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DAILY CURRENT AFFAIRS

30th & 31st January, 2024

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IS HYBRID VEHICLE BETTER THAN EV FOR INDIA?

SOURCE: ***THE INDIAN EXPRESS***

TAG: GS Paper III- ***Environmental pollution and degradation, development of new technology, S&T developments and everyday applications & effects.***

Mains Practice Question:

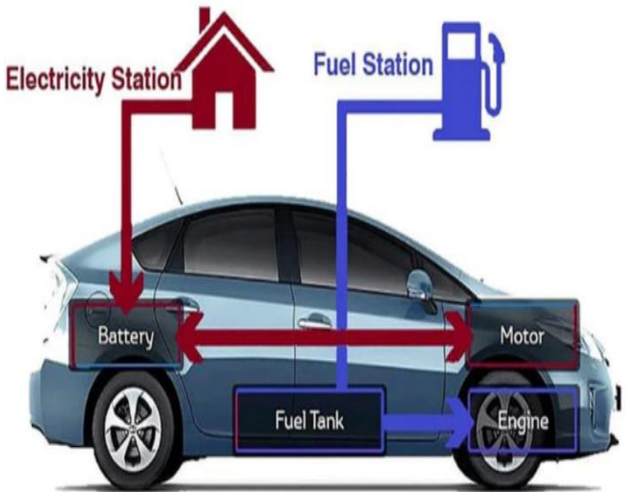
Q. To what extent can the adoption of hybrid vehicles be considered a more practical and less polluting medium-term solution for India's decarbonization efforts, as suggested by a recent research. Discuss the challenges and advantages does this pose in comparison to the prevailing focus on electric vehicles in the country? *(250 words)*

WHY IN NEWS?

- *India's transition to electric vehicles (EVs) has been a key focus in the **country's decarbonization efforts**. However, recent research by Hongkong and Shanghai Banking Corporation Limited (HSBC) suggests that **hybrid vehicles may be a more practical medium-term solution for India's current needs.***

WHAT ARE HYBRID VEHICLES ?

- Hybrid vehicles are cars that combine **at least one electric motor with a gasoline engine** to move the car. The system recaptures energy via **regenerative braking.** The electric motor and the gasoline engine can work together or separately, depending on the driving conditions.
- They produce **lower emissions than traditional vehicles,** but not zero emissions.
- There are **different types of hybrid vehicles**:
  - **Mild Hybrid:** These vehicles have electric motors that are not powerful enough to propel the vehicle alone. They may provide some fuel economy benefits, but they ***cannot power the vehicle using electricity alone.***
  - **Full Hybrid:** Full hybrids are ***equipped with both a gasoline engine and a more powerful electric component***. The electric motor in a full hybrid vehicle is capable of handling a significant portion of the workload.
  - **Plug-In Hybrid (PHEV):** These hybrids have a larger battery pack that can be charged by plugging the vehicle into an external power source. They ***can run on electricity alone for a certain range*** before the gasoline engine is needed.



HYBRID VEHICLES V/S ELECTRIC VEHICLES:

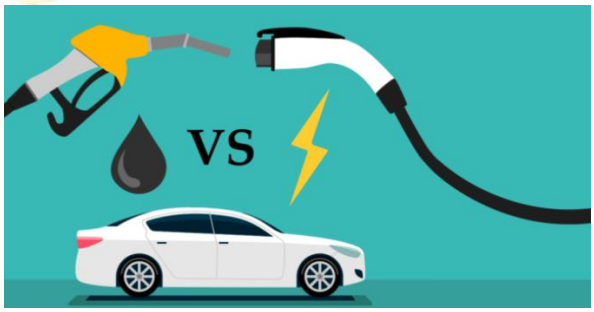
- The differences between hybrid vehicles and electric vehicles are based on their power source, fuel dependency, range, emissions, charging, and maintenance requirements:

ASPECT	HYBRID VEHICLES	ELECTRIC VEHICLES
Power Source	Internal combustion engine and electric motor	Electric motor and battery
Fuel Dependency	Requires gasoline	Relies entirely on electric power
Range	Typically have a longer range than electric vehicles, as they can also run on gasoline	Limited by the battery capacity and need to be recharged
Emissions	Produce lower emissions than traditional vehicles, but not zero emissions	Zero tailpipe emissions
Charging	Do not need to be plugged in for charging	Require regular charging from an external power source
Maintenance	Generally require more maintenance due to the dual power sources	Have fewer moving parts and require less maintenance

ADVANTAGES OF USING ELECTRIC VEHICLES OVER HYBRID VEHICLES:

The advantages of electric vehicles over hybrid vehicles in India are as follows:

- **Zero Emissions:**
  - EVs produce zero emissions, making them a **cleaner and more environmentally-friendly** option than hybrid vehicles.
  - EVs help **reduce the dependency on fossil fuels** and **diminish the impact of ozone-depleting substances**, thereby supporting the objective of phasing out coal and **transitioning to clean energy** as recommended by the **UNFCCC**
  - In terms of international goals, the adoption of EVs in India contributes to the objectives to reach **(net) zero GHGs** as soon as possible, by **reducing greenhouse gas emissions**, promoting sustainable transportation, and supporting the transition to clean energy.



- **Regenerative Braking:**
  - EVs use regenerative braking to recharge their batteries, which can help **extend their range** and **reduce energy consumption.**
- **Quieter Operation:**
  - EVs are quieter than hybrid vehicles because they don't have an internal combustion engine. So, reduction in noise pollution.

CHALLENGES IN EV ADOPTION:

India faces several challenges in transitioning to electric vehicles (EVs). These challenges include:

- The global push for **battery electric vehicles (BEVs)** faces challenges such as **the need for upfront subsidies, the lack of a robust charging network, and the source of electricity.** The experience in markets like ***Norway, the US, and China shows that the electric push works effectively only if backed by state subsidies.*** Moreover, the lack of a well-developed charging infrastructure is a significant hurdle in the widespread adoption of EVs.
- The **limited availability of public charging stations in India** is a significant factor that affects the adoption of EVs. In contrast, the **existing refueling infrastructure for traditional vehicles** can also support the use of hybrid vehicles.
- Additionally, the overall cost of electric vehicles is a primary challenge, as they tend to have a **higher initial cost compared to traditional vehicles and even hybrid vehicles.**

ADVANTAGES OF HYBRID VEHICLES OVER EV's :

The advantages of hybrid vehicles over electric vehicles (EVs) in India, **as suggested by HSBC Research**, are as follows:

- **Lower Overall Carbon Emissions:**
  - HSBC Research's calculations show that **overall carbon emissions are lower in hybrids compared to electric vehicles**. Currently, hybrids are less polluting than both electric and traditional internal combustion engine vehicles for similarly proportioned vehicles.
  - It further added that, it could take ***7-10 years for the emissions from EVs and hybrid vehicles to converge*.** The analysis takes into account total (wheel-to-wheel) carbon emissions, which are currently **lower for hybrids compared to EVs.**
  - Even **by 2030,** if India's share of non-fossil fuels in power generation reaches 40%, ***hybrids are expected to release 8% less emissions than EVs***.
- **Low Cost of Ownership and Maintenance:**
  - The initial purchase price of hybrid vehicles is generally lower than that of EVs, which can make them a more accessible choice for Indian consumers.
  - They **do not require frequent battery replacements**.
- **Practical Medium-Term Solution:**
  - Hybrid vehicles are considered a more practical medium-term solution for **India's decarbonization efforts.** They are critical not just from a cost of ownership perspective but also for **India's decarbonization drive.**

CONCLUSION:

- *In conclusion, while the transition to electric vehicles is a crucial part of India's decarbonization efforts,* ***the current data and analysis suggest that hybrid vehicles could be a more practical and less polluting medium-term solution for the country.*** *As India continues to work towards eventual electrification, embracing hybrid vehicles over the* ***next 7-10 years could be a more viable and sustainable approach.***

RIVER-LINKING PROJECT

SOURCE: **THE INDIAN EXPRESS**

TAG: *GS Paper III:* ***Water Resources Issues Relating to Development.***

Mains Practice Question:

Q. The interlinking of rivers can provide viable solutions to the multi-dimensional inter-related problems of droughts, floods, and interrupted navigation. Critically examine. ***-2020 (150 words)***

WHY IN NEWS?

- The signing of the Memorandum of Understanding (MoU) between Rajasthan, Madhya Pradesh, and the Union Ministry of Jal Shakti for the implementation of the Modified Parbati-Kalisindh-Chambal-ERCP (Modified PKC-ERCP) Link Project is noteworthy.

INTERLINKING OF RIVERS – BACKGROUND

- In August 1980, the **Ministry of Irrigation (now Water Resources)** formulated a **National Perspective Plan (NPP)** for Water Resources Development, envisioning inter-basin water transfer.
- The **National Water Development Agency (NWDA)** was established in July 1982 to study the feasibility of inter-basin water transfer links.
- The **National Water Policy (NWP)** was formulated in 1987 to coordinate water resource development and regulation.
- In 2002, **President Abdul Kalam** suggested the river linking project in a speech to address India's water issues. The 2002 revised NWP suggested using non-conventional methods like inter-basin water transfers to enhance utilizable water resources.
- Despite initial attention, the proposals were deemed not technoeconomically feasible and were not pursued by the government. However, ongoing interest prompted a closer examination of inter-basin water transfer proposals.
- The NWDA's functions were modified in 2011 to include preparing **Detailed Project Reports (DPRs) for intra-state links**. It conducted water balance studies and identified 30 links for Feasibility Reports (FRs), with 16 under the Peninsular Component and 14 under the Himalayan Component.

INTER LINK RIVER PROJECT (ILR)

- The **Inter Link River Project (ILR) proposed by the National Water Development Agency (NWDA)** aims to address water deficiency in western and southern India while mitigating floods in the eastern parts, particularly the Ganga basin.
- The project is considered an effective solution to improve irrigation, agricultural production, and ***minimize natural disasters*** like floods and droughts, according to the NWDA.
- The project is designed to transfer water from surplus river basins to water-scarce regions, reducing regional imbalances and benefiting farmers in monsoon deficit areas.
- The ILR project, also known as the **national river linking project**, is one of the largest civil engineering **projects jointly proposed by the Supreme Court and the President of India.**
- The project involves connecting 37 Himalayan and Peninsular rivers through 30 links and approximately 3000 storages to transfer water.
- The primary objective is to fulfill the idea of **interlinking water surplus Himalayan Rivers with water-scarce western and peninsular regions of India**.

- Detailed planning for the **mega-project is being carried out by the NWDA**, which has been conducting studies for water resources development based on the National Perspective Plan.
- The project is divided into two components:
  - **The Himalayan Component**, comprising 14 canal links, and **the Peninsular Component**, consisting of 16 links.
- The ILR project is expected to contribute to a consistent and year-round water supply to fields, villages, towns, and industries without causing harm to the environment.
- **Goal** :
  - To address water scarcity, enhance agricultural productivity, and reduce the impact of natural disasters through the efficient management of water resources.

MAJOR PROJECTS

S.No	Name	Rivers	States concerned
PENINSULAR COMPONENT			
1(a)	Mahanadi (Manibhadra)–Godavari (Dowlaiswaram) link	Mahanadiand Godavari	Jharkhand, Madhya Pradesh, Chhattisgarh, Telangana, Andhra Pradesh, Odisha, Karnataka and Maharashtra
1(b)	Mahanadi (Bermul)–Godavari (Dowlaiswaram) link	Mahanadi and Godavari	Jharkhand, Madhya Pradesh, Chhattisgarh, Telangana, Andhra Pradesh, Odisha, Karnataka and Maharashtra
2	Godavari (Inchampall)-Krishna(Pulichintala) link	Godavariand Krishna	Odisha, Madhya Pradesh, Chhattisgarh, Telangana, Andhra Pradesh, Maharashtra and Karnataka
3	Godavari (Inchampalli)-Krishna (Nagarjunasagar) link	Godavariand Krishna	Odisha, Madhya Pradesh, Chhattisgarh, Telangana, Andhra Pradesh, Maharashtra and Karnataka
4	Godavari (Polavaram) - Krishna(Vijayawada) link	Godavari and Krishna	Odisha, Madhya Pradesh, Chhattisgarh, Telangana, Andhra Pradesh, Maharashtra and Karnataka
5	Krishna (Almatti) –Pennar link	Krishna and Pennar	Telangana, Andhra Pradesh, Maharashtra and Karnataka
6	Krishna (Srisailam)–Pennar link	Krishna and Pennar	Telangana, Andhra Pradesh, Maharashtra and Karnataka
7	Krishna(Nagarjunasagar)-Pennar (Somasila) link	Krishna and Pennar	Telangana, Andhra Pradesh, Maharashtra and Karnataka
8			

	Pennar (Somasila)–Cauvery(Grand Anicut) link	Pennar and Cauvery	Andhra Pradesh, Karnataka, Tamil Nadu, Kerala and Puducherry
9	Cauvery (Kattalai)–Vaigai–Gundar link	Cauvery, Vaigai and Gundar	Karnataka, Tamil Nadu, Kerala and Puducherry
10	Ken–Betwa link	Ken and Betwa	Uttar Pradesh and Madhya Pradesh
11 (i)	Parbati – Kalisindh –Chambal link	Parbati, Kalisindhand Chambal	Madhya Pradesh,Uttar Pradesh and Rajasthan requested to be Consulted during consensus building)
(ii)	Parbati-Kuno-Sindh link	Parbati, Kuno and Sindh	Madhya Pradesh and Rajasthan
12	Par-Tapi-Narmada link	Par, Tapi and Narmada	Maharashtra and Gujarat
13	Damanganga – Pinjal link	Damanganga and Pinjal	Maharashtra and Gujarat
14	Bedti-Varada link	Bedti and Varada	Maharashtra, Andhra Pradesh and Karnataka
15	Netravati – Hemavati link	Netravati and Hemavati	Karnataka, Tamil Nadu and Kerala
16	Pamba - Achankovil –Vaippar link	Pamba,Achankovil and Vaippar	Kerala and Tamil Nadu

Himalayan Component			
1.	Manas-Sankosh-Tista-Ganga(M-S-T-G)link	Manas,Sankosh, Tista and Ganga	BHUTAN&INDIA (Assam,West Bengal and Bihar)
2.	Kosi-Ghaghra link	Kosi and Ghaghra	NEPAL&INDIA (Bihar and Uttar Pradesh)
3.	Gandak-Ganga link	Gandak and Ganga	NEPAL&INDIA (Bihar and Uttar Pradesh)
4.	Ghaghra-Yamuna link	Ghaghra and Yamuna	NEPAL&INDIA (Bihar and Uttar Pradesh)
5.	Sarda-Yamuna link	Sarda and Yamuna	NEPAL&INDIA (Bihar, Uttar Pradesh, Uttarakhand, Haryana And Rajasthan)
6.	Yamuna-Rajasthan link	Yamuna and Sukri	Gujarat, Rajasthan, Haryana and Uttar Pradesh
7.	Rajasthan-Sabarmati link	Sabarmati	Gujarat, Rajasthan, Haryana and Uttar Pradesh

8.	Chunar-Sone Barrage link	Ganga and Sone	Bihar and Uttar Pradesh
9.	Sone Dam – Southern Tributaries of Ganga link	Sone and Badua	Bihar and Jharkhand
10.	Ganga (Farakka)-Damodar-Subernarekha link	Ganga, Damodar and Subernarekha	West Bengal,Odisha and Jharkhand
11.	Subernarekha-Mahanadi link	Subernarekha and Mahanadi	West Bengal and Odisha
12.	Kosi-Mechi Link	Kosi and Mechi	NEPAL & INDIA (Bihar and West Bengal)
13.	Ganga (Farakka)-Sunderbans link	Ganga and Ichhamati	West Bengal
14.	Jogighopa-Tista-Farakkalink(Alternative to M-S-T-G)	Manas,Tista and Ganga	Assam, Bihar and West Bengal

BENEFITS OF INTER LINKING :

- **Major benefits of river- inter linking project** are –
  - Create the potential to increase agricultural production by an additional 100 per cent over the next five years.
  - Unify the country by involving every Panchayat as a shareholder and implement agency.
  - Provide for enhancing the security of the country by an additional waterline of defence.
  - Employ the 10 lakh people for the next 10 years.
  - Eradicate the flooding problems which recur in the north-east and the north every year.
  - Solve the water crisis by providing alternative, perennial water resources.
  - The large canals linking the rivers are expected to facilitate inland navigation too.
  - Increasing food production from about 200m tonnes a year to 500m tonnes.
  - Boost the annual average income of farmers.
  - To solve the problem of the water crisis in cosmopolitan cities of India and Inter-state water disputes.
  - The rural areas of the country will get an all-out development on modern lines.
  - It will boost the rural economy and the lifestyle of the Indian village.
  - Due to the interlinking of rivers, the overall economic activities of the country will be enhanced resulting in an annual increase of GDP. Employment opportunities also increase.
  - Not only the environment protection and pollution control shall be achieved but this creation of "National Rivers Water Grid" shall also provide extra security to the country as a whole.
  - Generate employment in agriculture, power, transport & construction sector.

CHALLENGES OF INTER LINKING OF RIVERS:

- **Political Challenges:**
  - Water is the sign of wealth for a state as its basic need of every kind thus several states do not want to go with national river linking project in fear of losing surplus of water to the other states. A less political desire will make this project again a lip service so for this issue there must be an enthusiasm towards the project only after this can be a dream project comes true.

- **Economic Challenges:**
  - National river linking project is a dream project for the Indian government has a vast **impact on the national economy** as the programming **cost of this project** is very high nearly $87 billion. It seems rather difficult to arrange this vast money from the market itself.
- **Environmental Challenges:**
  - The national river linking project form very start has been a matter of criticism to the environmentalist. They feel the project as negligent, incautious and impertinent. According to the major group of environmentalist that project will change the geography of the whole country recklessly and will invite several challenges and the worst effect of nature.
- **International Challenges:**
  - Himalayan rivers like Ganga, the Brahmaputra which flows in either multination boundaries or combination boundaries. India's neighbours especially Bangladesh will resist this project because the flow of Ganga in Bangladesh will be reduced which will create a problem in implementing NRLP.

CONCLUSION:

- *With the rapid increase of demand for water and new technological advancements, the ILR project seems to act as a boon for the nation. It will not only meet the water requirements of millions of people by providing water but would also reduce the problems people face in water-scarce regions. The water supply would be from regions having surplus water in the rivers to regions where water is scarce, thus, equally and adequately fulfilling the needs of people across the nation.*

PROS AND CONS OF SIMULTANEOUS ELECTIONS

SOURCE: THE HINDU

TAG: GS Paper II- ***Federalism, Elections, Government Policies and Interventions***

Mains Practice Question:

Q. Discuss the concept of simultaneous elections in India, while examining the potential impact on federalism, democratic expression, and local governance. ***(150 words)***

WHY IN NEWS?

- *A **High-Level Committee (HLC) under Ramnath Kovind** was set up in September 2023 to investigate the **feasibility of simultaneous elections for Lok Sabha, State Legislative Assemblies, and local bodies**. Seeking responses from stakeholders, including political parties and the Law Commission, the HLC aimed to address the challenges and advantages of synchronized polls.*

HISTORICAL CONTEXT:

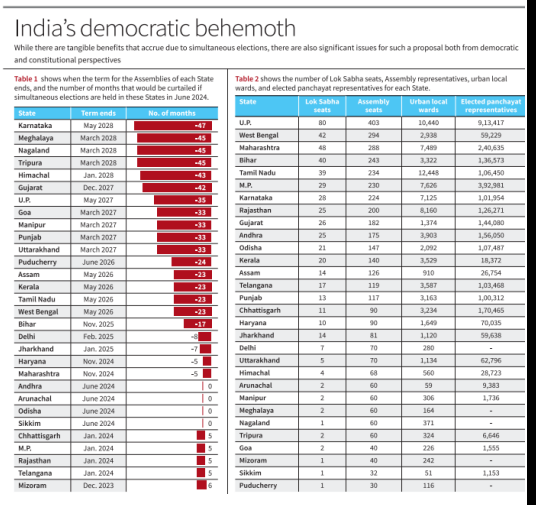
- During the initial **four general election cycles (1952, 1957, 1962, and 1967), Lok Sabha and State legislative assembly elections** were held simultaneously.
- Premature dissolutions led to elections being held at different times. In **2019, only four states had assembly elections** along with the Lok Sabha.

WHAT IS SIMULTANEOUS ELECTION?

- **Simultaneous elections** means conducting polls for both Lok Sabha and State Legislative Assemblies concurrently, occurring once every five years.
- Currently, there is a lack of synchronization between Lok Sabha and State Legislative Assembly elections.
- While occasional instances, such as the 2014 elections in Andhra Pradesh, Odisha, and Sikkim, witness alignment of State Assembly elections with the Lok Sabha polls, it is not a consistent practice.

CASE FOR SIMULTANEOUS ELECTIONS:

- **Cost Reduction:**
  - Estimated cost for Lok Sabha elections is around ₹4,000 crores. Simultaneous elections would reduce overall costs.
- **Efficiency during MCC:**
  - Simultaneous polls can mitigate disruptions caused by the **Model Code of Conduct (MCC),** enhancing government service delivery.
- **Political Decision-making:**
  - Political parties, to woo voters, often make decisions that may not align with public interest. Simultaneous elections reduce such populist tendencies.
- **National Perspective:**
  - Promotes a national perspective, strengthening national parties and reducing narrow vote bank politics.



India's democratic behemoth

While there are tangible benefits that accrue due to simultaneous elections, there are also significant issues for such a proposal both from democratic and constitutional perspectives

Table 1 shows when the term for the Assemblies of each State ends, and the number of months that would be curtailed if simultaneous elections are held in these States in June 2024.

State	Term ends	No. of months
Karnataka	May 2028	-47
Meghalaya	March 2028	-45
Nagaland	March 2028	-45
Tripura	March 2028	-45
Himachal	Jan. 2028	-43
Gujarat	Dec. 2027	-42
U.P.	May 2027	-53
Goa	March 2027	-33
Manipur	March 2027	-33
Punjab	March 2027	-33
Uttarakhand	March 2027	-33
Puducherry	June 2026	-24
Assam	May 2026	-23
Kerala	May 2026	-23
Tamil Nadu	May 2026	-23
West Bengal	May 2026	-23
Bihar	Nov. 2025	-17
Delhi	Feb. 2025	-8
Jharkhand	Jan. 2025	-7
Haryana	Nov. 2024	-5
Maharashtra	Nov. 2024	-5
Andhra	June 2024	0
Arunachal	June 2024	0
Odisha	June 2024	0
Sikkim	June 2024	0
Chhattisgarh	Jan. 2024	5
M.P.	Jan. 2024	5
Rajasthan	Jan. 2024	5
Telangana	Jan. 2024	5
Mizoram	Dec. 2023	6

Table 2 shows the number of Lok Sabha seats, Assembly representatives, urban local wards, and elected panchayat representatives for each State.

State	Lok Sabha seats	Assembly seats	Urban local wards	Elected panchayat representatives
U.P.	80	403	10,440	9,13,417
West Bengal	42	294	2,938	59,229
Maharashtra	48	288	7,489	2,40,635
Bihar	40	243	3,322	1,36,573
Tamil Nadu	39	234	12,448	1,06,450
M.P.	29	230	7,626	3,92,981
Karnataka	28	224	7,125	1,01,954
Rajasthan	25	200	8,160	1,26,271
Gujarat	26	182	1,374	1,44,080
Andhra	25	175	3,903	1,56,050
Odisha	21	147	2,092	1,07,487
Kerala	20	140	3,529	18,372
Assam	14	126	910	26,754
Telangana	17	119	3,587	1,03,468
Punjab	13	117	3,163	1,00,312
Chhattisgarh	11	90	3,234	1,70,465
Haryana	10	90	1,649	70,035
Jharkhand	14	81	1,120	59,638
Delhi	7	70	280	-
Uttarakhand	5	70	1,134	62,796
Himachal	4	68	560	28,723
Arunachal	2	60	59	9,383
Manipur	2	60	306	1,736
Meghalaya	2	60	164	-
Nagaland	1	60	371	-
Tripura	2	60	324	6,646
Goa	2	40	226	1,555
Mizoram	1	40	242	-
Sikkim	1	32	51	1,153
Puducherry	1	30	116	-

- **Federalism Strengthened:**
  - Simultaneous elections, occurring once in five years, make it challenging to dismiss elected state governments easily, reinforcing federalism.

- **Governance and Administrative Convenience:**
  - Frequent elections hinder policy-making and governance, with parties in "permanent campaign" mode.
  - Administrative machinery slows down during election periods.
- **Social Cohesion:**
  - High-stakes yearly elections lead to polarizing campaigns, deepening divisions. Simultaneous polls might reduce polarization.

CHALLENGES:

- **Political Expenditure:**
  - While Election Commission costs may decrease, there's no guarantee that political parties will reduce their expenditures.
- **Impact on Federalism:**
  - Simultaneous elections may diminish the importance of state elections, conflicting with the principles of federalism.
- **Constitutional Contradictions:**
  - The Constitution's requirement for the existence of Lok Sabha and State legislatures for five years contradicts the idea of simultaneous elections.
- **No Confidence Motion:**
  - The concept of simultaneous elections challenges the traditional role of 'no confidence motion,' affecting legislative control over the executive.
- **Democratic Expression:**
  - Fixed tenure limits the public's right to express confidence or displeasure through more frequent elections.
- **Neglect of Local Issues:**
  - Simultaneous elections may **sideline local and state-specific concerns**, overlooking the country's diversity.
- **Logistical Challenges:**
  - Holding simultaneous elections once in five years may pose logistical challenges, especially regarding the deployment of security forces.
- **Federal and Democratic Concerns:**
  - Simultaneous polls might overshadow regional issues with national ones, favoring national parties.
  - Elections act as an **effective feedback mechanism for governments**, and a fixed tenure may affect this process.
- **Constitutional Amendments:**
  - Requires amendments **to Articles 83, 85, 172, and 174** dealing with the duration and dissolution of Lok Sabha and legislative assemblies.

RECOMMENDATIONS OF THE HIGH-LEVEL COMMITTEE:

- **Clubbing Elections:**
  - Lok Sabha and half of the State assemblies in one cycle, the rest after two and a half years.
  - Curtailing or extending tenures will require constitutional amendments.
- **No-Confidence Motion:**
  - Any no-confidence motion must be accompanied by a confidence motion for forming an alternate government.
  - Dissolution should lead to the remainder period of the original house.

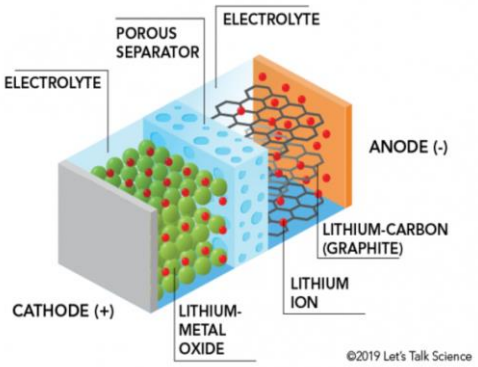
- **Bye-Elections:**
  - Bye-elections due to death, resignation, or disqualification can be clubbed and held once a year.

CONCLUSION:

- The debate over simultaneous elections involves weighing the advantages against potential drawbacks, emphasizing the **need for a balanced and well-thought-out approach to implementation.**

PRELIMS POINTERS:

30th & 31st January, 2024

TOPIC	DESCRIPTION
INS SUMITRA	**WHY IN NEWS?** ❖ *In a remarkable **display of maritime prowess, Indian Naval Ship (INS) Sumitra** has garnered attention for successfully executing **its second anti-piracy operation off the East Coast of Somalia.*** **ABOUT INS SUMITRA** ❖ **Background:** ☛ INS Sumitra is an **indigenous Offshore Patrol Vessel** of the Indian Navy. ☛ Specifically **deployed for Anti-Piracy and Maritime Security Operations** in the **East of Somalia and the Gulf of Aden.** ❖ **Previous Operation:** ☛ Earlier, on **January 28, 2024, INS Sumitra thwarted a piracy attempt** on the Iranian flagged **Fishing Vessel (FV) Iman**, rescuing 17 Iranian nationals who were held hostage by pirates.  **DETAILS OF RECENT OPERATION:** ❖ **Targeted Rescue:** ☛ The recent operation focused on the **Iranian Fishing Vessel Al Naeemi**, held by **Somali pirates** with 19 Pakistani nationals as hostages.
LITHIUM-ION BATTERY	**WHY IN NEWS?** ❖ *India experienced a **50% growth in Electric Vehicle (EV) sales in 2023**, signaling potential for a $100 billion market by 2030, emphasizing the pivotal role of **lithium-ion batteries constituting 40% of the vehicle cost.*** **ABOUT LITHIUM-ION BATTERY:** ❖ Standard in current EVs, with **lithium atoms powering the vehicle's motor.** ❖ Lithium's **lightweight nature** makes it ideal, but challenges include **slow charging** and **environmental concerns.** ❖ **Structure: Anode**, **cathode**, **separator**, **electrolyte**, and **current collectors**. ❖ **Materials**: **Graphite** (anode), various cathode materials.  **APPLICATIONS:** ❖ **Portable electronics**, **electric vehicles**, **aerospace.**

- Promising for clean energy in **battery-powered cars.**

ADVANTAGES:

- High energy density, **low self-discharge.**
- No memory effect, **environmentally friendly.**
- Dominant in **portable electronic devices.**
- **Cadmium-free**, easier to dispose of.
- Holds promise for **clean energy applications.**

DISADAVANTAGES:

- Prone to **overheating and damage at high voltages**.
- Requires safety mechanisms to control voltage and internal pressures.
- Subject to aging, leading to capacity loss.
- Frequent failures reported after a certain number of years.
- Cost around **40% higher than Ni-Cd.**

APPROACHES TO BATTERY IMPROVEMENT:

- **Electrode Tweaks:**
  - Modifying electrode materials (NMC, LFP) for trade-offs in energy density, lifespan, and charging times.
- **Sensing and Control:**
  - Implementing sensors and control systems for safety, extended lifespan, and faster charging.
- **Paradigm Shift - Solid-State Lithium Battery (SSB)**:
  - Addresses flammability with a solid electrolyte, reducing weight and improving charging speed.

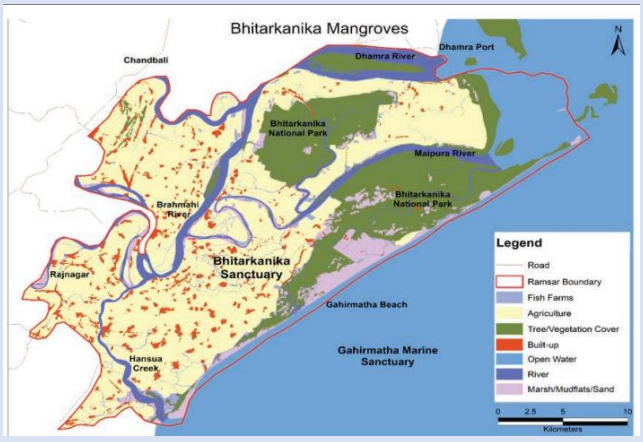
BHITARKANIKA NATIONAL PARK

WHY IN NEWS?

- ***Bhitarkanika National Park in Odisha**, a biodiversity hotspot and tourist attraction, will soon be linked by the **proposed Jajpur Road-Dhamra railway** line.*

BHITARKANIKA NATIONAL PARK:

- It became a **Ramsar site in 2002**
- Situated in **Kendrapara, Odisha**
- It is situated on a **delta formed** by the **Brahmani, Baitarna and Dhamra Rivers.**
- It the **second-largest mangrove ecosystem in India.**
- Unique ecosystem enriched with **salts from the Bay of Bengal.**
- Bhitarkanika is home to **eight rare varieties of Kingfisher birds.**



FLORA:

- **Various species of mangroves.**
- **Thespia, sundari and indigo bush.**

FAUNA:

- It serves as a **breeding ground for Salt Water Crocodiles** and hosts the **largest**

Olive Ridley Sea Turtles colony at **Gahirmatha Beach.**

- **Sambar deer, otter, Monkeys, Jackals, etc.**

HUMBOLDT'S ENIGMA

WHY IN NEWS?

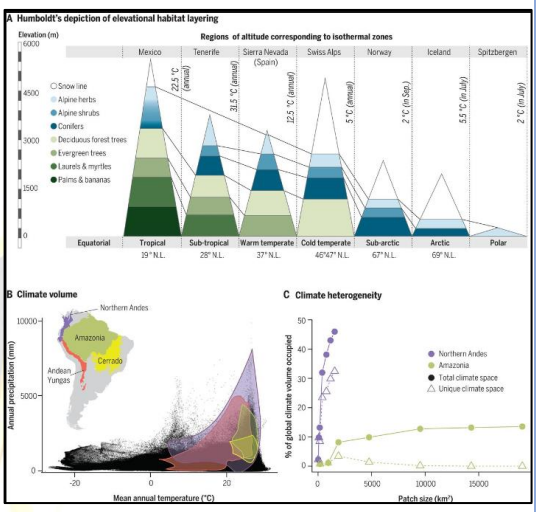
- ***Humboldt's enigma, examining the biodiversity-mountain relationship****, is currently relevant, notably in the context of* ***India's Western Ghats and Sri Lanka biodiversity hotspot.***

BACKGROUND:

- The **Earth's tropical areas receive more solar energy** due to the **planet's angle of inclination**, resulting in **greater primary productivity in the tropics**.
- This enhanced productivity fosters biodiversity by creating **more ecological niches**, leading to complex ecosystems and greater biological diversity.

HUMBOLDT'S ENIGMA:

- **Humboldt's enigma challenges the notion that biodiversity is solely concentrated in the Earth's tropical regions.** It asserts that many highly biodiverse areas exist outside the tropics, particularly in mountainous regions.



MOUNTAIN EXCEPTION:

- While biodiversity typically **decreases away from the tropics**, mountains represent a notable exception to this pattern.
- Mountains, like the eastern Himalaya, have been identified as **highly biodiverse areas, presenting a paradox that defies traditional expectations.**

INDIAN CONTEXT - TROPICAL VS. MOUNTAINOUS BIODIVERSITY:

- In India, **Humboldt's enigma is exemplified by comparing biodiversity in tropical areas** (south of the Tropic of Cancer, including the Western Ghats and Sri Lanka biodiversity hotspot) with the eastern Himalaya.
- Despite the Western Ghats being a **renowned biodiversity hotspot**, the eastern Himalaya surpasses it in diversity, especially in perching and river birds.

NON-UREA FERTILIZERS

WHY IN NEWS?

- *Govt brings non urea fertilizers* ***under price control, fixed profit margins***.

ABOUT FERTILIZERS:

- **A fertiliser** is a natural or artificial substance **containing chemical elements (such as Nitrogen (N), Phosphorus (P) and Potassium (K))** that improve **growth and productiveness of plants**.
- There are **3 basic fertilisers** in India - **Urea, DAP and Muriate of Potash (MOP).**
- Crops are mainly rain-fed and cultivated on a single piece of land over time, decreasing soil fertility in many regions.
- Thereby, increasing **quantities of nitrogen fertilizers** have been used in the country.

ABOUT FERTILIZER SUBSIDY:

- Fertilizer subsidies involve **farmers purchasing fertilizers below market rates, set by the government.**
- The disparity between MRP and actual cost is covered by the government as a subsidy.
- Non-urea fertilizers have **market-driven MRPs set by companies**, but the government provides a **fixed per-tonne subsidy** to maintain reasonable prices.

GOVERNMENT SCHEMES/INITIATIVES:

- **NUTRIENT BASED SUBSIDY SCHEME, 2010:**
  - Fixed subsidy rates per kilogram are announced **annually for Nitrogen (N), Phosphate (P), Potash (K), and Sulphur (S)** under this scheme.
  - Objectives include promoting balanced **fertilizer use, enhancing agricultural productivity, supporting indigenous fertilizer industry growth**, and reducing subsidy burdens.
  - Urea is excluded, leading to a focus on Urea due to delayed subsidy payments, disrupting the ideal NPK ratio.
- **NEW INVESTMENT POLICY 2012:**
  - Introduced in January 2013, this **policy aims to encourage fresh investments,** foster self-reliance, and reduce urea import dependency.

- **NEEM-COATED UREA 2015:**
  - Neem-coated urea, using **neem tree seed oil, is mandated for domestic producers.**
  - Benefits include **slowing nitrification, increasing yield**, and reducing urea requirements, leading to cost savings.
- **NEW UREA POLICY 2015:**
  - Released in May 2015 to **boost indigenous urea production**, promote energy efficiency, and alleviate the subsidy burden on the Central government.
- **GAS POOLING IN FERTILIZERS:**
  - Initiated in 2015, the Gas Pooling mechanism aims to provide uniform gas prices to all 30 urea-producing units **(27 gas-based, 3 Naphtha-based)** to ensure consistent urea production across the country.

PHILIPPINES, VIETNAM SIGN DEAL ON SOUTH CHINA SEA

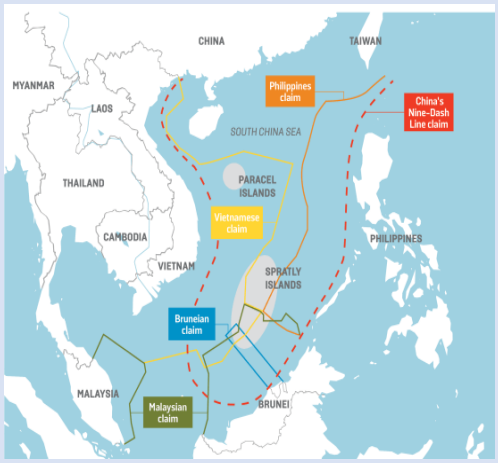
WHY IN NEWS?

- *In a significant development, the **Philippines and Vietnam have signed agreements aimed at preventing incidents in the South China Sea,** signalling a deepening alliance between the two nations.*

ABOUT THE DEAL

- **Preventing Incidents**:
  Agreements aim to **prevent South China Sea incidents**, managing disputes and enhancing coordination to **avoid conflicts**.

- **Coast Guard Cooperation:** Focus on **broadening cooperation between Philippines and Vietnam** coast guards to address maritime challenges and maintain stability.
- **Trade and Investment Boost:** Agreement to boost trade and investment signifies a **broader partnership beyond maritime security**; includes a **key rice deal**.
- **Military Collaboration:** Discussions involve enhancing **information-sharing and training exchanges between Vietnamese and Philippine militaries** to strengthen strategic partnership.



SOUTH CHINA SEA OVERVIEW:

- **Geographical Boundaries:**
  - **Western Pacific Ocean arm** bordered by **Southeast Asian mainland**, **Taiwan Strait to northeast**, Taiwan, **Philippines to east**, **Borneo, Malay Peninsula to southeast and south**, **Asian mainland** to west and north.
- **Basin and Features:**
  - **Rhombus-shaped China Sea Basin** with max depth of 16,457 ft (5,016 m).
  - **Reef-studded shoals include Reed**, Tizard banks, **Nanshan Island, Paracel Islands, Macclesfield banks.**
- **Continental Shelf:**
  - Palawan Trough, broad **NW shelf with Gulf of Tonkin**, **Taiwan Strait, Hainan, Taiwan.**
- **Sunda Shelf:**
  - Connects southward, **extensive network of submerged river valleys**.
- **Connecting Channels:**
  - **Taiwan Strait (north), Luzon Strait (east)**, **Strait of Malacca (west).**

TEST TUBE RHINOS

WHY IN NEWS?

- *The groundbreaking achievement of the **first-ever rhino pregnancy through in vitro fertilization (IVF)** by an international group of scientists, part of **the BioRescue project**, has brought the ambitious initiative to rebuild the **nearly extinct northern white rhino** into the spotlight.*

ABOUT TEST TUBE RHINO

- **Last Male's Death (2018):**
  - **Last male northern white rhino's** death in 2018 marked the species' **inevitable extinction**.
- **IVF Project (2015):**
  - **In 2015, BioRescue project** launched for northern white rhino population rebuilding through IVF.

- **First Rhino Pregnancy (IVF):**
  - Recent success in **transferring lab-made rhino embryo into southern white rhino,** achieving **first-ever rhino pregnancy through IVF.**

- **Challenges in Rebuilding:**
  - Rebuilding faces challenges like a **limited gene pool**, genetic viability issues
  - The need for IVF calves to learn behaviours from **last surviving northern white females**.
- **Genetic Viability Issue:**
  - Limited genetic diversity poses a challenge; **stem cell techniques** explored for viability.

Time Constraints:

Urgency for IVF calves to learn skills from last two surviving **northern white females, Najin (35) and Fatu (24).**

- **Poaching Threat:**

Rhino populations, **including northern whites**, face threats from **organized hunting, highlighting the urgency for conservation efforts.**

OTHER RHINO SPECIES:

Rhino Species	IUCN Status	Habitat	Weight	Distribution
White Rhino	Near Threatened	Grassland and savanna	1,800kg to 2,700kg	South Africa, Namibia, Botswana, Zimbabwe, Zambia, Kenya, Uganda
Black Rhino	Critically Endangered	Tropical grassland, Shrublands, deserts	900kg to 1,400kg	South Africa, Namibia, Zimbabwe, Tanzania, Kenya
Greater One-Horned Rhino	Vulnerable	Tropical grassland, shrublands, savanna	1,800kg to 2,700kg	India, Nepal
Sumatran Rhino	Critically Endangered	Tropical and subtropical forests	550kg to 1,000kg	Sumatra, Sabah
Javan	Critically	Tropical	900kg to 2,300kg	Sumatra, Sabah

	Rhino	**Endangered**	**and subtropical forests**		

INDIA NOMINATES 12 FORTS OF MARATHAS FOR UNESCO WORLD HERITAGE LIST

WHY IN NEWS?

- *India has nominated the **"Maratha Military Landscapes"** for inclusion on the **UNESCO World Heritage List for 2024-25.***

ABOUT THE NOMINATION:

- The nomination comprises a **network of 12 forts** strategically located across various regions in India.
- These forts showcase the **military prowess of the Maratha rulers.**

ABOUT MARATHA MILITARY LANDSCAPE:

- The "Maratha Military Landscapes" developed between the **17th and 19th centuries.**
- It represents **extraordinary fortification** envisioned by the Maratha rulers.
- These forts are strategically distributed across diverse geographical and physiographic regions, including the **Sahyadri mountain ranges, Konkan Coast, Deccan Plateau, and Eastern Ghats in the Indian Peninsula.**
- The forts vary in **hierarchies, scales, and typological features.**
- The inception of the Maratha military ideology dates back to the 17th century during the **reign of Shivaji Maharaj (from 1670**) and continued through subsequent rules until the **Peshwa rule till 1818 CE.**

List:

- **Salher**
- **Shivneri**
- **Lohagad**
- **Khanderi**
- **Raigad**
- **Rajgad**
- **Pratapgad**
- **Suvarnadurg**
- **Panhala**
- **Vijaydurg**
- **Sindhudurg (First 11 in Maharashtra)**
- **Gingee (in Tamil Nadu)**

SNOW LEOPARD POPULATION ASSESSMENT IN INDIA (SPAI)

WHY IN NEWS?

- *India has an estimated population of **718 snow leopards in the wild**, according to **Snow Leopard Population Assessment in India (SPAI)**. This exercise marks the first-time estimation of the base threshold for the animal's numbers in India.*

WHY IT TOOK 4 YEARS?

- Snow leopards are known to be **elusive** and are located in **mountainous terrains** that are **hard to access.**

GEOGRAPHICAL DISTRIBUTION OF SNOW LEOPARDS IN INDIA:

- Ladakh: 477
- Uttarakhand: 124

- Himachal Pradesh: 51
- Arunachal Pradesh: 36
- Sikkim: 21
- Jammu and Kashmir: 9

SNOW- LEOPARD

Khelo India Winter Games 2024 mascot - Snow Leopard 'Sheen-e She' (Shan)

- **Conservation Status:** Snow leopards are classified as **'vulnerable'** by the **International Union for the Conservation of Nature(IUCN)**
- **Threats:** It faces threats from **free-ranging dogs, human-wildlife conflicts, and poaching.**

SNOW LEOPARD POPULATION ASSESSMENT IN INDIA (SPAI)

- **Snow Leopard Population Assessment in India (SPAI):** The SPAI initiative began in **2019** and involves the **World Wide Fund for Nature-India** and the **Nature Conservation Foundation, Mysuru**, along with the **Wildlife Institute of India.**
- The **Dehradun-based Wildlife Institute of India**, an autonomous body of the **Union Environment Ministry**, used software and statistical methods for estimation.
- The current estimate places the number of Indian snow leopards between **10% and 15% of the global population.**
- The exercise involved setting up cameras or **camera traps in 1,971 locations.**
- Teams surveyed 13,450 km of **trails**, recording signs of snow leopards such as **scat, hair, and other body markers.**

INDIAN MONETARY FUND

WHY IN NEWS?

- *The IMF now expects **the world economy to grow by 3.1%** this year, an improvement from its **previous estimate of 2.9%.** Additionally, global inflation is projected to **ease from 6.8% in 2023 to 5.8% in 2024** and further to **4.4% in 2025.***

ABOUT IMF

- The **IMF consists of 190 member nations**, each with representation on the organization's executive board corresponding to its financial significance.
- This ensures that the **most influential countries** in the **global economy hold the highest voting power**.

OBJECTIVES OF THE IMF

- Enhance and foster **worldwide monetary cooperation**.
- Ensure financial stability by **mitigating fluctuations in exchange rates.**

- Facilitate equitable international trade.
- Promote increased employment opportunities through economic support and sustainable growth.
- Diminish **global poverty levels.**

FUNCTIONS OF THE IMF

- **Regulatory Functions:**
  - Operates as a **regulatory body,** adhering to the guidelines outlined in **the Articles of Agreement.**
  - Administers a **code of conduct for exchange rate** policies and restrictions on payments related to current account transactions.
- **Financial Functions**:
  - Offers financial support and allocates resources to member countries to address short-term and medium-term imbalances in their **Balance of Payments (BOP).**
- **Consultative Functions**:
  - Serves as a **hub for international cooperation** among member countries.
  - Acts as a valuable source of advice and **technical assistance for its members**.
- **India & IMF**
  - **India is a founder member** of the IMF.
  - India's Union Finance Minister is the **Ex Officio Governor on the IMF's Board of Governors**.
  - India is the **eighth-largest quota holder in the organization**.
  - The **quota system determines a member country's financial commitment** and voting power within the IMF.
  - India has transitioned from being a **borrower to becoming a contributor to the IMF**.