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MK Yadav Sir

Table of Contents

1. Google vs CCI
2. Line of Credit
3. Upper Siang Project
4. Semiconductor Mission
5. ASER 2022
6. Neonatal Mortality
7. Hakku Patra
8. Greenland Warming
9. Submarine Vagir
10. Discovery of Plateau

BUSINESS STANDARD

Page 1

GOOGLE VS CCI

(Syllabus: GS Paper 3 - Economy)

SC turns down Google's plea on CCI penalty

Firm gets 7 days to deposit 10% of ₹1,337.7-cr fine

BHAVINI MISHRA
New Delhi, 19 January

In a setback to Google, the Supreme Court on Thursday refused to grant it interim relief from the National Company Law Appellate Tribunal's (NCLAT's) order upholding a ₹1,337.76-crore penalty imposed by the Competition Commission of India (CCI) for alleged unfair and anti-competitive practices related to Android devices. The Bench of Chief Justice of India D Y Chandrachud, Justice P S Narasimha and Justice J B Pardiwala said the findings of the CCI couldn't be considered at the "interlocutory stage".

"We direct the NCLAT to dispose of the appeal (against the CCI order) by March 31. No interim relief (is to be) granted to Google. Since Google is ready to partially comply with the CCI's directions, we give it one week's time to do so." In accordance with the CCI order, Google has to pay 10 per cent of the penalty imposed by the CCI. This it has to do in a week.

Google also seems to have softened its stand on the order given by the CCI.

Senior advocate Abhishek Manu Singhvi, appearing for Google India, said the firm was willing to comply with some directions of the CCI.

Turn to Page 6

NO RELIEF

2022

Oct 20: CCI imposes ₹1,337.76-cr fine on Google for unfair practices

Dec 22: Google moves NCLAT against CCI's order

2023

Jan 4: NCLAT upholds CCI order, asks Google to pay 10% of penalty

SC has asked NCLAT to decide Google's appeal by March 31, 2023



Context: In a setback to Google, the **Supreme Court refused to grant it interim relief from the National Company Law Appellate Tribunal´s (NCLAT´s) order** upholding a ₹ 1,337.76crore penalty imposed by the Competition Commission of India (CCI) for alleged unfair and anticompetitive practices related to Android devices.

Google vs CCI

- The Competition Commission of India (CCI) has **imposed a provisional penalty** of Rs 1,337.76 crore ($162 million) on Google for "abusing its market dominant position" in multiple categories related to the Android mobile device ecosystem in the country.
- **Google Unfair Business Practices investigation** was ordered by CCI in 2019 following complaints by consumers of Android-based smartphones in the country.
- Google had **mandated pre-installation of the entire Google Mobile Suite (GMS) by OEMs** under Mobile Application Distribution Agreement (MADA), which could not be uninstalled.
- This action of Google amounted to imposition of unfair conditions on the device manufacturers and thereby violated **Section 4 of the competition Act.**
- Section 4 of the Competition Act is related to abuse of dominant position.
- Google **had appealed CCI's decision** with the National Company Law Appellate Tribunal (NCLAT), which declined to stay the antitrust watchdog's order.
- Google has **challenged the NCLAT's order** before the Supreme Court.

LINE OF CREDIT
(Syllabus: GS Paper 3 - Economy)

India gives Maldives $40 mn to strengthen sports infrastructure

External affairs minister S. Jaishankar on Thursday said India has extended a concessional $40 million Line of Credit for developing sporting infrastructure in the Maldives, as part of India's efforts to bring Prime Minister Narendra Modi's flagship projects such as "Fit India" and "Khelo India" into the ambit of the Neighbourhood First Policy.

Jaishankar is on a visit to the Maldives to further expand bilateral engagement with the key maritime neighbour of India.

"India and Maldives have a very special relationship. We in India see ourselves as a good neighbour, special neighbour, a trusted neighbour," he said during the inauguration of a community project in Shaviyani Foakaidhoo.

Jaishankar inaugurated the community centre with his Maldivian counterpart Abdulla Shahid.

Fit India and Khelo India were introduced by the Modi government to revive sporting and fitness culture at the grass root level in the country. PTI



External affairs minister S. Jaishankar is on a visit to the Maldives. PTI



LINES OF CREDIT

A business line of credit is a fixed amount of money, which can be accessed as needed to meet fluctuations in cash flow.

- Unlike a term loan, capital is available to withdraw as needed, instead of in a lump sum.
- A line of credit offers flexibility because interest is only paid on credit when it's accessed.
- Secured and unsecured lines of credit are available from both banks and non-bank lenders.

Context: India has extended a concessional $40 million **Line of Credit** for developing sporting infrastructure in the Maldives.

Line of Credit (LOC)

- **About**: It is a **credit facility extended by a bank or any other financial institution** to a government, business or individual customer.
  - The borrower **can access funds from the LOC at any time** as long as they do not exceed the maximum amount (or credit limit) set in the agreement and meet any other requirements such as making timely minimum payments.
- **Soft loan**: It is not a grant but **a 'soft loan' provided on concessional interest rates** to developing countries, which has to be repaid by the borrowing government.
- **Significance**: The projects under LOCs spread over different sectors like agriculture, infrastructure, telecom, railway, transmission, power, renewable energy etc.
  - The LOCs also helps to **promote exports of Indian goods and services**, as 75% of the value of the contract must be sourced from India.

INDIAN EXPRESS

Page 2

NHPC pitches Upper Siang as counter to China dam on Brahmaputra

EXPRESS NEWS SERVICE
NEW DELHI, JANUARY 19

INDIA's LEADING hydroelectric power company National Hydroelectric Power Corporation (NHPC) has submitted a pre-feasibility report to the Central Electricity Authority of India for the 'Upper Siang Multipurpose Storage', India's largest hydel power project to date, to come up in Arunachal Pradesh.

Senior officials of the PSU said the report for the 11 gigawatt (GW) project was submitted on December 30, 2022, and the NHPC is awaiting clearance.

Production of hydel power from the project is "simply a by product", said sources in the NHPC, pointing out that the main purpose is to counter China's water diversion scheme for the Yarlung Tsangpo river, which flows into Arunachal Pradesh as the Siang and then as the Brahmaputra in Assam.

"China is building several hydroelectric projects on the Tsangpo but one of the biggest is a 60 GW dam, which is being constructed on the neck of Arunachal Pradesh in Medong. It is a part of China's ambition to achieve carbon neutrality by 2060 and also to divert water to northern China, which is water scarce. This is a major concern for India, as the diversion of water will lead to a thinning of the river water during our peak season." said a senior official.

"Also, a possible release of water will lead to major flooding," the official added.

UPPER SIANG PROJECT

(Syllabus: GS Paper 3 - Economy & Infrastructure)

Context: India's leading hydroelectric power company **National Hydroelectric Power Corporation (NHPC)** has submitted a pre-feasibility report to the Central Electricity Authority of India for the '**Upper Siang Multipurpose Storage'**, India's largest hydel power project to date to come up in Arunachal Pradesh.

Upper Siang Hydroelectric Project

- **About**: The Upper Siang Hydroelectric Project consists of the construction of several hydroelectric power dams in the **Upper Siang district of Arunachal Pradesh, India.**
- **Origin**: Construction work on the project was commenced by the **National Hydroelectric Power Corporation (NHPC)** in April 2009 and various hydro dams will be constructed in phases over a span of 15–20 years.
- **Associated river:** The main dam is being constructed across r**iver Siang, a tributary of river Brahmaputra** and upon completion, the dam reservoir will hold 10 billion cubic meters of water.
- **Capacity**: The hydro power project at Siang will alone **generate between 10,000 and 12,000 MW,** making it the largest hydroelectric dam in the Indian Subcontinent.

National Hydroelectric Power Corporation (NHPC)

- **About**: NHPC is **enterprise of Central Government** incorporated with an objective to plan, promote and organise an integrated and efficient development of hydroelectric power in all aspects.
    - Besides, hydroelectric power, the company has expanded its objects to include other sources of energy like **Solar, Geothermal, Tidal, Wind etc**.
- **Established**: NHPC LIMITED (A Govt. of India Enterprise) has been set up in the year **1975** under **Ministry of Power**, Government of India.
- **Headquarters**: Faridabad, Haryana.
- **Mini Ratna Category:** At present, NHPC is **a Mini Ratna Category-I Enterprise of the Central Government** with an authorised share capital of Rs. 1,50,000 Million.

SEMICONDUCTOR MISSION

(Syllabus: GS Paper 3 - Economy & Infrastructure)

Context: The government is open to investing more in the **India Semiconductor Mission** as and when the need arises, Union Minister of Electronics and Information Technology said.

Govt Ready to Invest More in Semicon Mission: Vaishnaw

Our Bureau



New Delhi: The government is open to investing more in the India Semiconductor Mission as and when the need arises, Union Minister of Electronics and Information Technology Ashwini Vaishnaw said. He was speaking at a World Economic Forum session in Davos. Vaishnaw said the proposed investment of $10 billion (Rs 76,000 crore) in the Mission was 'just the first tranche'.

"We fully understand that this is not something that can be done in a quarter or two or a year. This is a long haul and will require a lot of persistence and lots of effort," he said at a WEF session on semiconductor supply chains.

In December 2021, the IT ministry unveiled a semiconductor fabrication incentive plan, as part of which the government would make large, upfront investments – 50% fiscal support as per recent modifications – to back the semiconductor wafer fab proposals by various corporate entities.

Last year, the IT ministry revised the terms of the semiconductor manufacturing programme to offer a flat 50% incentive to all applicants irrespective of the investment or the size of the chip they planned to manufacture.

The government had expanded the plan to include incentives for the manufacture of legacy nodes based on industry inputs, Vaishnaw said.

"The demand for higher nodes which go into electric vehicles, in train sets, in practically all the telecom equipment and power electronics…all those sectors require higher nodes. So, we changed our policy and opened it up further," the minister added.

The government was, however, not concerned with a supply glut of semiconductor chips as "these kinds of ups and downs" were common in the industry, Vaishnaw said. "It took 60 years for the industry to grow to $500-600 billion. It is going to be $1 trillion in five-six years. So, that's the kind of growth which is happening in the industry. There is enough for everybody," he said.

The new plants to be set up under semiconductor mission will be served and serviced by green energy, he said.

India Semiconductor Mission

- **About:** The ISM was launched in 2021 with a total financial outlay of Rs76,000 crore under the aegis of the **Ministry of Electronics and IT (MeitY).**
  - It is part of the comprehensive program for the development of **sustainable semiconductor and display ecosystem** in the country.
  - Envisioned to be led by global experts in the Semiconductor and Display industry, **ISM will serve as the nodal agency** for efficient, coherent and smooth implementation of the schemes.
- **Objectives**: The programme aims to **provide financial support** to companies investing in semiconductors, display manufacturing and design ecosystem.
- **Components**:
  - **Scheme for setting up of Semiconductor Fabs in India:** It provides **fiscal support to eligible applicants for setting up of Semiconductor Fabs** which is aimed at attracting large investments for setting up semiconductor wafer fabrication facilities in the country.
  - **Scheme for setting up of Display Fabs in India**: It provides **fiscal support to eligible applicants for setting up of Display Fabs** which is aimed at attracting large investments for setting up TFT LCD / AMOLED based display fabrication facilities in the country.
  - **Scheme for setting up of Compound Semiconductors / Silicon Photonics / Sensors Fab and Semiconductor Assembly, Testing, Marking and Packaging (ATMP) / OSAT facilities in India:** The Scheme provides a **fiscal support of 30% of the Capital Expenditure to the eligible applicants** for setting up of Compound Semiconductors / Silicon Photonics (SiPh) / Sensors (including MEMS) Fab and Semiconductor ATMP / OSAT(Outsourced Semiconductor Assembly and Test) facilities in India.
  - **Design Linked Incentive (DLI) Scheme:** It offers **financial incentives, design infrastructure support across various stages of development and deployment** of semiconductor design for Integrated Circuits (ICs), Chipsets, System on Chips (SoCs), Systems & IP Cores and semiconductor linked design.

Semiconductors

- Any of a class of **crystalline solids intermediate** in electrical conductivity between a conductor and an insulator.
- Semiconductors are employed in the manufacture of various kinds of electronic devices, including **diodes, transistors, and integrated circuits**. Such devices have found wide application because of their compactness, reliability, power efficiency, and low cost.
- As discrete components, they have **found use in power devices**, optical sensors, and light emitters, including solid-state lasers.

THE HINDU Page 14

COVID-19 did not force girls to exit school early: study

The Hindu Bureau
NEW DELHI

The number of girls who are out of school continued to decline across age groups in 2022 from the 2018 figures, according to the Annual School Education Report (ASER), 2022 of the non-governmental organisation Pratham. This lays to rest fears that economic stress on families during COVID-19 will force them to withdraw girls from schools and push them into early marriages.

In 2022, the all-India figure for girls in the 11-14 age group not enrolled in school stood at 2% as against 4.1% in 2018. In other words, the proportion of girls in this age band who were out of school dropped by half. This figure is around 4% only in Uttar Pradesh and is lower in all other States.

The decrease in the proportion of girls not enrolled in school is even sharper among girls in the 15-16 age group, which stood at 7.8% in 2022 as against 13.5% in 2018, which is almost a 40% drop.

Three States

Only three States have more than 10% of girls in this age group out of school — Madhya Pradesh (17%), Uttar Pradesh (15%), and Chhattisgarh (11.2%).

The States that are relatively poor in school enrolments have also seen a steady rise in number of girls in schools. Uttar Pradesh, which had 7.9% girls in the 11-14 age group out of school in 2018 saw the figure drop to 4.1%; whereas older girls saw a sharper decline from 22.2% to 15% during the period. In Haryana, out-of-school girls in the 11-14 age group dropped from 2.3% to 1% and those between the ages of 15 and 16 declined from 6.8% to 4.7% over the past four years.



Schools have been successful in retaining students at the secondary level.

"This shows that there was a clear demand for schooling, which cut across age groups, gender and States. It also shows that the push for secondary education through Samagra Shiksha Abhiyaan is bearing fruit. Though it is difficult to retain students in secondary school, but our study shows schools have been successful in doing so," Wilima Wadhwa, Director, ASER Centre, Pratham, says.

ASER 2022

(Syllabus: GS Paper 2 - Education)

Context: The number of girls who were out of school continued to decline across age groups in 2022 as compared to 2018, according to NGO Pratham's **Annual School Education Report (ASER) 2022**, which lays to rest fears that economic stress on families during COVID-19 would force them to withdraw girls from schools and push them into early marriages.

Key Points

- In 2022, the **all-India figure for 11-14-year-old girls** not enrolled in school stood at 2% as compared to 4.1% in 2018.
- The proportion of girls in this age band who were **out of school dropped by half.** This figure is around 4% only in Uttar Pradesh and is lower in all other States.
- The **decrease in the proportion of girls not enrolled in school** is even sharper among older girls in the 15-16 age group which stood at 7.8% in 2022 as compared to 13.5% in 2018, which is almost a 40% drop in the proportion of girls in this age group who were not in schools.
- Only three States have **more than 10% of girls in this age group out of school** - Madhya Pradesh (17%), Uttar Pradesh (15%), and Chhattisgarh (11.2%).
- States that are **relatively poor in school enrolments** have also seen a steady rise in girls in schools.

ASER Report

- **About**: The Annual Status of Education Report, or ASER, is an annual, **citizen-led household survey** that aims to understand whether children in rural India are enrolled in school and whether they are learning.
- **Conducted by**: **Pratham**, a non-government organization.
- **Assessment mechanism**: Unlike most other large-scale learning assessments, ASER is a **household-based rather than school-based survey.**
  - This design **enables all children to be included** – those who have never been to school or have dropped out, as well as those who are in government schools, private schools, religious schools or anywhere else.
  - From 2005 to 2014, and then **every alternate year till 2018,** large-scale, nationwide ASER surveys provided representative estimates of the enrolment status of children **aged 3-16** and the basic reading and arithmetic levels of children aged 5-16 at the national, state and district level.
- **ASER Report 2022:** For Preparing ASER Report 2022, NGO Pratham **surveyed children aged 6 to 14 since 2005** to track trends in school enrolment, attendance and reading and arithmetic abilities.
  - This year's report (came after 2018) **surveyed 7 lakh children across 19,060 villages in 616 district**s in the country.
  - After two years of a Covid-19-induced school shutdown, the recently released 17th Annual Status of Education Report (ASER) for 2022 **contains both good (high enrolment) and bad news (drop in learning levels).**

DTE JAN 20

NEONATAL MORTALITY

(Syllabus: GS Paper 2 - Health)



Neonatal mortality rate in Kenya shows no significant change in 8 years: Survey

Childhood and under-5 mortality rates, however, declined during the period, study finds

By Madhumita Paul
Published: Thursday 19 January 2023

Context: Improvement of neonatal mortality rate in Kenya has not been significant, even as childhood and under-5 mortality rates declined steadily, a new study showed.

Key Points

- The leading probable causes of neonatal deaths among preterm or low birth weight infants were birth a**sphyxia, neonatal sepsis, respiratory distress and hypothermia,** the researchers found.
- **Lack of check-ups for pregnancy complications**, unskilled antenatal care provision and lack of tetanus injection were associated with neonatal mortality in the country, it added.
- **Tetanus toxoid injections** are given during pregnancy to prevent neonatal tetanus, a major cause of early infant death in many countries. Neonatal tetanus is often caused by failure to observe hygienic procedures during delivery, the indicators report stated.
- The report highlighted an **evident gap in documentation of mortality** and its causes among low birth weight and preterm neonates, owing to the country's weak civil registration and vital statistics systems.
- Among the possible causes of **under-5 death rate** decline were various targeted new public health initiatives and improved access to water and sanitation, the analysts wrote.
- **Increased ownership of insecticide-treated bed nets** in endemic malaria zones resulted in 39 per cent of the decline in post-neonatal mortality and 58 per cent of the decline in infant mortality.
- Understanding causes of and circumstances preceding both preterm and low-birth-weight neonatal deaths is essential for accelerating progress towards **Sustainable Development Goal (SDG) 3** that aims to reduce neonatal mortality rates to 12 per 1,000 live births by 2030.

Neonatal mortality

- It refers to **death in the 1st 28 days of life**. Early neonatal mortality refers to death before 7 days and late neonatal mortality to death on days 7-28.
- The **specific neonatal mortality rate** by birth weight refers to the number of neonatal deaths of a determined weight per 1000 live births of the same birth weight.
- **Perinatal mortality** is the sum of early neonatal and late fetal mortality.
- **Prematurity** refers to a gestational age of less than 37 weeks or 258 completed days.

PIB JAN 20

HAKKU PATRA

(Syllabus: GS Paper 2 - Govt Policies & Interventions)

PM distributes title deeds (hakku patra) to about fifty thousand beneficiaries of newly declared revenue villages in Kalaburagi, Karnataka

Context: The Prime Minister distributed **title deeds (hakku patra)** to the eligible beneficiaries of newly declared revenue villages of Karnataka.

Key Points

- In line with the Prime Minister's vision of 100 percent saturation of government schemes, about 1475 unrecorded habitations have been declared as **New Revenue villages in five districts of Kalaburagi, Yadgiri, Raichur, Bidar and Vijayapura.**
- At Malkhed village of Sedam Taluka of Kalaburagi district, the Prime Minister distributed **title deeds (hakku patra) to the eligible beneficiaries** of these newly declared revenue villages.
- The issuance of title deeds to more than fifty thousand beneficiaries, who are largely from the **marginalised and vulnerable communities** from the SC, ST and OBC, is a step to provide formal recognition from the government for their land and will make them eligible for receiving government services like drinking water, electricity, roads etc.

Title Deeds (hakku patra)

- **About**: In India, land ownership is **defined through a legal document known as the title deed.** It is a crucial document that states the property's ownership, rights, and privileges.
  - While most of the urban population is aware of the process of obtaining this document, the underprivileged population often struggles with it.
- **Hakku Patra**: To simplify things, the state **Government of Karnataka issued Hakku Patra**, stating their ownership title.
  - Hakku Patra in Kannada means "Claim Letter".
  - The word '**Hakku' means "the right", and 'Patra' means a "paper" or "document".**
  - Hakku Patra is a **legal document** that states an individual's rightful inheritance of a property. It is a state-guaranteed document.
  - It is **issued to the nation's underprivileged section**, including scheduled castes, scheduled tribes, urban slum dwellers, handicapped, and other disadvantaged populations.
  - In most cases, the land on which the Hakku Patra is **issued is government-owned with a specific set of conditions attached.**
  - **It is a part of the** Ambedkar Rural Housing Scheme of Karnataka.
  - The government offers **free registration of Hakku Patra land** in the beneficiary's name. But, any house built on the Hakku Patra land should be used as the beneficiary's house and not for rental purposes.

DTE JAN 20

GREENLAND WARMING

(Syllabus: GS Paper 3 - Env & Eco)



Global warming has reached remote Greenland ice sheets

New study shows temperatures in Greenland haven't been this warm in at least a 1,000 years

NEXT NEWS >

By Nandita Banerji
Published: Thursday 19 January 2023



Context: Global warming has reached Greenland, with a new study showing that remote high elevations of its ice sheet are facing the warmest decade in the last thousand years.

- The years 2001 to 2011 were 1.5 degrees Celsius warmer than the 20th century.

Key points

- An **ice sheet** is a mass of glacial ice of more than 50,000 square kilometres.
- Ice sheets contain **about 99% of the Earth's freshwater** and are sometimes called continental glaciers.
- Today, there are **only two ice sheets in the world:** The Antarctic ice sheet and the Greenland ice sheet.
- **Ice sheets form like other glaciers**. Snow accumulates year after year, then melts. The slightly melted snow gets harder and compresses. As years go by, layers build on top of each other.
- An **ice core** is a core sample that is typically removed from an ice sheet or a high mountain glacier.
- They are **losing ice due to the Earth's surface and ocean warming.** Meltwater coming from these ice sheets is responsible for about a third of the global average rise in sea level since 1993.
- Greenland ice sheet has a **central role in the global climate system** owing to its size, radiative effects and freshwater storage.

Greenland

- It is an island country that is a **part of Denmark.**
- It is located **between the Arctic and Atlantic oceans.**
- Greenland is the **world's largest island.**
- The citizens of these countries are **all Danish nationals**.
- With a population of 56,081 (2020 data), it is the **least densely populated region** in the world.
- Greenland's capital is **Nuuk**, about a third of the population lives in Nuuk.
  - It is the capital and largest city of Greenland.
- Though a part of the continent of North America, Greenland has been **politically and culturally associated with Europe.**
- The population is concentrated mainly on the southwest coast, while the rest of the island is sparsely populated.
- Nearly 75% of Greenland is **covered by a permanent ice sheet.**

PIB JAN 20

SUBMARINE VAGIR

(Syllabus: GS Paper 3 - Sci & Tech)

FIFTH KALVARI CLASS SUBMARINE VAGIR TO BE COMMISSIONED ON 23 JAN 2023

Context: Indian Navy is set to commission the fifth **Kalvari class submarine** Vagir on 23 Jan 2023.

- The first submarine, **INS Kalvari,** was commissioned in 2017, the second **INS Khanderi** in 2019, the third **INS Karanj** in 2021 and the fourth **INS Vela** in 2021.

Key Points

- **Glorious Past and Inception**: The erstwhile **Vagir was commissioned on 01 Nov 1973** and undertook numerous operational missions including deterrent patrols. The submarine was decommissioned on 07 Jan 2001 after serving the nation for about three decades.
  - Launched and **named 'Vagir'** on 12 Nov 20, the submarine in its new avatar has the distinction of having the lowest build time among all indigenously manufactured submarines till date.
  - She undertook her **maiden sea sortie in Feb 22**, marking the commencement of sea trials and has gone through a series of comprehensive acceptance checks and, stringent and demanding sea trials prior being commissioned.
- **Vagir - Ferocious Fifth:** Vagir will **boost the Indian Navy's capability** to further India's maritime interests and is capable of undertaking diverse missions including anti-surface warfare, anti-submarine warfare, intelli**gence gathering, mine laying and surveillance missions.**
- **Vagir - Sand Shark: The Sand Shark represents '**Stealth and Fearlessness', two qualities that are synonymous with the ethos of a submariner.

INS Vagir

- **About**: INS Vagir (S25) is the **fifth submarine of the first batch of six Kalvari-class submarines** for the Indian Navy.
  - It is a diesel-electric attack submarine based on the Scorpène class, designed by French naval defence and manufactured by Mazagon Dock Limited.
- **Name**: The submarine inherits its **name from INS Vagir (S41)** which served in the Navy from 1973–2001, and was named after a species of sandfish.
- **Kalvari class:** The Kalvari class is a **class of diesel-electric attack submarines** based on the Scorpène-class submarine being built for the Indian Navy.
  - The class and submarines take their names from the first submarines inducted in the Indian Navy.
- **Last one:** The Sixth and last of the **Scorpène-class submarines, Vagsheer,** was launched into water in 2022 and is expected to be delivered to the Navy by 2023-end.

DST JAN 20

DISCOVERY OF PLATEAU

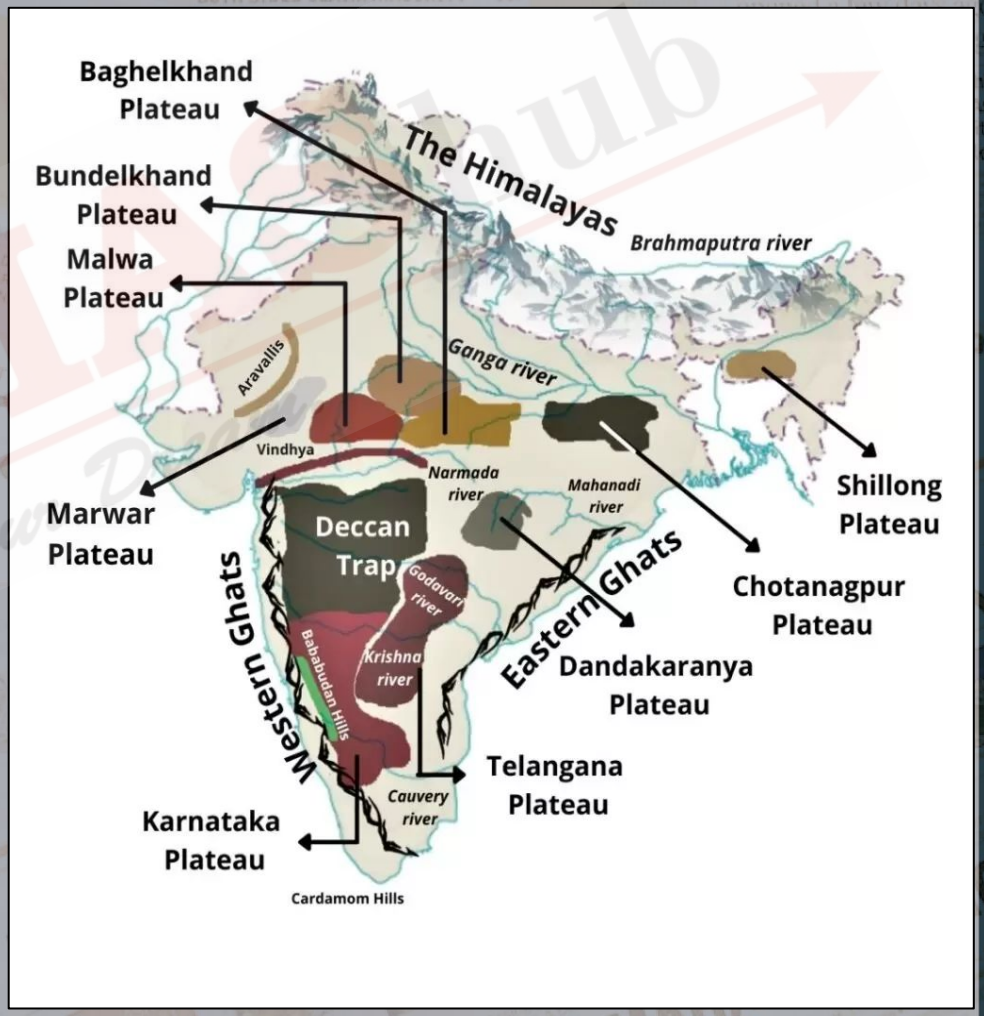
(Syllabus: GS Paper 1 - Geography)

New plateau type discovered from Maharashtra could prove to be a repository of information to study climate change effects on species survival

Context: A **rare low-altitude basalt plateau** housing 76 species of plants and shrubs from 24 different families discovered in Thane region in the Western Ghats - one of the four global biodiversity hotspots in India, can prove to be a repository of information for species interactions.

Key Points

- **Agharkar Research Institute (ARI) team** discovered a rare low-altitude basalt plateau in Manjare village, Thane district.
- This is the **fourth type of plateau** to be identified in the region; the previous three are laterites at high and low altitudes and basalt at high altitudes.
- Surveying the plateau, the team documented **76 species of plants and shrubs from 24 different families.**
- It **can help study effects of climate change on species** survival and increase awareness of the conservation needs of rock outcrops and their immense biodiversity value in the global context.
- The **Western Ghats** is one of four global biodiversity hotspots in India, and Agharkar Research Institute (ARI) in Pune has been studying its biodiversity, particularly its rock outcrops, for a decade.
- **Plateaus are dominant landscapes** in the Western Ghats, significant because of the predominance of endemic species.
- They are **classified as a type of rock outcrop** and provides unique and challenging environment for species to adapt to.
- These outcrops have **seasonal water availability, limited soil and nutrients,** making them ideal laboratories to study the effects of climate change on species survival.
- Plateaus are thus a **valuable source of insight** into how species can survive in extreme conditions.



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