Freedom UPSC

TOGETHER WE SCALE HEIGHTS

Daily Current Affairs

To The Point

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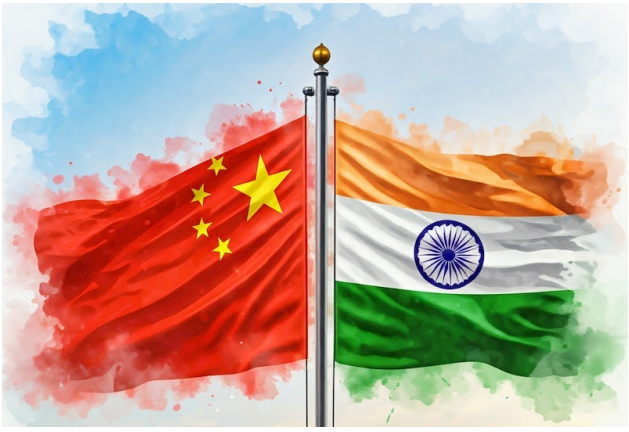
23 Oct 2024

GS Paper 2 – International Relations

1 India and China Restore Patrolling Rights Along the LAC in Ladakh



Context: India and China have reached a significant diplomatic breakthrough by agreeing to resume patrolling at key friction points along the Line of Actual Control (LAC) in eastern Ladakh. This agreement comes after years of military standoffs following the 2020 Galwan Valley clash.

Galwan Clash and Situation Thereafter:

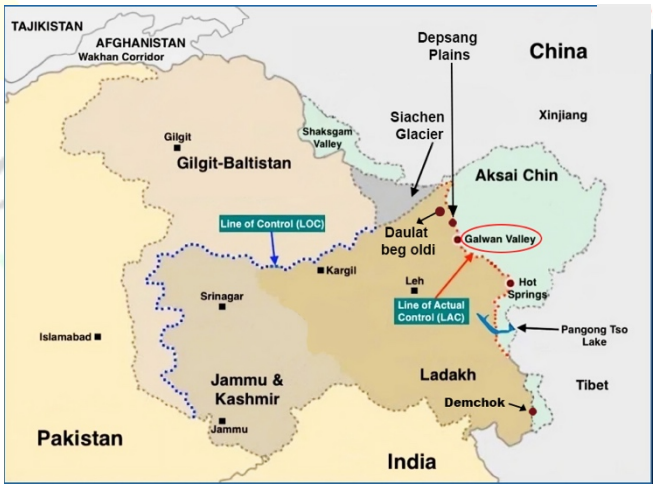
Galwan Clash:

- In May 2020, Indian and Chinese troops clashed at various points along the LAC, including Pangong Tso, Galwan Nalah, and Demchok in Ladakh, and at Naku La in Sikkim.
- A violent clash occurred on June 15, 2020, in Galwan Valley, resulting in significant troop deployments and heavy weaponry from both sides.

Corps Commander Level Talks: Multiple rounds of talks at the Corps Commander level have taken place to resolve the standoff since the Galwan incident.

Friction Points:

- There are seven key friction points in eastern Ladakh where confrontations have occurred since May 2020:
  - PP 14 (Galwan)
  - PP 15 (Hot Springs)
  - PP 17A (Gogra)
  - North and south banks of Pangong Tso
  - Depsang Plains
  - Charding Nullah



Key Highlights of the Recent Patrolling Agreement

1. **Restoration of Patrolling Rights in Depsang Plains and Demchok**
   - Both countries have agreed to restore patrolling rights in these regions, addressing long-standing issues that predate the 2020 incursions.
   - Indian troops can now patrol up to Patrolling Points (PP) 10 to 13 in Depsang and Charding Nullah in Demchok.
2. **Agreement on Patrolling Protocols**
   - Both sides will conduct patrols up to the old points along the LAC, with Indian patrols occurring twice a month.
   - Each patrol will consist of 14-15 troops to minimize the risk of clashes.
   - Coordination of patrol programs will be emphasized to avoid misunderstandings on clashing dates.

3. **Eastern Theatre and Other Friction Points**
    - While agreements have been made for Depsang and Demchok, issues in areas like Galwan Valley and Pangong Tso remain unchanged.
    - Discussions regarding sensitive areas in Arunachal Pradesh are still ongoing.
4. **Confidence-Building Measures**
    - The agreement includes plans for monthly commander-level meetings and case-specific discussions.
    - A mutual aim is to reduce troop deployments along the LAC, with preparations for winter already in motion.

Significance of This Agreement

1. **Rekindling Hope:** The pact has renewed hopes for restoring diplomatic and bilateral political ties, especially as China had been reluctant to discuss such matters previously.
2. **Significance of Depsang Plains**
    - The Depsang Plains are strategically important, located 30 km southeast of the Daulat Beg Oldie post near the Karakoram Pass.
    - The terrain offers a flat surface conducive for military operations, making it a focal point for both countries.

Bottleneck Area: A key area in the Depsang Plains, known as Bottleneck, connects crucial locations and is strategically significant for military logistics.

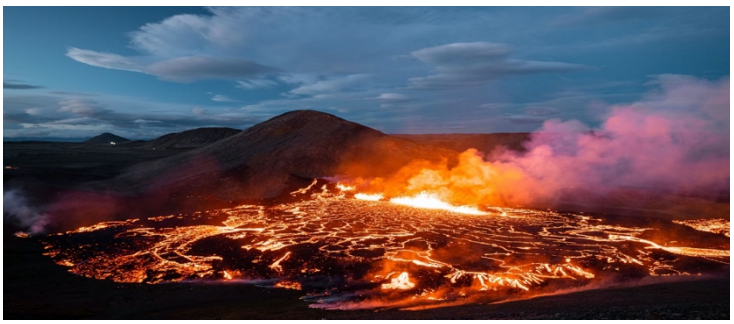
Border Dispute Settlement Mechanism:

India and China have signed five agreements to manage disputes along the Line of Actual Control (LAC):

Agreements	Focus
1993 Agreement	Focused on maintaining peace and tranquility along the LAC
1996 Agreement	Established confidence-building measures in military operations
2005 Protocol	Detailed implementation of military confidence-building measures
2012 Agreement	Created a Working Mechanism for Consultation & Coordination on India-China Border Affairs (WMCC)
2013 Agreement	Enhanced border defence cooperation

GS Paper 1 – Geography

2 Connection Between Volcanic Eruption & Ionospheric Disturbances



Context: A recent study conducted by the **Indian Institute of Geomagnetism (IIG)** has highlighted the significant role volcanic eruptions play in influencing **space weather** and its impact on satellite communication and navigation systems.

Key Findings:

1. **Ionospheric Disturbances**:
    - **Volcanic eruptions** produce **strong atmospheric gravity waves** that trigger the formation of **Equatorial Plasma Bubbles (EPBs)** in the ionosphere.
    - EPBs are typically observed near the Earth's equator and are characterized by **plasma density depletions** in the ionosphere, primarily occurring after sunset.
2. **Impact on Satellite Communication and Navigation Systems**:
    - The formation of EPBs can cause **disruptions** in satellite signals, affecting **satellite-based communication systems** and **GPS** technologies, which are vital for various sectors like aviation, defence, and disaster management.

Volcanism and Its Impacts:

A **volcano** is an opening in Earth's crust that releases **lava, ash, gases, and steam** during an eruption. Recent examples of volcanic activity include **Mount Ruang (Indonesia, 2024)** and **Whakaari/White Island (New Zealand, 2024)**.

Positive Impacts of Volcanic Activities:

- **Cooling Earth's Atmosphere**: Volcanic particles can block incoming solar radiation, causing a short-term cooling effect on Earth's climate.
- **Geothermal Energy**: Volcanic regions are rich sources of **geothermal energy**, providing sustainable electricity to local populations.
- **Soil Fertility**: **Volcanic ash** is rich in minerals that enhance soil fertility, benefiting agriculture.
- **Mining Opportunities**: Volcanic eruptions bring valuable minerals such as **gold, silver, and copper** to the surface, supporting mining activities.
- **Tourism Potential**: Volcanic landscapes often attract tourists, boosting local economies.

Negative Consequences of Volcanic Activity:

- **Impact on Climate**: The release of dust, ash, and gases like sulphur dioxide into the atmosphere can affect global climate patterns and lead to **acid rain**.
- **Disasters**: Volcanic eruptions can trigger secondary disasters like **tsunamis**, as witnessed during the **Tonga eruptions in 2022**.

- **Damage to Life and Property**: Volcanic eruptions can lead to the **destruction of homes**, infrastructure, and entire landscapes, posing significant threats to human life and ecosystems.

What is a Volcano?

A **volcano** is an opening in the Earth's crust through which **gases, molten rock (lava), ash, and steam** are expelled during an eruption. These vents typically form in areas of the Earth's crust where the rock layers are weak, allowing magma from the mantle to reach the surface.

About Volcanoes:

- **Volcanic activity** is part of the Earth's **endogenic processes**, which are processes driven by internal heat.
- Depending on the **explosiveness** of a volcano, different **landforms** are created:
    - **Non-explosive eruptions** can create flat **plateaus** as lava spreads out over large areas.
    - **Explosive eruptions** can form **mountains** or cones due to the forceful ejection of materials.
    - **Intrusive landforms**, such as **batholiths** and **laccoliths**, are formed when magma cools and solidifies before reaching the surface.

Magma vs Lava:

- **Magma** refers to the **molten rock** material found **beneath** the Earth's surface, typically originating from a weak layer in the mantle called the **asthenosphere**.
- **Lava** is what magma is called **once it reaches the Earth's surface** through a volcanic vent.

Tools and Methods to Predict Volcanic Eruptions:

1. **Seismic Data**: Monitoring **earthquakes** and **tremors** can help identify early warning signs of volcanic activity, as magma movement causes seismic disturbances.
2. **Ground Deformation**: Tracking changes in the Earth's surface using instruments like **GPS** or **InSAR** (Interferometric Synthetic Aperture Radar) can indicate magma buildup beneath a volcano.
3. **Gas Emissions and Gravity Changes**:
    - **Volcanic gas emissions**, including sulfur dioxide (SO_2), carbon dioxide (CO_2), and water vapor, can signal rising magma.
- Changes in **gravity** and **magnetic fields** can also suggest magma movement or accumulation.

Conclusion: This study underscores the importance of understanding the broader impact of volcanic activity, not just on Earth's surface but also on **space weather**, especially in relation to the increasing reliance on satellite technologies.

GS Paper 3– Economic Development

3 India's Solar imports could reach $30 billion annually by 2030

Context: The **Global Trade Research Initiative (GTRI) Report** highlights significant concerns for India's solar industry, emphasizing the growing dominance of China and the challenges faced by domestic solar manufacturing. According to the report, India's **solar imports** could reach **$30 billion annually by 2030**, underscoring the need to strengthen local production.

Key Findings of the GTRI Report:

1. **China's Dominance**: China currently controls **over 80%** of global solar production and exports, which has a direct impact on other countries' solar industries, including India.
2. **Challenges in India's Solar Manufacturing**:
    - **High Dependency on Imports**: India heavily relies on imports, especially from China, for critical components like solar modules and cells, limiting domestic capacity.
    - **Limited Raw Material Supply**: India lacks the capacity to produce **high-purity polysilicon** and **wafers**, which are essential for solar cell manufacturing.
    - **R&D and Technology Gaps**: India is behind in adopting advanced solar cell technologies like **PERC**, **bifacial**, and **thin-film**.
    - **High Capital Costs**: Setting up solar manufacturing facilities requires significant investment, making it financially challenging.

Recommendations from the Report:

1. **Expansion of the Production Linked Incentive (PLI) Scheme**:
    - The PLI scheme should be expanded to cover early-stage solar manufacturing, focusing on **upstream production** to build local capacity for materials like polysilicon and wafers.
2. **Investment in R&D**:
    - Increase investment in **research and development** and advanced manufacturing technologies to create a fully integrated domestic supply chain.
3. **Reassessment of Import Duties**:
    - Current import duties on solar modules and cells should be reassessed to promote local manufacturing and reduce reliance on imports.
4. **International Collaborations**:
    - India should collaborate with other countries, such as the **US**, **EU**, and **Japan**, to reduce global dependence on China and boost local production.

India's Initiatives to Boost Solar Manufacturing:

1. **Approved List of Models and Manufacturers (ALMM)**: Ensures that government-backed solar projects use **BIS-certified** modules to maintain quality standards and promote domestic manufacturing.
2. **Production Linked Incentive (PLI) Scheme**: Targets **fully integrated solar PV manufacturing** units by providing financial incentives for companies to establish local production facilities.
3. **PM-KUSUM Scheme**: Promotes the use of domestically sourced solar cells and modules, particularly for agricultural and rural electrification projects.

These steps aim to reduce India's dependence on imports, foster a robust solar manufacturing ecosystem, and strengthen India's position in the global solar market.

Current Status of India's Solar Sector

- India is the **3rd largest energy-consuming country** in the world.
- It ranks **5th in solar power capacity** according to the **REN21 Renewables 2024 Global Status Report**.

Commitments:

- At **COP26**, India pledged to achieve **500 GW of non-fossil fuel-based energy by 2030** as part of the **Panchamrit initiative**, which is recognized as the **world's largest renewable energy expansion plan**.

Solar Energy Growth:

- Installed solar energy capacity has seen a **30-fold increase in the last 9 years**, reaching **89.4 GW** by August 2024.
- India's solar potential is estimated at **748 GWp**, as reported by the **National Institute of Solar Energy (NISE)**.

Investment and Foreign Direct Investment (FDI):

- The sector allows for **100% Foreign Direct Investment (FDI)** under the automatic route for renewable energy generation and distribution projects, as per **The Electricity Act 2003**.

GS Paper 3 – Economic Development

4 GUESS India 2023 survey report of IIT Mandi

Context: The GUESS India 2023 survey report from IIT Mandi emphasizes the vibrant entrepreneurial spirit among Indian students, reflecting significant trends and insights into the current landscape of entrepreneurship in the country.

Major Trends Highlighted by the Report:

- **Nascent Entrepreneurship**: Approximately 33% of college students in India identify as nascent entrepreneurs, surpassing the global average of 26%.
- **Entrepreneurship as an Emerging Career Choice**: About 14% of students express intentions to pursue entrepreneurship after graduation.
- **High Entrepreneurship Intent**: Indian students demonstrate the highest entrepreneurial intent globally.

Factors Propelling Entrepreneurship Among Students

- **Favourable Macroeconomic Environment**: India ranks 39th out of 133 in the Global Innovation Index, indicating a supportive environment for innovation.
- **Thriving Startup Ecosystem**: With over 110 unicorns (startups valued at over $1 billion), India has the third-largest startup ecosystem, following the USA and China.
- **Educational Ecosystem**: Diverse and specialized courses cater to entrepreneurial skills.
- **Supportive Government Initiatives**: Various programs and policies are in place to foster entrepreneurship.

Existing Challenges:

- **Low Active Entrepreneurs**: There is a significant gap in transitioning nascent ventures into active businesses.
- **Limited Reach and Accessibility**: Entrepreneurship education and incubation programs are not widely accessible.
- **Mismatch in Support Programs**: There's a disconnect between available support programs and the actual needs of student ventures.

Way Forward:

- **Encouraging Entrepreneurship Education**: Implementing compulsory entrepreneurship courses in universities to better prepare students.
- **Expanding the Incubation Network**: Providing more mentorship, funding, and resources to budding entrepreneurs.

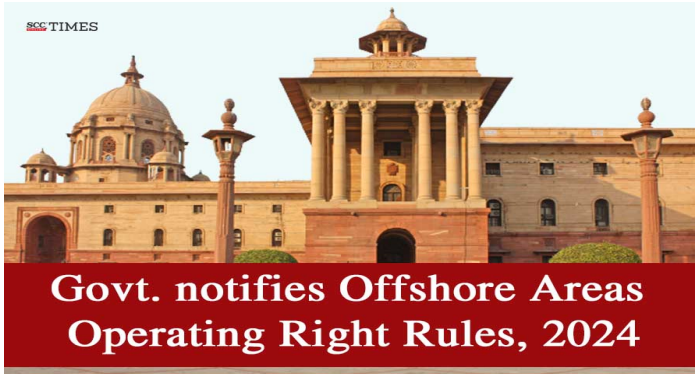
Supportive Government Initiatives:

- **NIDHI Umbrella Programs (2016)**: Established by the Department of Science and Technology to create a robust network of incubation centers and support for startups.
- **Atal Innovation Mission (2016)**: Aims to promote innovation at the school level through Atal Tinkering Labs.
- **National Innovation and Startup Policy (2019)**: Focuses on strengthening the innovation and entrepreneurial ecosystem within campuses.

This report showcases a promising landscape for entrepreneurship in India, driven by a strong intent among students and an evolving ecosystem, despite existing challenges.

GS Paper 2 – Governance

5 Offshore Areas Operating Right Rules, 2024



Context: The Government of India has notified the **Offshore Areas Operating Right Rules, 2024** under the **Offshore Areas Mineral (Development and Regulation) Act, 2002**. These rules are designed to regulate the exploration and production of minerals in specified offshore regions, marking a significant step towards managing offshore mineral resources effectively.

Key Highlights of the Rules

- **Applicability**: The rules cover all minerals in offshore areas, excluding mineral oils, hydrocarbons, and specified atomic minerals.
- **Lease Surrender**: The rules stipulate that a lease may be surrendered after 10 years if the production operations are deemed uneconomic.
- **Priority Access**: Government and government-owned companies are given priority access for operating rights in reserved offshore zones.

Significance of Offshore Mining

- **Definition**: Also known as deep sea mining, offshore mining involves retrieving mineral deposits from the ocean's deep seabed, specifically below 200 meters.
- **Meeting Demand**: Offshore mining aims to meet the growing demand for metals, especially in light of depleting terrestrial mineral deposits, and to reduce dependence on mineral imports.

Challenges in Offshore Mining:

- **Environmental Concerns**: Offshore mining poses potential environmental risks, including habitat destruction, underwater noise pollution, and threats to biodiversity.
- **Impact on Fishing Communities**: The mining operations may adversely affect fish populations, jeopardizing the livelihoods of fishing communities.
- **Technological Gaps**: There is a lack of adequate research and technological development for efficient and safe deep-sea mining practices.

Initiatives for Offshore Mining:

- **Offshore Areas Mineral (Development and Regulation) Act, 2002**: This act provides the framework for the development and regulation of mineral resources in offshore areas.
- **Deep Ocean Mission**: Initiated by the Ministry of Earth Sciences, this mission focuses on deep-sea mineral exploration, including initiatives like the Samudrayaan Mission and MATSYA 6000.
- **International Seabed Authority (ISA)**: In 2016, the ISA allocated an area of 10,000 square kilometres to India for the exclusive exploration of polymetallic nodules in the Indian Ocean.

Conclusion: The Offshore Areas Operating Right Rules, 2024, are a crucial step in regulating offshore mineral resources, addressing both the increasing demand for metals and the associated environmental and social challenges. The government's initiatives reflect a balanced approach to harnessing resources while considering ecological sustainability and the well-being of local communities.

GS Paper 3 – Environment and Ecology

6 Role of Wetlands in National Biodiversity Strategies and Action Plans (NBSAP)

Context: A new assessment commissioned by **Wetlands International** and conducted by **35 per cent Ltd** underscores the critical role of wetlands in the **National Biodiversity Strategies and Action Plans (NBSAP)** submitted post-COP15 to the UN Convention on Biological Diversity. This assessment aligns with the **Kunming-Montreal Global Biodiversity Framework (KMGBF)**, which aims to halt and reverse biodiversity loss by 2030.

Key Highlights of the Assessment

- **Inclusion of Wetlands**:
  - **83%** of NBSAPs mention wetlands, inland waters, or freshwater in their targets.
  - **71%** of NBSAPs in Asia explicitly refer to these ecosystems.
  - The assessment notes an increasing acknowledgment of various types of wetlands—such as mangroves, rivers, lakes, and peatlands—in national strategies, reflecting their growing significance in environmental objectives.
- **Underrepresentation of Significant Areas**:
  - Certain crucial wetland regions, like the **Amazon River Basin** and **Hudson Bay Lowland**, are rarely included in national biodiversity targets, indicating a gap in comprehensive biodiversity strategies.

Role of Wetlands in Biodiversity Conservation

- **Biodiversity Hotspots**: Wetlands, which cover only **6%** of the Earth's surface, are home to approximately **40%** of global biodiversity, highlighting their importance as habitats for diverse species.
- **Nutrient Cycling**: Wetland plant diversity plays a crucial role in nutrient cycling and water purification, enhancing overall water quality and supporting various forms of life.
- **Carbon Sequestration**: Wetlands act as significant carbon sinks by storing carbon in plant biomass and sediments. This function aids in climate change mitigation and provides additional benefits such as flood control.

Recommendations from the Assessment:

- **Establishing Clear Goals**: Setting measurable goals for wetland restoration and protection to support both regional and global ecological health.
- **Enhanced Focus**: Greater emphasis on integrating wetlands into biodiversity conservation strategies, ensuring that significant wetland areas are recognized and protected.

What are Wetlands?

Wetlands are areas where water is the primary factor controlling the environment and the associated plant and animal life. They occur where the water table is at or near the surface of the land, or where the land is covered by water. Wetlands are defined as "lands transitional between terrestrial and aquatic ecosystems where the water table is usually at or near the surface or the land is covered by shallow water."

Wetlands in India:

In India, wetlands cover approximately **1,52,600 square kilometres (sq km)**, which is about **4.63%** of the total geographical area of the country. Of this area:

- **Inland-natural wetlands** account for **43.4%**
- **Coastal-natural wetlands** account for **24.3%**

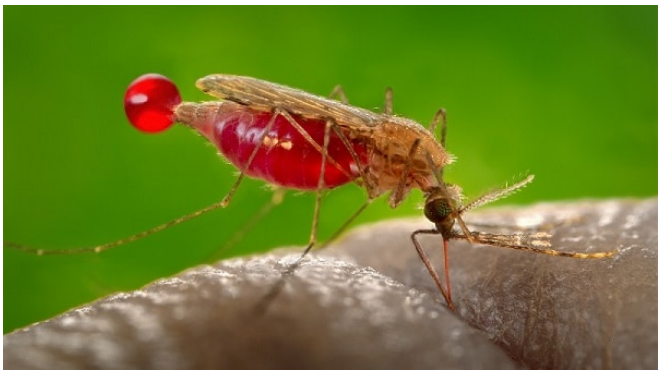
India has **19 types of wetlands**. The state-wise distribution shows:

- **Gujarat** is the leader with **34,700 sq km** (17.56% of the total geographical area of the state), which constitutes **22.7%** of the total wetland areas in the country.
- Followed by **Andhra Pradesh** with **14,500 sq km**,
- **Uttar Pradesh** with **12,400 sq km**, and
- **West Bengal** with **11,100 sq km**.
- Wetlands play a crucial role in biodiversity conservation, water purification, carbon sequestration, and more, underscoring their significance in environmental strategies and policies.

Conclusion: The assessment highlights the integral role wetlands play in biodiversity conservation and underscores the need for their inclusion in national biodiversity strategies. As nations revise their NBSAPs, a stronger focus on wetlands is essential to achieving the goals set out in the KMGBF and ensuring the health of our planet's ecosystems.

GS Paper 3– Science and Technology & Healthcare

7 Malaria



Context: Recently, **Egypt** was officially declared **'malaria-free'** by the **World Health Organization (WHO)**, marking a significant achievement in global health.

About Malaria:

- **Cause**: Malaria is an **acute febrile illness** caused by **Plasmodium parasites**, transmitted to humans through the bites of infected female **Anopheles mosquitoes**.
- **Location**: It is primarily a **life-threatening disease** found in tropical and subtropical regions.

Transmission:

- Malaria is **not contagious** and cannot spread from one person to another.
- The disease is transmitted exclusively through the bites of infected female Anopheles mosquitoes.
- **Parasite Species**: Five species of Plasmodium can cause malaria in humans; of these, **Plasmodium falciparum** and **Plasmodium vivax** pose the greatest threat.

Symptoms:

- Symptoms usually appear **10–15 days** after the bite from an infected mosquito.
- Common symptoms include:
  - **Fever**
  - **Headache**
  - **Chills**
- Symptoms may be mild and difficult to recognize as malaria, especially in endemic areas where individuals may develop partial immunity and experience no symptoms despite being infected.

Prevention:

- **Vector Control Interventions**: The primary method to prevent malaria is through vector control, which includes strategies like insecticide-treated bed nets, indoor spraying, and environmental management to reduce mosquito populations.

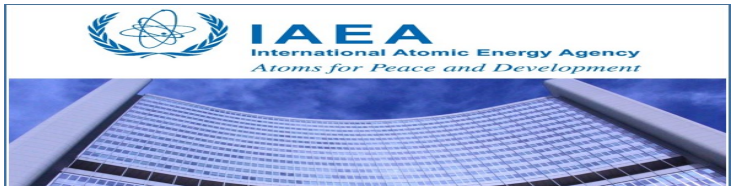
Treatment:

- Malaria is both **preventable and curable**.
- **Early Diagnosis and Treatment**: Timely diagnosis and treatment reduce the severity of the disease, prevent deaths, and contribute to lowering transmission rates.

Conclusion: Malaria remains a critical public health challenge in many parts of the world, but with effective prevention and treatment strategies, significant progress can be made toward reducing its incidence and impact.

GS Paper 2 – International Relations

8 International Atomic Energy Agency (IAEA)



Context: The **2024 edition** of the IAEA's **Climate Change and Nuclear Power** report has been released, emphasizing the urgent need for a significant increase in investment to achieve goals for expanding nuclear power.

About the IAEA

- The IAEA is the world's foremost **intergovernmental forum** for scientific and technical cooperation in the nuclear field.
- It is recognized as the **"Atoms for Peace and Development"** organization within the **United Nations** family.
- The agency focuses on the **safe, secure, and peaceful** uses of nuclear science and technology.

History

- Although established as an autonomous organization through its own international treaty, the **IAEA Statute**, it reports to both the **United Nations General Assembly** and the **Security Council**.

Headquarters

- The IAEA is headquartered in **Vienna, Austria**, and currently has **178 member states**.

Structure

- **General Conference**: Comprising all members, this conference meets annually to approve budgets and programs and to discuss general policies.
- **Board of Governors**: This board consists of **35 members** who meet approximately five times a year to perform statutory functions, approve safeguards agreements, and appoint the director general.
- **Secretariat**: Responsible for day-to-day operations, the Secretariat is led by the director general.

Functions of the IAEA

- The agency collaborates with member states and global partners to promote the **safe, secure, and peaceful use** of nuclear technologies.
- It applies **nuclear safeguards**, including monitoring, inspection, and information analysis, to ensure that nuclear activities remain peaceful and to detect and deter diversion for weapons purposes.
- The IAEA implements **comprehensive safeguards agreements** mandated by the **Nuclear Non-Proliferation Treaty (NPT)**, serving as a primary defence against the proliferation of nuclear weapons.
- It assists member states and promotes the exchange of scientific and technical information.
- The agency enhances capacities to respond to **nuclear and radiological incidents**, which is crucial for minimizing their impact.

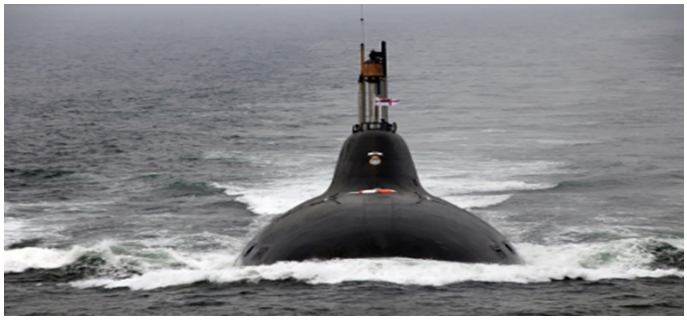
What is the Nuclear Non-Proliferation Treaty (NPT)?

- The **NPT** is an international treaty aimed at preventing the spread of nuclear weapons and technology, fostering the peaceful use of nuclear energy, and promoting disarmament.
- It is the only binding multilateral treaty commitment towards nuclear disarmament by nuclear-armed states.
- A total of **191 states** have joined the NPT, including the five recognized nuclear-weapon states. However, **South Sudan, India, Pakistan,** and **Israel** have never joined the treaty, while **North Korea** withdrew in **2003** after joining in **1985**.

Conclusion: The IAEA plays a vital role in promoting safe nuclear practices and preventing nuclear proliferation worldwide. Its efforts are crucial in addressing climate change and fostering international cooperation in nuclear technology for peaceful purposes.

GS Paper 3 – Internal Security and Defence

9 India's fourth nuclear-powered ballistic missile submarine (SSBN)



Context: India has quietly launched its **fourth nuclear-powered ballistic missile submarine (SSBN)** at the **Ship Building Center (SBC)** in **Visakhapatnam**, significantly enhancing its nuclear deterrence capabilities.

About the Fourth SSBN

- **Codename**: The fourth SSBN is codenamed **S4***.
- **Indigenous Content**: It boasts nearly **75% indigenous content**, reflecting India's efforts to enhance self-reliance in defence production.
- **Armament**: The submarine is equipped with **K-4 ballistic missiles**, which have a range of **3,500 km** and are launched through **vertical launching systems**.
- **Successor Development**:
  - The first of its class, **INS Arihant**, carries **K-15 nuclear missiles** with a range of **750 km**.
  - Its successors, **INS Arighaat** and **INS Aridhaman**, are upgrades that carry only **K-4 ballistic missiles**.

Recent Developments

- The launch of **S4*** follows the commissioning of **INS Arighaat** in **August 2024**.
- **INS Aridhaman** is set for commissioning next year.
- Both **INS Arihant** and **INS Arighaat** are currently conducting deep sea patrols.

Naming Convention

- India's first leased nuclear attack submarine, **INS Chakra**, was designated as **S1**.
- Subsequent submarines were named: **INS Arihant (S2)**, **INS Arighaat (S3)**, and **INS Aridhaman (S4)**.
- The newly launched submarine is the last of its class, **S4***, with its formal name yet to be announced.

Significance of SSBNs

- **SSBNs** (Submarine-Launched Ballistic Missile Submarines) are potent and highly specialized military assets.
- Operated only by a few countries—including the **United States, Russia, China, the United Kingdom, France,** and **India**—these submarines are armed with submarine-launched nuclear ballistic missiles.
- They provide a reliable **second-strike capability** and underpin strategic nuclear deterrence based on the principle of **mutual assured destruction**.
- With **unlimited range** and **endurance**, SSBNs are primarily limited by food supplies, crew fatigue, and maintenance requirements.

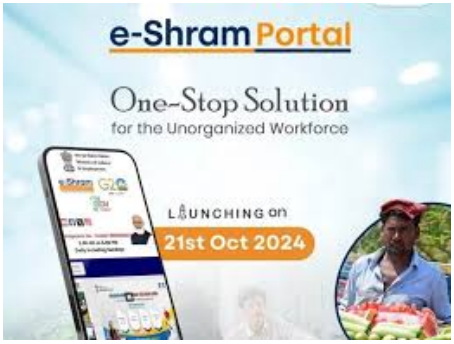
What is the K-4 Ballistic Missile?

- The **K-4 ballistic missile** is a solid-fuel missile developed by **DRDO (Defence Research and Development Organisation)** to arm India's nuclear-powered submarines, such as **INS Arihant** and its under-development sister vessels.
- It has a range of **3,500 km**, enabling it to target almost all areas of **Pakistan** and several regions in **China**.

Conclusion: The addition of the S4* submarine to India's fleet enhances its strategic deterrence posture and reflects the country's commitment to advancing its indigenous defence capabilities in the face of evolving regional security challenges.

GS Paper 2 – Governance and Welfare

10 eShram Portal



Context: Recently, the **Union Minister of Labour & Employment and Youth Affairs & Sports** launched the **eShram One Stop Solution** in **New Delhi**.

About eShram - One Stop Solution

- **Purpose**: The primary aim of the **eShram One Stop Solution** is to simplify the registration process for unorganised workers and facilitate their access to government welfare schemes.
- **Functionality**: This platform serves as a bridge, connecting workers to the numerous benefits offered by the government, making the registration process easier and more transparent.
- **Data Integration**: It consolidates and integrates data from various Central Ministries/Departments into a single repository, streamlining access to welfare schemes.
- **Integrated Schemes**: Key welfare schemes integrated with eShram include:
  - **One Nation One Ration Card**
  - **Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA)**
  - **National Social Assistance Programme**
  - **National Career Service**
  - **Pradhan Mantri Shram Yogi Maandhan**

What is eShram Portal?

- **Launch**: The eShram Portal was launched by the **Ministry of Labour and Employment** in **2021** to register and create a comprehensive **National Database of Unorganised Workers**.
- **Registration Process**:
  - The registration in the portal is fully **Aadhaar verified** and **Aadhaar seeded**.
  - Unorganised workers can register themselves on the portal based on self-declaration.
  - The portal covers **400 occupations** across **30 broad occupation sectors**.

What is Social Security?

- **Definition**: Social security refers to measures established by legislation to maintain individual or family income or to provide income when some or all sources of income are disrupted or terminated. It also covers exceptionally heavy expenditures, such as those incurred in bringing up children or paying for healthcare.

Conclusion: The **eShram Portal** and its **One Stop Solution** aim to enhance the accessibility of social security schemes for unorganised workers, promoting transparency and efficiency in the registration process. By integrating various welfare schemes, it provides a comprehensive platform to support the livelihood and welfare of a significant segment of India's workforce.