



Climate Adaptation of Marine Microalgae

For Prelims: Climate Adaptation of Marine Microalgae, Marine Microalgae, [Global Warming](#), [Climate Change](#), Rhodopsin.

For Mains: Climate Adaptation of Marine Microalgae, Developments and their applications and effects in everyday life, Environmental pollution and degradation.

[Source: DTE](#)

Why in News?

Recently, Scientists from **the University of East Anglia (UEA), England** have found that eukaryotic phytoplankton, also known as **Microalgae**, have adapted to **cope with [Global Warming](#)** and changing ocean conditions.

What is Marine Microalgae?

- Microalgae are **photosynthetic microorganisms** that can be found in diverse natural environments, such as water, rocks, and soil. They present **higher photosynthetic efficiency** than terrestrial plants, and are responsible for a **significant fraction of the world's oxygen production**.
- Marine microalgae play a pivotal role in the **oceanic food chain** and carbon dioxide absorption.
 - However, as climate change continues, **global warming is causing surface ocean waters** to warm, resulting in reduced nutrient availability due to **less mixing between the surface waters and nutrient-rich deeper waters**.
 - So nutrients become scarce at the surface, impacting **the primary producers such as microalgae** that are present in the top layer.
- This scarcity of nutrients, including iron, impacts the **primary producers like microalgae, causing them to produce less food** and capture less carbon dioxide from the atmosphere.
- Examples of Microalgae: **Diatoms, Dinoflagellate, Chlorella, etc.**

Note

Microalgae need sunlight and ample iron to produce food and absorb carbon dioxide, but 35% of the ocean's surface lacks sufficient iron for their growth.

What are the Key Findings of the Study?

- **Activate of a Protein called Rhodopsin:**
 - In response to the changing climatic conditions with the ocean surface, marine microalgae **activate a protein called rhodopsin**, similar to the protein responsible for **low-light vision in the human eye**.

- Rhodopsin allows these microalgae to **thrive by using sunlight as an alternative energy** source to traditional chlorophyll-based photosynthesis.
 - This adaptation is crucial for their survival, especially in regions with nutrient-poor surface waters due to ocean warming.
- **Capturing Light as Photosynthesis:**
 - Rhodopsins are the major light capturers in the ocean and can absorb as much light as **chlorophyll-based photosynthesis**.
 - Rhodopsins capture light to generate energy (in the form of adenosine triphosphate or ATP), helping **microalgae produce food** and capture carbon dioxide.

What are the Implications of this Study?

- **Environmental Adaptation:**
 - Understanding the role of rhodopsin in microalgae's adaptation to changing ocean conditions **can help mitigate the negative effects** of ocean warming on marine ecosystems.
 - This knowledge can be essential for **preserving ecosystems that rely on microalgae** as a food source.
- **Biotechnology Applications:**
 - Similar mechanisms could be employed in biotechnology to enhance the activity of **non-light-dependent microbes**, such as yeast. This could be valuable in the production of **various biotechnological products**, including insulin, antibiotics, enzymes, antivirals, and biofuels.
- **Global Agriculture:**
 - These findings also draw a parallel with land-based agriculture, where reduced nutrient availability can lead to reduced crop yields.
 - Just as microalgae rely on rhodopsin to adapt to changing conditions, there is potential to explore **strategies for enhancing crop resilience** in the face of [Climate Change](#).

UPSC Civil Services Examination, Previous Year Questions (PYQs)

Q. Which one of the following is the correct sequence of a food chain? (2014)

- (a) Diatoms-Crustaceans-Herrings
- (b) Crustaceans-Diatoms-Herrings
- (c) Diatoms-Herrings-Crustaceans
- (d) Crustaceans-Herrings-Diatoms

Ans: (a)

Exp:

- The food chain is defined as the relation between organisms of different trophic levels which are connected to each other for food or energy. In a food chain the flow of energy or food is unidirectional and in a linear sequence. First, plants capture solar energy and then, food is transferred from the producers to decomposers.
- Diatoms are single celled photosynthesising algae found in seas and oceans.
- Animals like crab, shrimps, lobsters, etc., are crustaceans and they eat diatoms.
- Herrings are fish and they eat crustaceans.
- Thus, **Diatoms → Crustaceans → Herrings forms the correct food chain**. Therefore, option (a) is the correct answer.

Cancer Cases and Cure in India

For Prelims: [Cervical Cancer](#), Population Based Cancer Registries (PBCRs), The Lancet, National Centre for Disease Informatics and Research, [Indian Council of Medical Research \(ICMR\)](#)

For Mains: Rising Cases of Different forms of Cancer in India and its impact on Health Sector

Source: TH

Why in News?

A recent study published in **The Lancet Regional Health Southeast Asia** has revealed that there is a significant regional disparity in the survival rates of [cervical cancer](#) patients across India.

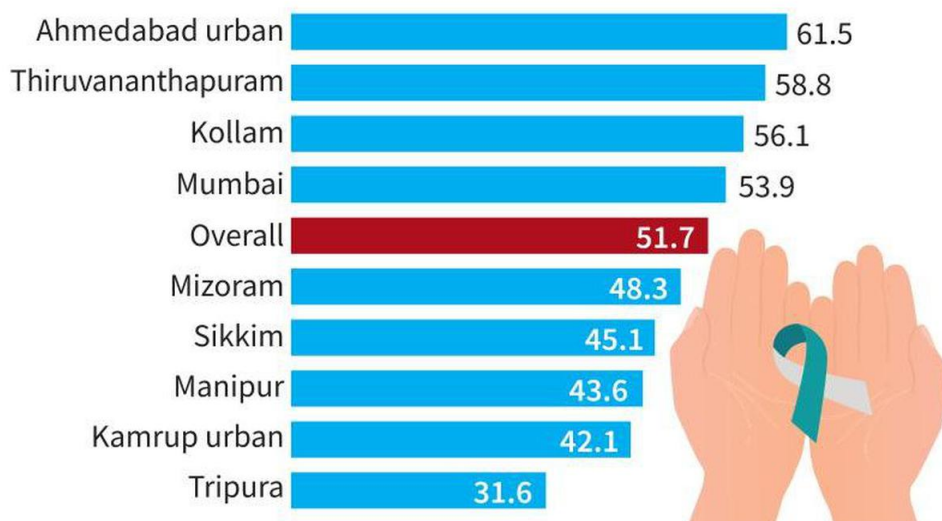
What Were the Key Findings Of the Study?

- **Survival rate:**
 - About 52% of cervical cancer cases diagnosed between 2012 and 2015 survived.
- **Variations Across Regions:**
 - Among those that participated in the study, the **Ahmedabad urban registry demonstrated the highest survival rate at 61.5%**, followed by Thiruvananthapuram with 58.8% and Kollam at 56.1%. In contrast, **Tripura reported a survival rate of 31.6%**.
- **Factors Contributing to Regional Disparities:**
 - The study noted that factors such as **access to diagnostic services, effective treatment, distance from clinical care facilities, travel costs, co-morbidities, and poverty** contributed to survival rates.

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Survival rates

The chart shows the survival rate (%) for cervical cancer across the 11 Population Based Cancer Registries (PBCRs)



Cervical Cancer

- Cervical cancer **develops in a woman's cervix** (the entrance to the uterus from the vagina).

- Almost all cervical cancer cases (**99%**) are linked to infection with high-risk [human papillomaviruses \(HPV\)](#), an extremely common virus transmitted through sexual contact.
- Two **HPV types (16 and 18)** are responsible for nearly 50% of high grade cervical pre-cancers.
- Cervical cancer is the **fourth most common cancer among women globally**. About 90% of the new cases and deaths worldwide in 2020 occurred in **low- and middle-income countries**.
- Comprehensive cervical cancer control includes **primary prevention** ([vaccination against HPV](#)), **secondary prevention** (screening and treatment of pre-cancerous lesions), **tertiary prevention** (diagnosis and treatment of invasive cervical cancer) and palliative care.

What are Some of the Challenges Faced by Healthcare Providers in Curing Cancer?

- **Heterogeneity of Cancer:** [Cancer](#) is not a single disease **but a group of diseases characterized by the uncontrolled division and growth of abnormal cells**. The heterogeneity of cancer makes it challenging to find a universal cure, as each type may require a different approach.
- **Late Diagnosis:** Many cancer cases are **diagnosed at an advanced stage, reducing the chances of a complete cure**. Early detection methods and public awareness are crucial but often lacking in many regions.
- **Treatment Toxicity:** Traditional cancer treatments, **such as chemotherapy and radiation therapy, can have severe side effects**, affecting a patient's quality of life. Developing targeted therapies with fewer side effects is a challenge.
- **Resistance to Treatment:** **Some cancers develop resistance to treatment over time, making it harder to cure**. Developing strategies to overcome resistance is a key challenge.
- **Cost of Treatment:** Cancer treatment **can be prohibitively expensive**, and not all patients can afford it. The high cost of cancer drugs and therapies is a significant barrier to curing cancer.
- **Lack of Access to Care:** In many regions, especially in low-income countries, there is a lack of access to cancer care facilities and specialists. This contributes to regional disparities in cancer outcomes.
 - Apart from this, **lack of awareness among patients about their rights and obligations under the law and schemes and inadequate training and capacity building** for healthcare providers aggravate the issue.
- **Limited Availability of Specialized Care:** Specialized cancer care centers, equipped with the latest technology and skilled healthcare professionals, **are concentrated in urban areas**, leaving rural and remote areas underserved.
- **Stigmatization and Fear:** **Cultural and social stigmatization can lead to delayed diagnosis and treatment**, as patients may avoid seeking help due to fear, shame, or misinformation.

What are the Different Ways to Reduce Regional Disparities in Cancer Care in India?

- **Awareness and Education:** Launch public **awareness campaigns about cancer prevention, early detection, and available treatments**. These campaigns should be tailored to different regions and languages.
- **Preventive Measures:** Promote healthy lifestyles, discourage tobacco use, and emphasize the importance of regular screenings and vaccinations (**e.g., HPV vaccine for cervical cancer prevention**).
- **Primary Healthcare Strengthening:** Improve the quality and accessibility of primary healthcare in underserved regions. Develop a **network of primary healthcare centers** that can identify and refer to potential cancer cases.
- **Telemedicine:** Use **telemedicine and mobile health units** to provide cancer consultations and education to remote areas. This can help patients access expert opinions and guidance.
- **Government Initiatives:** Implement and fund government-sponsored cancer care initiatives, such as the **National Cancer Control Program**. Allocate resources to build and upgrade cancer

treatment centers in underserved regions.

- **Subsidized Treatment:** Provide **subsidies for cancer treatment**, especially for economically disadvantaged patients, through government schemes and insurance programs.
- **Research and Development:** Invest in **cancer research and innovation to develop cost-effective treatments** and diagnostics. Encourage partnerships between government, academia, and the private sector.
- **Community Engagement:** Involve **local communities and NGOs in awareness campaigns and support services**. This can help in breaking down cultural stigmas and improving access to care.

What are the Government Initiatives Related to Cancer Treatment?

- [National Programme for Prevention and Control of Cancer, Diabetes, Cardiovascular Diseases and Stroke](#)
- [National Cancer Grid](#)
- [National Cancer Awareness Day](#)
- [HPV Vaccine](#)

UPSC Civil Services Examination, Previous Year Questions (PYQs)

Q 1. Consider the following statements: (2010)

1. The Taxus tree is naturally found in the Himalayas.
2. The Taxus tree is listed in the Red Data Book.
3. A drug called "taxol" is obtained from Taxus trees and is effective against Parkinson's disease.

Which of the statements given above is/are correct?

- (a) 1 only
- (b) 1 and 2 only
- (c) 2 and 3 only
- (d) 1, 2 and 3

Ans: (b)

SDG Summit 2023

For Prelims: SDG Summit 2023, [Sustainable Development Goals \(SDGs\)](#), [Addis Ababa Action Agenda](#), Debt Swaps, [Sendai Framework for Disaster Risk Reduction](#).

For Mains: SDG Summit 2023, Inclusive growth and issues arising from it.

[Source: TH](#)

Why in News?

Recently, the Global leaders expressed apprehension regarding the **slow progress in achieving Sustainable Development Goals (SDGs)** during the SDG Summit in New York, the US.



What are the Key Highlights of the SDG Summit 2023?

- **Acknowledging Funding Gap:**
 - The annual SDG funding gap, which was USD 2.5 trillion before the pandemic, has now increased to an **estimated USD 4.2 trillion**, emphasizing the **urgent need for substantial investment in achieving the SDGs**.
- **Addressing the Finance Challenge:**
 - The leaders stressed the **importance of the [Addis Ababa Action Agenda \(AAAA\)](#)** in achieving the 2030 Agenda, emphasizing efficient use of all **financial flows, public and private**, for sustainable development.
 - They called for swift implementation of the **UN Secretary-General's proposal for an SDG stimulus**, a significant increase in funding by USD 500 billion annually.
 - The AAAA is a global framework for financing sustainable development. It aims to discuss and agree upon ways to mobilize **resources and provide the necessary financing for the implementation of the 2030 Agenda for Sustainable Development** and its 17 SDGs.
- **Multilateral Actions and Debt Swaps:**
 - To strengthen SDG implementation, the leaders urged multilateral actions and coordination by all creditors, emphasizing scaling up **Debt Swaps for SDGs**, including climate and nature-related debt swaps.
 - Debt swaps provide opportunities for raising capital in low-income countries to address environmental and other policy challenges and support green growth.
- **Impact of Covid-19:**
 - The declaration acknowledged **that the [Covid-19 Pandemic](#) has disproportionately impacted** the SDGs, particularly in the world's poorest and most vulnerable nations. It highlighted the need for an emergency course correction to accelerate progress in achieving the SDGs.
- **Integrating Climate Action and Disaster Risk Reduction:**
 - Leaders recommitted to fully implementing the **[Sendai Framework for Disaster Risk Reduction](#)** and pledged to step up efforts to combat climate change.
 - They also committed to operationalizing new finance arrangements to respond to loss and damage, aligning with climate goals.
- **Commitment to 2030 Agenda:**
 - The leaders expressed **deep concern about the state of SDGs** at the halfway point of

- their implementation, highlighting challenges such as poverty, forced relocations, disparities, and the adverse impacts of climate change.
- Despite these challenges, they recommitted to **fully implementing the 2030 Agenda and 17 SDGs** to protect the rights and well-being of all for a sustainable world.

What are the Concerns Related to Progress in SDG?

- **Lack of Progress and Commitment:**
 - Despite commitments, the progress towards meeting the 169 targets comprising the 17 SDGs is just 15%, with some areas regressing.
 - The concern is that at the halfway point of the commitment period, there is little confidence in significant progress in the second half.
- **Funding Adequacy and Accessibility:**
 - The investment gap in **achieving the SDGs in developing countries is estimated to be over USD 4 trillion**, significantly higher than earlier estimates, especially with a substantial portion required for the energy transition.
 - This immense financial requirement renders the **SDGs seemingly unachievable, raising questions** about funding adequacy and accessibility.
- **Dis-synergies and Barriers:**
 - Five dis-synergies are identified in **SDG interventions, including resource allocation, creation of enabling environments, co-benefits, cost-effectiveness, and saturation limits.**
 - Various barriers hinder synergistic action, such as knowledge gaps, political and institutional barriers, and economic challenges, inhibiting the full realization of synergies in SDG implementation.
- **Challenges in Policy Implementation:**
 - Inconsistencies and misalignment in **policy implementation pose challenges, particularly in achieving renewable energy targets and small-scale applications** due to a lack of integration and clear objectives.
- **Climate Change and Environmental Impact:**
 - Climate change is identified as a significant challenge, threatening the achievement of SDG targets. Emissions of greenhouse gasses continue to rise globally, with concerns over vulnerability to climate change impacts.

Way Forward

- Combating climate change and its **environmental impacts must be a priority**, requiring coordinated global efforts.
- Encouraging multilateral actions and cooperation among nations is essential to drive progress in **achieving the Sustainable Development Goals.**
- The leaders must remain **dedicated to the 2030 Agenda**, focusing on safeguarding the rights and well-being of all for a sustainable world.

UPSC Civil Services Examination, Previous Year Questions (PYQs)

Q. Sustainable development is described as the development that meets the needs of the present without compromising the ability of future generations to meet their own needs. In this perspective, inherently the concept of sustainable development is intertwined with which of the following concepts? (2010)

- (a) Social justice and empowerment
- (b) Inclusive Growth
- (c) Globalization
- (d) Carrying capacity

Ans: (d)

Q. The Partnership for Action on Green Economy (PAGE), a UN mechanism to assist countries

transition towards greener and more inclusive economies, emerged at (2018)

- (a) The Earth Summit on Sustainable Development 2002, Johannesburg.
- (b) The United Nations Conference on Sustainable Development 2012, Rio de Janeiro.
- (c) The United Nations Framework Convention on Climate Change 2015, Paris.
- (d) The World Sustainable Development Summit 2016, New Delhi.

Ans: (b)

Q. Consider the following statements: (2016)

1. The Sustainable Development Goals were first proposed in 1972 by a global think tank called the 'Club of Rome'.
2. The Sustainable Development Goals have to be achieved by 2030.

Which of the statements given above is/are correct?

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2

Ans: (b)

Puri Jagannath Temple's Ratna Bhandar

[Source: IE](#)

Why in News?

Recently, the demand to open the **Ratna Bhandar (treasure room)** of the [Jagannath Temple](#) is growing louder again. The treasure room at the temple has not been unlocked for three decades.

What is Jagannath Temple's Ratna Bhandar?

- **About:**
 - The precious ornaments of sibling deities, **Lord Jagannath, Lord Balabhadra and Goddess Subhadra**, given by devotees and erstwhile kings over centuries, are stored in the Ratna Bhandar of the **12th century shrine**.
 - The Ratna Bhandar consists of two chambers: the **Bhitar Bhandar (inner chamber) and the Bahara Bhandar (outer chamber)**.
 - While the outer chamber is opened regularly to fetch ornaments for the deities during important rituals and festivals, the inner chamber has not been opened in the past **38 years**.
- **Demands for Opening the Ratna Bhandar:**
 - The demand to open the Ratna Bhandar has gained momentum due to concerns over the **chamber's structural integrity**.
 - The [Archaeological Survey of India \(ASI\)](#), the custodian of the temple, requisitioned the chamber for repair and conservation due to apprehensions of

cracks in its walls, which could endanger the priceless ornaments stored within.

Jagannath Temple

- The **Jagannath temple** located in **Puri, Odisha** is a sacred temple devoted to **Lord Jagannath** along with his brother **Lord Balabhadra** and sister **Devi Subhadra**.
 - It was constructed by a famous king of Ganga Dynasty **Ananta Varman Chodaganga Deva** dating back to **12th century**.
 - It is known as the **“White Pagoda”** and one of the **four pilgrimage sites of Char Dham Pilgrimage**.
- It is an outstanding example of **Kalinga architecture**, featuring distinctive curvilinear towers, intricate carvings, and ornate sculptures.
 - It is enclosed by a **high wall with four gates**, each facing a cardinal direction.
- It is also called as **‘Yamanika Tirtha’** where, according to the Hindu beliefs, the **power of ‘Yama’, the god of death**, has been nullified in Puri due to the presence of Lord Jagannath.
- **Associated Major Festivals:** Snana Yatra, Netrotsava, **Rath Yatra**, Sayan Ekadasi.



Proposed Reforms For Multilateral Development Banks

For Prelims: [MDB](#), [G20](#), [World Bank Group](#), [Asian Development Bank](#), African Development Bank, Inter-American Development Bank, Emerging markets and developing economies (EMDEs), [Sustainable development goals \(SDGs\)](#), [Asian Development Bank](#), [Asian Infrastructure Investment Bank](#).

For Mains: Multilateral Development Banks, [Reasons for Experts Advocating for Reforms within MDBs](#), Contributions of MDBs to support India, Important International Institutions.

[Source:IE](#)

Why in the News ?

Recently, a [G20](#) expert panel has recommended that Multilateral Development Banks (MDBs), should shift their approach from funding individual projects to focusing on sector-specific programs and long-term transformation plans as outlined by national governments.

What are Multilateral Development Banks?

- **MDBs** are international institutions comprising developed and developing countries.
- They offer financing and technical assistance for various projects in areas like transportation, energy, urban infrastructure, and waste management.
- Developed countries contribute to MDB lending, while developing nations typically borrow from them for development projects.
- MDBs have been instrumental in supporting the development of both low-income and middle-income countries (LICs and MICs) by addressing issues such as poverty reduction, infrastructure development, human capital formation, etc.
- MDBs include the [World Bank Group](#), the [Asian Development Bank](#), the African Development Bank, the Inter-American Development Bank, etc.



- The African Development Bank (AfDB)
- The Asian Development Bank (ADB)
- The European Bank for Reconstruction and Development (EBRD)
- The European Investment Bank (EIB)
- The Inter-American Development Bank (IADB)
- The Islamic Development Bank (IsDB)
- The World Bank Group (WBG)

Why are Experts Advocating for Reforms within MDBs?

- **Climate Crisis:** The G20 expert panel argues that the climate crisis necessitates reforms in MDBs to address global challenges, especially in emerging markets and developing economies (EMDEs)
- **Long Term Transformation :** MDBs should align their operations with the [Sustainable Development Goals \(SDGs\)](#) identified by national governments, focusing on long-term transformation plans.
- **Private Sector Engagement :** Greater private sector engagement should be central to MDB operations, breaking from their historical separation of private and sovereign financing arms.
- **Coordination:** The success of MDBs depends on enhanced coordination among various stakeholders. The reforms should aim to mitigate coordination failures between domestic and international stakeholders, public and private.
- **National Involvement :** National governments should have a more prominent role in shaping a unified vision of goals, policies, investments, and financing.

How have MDBs Traditionally Lent in India?

- **World Bank's Commitment to India:**
 - The **World Bank**, established in 1944, has committed USD 97.6 billion in lending to India,

encompassing both active and closed projects.

- Out of the total commitments, 19% has been dedicated to projects in the public administration sector, 15% to agriculture, fishing, and forestry, and 11% to the transport sector.

▪ **Asian Development Bank's (ADB) Involvement:**

- The **ADB, based in Manila** and established in 1969, has committed USD 59.7 billion in assistance to India, covering both project and technical assistance.
- Of the total assistance, 34% has been allocated to the transport sector, 25% to the energy sector, and 10% to urban infrastructure.

▪ **Asian Infrastructure Investment Bank's (AIIB) Contribution:**

- The **AIIB, headquartered in Beijing** and founded in 2016, has approved USD 9.9 billion in financing for India.
- Of this amount, 42% has been designated for the transport sector, 14% for the energy sector, and 12.6% for economic resilience.

UPSC Civil Services Examination Previous Year's Question (PYQs)

Prelims:

Q. With reference to Asian Infrastructure Investment Bank (AIIB), consider the following statements: (2019)

1. AIIB has more than 80 member nations.
2. India is the largest shareholder in AIIB.
3. AIIB does not have any members from outside Asia.

Which of the statements given above is/are correct?

- (a) 1 only
(b) 2 and 3 only
(c) 1 and 3 only
(d) 1, 2 and 3

Ans: (a)

Mains:

Q. India has recently signed to become a founding member of New Development Bank (NDB) and also the Asian Infrastructure Bank (AIIB). How will the role of the two Banks be different? Discuss the strategic significance of these two Banks for India. (2012)

China To Curb Exports Of Graphite Material

[Source: TH](#)

Why in News?

Recently, China, **the world's top graphite producer (around 65%) and exporter**, has decided to curb exports of key battery material.

- The curbs are similar to those in place since 1st August, 2023 for two chip-making metals, [gallium](#) and [germanium](#) which pushed up prices outside of the country.

What is China's Decision To Curb Exports of Graphite And Its Impacts?

- **Significance:**
 - This move is aimed at **protecting China's national security and controlling supplies of [critical minerals](#)** in response to challenges over its global manufacturing dominance.
 - Graphite, Cobalt, Nickel etc are important critical minerals as reflected in [Mineral Security Partnership](#) which India is not part of.
 - It also becomes important for major [Electric vehicles \(EVs\)](#) manufacturers across the world and also India due to its [National Electric Mobility Mission Plan \(NEMMP\)](#) where Graphite is a key component.
- **Restrictions:**
 - China will require as of December 1st that exporters apply for permits to **ship two types of graphite**, including high-purity, high-hardness and high-intensity synthetic graphite material, and natural flake graphite and its products.
 - Meanwhile, it **dropped temporary controls on five less sensitive graphite** items used in basic industries such as steel, metallurgy, and chemicals.
- **Concern for EV Manufacturers:**
 - South Korean firms which heavily rely on China for graphite imports would need to seek alternatives, **such as mines from the United States or Australia.**
 - With rising sales of EVs, automakers are racing to lock in supplies from outside China, but **shortages are looming, which is all set to push the costs manifold.**

What is Graphite?

- **About:**
 - Graphite is a naturally occurring mineral composed of carbon. It is **one of the three crystalline forms of carbon**, with the other two being diamond and amorphous carbon (such as charcoal or carbon black).
- **Structure:**
 - Graphite has a hexagonal crystal structure in which carbon atoms are arranged in layers or sheets. These layers are weakly bonded together, **allowing them to easily slide past each other, giving graphite its lubricating properties.**
- **Properties:**
 - Graphite is a **good conductor of both electricity and heat.** It is used in the production of electrodes for batteries and in the electronics industry.
- **Applications:**
 - Graphite is commonly known for its use in pencils. **The "lead" in pencils is actually a mixture of graphite and clay.**
 - Other applications include **crucibles, foundry facings, polishes, arc lamps, batteries, brushes for electric motors, and cores of nuclear reactors.**
- **Global Reserves:**
 - China produces two-thirds of the world's graphite, but compared to global reserves, the Asian country is not the only option.
 - According to the United States Geological Survey, **Turkey (27.3%) and Brazil (22.4%) together own half of the world's natural graphite resources. China comes third, sitting on 16%, followed by Madagascar (7.9%)**

Top producers of rare minerals 2020

Metal	Share of key producers	India's production share
Lithium	Australia (49%), Chile (22%), China (17%), Argentina (8%), Brazil (2%)	-
Graphite	China (65%), Brazil (10%), Madagascar (5%), India (3%), Mozambique (2%)	3%
Cobalt	Congo (68%), Australia (4%), Cuba (4%), Canada (3%), Philippines (3%)	-
Manganese	South Africa (32%), Gabon (16%), China (13%), Australia (10%)	5.32%
Nickel	Indonesia (33%), Philippines (13%), Russia (9%), New Caledonia (8%) Australia (7%)	-

Expected mineral demand of the EV sector (in thousand tonnes)

	2020	2030	Growth (%)
Graphite	141.03	2,499.25	1,672
Nickel	80.47	1,566.94	1,847
Copper	110.32	1,632.63	1,380
Lithium	19.83	358.39	1,707
Cobalt	21.12	256.64	1,115
Manganese	25.34	246.28	872

EVs need more minerals than a conventional vehicle

	Conventional vehicle	Electric vehicle
Graphite	-	66.3
Nickel	-	39.9
Copper	22.3	53.2
Lithium	-	8.9
Cobalt	-	13.3
Manganese	11.2	24.5



UPSC Civil Services Examination, Previous Year Questions (PYQs)

Prelims:

Q. Recently, there has been a concern over the short supply of a group of elements called 'rare earth metals'. Why? (2012)

1. China, which is the largest producer of these elements, has imposed some restrictions on their export.
2. Other than China, Australia, Canada and Chile, these elements are not found in any country.
3. Rare earth metals are essential for the manufacture of various kinds of electronic items and there is a growing demand for these elements.

Which of the statements given above is/are correct?

- (a) 1 only
(b) 2 and 3 only
(c) 1 and 3 only
(d) 1, 2 and 3

Ans: (c)

Mains:

Q. Despite India being one of the countries of Gondwanaland, its mining industry contributes much less to its Gross Domestic Product (GDP) in percentage. Discuss. (2021)

India's Balancing Act in Israel-Palestine War

For Prelims: India's Balancing Act in Israel-Palestine War, [Israel-Palestine conflict](#), [Mahatma Gandhi](#), [Cold War](#), West Bank, [India-Middle East-Europe Economic Corridor \(IMEC\)](#).

For Mains: India's Balancing Act in Israel-Palestine War, Bilateral, Regional and global groupings and agreements involving India and/or affecting India's interests.

[Source: TH](#)

Why in News?

India's diplomatic stance on the [Israel-Palestine conflict](#) has evolved over the years, reflecting a delicate balance between its **historical support for Palestine** and its **growing relationship with Israel**.





How has been India's Policy over the Israel-Palestine Conflict?

▪ Background:

- India's **historical stance on the Israel-Palestine conflict** leaned towards Palestine, driven by factors such as [Mahatma Gandhi's opposition to a Jewish state in Palestine](#), India's large Muslim population, and the **need to maintain good relations with Arab countries**.
 - India's position with regard to Palestine was also guided by the general consensus in the Arab world, the Non-Aligned Movement, and the United Nations.
 - When the partition of Palestine plan was put to vote at the UN, **India voted against, along with the Arab countries**. India also opposed Israel's admission to the UN.
- During the [Cold War](#), India aligned **itself with the Soviet Union**, which supported the Arab states, thus **perpetuating its pro-Palestine position**.

▪ Shift in India's Policy:

- **Establishment of Diplomatic Relations:** In 1992, India established full **diplomatic relations with Israel**, marking a significant shift. Despite this, India continued to **voice support for the Palestinian cause**.
 - It was only after the end of the Cold War that Prime Minister Narasimha Rao took the bold step of **establishing diplomatic ties with Israel, irrespective of potential fallout** with the Arab nations.
- **Balance in National Interest:** India's diplomatic decisions are guided by **national interest**, necessitating a balance between maintaining strong relations with Israel, supporting Palestine, and **developing ties with the Arab world**.

What are the Current Policy and Diplomatic Nuances?

▪ Relations with Israel as a National Interest:

- India's relations with Israel have strengthened considerably in recent years, encompassing **various sectors like trade, technology, defense**, and counter-terrorism cooperation.
- India's support for Israel is seen as a response to its **fight against cross-border terrorism**, although the situations in Israel and India differ significantly.

▪ Stands With Palestine's Cause:

- Besides growing relations with Israel, India has reiterated its stand for Palestine's cause.
 - Amid the ongoing tensions, USD 29.53 million has been contributed by India to the **UN Relief and Works Agency (UNRWA)** for Palestinian refugees.
- India also sent nearly 6.5 tonnes of medical aid and 32 tonnes of disaster relief material for the **people of Palestine**.

▪ India Balancing its Stance:

- In 2017, the Indian Prime Minister for the first time visited Israel and in 2018 he made an official visit to Palestine for the first time.
- In 2017, India voted **against the U.S. and Israel for an attempt to declare unilaterally all** of Jerusalem as the Israeli capital.
- India's policy is clear, they condemn **terrorism but do not support indiscriminate reprisal bombings**.

▪ India's Official Stand:

- India's official position on the Israel-Palestine conflict remains unchanged, advocating for a **two-state solution with Israel and Palestine** as good neighbors.
 - It was only after the mediation of the US, in the **1991 Madrid Peace conference** a two-state solution was agreed to **resolve the Israeli-Palestinian conflict**.
- This is evidenced by the Indian Prime Minister's visit to **Ramallah in the West Bank in 2018**.

What will be the Likely Implications of Israel Palestine Conflict on India?

▪ Defense Deals with Israel:

- India has a significant defense relationship with Israel, with defense procurement and technology cooperation. The conflict may **impact this relationship, as Israel may focus more on its security needs** during the conflict.
- Israel supplies the most military equipment to India, with the military business between the two countries worth around USD 2.1 billion.
- **Energy Security:**
 - India is **dependent on oil imports from the Middle East**, and any escalation in the region could affect energy prices and, subsequently, India's economy.
 - Since all the world economies are interconnected therefore, if countries like Saudi Arabia and Iran get involved in ongoing Israel-Palestine conflict then definitely there will be **direct consequences over India's energy supply**, economy and investment.
- **Impact on India-Middle East-Europe Economic Corridor:**
 - The conflict has the potential to affect the stability of the Middle East, a region of strategic importance to India.
 - An escalation of hostilities could have implications for India's interests and engagements in the region.
 - India recently signed the [India-Middle East-Europe Economic Corridor \(IMEC\)](#) as an ambitious infrastructure project aimed at connecting India, the Middle East, and Europe through various transportation modes, including shipping and rail networks.
 - Instability in the region can create security challenges, and affect the smooth operation of the IMEC.

Way Forward

- Maintaining a status quo in the Israel-Palestine conflict is a challenging endeavor, and India can play a **constructive role by promoting a peaceful resolution** based on a two-nation theory.
- India should continue its diplomatic efforts and use its international influence to encourage both **Israel and Palestine to return to the negotiating table**.
- India must continue to act as a mediator and provide humanitarian assistance to the Palestinian people to address the immediate needs and alleviate suffering in conflict-affected areas.
- Encourage dialogues and exchanges between Israeli and Palestinian civil society groups, academics, and youth to promote mutual understanding and trust.

UPSC Civil Services Examination, Previous Year Questions (PYQs)

Prelims

Q 1. Which one of the following countries of South-West Asia does not open out to the Mediterranean Sea? (2015)

- (a) Syria
- (b) Jordan
- (c) Lebanon
- (d) Israel

Ans: (b)

Mains

Q1. 'Too little cash, too much politics, leaves UNESCO fighting for life.' Discuss the statement in the light of US' withdrawal and its accusation of the cultural body as being 'anti-Israel bias'. (2019)

Q2. "India's relations with Israel have, of late, acquired a depth and diversity, which cannot be rolled back." Discuss. (2018)

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