps in its air defence network along the northern and western borders.

Radar Technology

• What is it?

- → Radar stands for Radio Detection and Ranging.
- → It is an electromagnetic system used for detecting, locating, tracking, and recognizing objects at considerable distances.

• Working Principle

- → A transmitter generates radio waves.
- → Antenna directs these waves toward the target.
- → Target reflects a portion of the wave energy (echo).
- → The receiver captures the echo and processes it to determine range, velocity, distance.

Components

- → **Transmitter**: Produces radio frequency pulses.
- → Antenna: Radiates and collects electromagnetic energy.
- → **Duplexer**: Switches antenna between transmitter and receiver.
- → Receiver: Amplifies and processes returned signals.
- → **Display/Processor**: Shows target info (range, speed, azimuth, elevation).

• Types

- → Continuous Wave (CW) Radar: Measures velocity using Doppler shift.
- → Pulse Radar: Determines range by measuring time delay.
- → Primary Radar: Detects objects using reflected signals.
- → Secondary Radar: Requires a transponder on the target (used in aviation).
- → Phased Array Radar: Uses multiple antennas, electronically steered beams.
- → Synthetic Aperture Radar (SAR): High-resolution imaging (used in satellites, remote sensing).
- → Over-the-Horizon Radar: Long-distance detection by ionospheric reflection.



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• Application

→ Defence & Security

- ★ Early warning systems, missile guidance, fire control.
- ★ Border surveillance, anti-drone systems.

→ Civil Aviation

- ★ Air Traffic Control (ATC).
- ★ Weather radars for flight safety.

→ Space & Remote Sensing

- ★ ISRO satellites (e.g., RISAT, NISAR with NASA).
- ★ Terrain mapping, earth observation, disaster monitoring.

→ Weather Forecasting

★ Doppler Weather Radars (DWR) for cyclone, monsoon tracking.

→ Maritime Navigation

★ Collision avoidance, ship navigation, coastal monitoring.

→ Civil Uses

- ★ Speed detection by traffic police.
- ★ Ground Penetrating Radar (GPR) for archaeology, construction.

• Indian Initiatives

- → INDRA Radar series (by DRDO) for air surveillance.
- → Arudhra & Ashwini Radars (3D surveillance).
- → Revathi Radar (naval applications).
- → Rohini Radar (air defence).
- → NISAR (2024 launch) joint ISRO-NASA SAR satellite for earth monitoring.
- → IMD's Doppler Weather Radars for cyclone and rainfall prediction.

Advantages

- → Works day & night; not dependent on sunlight.
- → Penetrates through clouds, fog, rain (all-weather).
- → Detects objects at long range.

• Limitation

- → Limited resolution compared to optical sensors.
- → Vulnerable to jamming & stealth technology.
- → High energy consumption and cost.

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7. PM Vishwakarma Scheme

- Prelims PM Vishwakarma Scheme
- Mains GS 3 Economy

PM Vishwakarma Scheme



Why in the news?

· The scheme completes two years, registering 30 lakh artisans and craftsmen under its purview.

PM Vishwakarma Scheme

- · What is it?: The scheme announced by PM Modi in his independence day address.
- · Aim Aims to provide subsidised loans of up to Rs 2 lakh to traditional artisans and craftsmen including weavers, goldsmiths, blacksmiths, laundry workers, and barbers.
- Objective
 - To boost livelihood opportunities for skilled workers like goldsmith, blacksmith, masons and barbers etc.



· It aim at improving the quality, scale and reach of product and services of artisans, and to integrate them with domestic and global value chain.

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8. Light Pollution and Impact on Biodiversity

- Prelims Light Pollution and Impact on Biodiversity
- Mains GS 3 Environment

Why in the news?

• Light pollution is reported to cause disruptions in the circadian rhythm of birds, keeping them awake during the night.

Light Pollution and Impact on Biodiversity

• What is it?: Excessive, misdirected, or obtrusive artificial light introduced into the natural environment.

• Major forms of Light Pollution:

- → Skyglow brightening of night sky over populated areas.
- → Glare excessive brightness causing visual discomfort.
- → Light trespass unwanted spill of light into areas not intended.
- → Clutter confusing grouping of lights.

<u>Causes:</u>

- → Urbanisation and 24×7 active cities.
- → Streetlights, billboards, vehicle headlights.
- → Industrial installations, ports, airports.
- → Over-illumination in tourist and commercial hubs.

• Impact on Biodiversity:

→ On Plants:

- ★ Alters **photoperiodism**: flowering, leaf shedding, fruiting cycles disturbed.
- ★ Trees under streetlights retain leaves longer, affecting seasonal cycles.

→ On Animals:

- ★ Disturbs circadian rhythm and breeding behaviour.
- ★ Migratory birds misoriented by skyglow → collisions with buildings.
- ★ Insects get attracted to lights leading to their exhaustion, predation and population decline.
- ★ Disrupts pollination cycles of insects like Honey Bees and butterflies (especially moth-pollinated plants).



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- ★ Frogs and toads' nocturnal mating calls are suppressed by light and affect reproduction.
- ★ Artificial coastal lighting confuses sea turtle hatchlings and causes them to move inland instead of towards the sea.
- ★ Reduced hunting efficiency of nocturnal predators, affecting prey-predator balance.

→ On Ecosystem:

- **★** Disrupts food chains
- ★ Alters species competition and migration timing.
- ★ Causes **ecological traps** where organisms are attracted to harmful light sources.

• Impacts on Humans:

- → Affects human health: Melatonin suppression, sleep disorders.
- → Cultural impacts: loss of stargazing, astronomy.
- \rightarrow Energy wastage \rightarrow contributes to climate change.

• Mitigation Measures:

- → Use **shielded lighting** to direct light downward.
- → Adopt timers and sensors for lights.
- → Replace high-intensity white/blue LEDs with **amber/yellow spectrum** lights.
- → Declare dark-sky reserves near biodiversity-rich and astronomical zones.
- → Incorporate light pollution in **EIA norms**.
- → Awareness and community participation.

• Global Best Practices:

- → International Dark-Sky Association (IDA): Creates awareness and takes mitigation efforts.
- → UNESCO recognizes dark-sky reserves:
 - ★ India's first: Hanle Dark Sky Reserve, Ladakh, 2022.
- → CPCB guidelines under Environment Protection Act, though light pollution is not explicitly regulated in India.
- → Smart Cities Mission promotes LED-based, shielded street lighting.