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MK Yadav Sir

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BUSINESS STANDARD

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UNIFIED TARIFF STRUCTURE

(Syllabus: GS Paper 3 - Economy)

Unified tariff for gas pipelines from April 1

Industrial customers transporting gas over larger distances to now pay less

SUBHAYAN CHAKRABORTY
New Delhi, 14 March

More than a dozen gas pipelines that form the national gas grid are on track to come under a unified tariff structure from April 1, a top Petroleum and Natural Gas Regulatory Board (PNGRB) official said on Tuesday.

Based on the principle of 'one nation, one grid, and one tariff', the unified tariffs will benefit customers transporting fuel over longer distances and multiple pipelines, PNGRB Board Member A K Tiwari said at the International LNG Conclave organised by the PHD Chamber of Commerce and Industry.

Currently, customers pay additional tariffs for using multiple and inter-connected pipelines. This results in consumers away from the coast paying higher charges as compared to those near it. To simplify the implementation of unified tariff, the sector regulator introduced entity-level integrated natural gas pipeline tariff.

Under the new regime, buyers will be charged a fixed tariff for the transport of gas over three zones, up from two. This includes transportation of gas within 300 km of a source (gas field or LNG import terminal), 300-1,200 km, and 1,200 km, Tiwari said.

"The existing tariff of the first zone will almost remain the same. The tariff of the second zone will be less than the additive tariff, and the third will have a tariff which is much less than the additive tariff," he said. PNGRB had earlier said the tariff for the first tariff zone will be 40 per cent of the tariff for the second zone. The government has also incorporated other amendments, such as allowing unaccounted gas, moratorium period, and ramp-up in capacity.

The pipelines that will be part of the unified tariff plan include state-owned gas utility GAIL India-operated Hazira-Vijaipur-Jagdishpur

WHAT'S NEW



- Number of tariff zones expanded to 3 from 2
- Existing tariff of the first zone to almost remain the same
- Tariff of the second zone to be less than the additive tariff
- Industrial gas buyers now pay more over longer distances
- Part of move to raise share of gas in energy mix to 15% by 2030

Context: More than a dozen gas pipelines that form the national gas grid are on track to come under a **unified tariff structure** from April 1.

- Based on the principle of **'one nation, one grid, and one tariff', th**e unified tariffs will benefit customers transporting fuel over longer distances and multiple pipelines, **PNGRB** Board Member said at the International LNG Conclave organised by the PHD Chamber of Commerce and Industry.
- Currently, customers pay **additional tariffs** for using multiple and interconnected pipelines.

Unified tariff structure

- **About**: The **Petroleum and Natural Gas Regulatory Board (PNGRB)** has notified a new tariff structure for 14 natural gas pipelines.
  - PNGRB is a **statutory body in India,** constituted under the act of Parliament of India, namely **Petroleum and Natural Gas Regulatory Board Act, 2006.**
  - Its primary functions include **regulation** of refining, transportation, distribution, storage, marketing, supply and sale of petroleum products and natural gas.
- **Objectives**: It aims to **reduce the cost of natural gas** for users further away from sources of natural gas and LNG terminals on the west coast of the country.
- **Key Features**: Under the new unified tariff structure, **buyers will be charged a fixed tariff** for the transport of gas within 300 kms of a source and a fixed tariff for the transport of gas beyond 300 kms on a single pipeline network.
  - **Multiple pipeline operators now have to settle dues among themselves** as the consumers will pay the transport tariff to the operator at the exit point of gas and the operators will then have to settle dues with the operators of other pipelines used for the delivery of the natural gas.

THE HINDU Page 12

PVTG DEVELOPMENT MISSION

(Syllabus: GS Paper 2 - Polity & Governance)

House panel on Tribal Affairs apprehensive about PM-PVTG outlay without population data

Abhinay Lakshman
NEW DELHI

Weeks after Finance Minister Nirmala Sitharaman announced a ₹15,000-crore expenditure outlay for the Prime Minister's Particularly Vulnerable Tribal Groups (PM-PVTG) Development Mission, the Standing Committee on Social Justice and Empowerment on Tuesday expressed disappointment that such a massive budgetary allocation had been planned when even the Ministry of Tribal Affairs does not have data on PVTG populations in several States and Union Territories.

The House panel, headed by BJP MP Rama Devi, in its report on the Demands for Grants of the Ministry of Tribal Affairs, said, "The Committee are rather apprehensive on the enhanced budgetary allocation for PVTGs and its utilisation by the Ministry of Tribal Affairs as data on population of Particularly Vulnerable Tribal Groups (PVTGs) in several States/ U.T.s is still not available with them."

The panel noted that Ministry officials informed members that for PVTGs, an annual expenditure of ₹5,000 crore had been planned – to be spent over the next three years. The officials also said that the States and Union Territories had been asked to carry out baseline surveys and that this exercise was now under verification process.

"The Committee feel that this should have been done earlier because they strongly believe that in the absence of correct details of the population of PVTGs, the financial allocation for the Scheme may not bear the desired results," the panel noted.

The House panel also noted that an evaluation study had revealed that PVTG data are absent in many States and UTs, including for Andaman and Nicobar Islands, which the panel members recently visited, and where six of seven Scheduled Tribes groups fall under the PVTG categorisation.

The panel also pointed out that the government had been able to spend just ₹6.48 crore for the development of PVTGs in 2022-23, out of an initial allocation of ₹252 crore, and said that estimates had to be reduced significantly in the financial years 2020-21, 2021-22 and 2022-23.

Expressing hope that the PM-PVTG Development Mission had the potential to rejuvenate a "crumbling scheme", "if implemented with the requisite push", the panel said it expects the Ministry to frame the modalities, guidelines and SOPs expeditiously, and also sought regular updates on the same from the Ministry.

On 2023-24 allocation

On the Tribal Affairs allocation of over ₹12,000 crore made in this year's Budget Estimates, the committee said it appreciated this increase.

However, it noted that in the past three financial years, Tribal Affairs ministry's allocation has consistently reduced from BE stage to RE stage, and cautioned that the same not be repeated this year.

Context: The Standing Committee on Social Justice and Empowerment on March 14 expressed disappointment after Finance Minister announced a ₹15,000 crore expenditure layout for the **Prime Minister's Particularly Vulnerable Tribal Groups (PM-PVTG) Development Mission.**

Pradhan Mantri PVTG Development Mission

- **About**: The mission has launched as part of **'Reaching The Last Mile',** one of the seven Saptarishi priorities enlisted in this year's Budget.
- **Objectives**: The mission will saturate the **particularly vulnerable tribal groups** with safe housing, clean drinking water, education, nutrition, road and telecom connection and livelihood.
    - A Budget of Rs 15,000 crore will be dedicated to this mission in the next **three years.**
    - The scheme will benefit 3.5 lakh tribals.
- **Saptarishi priorities (seven priorities) enlisted in the 2023-24 budget:** Inclusive Development, Reaching the Last Mile, Infrastructure and Investment, Unleashing the Potential, Green Growth, Youth Power & Financial Sector

PVTG (Particularly Vulnerable Tribal Groups)

- **About**: PVTGs are more **vulnerable among the tribal groups** who are in need of greater support and development.
- **Habitation**: Out of the 705 Scheduled Tribes in India, **75 have been identified as PVTGs** and are spread across 17 states and one Union Territory.
    - In 1975, the Government of India initiated to identify the most vulnerable tribal groups as a **separate category called PVTGs and declared 52 such groups.**
    - An additional 23 groups were added to the category in 1993.
    - Some Examples: **Cholanaikayan (Kerala), Kathodi (Gujarat), Jarawas (Andaman & Nicobar Islands), Koraga (Karnataka).**
- **Criteria**: Government of India follows the following **criteria for identification of PVTGs:**
    - Pre-agricultural level of technology
    - Low level of literacy
    - Economic backwardness
    - A declining or stagnant population.

INDIAN EXPRESS

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MPLAD SCHEME

(Syllabus: GS Paper 2 - Polity & Governance)

After concerns, govt corrects MPLADS change on allocation for SC/ST areas

LIZ MATHEW
NEW DELHI, MARCH 14

THE GOVERNMENT Tuesday retracted a change in the guidelines for use of MPLADS (Members of Parliament Local Area Development Scheme) funds, which appeared to water down the requirement to set aside a certain portion for areas dominated by Scheduled Castes (SCs) and Scheduled Tribes (STs).

In a "corrigendum" issued on Tuesday evening, the government said: "In order to give due attention to the development of infrastructure in the areas inhabited by SCs and STs, Members of Parliament are to recommend every year, works costing at least 15 per cent of the total MPLADS entitlement for the year for areas inhabited by Scheduled Castes population and at least 7.5 per cent of the total MPLADS entitlement for the year for areas inhabited by Scheduled Tribes population."

On Saturday, CPI(M) MP John Brittas had pointed out a change in the guidelines which made the provision for allocation to SC/ST areas advisory in nature. Brittas expressed the apprehension that this could result in a drop in funds for these areas, and change the "inclusive and egalitarian nature" of MPLADS, while pointing out that funds under it had been instrumental in the development of these regions through works like drinking water facilities, and construction of roads and toilets.

The changed guidelines highlighted by Brittas, which would have come into effect from April 1, said: "In order to give due attention to the development of infrastructure in the areas predominantly inhabited by Scheduled Castes and Scheduled Tribes, it shall be advisable for Members of Parliament to recommend every year, works costing at least 15 per cent of the total MPLADS entitlement for the year for areas predominantly inhabited by Scheduled Caste population, and at least 7.5 per cent of the total MPLADS entitlement for the year for areas predominantly inhabited by Scheduled Tribe population."

The earlier guidelines, in place since 2016, provided flexibility in spending funds on either SCs or STs depending on their population in a constituency. They also had a provision to spend the stipulated amount in any other part of the state provided there was not a sizeable SC/ST population in an MP's constituency.

This meant that of the Rs 25 crore an MP could spend over five years, at least Rs 3.75 crore had to be set aside for SCs and Rs 1.87 crore for STs.

The government has now reinstated these old provisions.

Sources said the tweak introducing the word "advisable" regarding the funding was an "oversight", and came to the notice of the political leadership after it was pointed out by MPs. Brittas had also criticised the new guidelines for excluding government-aided institutions from the ambit of MPLADS, saying this could particularly impact the education sector.

Context: A change in the guidelines for use of funds under **MPLADS - the Members of Parliament Local Area Development Scheme** - seems to water down the requirement to set aside a certain section for the Scheduled Caste and Scheduled Tribe areas.

- The newly issued guidelines are to be effective from April 1, and mark the first comprehensive review of the scheme since 2016.

Old and New Guidelines

- **2016 guidelines:** MPs are to recommend every year, works costing **at least 15 percent of the MPLADS entitlement for the year for areas inhabited by Scheduled Caste population** and 7.5 per cent for areas inhabited by ST population.
  - This meant that of the Rs 25 crore of works an MP could recommend for spending in his constituency over five years, at least Rs 3.75 crore had to be spent in SC areas and Rs 1.87 crore in ST-dominated regions.
- **New guidelines:** It shall be **advisable for Members of Parliament to recommend every year,** works costing at least 15 percent of the total MPLADS entitlement for the year for areas predominantly inhabited by Scheduled Caste population and at least 7.5 per cent of the total MPLADS entitlement for the year for areas predominantly inhabited by Scheduled Tribe population.
  - **Criticism**: While it **was mandatory** for all MPs to allocate 15 per cent and 7.5 per cent of the annual Rs 5 crore under MPLADS for various development activities in SC/ST regions respectively, this obligatory condition has been tacitly converted to a **mere 'advisory' clause**.

MPLAD Scheme

- **About**: The **Local Area Development Scheme** known as MPLADS is a government scheme launched on 23rd December 1993.
  - The scheme, Members of Parliament Local Area Development Scheme (MPLADS) was started by late **Prime Minister P.V. Narasimha Rao.**
- **Nodal Ministry**: This scheme is now administered by the **Ministry of Statistics and Implementation** but was earlier administered by the Ministry of Rural Development.
- **Objectives**: This central sector scheme was developed as an initiative to enable the parliament members to **recommend developmental work in their constituencies** based on locally felt needs.
  - These developmental works mainly **focused on the areas of national priorities** such as drinking water, education, public health, sanitation, roads, etc.

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EXERCISE BOLD KURUKSHETRA

(Syllabus: GS Paper 2 - International Relations)

JOINT INDIA SINGAPORE EXERCISE 'BOLD KURUKSHETRA' CONCLUDES AT JODHPUR

Context: The **Singapore Army and Indian Army** participated in the **13th edition of Exercise Bold Kurukshetra,** a bilateral armour exercise from 06-13 March 2023 at Jodhpur Military Station, India.

- **Hosted by the Indian Army,** the exercise involved soldiers from the 42nd Battalion, Singapore Armoured Regiment and an Armoured Brigade of Indian Army.

Exercise Bold Kurukshetra

- **About**: It is conducted under the ambit of the **bilateral arrangement** for the joint Army Training and exercises between the Singapore Army and the Indian Army.
- **Origin**: First conducted in 2005, this exercise underscores the **strong and long-standing bilateral defence relationship** between both countries and enhances cooperation between the two armies.
    - Both **defence establishments** also interact regularly through high-level visits, policy dialogues, courses and other professional exchanges.

Other Exercises between India and Singapore

- **Exercise Agni Warrior** (Army)
- **Joint Military Training** (Air Force)
- **Trilateral Maritime Exercise SIMTEX** (With Thailand)

TIMES OF INDIA

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WORLD AIR QUALITY REPORT

(Syllabus: GS Paper 3 - Env & Eco)

India 8th most polluted country in world, Delhi 4th most polluted city

City PM 2.5 Level 19 Times Higher Than WHO Standard: Air Quality Report

Priyangi.Agarwal
@timesgroup.com

New Delhi: India was the world's eighth most polluted country in 2022 with an annual average PM2.5 concentration of 53.3 micrograms per cubic metre, according to the fifth annual World Air Quality Report 2022 by IQAir released Tuesday. In 2021, India was ranked the fifth most polluted country with an average PM2.5 level of 58.1 micrograms per cubic metre.

With an annual average PM2.5 concentration of 92.6 micrograms per cubic metre, Delhi has been ranked the fourth most polluted city in the world after Lahore in Pakistan (97.4 micrograms per cubic metre), Hotan in China (94.3 micrograms per cubic metre) and Bhiwadi in Rajasthan (92.7 micrograms per cubic metre).

Delhi had occupied fourth place globally in 2021 too, with average PM2.5 concentration of 96.4 micrograms per cubic metre. The annual safe limit prescribed by World Health Organization (WHO) is 5 micrograms per cubic metre.

Till 2021, Delhi remained the world's most polluted capital for four consecutive years. However, this year, the report makes a distinction between the capital and the much smaller area of 'New Delhi' with the overall Union Territory. Due to this, New Delhi has been ranked the second most regional polluted capital in the world with average PM2.5 concentration of 89.1 micrograms per cubic metre after N'Djamena, Chad (89.7 micrograms per cubic metre). The report said stubble burning is also an important challenge in the region but is an episodic phenomenon confined to a few areas, including Delhi and north India.

Anumita Roychowdhury, executive director, research and advocacy, Centre for Science and Environment, said, "For the first time, they have considered two different geographical units – Delhi and New Delhi. New Delhi is slightly cleaner than the rest of Delhi. But overall, the finding is consistent with the downward trend noticed in other assessments for Delhi. The levels are still very high and require aggressive and time-bound multi-sector action to meet the clean air benchmark."

The latest report said 12 of the 15 most polluted cities in Central and South Asia were in India. Roughly 60% of Indian cities included in the report experienced annual PM2.5 levels at least seven times higher than the WHO limit.

Roychowdhary said the worst affected cities are from north India and Indo-Gangetic plains, where adverse geo-climatic conditions influence pollution concentration. "There are tiny towns in the list that are more affected by regional pollution than local sources, unless there is a concentration of grossly polluting sources. This validates the need for airshed level action to mitigate pollution across the northern region," she added.

Avinash Chanchal, campaign manager, Greenpeace India, said stricter regulations on industries and vehicles to reduce pollution is the need of the hour. "Investment in renewable energy in a decentralised manner should be a priority. The government should also invest in 'real' public transportation systems, such as buses and suburban rail, to reduce the number of vehicles on the roads," said Chanchal.

Frank Hammes, global CEO, IQAir, said, "In 2022, more than half of the world's air quality data was generated by grassroots community efforts. When citizens get involved in air quality monitoring, we see a shift in awareness and the joint effort to improve air quality intensifies."

THAT CHOKING FEELING

File photo



Top 10 polluted countries in 2022

Rank		Avg PM2.5
Chad	1	89.7
Iraq	2	80.1
Pakistan	3	70.1
Bahrain	4	66.6
Bangladesh	5	65.8
Burkina Faso	6	63
Kuwait	7	55.8
India	8	53.3
Egypt	9	46.5
Tajikistan	10	46

2022 capital rankings

N'Djamena, Chad	1	89.7
Delhi, India	2	89.1
Baghdad, Iraq	3	86.7
Manama, Bahrain	4	66.6
Dhaka, Bangladesh	5	65.8

World's most polluted cities in 2022

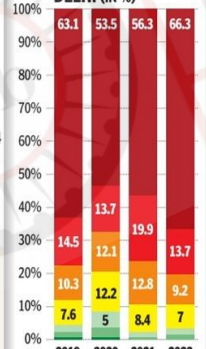
Lahore, Pakistan	1	97.4
Hotan, China	2	94.3
Bhiwadi, India	3	92.7
Delhi, India	4	92.6
Peshawar, Pakistan	5	91.8

PM 2.5 in µg/cubic metres

5 10 15 25 35 50

Note: All figures are of average PM2.5 in micrograms per cubic metre

Annual hours in % spent at each PM2.5 level



- India's annual average **PM2.5 level in 2022 was 53.3 micrograms** per cubic metre, slightly lower than 2021's average of 58.1
- India's work ranking improved from **5 in 2021 to 8 in 2022**
- Bhiwadi in Rajasthan was found to be the **most polluted city in India**, with alarming PM levels of 92.7 micrograms per cubic metre
- Delhi was ranked **second most polluted capital** in the world in 2022

Context: India was the world's eighth most polluted country in 2022 with an annual average PM2. 5 concentration of 53. 3 micrograms per cubic metre, according to the fifth annual **World Air Quality Report 2022.**

- The annual world air quality report was **published by Swiss air quality technology company IQAir.**

Key Findings

- India's air quality is **seven times worse than the standards set** by the World Health Organisation (WHO).
- While **New Delhi is the second most polluted capital city** in the world, it is not the most polluted city in India.
- The most polluted city in India in 2022 was **Rajasthan's Biwadi.**
- India in 2022 had committed to resetting its **National Clean Air Program** targets with the aim of reducing particulate matter concentrations by 40 percent by 2026.
    - However, the report also highlights policy decisions including the **relaxation of environmental regulations for coal mines,** allowing for increased production that drover particulate matter.
- The **top five most polluted countries in 2022** included Chad, Iraq, Pakistan, Bahrain, and Bangladesh. It found that the region of Central and South Asia was home to eight of the world's ten cities with the worst air pollution.

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CARBON FOOTPRINT OF FISHERIES

(Syllabus: GS Paper 3 - Env & Eco)

Carbon footprint of marine fisheries lower than global average. Efforts on to green sector: CMFRI

Active fishing consumes more than 90% of the fuel used in the sector

By Rohini Krishnamurthy

Published: Tuesday 14 March 2023



Context: India's marine fisheries produced 1.32 tonnes of **carbon dioxide (CO2)** to produce one kilogram of fish in 2016, lower than the global average of 2 tonnes, according to the **Central Marine Fisheries Research Institute (CMFRI).**

- The findings were discussed at a review meeting of the fisheries component of the **National Innovations in Climate Resilient Agriculture (NICRA)**, a research project launched in 2011.

Key Points

- The **carbon footprint** from Indian marine fisheries is smaller because they depend largely on human force.
- **Large mechanised fishing boats** were introduced in India in the late 1950s, but the fleet size is growing. Their number increased to 72,559 in 2010 from 6,708 in 1961.
- Though **India's emissions from marine fisheries** are smaller than global emissions, CFMRI is looking at how fishing contributes to climate change and how India can reduce carbon emissions from the fishing sector.
- This estimate covers emissions during the entire **chain of operations of marine fisheries** - from the construction of boats to retail.

Central Marine Fisheries Research Institute

- **About**: It was established in the government of India on 3 February 1947 under the **Ministry of Agriculture and Farmers Welfare.**
  - In 1967, it joined the **Indian Council of Agricultural Research (ICAR)** family and emerged as a leading tropical marine fisheries research institute in the world.
- **Headquarters**: Kochi, Kerala.
- **Functions**: Initially the institute focused its **research efforts on creating a strong database on marine fisheries sector** by developing scientific methodologies for estimating the marine fish landings and effort inputs, taxonomy of marine organisms and the biological aspects of the exploited stocks of finfish and shellfish on which fisheries management were to be based.
  - This focus contributed significantly to **development of the marine fisheries sector** from a predominantly artisanal, sustenance fishery till the early sixties to that of a complex, multi-gear, multi-species fisheries.

National innovations in Climate Resilient Agriculture (NICRA)

- National innovations in Climate Resilient Agriculture (NICRA) is the unique project which brings all sectors of agriculture on one platform to meet the
- The flagship network Project was launched by Indian Council of Agricultural Research (ICAR) in February 2011 and ICAR - Central Research Institute for Dry land Agriculture, Hyderabad (CRIDA) is the nodal institute.
- Significant achievements of the project include extensive field phenotyping of germplasm of target crops (rice, wheat, maize, pigeon pea and tomato) to multiple abiotic stresses, preparation of first ever Vulnerability Atlas of India at district level for 572 rural districts.
- Best infrastructure was established across the country at different institutes to facilitate the climate change research.
- The project is comprised of four components namely, Strategic Research through network as well as Sponsored / Competitive Grants mode, Technology Demonstration on farmers' fields to cope with current climate

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MARCH 15

MONOCLONAL ANTIBODIES

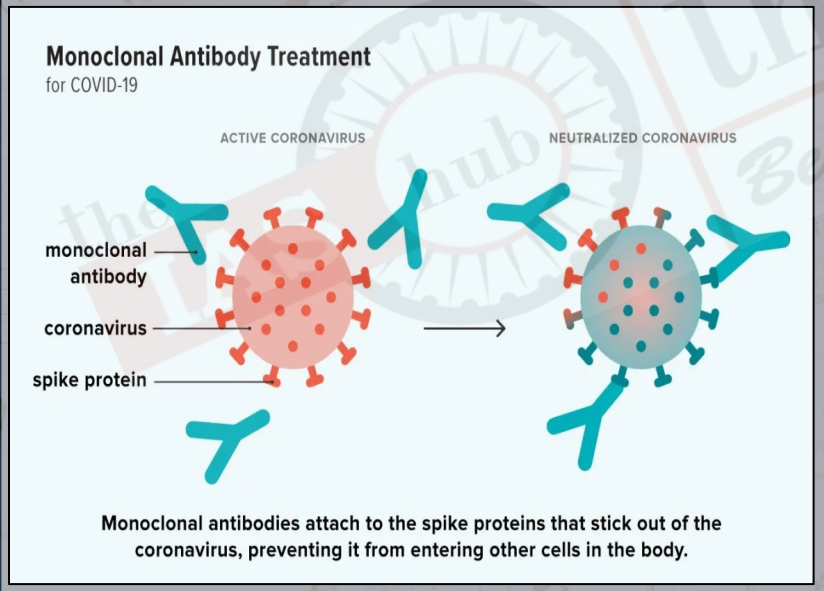
(Syllabus: GS Paper 3 - Sci & Tech)



Monoclonal antibody tech promises better disease prevention and control in Africa

Although the technology is not new, it is relatively unexplored in low- and middle-income countries

By Christophe Hitayezu
Published: Tuesday 14 March 2023



Monoclonal antibodies attach to the spike proteins that stick out of the coronavirus, preventing it from entering other cells in the body.

Context: Every year, **Africa faces over 100 health emergencies,** more than any other region in the world, according to the World Health Organization (WHO).

- Technologies such as **Monoclonal antibodies (MAb)** can help the continent with disease prevention and control.

Key Points

- They are **lab-made copies of B cells** that mimic the body's immune system.
- They're called monoclonal because they are **produced by single clone of the B cells.**
- MAb are used to **address different kinds of diseases**, not just infections.
- At the same time, they can be **used against infections like malaria** or others as they are made to target anything that is interpreted as outside.
- To **treat cancer**, the standard method is chemotherapy - the use of drugs. But those drugs are usually cytotoxic.
  - They kill everything - both the normal cells and the cancer cells.
  - Sometimes, even radiation cannot choose which cells to kill.
  - But **MAb can target specific problems** and attack those cells.

ECONOMIC TIMES

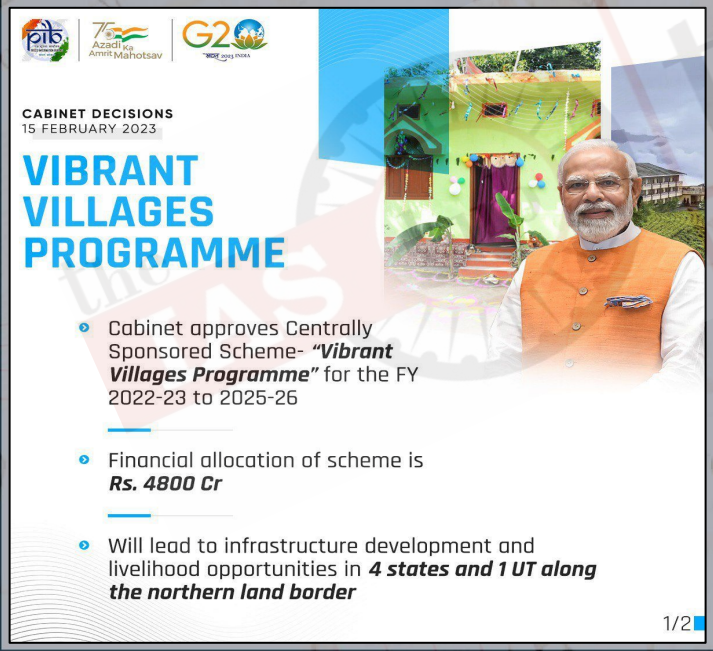
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VIBRANT VILLAGES PROGRAMME

(Syllabus: GS Paper 3 - Internal Security)

Vibrant Village Programme to Cover 662 LAC Villages, Govt Informs Parl

NEW DELHI: The Vibrant Village Programme will cover 662 villages near the Line of Actual Control in Arunachal Pradesh, 75 in Himachal Pradesh, 35 in Ladakh, 46 in Sikkim and 51 in Uttarakhand in the first phase, minister of state for home affairs Nisith Pramanik said in a written reply to a question in the Lok Sabha on Tuesday. The scheme aims to comprehensively develop border villages in 46 border blocks in 19 districts in the four states and UT. ₹4,800 crore has been allocated from 2022-26 for the programme. Focus areas include livelihood generation, road connectivity, housing and village infrastructure, solar and wind power, television and telecom connectivity, regeneration of ecosystem, promotion of tourism and culture, financial inclusion, skill development and entrepreneurship, development of cooperatives for managing agriculture, horticulture, cultivation of medicinal plants/herbs, he said. – OPB



Context: The **Vibrant Village Programme** will cover 662 villages near the Line of Actual Control in Arunachal Pradesh, 75 in Himachal Pradesh, 35 in Ladakh, 46 in Sikkim and 51 in Uttarakhand in the first phase, minister of state for home affairs said in a written reply to a question in the Lok Sabha.

Vibrant Villages Programme

- **About**: It has been announced in the **Finance Minister's Budget Speech 2022.**
  - It is a **Centrally Sponsored Scheme.**
  - **Existing schemes will be converged** and their outcomes will be defined and monitored on a constant basis.
- **Objectives**: To enhance infrastructure in villages along India's border with China, in states like **Himachal Pradesh, Uttarakhand, and Arunachal Pradesh.**
  - Border villages with sparse population, limited connectivity and infrastructure often get left out from the development gains.
- **Coverage**: The programme envisages **coverage of border villages** on Northern border having sparse population, limited connectivity and infrastructure, which often get left out from the development gains.
- **Activities**: Construction of **village infrastructure, housing, tourist centres, road connectivity**, provisioning of decentralized renewable energy, direct to home access for Doordarshan and educational channels, and support for livelihood generation.
  - **Additional funding** for these activities will be provided.

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NANAKSHAHI CALENDAR

(Syllabus: GS Paper 1 - Art & Culture)

PM greets Sikh community on the commencement of Nanakshahi Sammat 555

Context: The Prime Minister has greeted **Sikh community** around the world on the commencement of **Nanakshahi Sammat 555.**

Nanakshahi Calendar

- **About**: The Nanakshahi calendar is **a tropical solar calendar** used in Sikhism.
  - It is based on the **"Barah Maha" (Twelve Months),** a composition composed by the Sikh gurus reflecting the changes in nature conveyed in the **twelve-month cycle of the year.**
  - The year begins with the month of **Chet**, with 1 Chet corresponding to 14 March.
- **Reference**: The reference epoch of the Nanakshahi calendar is the birth of **Guru Nanak Dev,** corresponding to the year 1469 CE.
  - The Nanakshahi Calendar is named after the **founder of the Sikh religion, Guru Nanak Dev Ji.**
- **Features of the original Nanakshahi calendar:**
  - Uses the **accurate Tropical year** (365 Days, 5 Hours, 48 Minutes, 45 Seconds) rather than the Sidereal year
  - Called **Nanakshahi** after Guru Nanak (Founder of Sikhism)
  - Year 1 is the Year of Guru Nanak's Birth (1469 CE). As an example, March 14, 2023 CE is **Nanakshahi 555.**
  - **Based on Gurbani** – Month Names are taken from Guru Granth Sahib
  - **Contains 5 Months of 31 days** followed by 7 Months of 30 days
  - Leap year every 4 Years in which the last month (Phagun) has an extra day
  - **Approved by Akal Takht** in 2003

DST

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PLASMA BUBBLES

(Syllabus: GS Paper 1 - Geography)

Rare instability dynamics detected in Earth's geomagnetic equator can help understanding their affect on communication systems better

Context: A group of scientists from the **Indian Institute of Geomagnetism (IIG)**, an autonomous institute of the Department of Science and Technology (DST), used atmospheric emission from chemical species excited by the incoming solar radiation to track the **structuring of plasma bubbles.**

- While previous studies suggested that the west wall of a vertical or non-tilted **Equatorial Plasma Bubbles (EPBs)** is subject to SIs in the presence of an eastward neutral wind, but recently, it is observed that instabilities can grow on the east wall of eastward drifting EPBs.

Equatorial Plasma Bubbles (EPBs)

- At night time, when the Sun stops ionizing the atmosphere, **ions formed during the day time** in the Earth's geomagnetic equator recombine, forming lower density ionized layers.
- This is a situation similar to high density fluid resting on a low density fluid, which is a **unstable situation.**
- A small perturbation/disturbances at the bottom side of this ionized layer can led to the formation of **Equatorial Plasma Bubbles (EPBs)**, which are turbulent nonlinear structure that drift eastward along with the wind.
    - An **equatorial plasma bubble (EPB)** is one such phenomenon, which occurs in the post-sunset equatorial and low-latitude ionosphere.
    - An EPB **refers to a region extending vertically upwards** from the bottom side of the equatorial F region, with significantly lower plasma density than the background ionosphere.
- The study can **improve understanding of how such structures in the ionized layer** of the atmosphere can affect communication systems on Earth.
- A **peculiar feature of the ionosphere** situated approximately 50 -700 kms above the surface of the Earth is the **Equatorial plasma bubbles (EPBs)** which are electron density irregularities generated through plasma instability.
- These structures have **horizontal spatial scales** of few meters to hundreds of kilometers and normally drift eastward in the post-sunset hours. When these EPBs are formed at equator, they can map to off-equatorial stations through geomagnetic field lines.
- The study of these EPBs, particularly the structuring, is important as these **irregularities cause degradation to the incoming radio signal.**

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