



# Yojna IAS

योजना है तो सफलता है

## MARCH 2024

### WEEKLY CURRENT AFFAIRS

**YOJNA IAS WEEKLY CURRENT AFFAIRS**

**04/03/2024 TO 10/03/2024**

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# CURRENT AFFAIRS

## MARCH 2024

### INTERNATIONAL BIG CAT ALLIANCE (IBCA)

*THIS ARTICLE COVERS 'DAILY CURRENT AFFAIRS' AND THE TOPIC DETAILS OF THE "INTERNATIONAL BIG CAT ALLIANCE (IBCA)". THIS TOPIC IS RELEVANT IN THE "ENVIRONMENT" SECTION OF THE UPSC CSE EXAM.*

#### WHY IN THE NEWS?

The establishment of the International Big Cats Alliance (IBCA), which would have its headquarters in India and receive a one-time financial commitment of Rs. 150 crore for a period of five years, from 2023–2027, has been authorised by the Union Cabinet. IBCA's Framework of Agreement has been substantially modelled after the International Solar Alliance.

#### INTERNATIONAL BIG CAT ALLIANCE

- At the **Global Tiger Day gathering in 2019**, Prime Minister Modi appealed to leaders worldwide to collaborate in combating poaching in Asia. This appeal was reiterated on April 9, 2023, during the commemoration of **India's Project Tiger's 50th anniversary**, where he announced the initiation of the International Big Cat Alliance.
- The **International Big Cat Alliance (IBCA)** is a wide-ranging coalition bringing together numerous countries, organisations, and experts dedicated to the conservation of big cats. This multilateral effort aims to **facilitate cooperation between various stakeholders, fostering knowledge sharing, capacity building, and resource support for big cat conservation efforts around the globe.**
- **Goal:** The primary objective of the International Big Cat Alliance (IBCA) is to lead initiatives dedicated to the safeguarding and preservation of the **seven major big cat species**, namely the **tiger, lion, leopard, snow leopard, puma, jaguar, and cheetah.**
- **Membership:** The alliance will extend membership opportunities to 96 countries categorised as "range" nations, signifying countries that encompass the native habitats of the seven major big cat species.

## A MULTIFACETED APPROACH:

IBCA adopts a multifaceted approach to achieving its goals. This includes:

- **Knowledge sharing:** Facilitating the exchange of best practices and technical expertise among member countries.
- **Capacity building:** Equipping member states with the resources and skills needed for effective big cat conservation.
- **Networking:** Building strong connections between individuals and organisations working towards the same goal.
- **Advocacy:** Raising awareness and promoting policies that support big cat conservation.
- **Financial and resource support:** Providing financial assistance and essential resources for conservation initiatives.
- **Research and technical support:** Facilitating research and technical expertise to support effective conservation strategies.
- **Education and awareness:** Educating the public and fostering a sense of responsibility towards big cat conservation.

## BUILDING A COLLABORATIVE PLATFORM:

IBCA envisions a collaborative platform that fosters:

- **Sharing of best practices:** Disseminating knowledge about the most effective methods for big cat conservation.
- **Centralised knowledge base:** Providing access to a central repository of technical expertise and resources.
- **Strengthening existing initiatives:** Bolstering existing species-specific conservation efforts and transnational collaborations.
- **Addressing climate change:** Mitigating the harmful effects of climate change on big cat populations and their habitats.

## HOLISTIC AND INCLUSIVE CONSERVATION:

IBCA recognises the crucial role of integrating biodiversity policies with sustainable development goals (SDGs). This holistic approach ensures that conservation efforts are inclusive and address the needs of local communities alongside the well-being of big cats. By advocating for policies that align conservation efforts with local needs, IBCA strives to achieve sustainable and long-term conservation success.

## THE GOVERNANCE STRUCTURE OF IBCA

The International Big Cat Alliance (IBCA) employs a well-defined governance structure to ensure effective decision-making and implementation of its goals. This structure **consists of three key components**:

**General Assembly:** This body comprises representatives from all member countries of the alliance. They serve as the ultimate authority, collectively overseeing the organisation's direction.

**Council:** This smaller group, composed of 7 to 15 elected member countries, holds responsibility for advising the General Assembly and guiding the alliance's strategic direction. Their five-year terms ensure continuity and provide members with opportunities to contribute significantly.

**Secretariat:** This permanent administrative body handles the day-to-day operations of IBCA. The Secretary-General, appointed by the General Assembly upon the Council's recommendation, leads the Secretariat and coordinates its activities.

## THE SIGNIFICANCE OF THE IBCA:

The International Big Cat Alliance (IBCA) holds immense importance for several reasons:

- **Global Leadership:** IBCA serves as a demonstrative step in assuming a leadership role for big cat conservation. It brings together a diverse range of countries and stakeholders on a common platform, fostering collaboration and unified action.
- **Sustainable Resource Management:** The Alliance encourages the sustainable use of natural resources, preserving their long-term sustainability for future generations. Additionally, it addresses the challenges of climate change, mitigating its negative impacts on big cat populations and their habitats.
- **Holistic Benefits:** By protecting big cats and their habitats, IBCA contributes to natural climate adaptation. This, in turn, enhances water and food security for the thousands of communities residing within these ecosystems, promoting their well-being.
- **International Cooperation:** IBCA fosters cooperation among countries for mutual benefit. This collaborative approach strengthens the global fight against threats to big cats and promotes long-term conservation efforts.
- **Sustainable Future:** The Alliance paves the way for a future where natural ecosystems flourish. By emphasising their value, IBCA encourages integrating their conservation into economic and development policies, ensuring their sustained health for generations to come.

## PRELIMS PRACTISE QUESTIONS

**Q1. Among the following Tiger Reserves, which one has the largest area under "Critical Tiger Habitat"? (UPSC Prelims-2020)**

(a) Corbett

- (b) Ranthambore
- (c) Nagarjunasagar-Srisaillam
- (d) Sundarbans

**Answer: C**

**Q2. Consider the following statements:**

- (a) The United Nations Framework Convention on Climate Change (UNFCCC) was adopted at the Rio Earth Summit in 1992.
- (b) The Leopard seal is considered one of the seven big cats.
- (c) Snow Leopards are also known as “ghosts of the mountains”.
- (d) Teardrop markings under the eyes are a distinctive feature of Cheetah.

**How many of the statements given above are correct?**

- (a) Only one
- (b) Only two
- (c) Only three
- (d) All four

**ANSWER: C**

**MAINS PRACTISE QUESTION**

Q1. Explain the importance of maintaining genetic diversity within big cat populations for long-term conservation success. How can conservationists address genetic challenges in their efforts to protect these species?

## **SINGLE-USE PLASTICS**

*THIS ARTICLE COVERS 'DAILY CURRENT AFFAIRS' AND THE TOPIC DETAILS OF "SINGLE-USE PLASTICS". THIS TOPIC IS RELEVANT IN THE "ENVIRONMENT" SECTION OF THE UPSC CSE EXAM.*

**WHY IN THE NEWS?**

Despite pledging to eliminate Single-Use Plastics (SUP) by 2022, India still faces a significant challenge in curbing their widespread use. While the nation has made some progress through bans on

specific items, a recent report by the United Nations Environment Assembly (**UNEA-6**) underscores the ongoing struggle. The report highlights the heavy reliance on SUP in the thriving street food sector, which contributes significantly to the nation's plastic waste management woes.

## **KEY REPORT FINDINGS AND RECOMMENDATIONS**

- **Street Food Sector's Reliance on SUP:** The report reveals the extensive use of single-use plates, bowls, cups, and containers in India's street food industry. This ubiquitous presence translates to a substantial amount of plastic waste generation, posing a significant environmental challenge considering the vast scale and reach of the street food sector.
- **Reusable Packaging System: A Win-Win Solution:** The report proposes a compelling alternative – implementing a reusable packaging system within the street food sector. This approach presents a win-win scenario, **offering:**
  1. **Economic benefits:** Reduced costs for both vendors and customers.
  2. **Environmental benefits:** Significant reduction in the amount of plastic waste generated, contributing to a cleaner and healthier environment.
  3. **Financial viability:** The report highlights the potential for a high return on investment and a short payback period, making it an economically attractive option for businesses.
  4. **Additional considerations:** The report emphasises the importance of factors such as material selection, efficient return systems, and government incentives to optimise the effectiveness and widespread adoption of this solution.

The report strongly advocates adopting a reusable packaging system, emphasising its potential to create a more sustainable and economically viable future for all stakeholders involved in the Indian street food industry.

## **UNDERSTANDING SINGLE-USE PLASTICS**

- Single-use plastics (SUP) are defined as “plastic items intended for single use before disposal or recycling.”
- They encompass a vast range of commonly used plastic products, including packaging materials, beverage bottles, shopping bags, food containers, and cutlery.
- The widespread use and disposal of SUPs contribute significantly to global plastic pollution, posing a major threat to environmental and ecological health.
- A concerning projection suggests that single-use plastics could account for 5-10% of greenhouse gas emissions by 2050 if the current production trajectory continues unabated.

## **CURRENT LANDSCAPE IN INDIA:**

- **Progress Made:** India has taken initial steps towards curbing SUP by banning 19 specific items

in 2021. These prohibited items, primarily plastic bags and cutlery, represent an estimated volume of 0.6 million tonnes annually. However, this constitutes a relatively small portion of the overall SUP problem.

- **Remaining Challenge:** A significant portion of SUP, primarily packaging materials, still remains in circulation. These items fall under the ambit of the Extended Producer Responsibility (EPR) policy, which focuses on collection and recycling targets. However, a crucial limitation of this policy is that it overlooks the fact that some non-recyclable plastics are not included in the ban.
- **India's Plastic Footprint:**
  1. According to the Plastic Waste Makers Index 2019, India ranks 13th globally in terms of investment in single-use plastic polymer production, highlighting the nation's significant role in the global SUP landscape.
  2. The nation also holds the dubious distinction of being the third-largest contributor of SUP waste globally, generating an estimated 5.5 million tonnes annually.
  3. Alarmingly, India mismanages a staggering 85% of its plastic waste, leading to improper disposal and environmental contamination. This waste ends up in landfills, streets, waterways, and ultimately, oceans, causing harm to wildlife and ecosystems.

### CHALLENGES IN TACKLING SUP:

Phasing out single-use plastics and transitioning towards a more sustainable future presents a complex challenge for India, owing to several factors:

1. **Limited Alternatives:** The lack of readily available, affordable, and convenient alternatives to SUP hinders widespread adoption. Consumers and businesses are often hesitant to switch due to concerns about cost, practicality, and accessibility. Addressing this gap requires investing in research and development of innovative, cost-effective, and user-friendly alternatives to SUP.
2. **Economic Considerations:** The affordability and convenience often associated with single-use plastics create a significant economic barrier. Transitioning to sustainable alternatives may require investments in research, development, and infrastructure, which can be a burden for both businesses and the government. Additionally, consumer price sensitivity can impede the adoption of costlier alternatives. This necessitates the development of economically viable solutions that are both sustainable and accessible to all stakeholders.
3. **Infrastructure Gaps:** Deficient waste management infrastructure, particularly in developing regions, poses a major hurdle. Inadequate waste collection, sorting, and recycling facilities hinder proper disposal and prevent effective resource recovery from SUP. Addressing this challenge
4. **Consumer challenges:** Consumers often favour convenient, readily available options like SUP, making it difficult to shift to sustainable alternatives. Lack of knowledge about the environmental impact of SUP hinders behaviour change. Public education programmes are critical for raising awareness.
5. **Livelihood impacts:** Restrictions on SUP can impact those employed in their production and sale. Policymakers should consider retraining programs and support for transitioning to alter-



native industries within the waste management or sustainability sectors.

### **INITIATIVES NEEDED TO COMBAT THE SINGLE-USE PLASTIC CRISIS:**

- **Foster Sustainable Alternatives:**

1. Invest in R&D for affordable, accessible alternatives like bioplastics or reusables.
2. Incentivise businesses to develop and manufacture these alternatives.
3. Educate consumers on the environmental and health impacts of SUP and the benefits of sustainable options.

- **Strengthen Infrastructure and Policy:**

1. Upgrade waste management infrastructure for efficient collection, sorting, and recycling.
2. Strictly enforce existing bans and regulations on SUP.
3. Implement EPR programs to hold producers responsible for product lifecycle management.
4. Explore deposit-refund schemes to incentivise responsible collection and recycling.

- **Foster Collaboration:**

1. Collaborate with the private sector to use its experience and resources.
2. Engage civil society and communities for wider awareness and inclusivity.

- **Address Livelihood Concerns:**

1. Provide skill development and training programs for affected individuals.
2. Implement social safety nets for those disproportionately impacted.

### **PRELIMS PRACTISE QUESTIONS**

**Q1. Extended Producer Responsibility (EPR) is a concept introduced in the rules. What does EPR mean in the context of waste management?**

- (a) Producers are responsible for educating consumers about waste sorting.
- (b) Producers are financially or physically liable for the collection and management of their product after its use.
- (c) Producers are required to use recycled materials in their packaging.
- (d) Producers are encouraged to invest in waste-to-energy plants.

**Answer: B**

**Q2. Which international environmental treaty is India a party to, promoting sound management of hazardous waste, including transboundary movement?**

- (a) Basel Convention
- (b) Kyoto Protocol
- (c) Montreal Protocol
- (d) Rio Declaration

**Answer: A**

### **MAINS PRACTISE QUESTION**

**Q1. Analyse the role of decentralised waste management in achieving the objectives of the Solid Waste Management Rules, 2016. How can local communities play a pivotal role in waste segregation, collection, and treatment?**

## **RARE DISEASE DAY**

*THIS ARTICLE COVERS 'DAILY CURRENT AFFAIRS' AND THE TOPIC DETAILS OF "RARE DISEASE DAY". THIS TOPIC IS RELEVANT IN THE "GOVERNANCE AND SOCIAL JUSTICE" SECTION OF THE UPSC CSE EXAM.*

### **WHY IN THE NEWS?**

Rare Disease Day was recently marked on February 28th. This international awareness day aims to raise awareness about rare diseases and their profound impact on patients and their families.

### **WHAT IS A RARE DISEASE DAY?**

Rare Disease Day is an annual observance dedicated to raising awareness about rare diseases and their impact on the lives of individuals and their families. Celebrated on the last day of February each year, Rare Disease Day aims to highlight the challenges faced by those living with rare diseases and advocate for better support, research, and understanding of these often overlooked conditions.

### **THE OBJECTIVES OF RARE DISEASE DAY INCLUDE:**

#### **Educating and Uniting:**

The day serves as a crucial platform to educate various stakeholders, including the public, healthcare

professionals, policymakers, and researchers, about the existence, impact, and unique needs associated with rare diseases. This fosters a deeper understanding and fuels the creation of a more supportive environment.

### **Empowering Through Shared Experiences:**

Rare Disease Day empowers individuals and families directly affected by these conditions. It provides them with a space to share their stories, experiences, and challenges, fostering a sense of community and solidarity among those facing similar journeys.

### **Fueling Research and Progress:**

Through various campaigns and events, Rare Disease Day advocates for increased research funding and collaboration. This aims to accelerate advancements in understanding, treatment options, and potential cures for rare diseases. It's important to remember that while individual occurrences may be rare, the collective impact of these illnesses is significant, and research advancements can also benefit broader areas of medicine.

### **Improving Diagnosis and Care:**

Efforts are continuously made to improve the diagnosis and treatment landscape for rare diseases. Raising awareness among healthcare professionals, advocating for better diagnostic tools, and ensuring timely access to specialised care are all crucial aspects of this ongoing process.

### **Building a Network of Support:**

Rare Disease Day emphasises the importance of fostering connections and building support networks between individuals, families, and organisations working towards shared goals. These networks offer crucial emotional support, serve as valuable channels for information sharing, and provide a united voice in advocating for the needs of those affected by rare conditions.

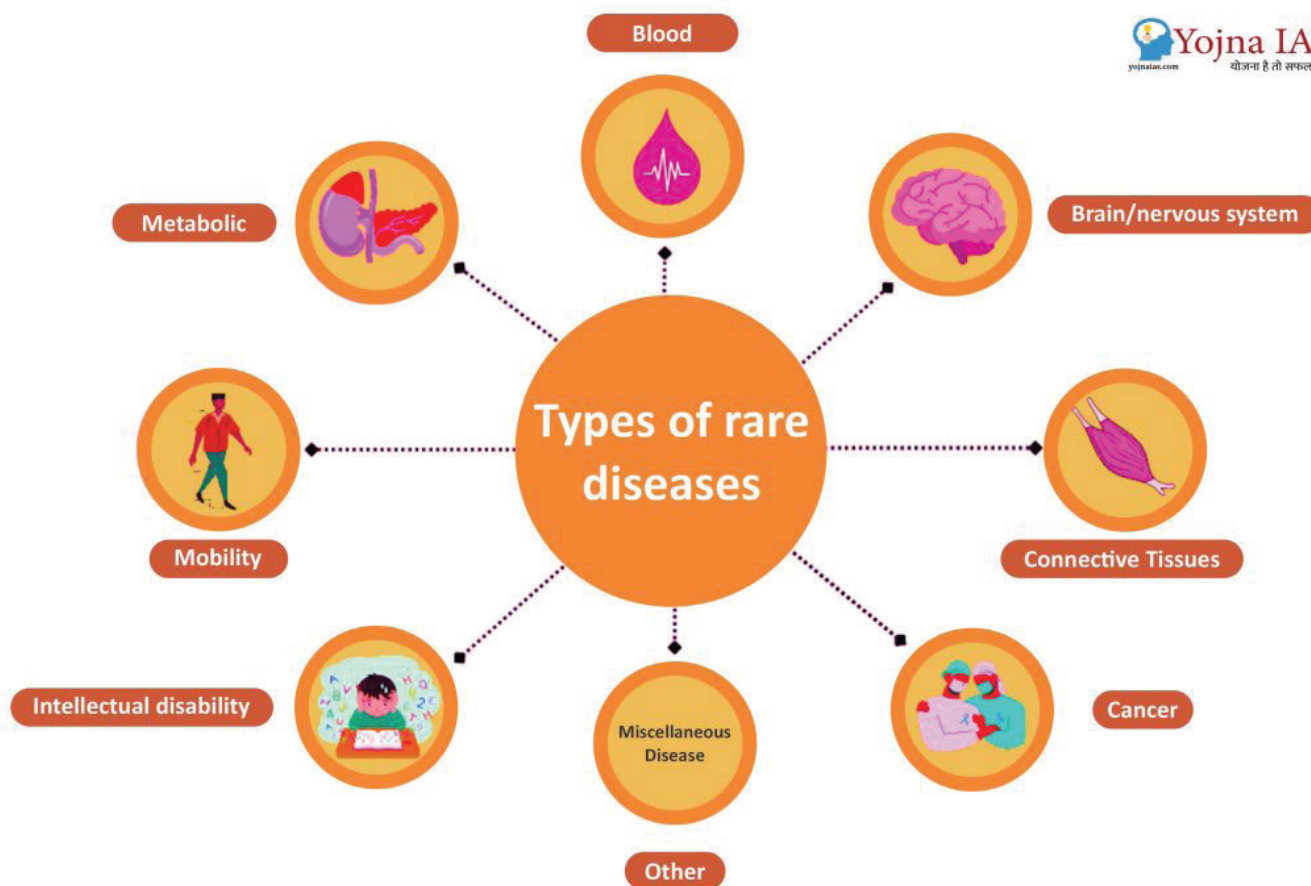
### **Influencing Policy and Shaping the Future:**

Advocates leverage Rare Disease Day to draw attention to the unique challenges faced by individuals with rare diseases. This ultimately aims to influence policy changes that improve their quality of life. These changes may involve addressing healthcare access, insurance coverage, and research funding allocations, paving the way for a more inclusive and supportive future.

## **ABOUT RARE DISEASES**

- Rare diseases, alternatively termed orphan diseases, are medical disorders that impact a limited portion of the population. These diseases are characterised by their low prevalence, often impacting only a small number of individuals. While each rare disease may be uncommon on its own, collectively, it affects millions of people worldwide.
- The **World Health Organization (WHO)** defines rare diseases as medical conditions with a prevalence rate of **1 or fewer cases per 1,000 individuals**.
- **Rare diseases in India:** India accounts for **one-third of the worldwide instances of rare diseases, comprising more than 450 identified conditions**. Despite this substantial prevalence,

rare diseases receive minimal attention in India, characterised by limited awareness, diagnosis, and drug development. An estimated 8 to 10 crore Indians are believed to be affected by rare diseases, with children constituting over 75% of this population. Unfortunately, less than 50% of the identified rare diseases in India have available treatments, and only around 20 diseases have approved treatments.



## THE DAUNTING CLIMB: CHALLENGES IN FIGHTING RARE DISEASES

### LIMITED AWARENESS AND UNDERSTANDING:

1. **Public knowledge:** The general public often lacks awareness about the vast spectrum of rare diseases, their symptoms, and the impact they have on individuals and families. This lack of understanding can lead to misdiagnosis, delayed intervention, and social stigma.
2. **Healthcare professionals:** Due to the rarity of these conditions, healthcare professionals may not have the necessary experience or expertise to accurately diagnose and manage them. This can lead to misdiagnosis, inappropriate treatment approaches, and frustration for patients seeking effective care.

### DIFFICULTIES IN RESEARCH AND DEVELOPMENT:

1. **Small patient pool:** The limited number of patients with each rare disease makes it challenging to conduct clinical trials and gather sufficient data for research and development efforts. This can hinder the development of effective treatments and therapies.

2. **High costs:** Researching and developing treatments for rare diseases can be extremely expensive due to the smaller market size and the complex nature of these conditions. This can discourage pharmaceutical companies from investing in areas with limited financial return, leaving patients with fewer treatment options.

#### DIAGNOSTIC HURDLES:

1. **Non-specific symptoms:** Many rare diseases present with non-specific symptoms that overlap with more common conditions. This can make it difficult for healthcare professionals to pinpoint the underlying cause and lead to delayed diagnosis.
2. **Lack of readily available diagnostic tests:** Due to the rarity of the diseases, specific diagnostic tests may not be readily available or covered by insurance, further complicating the diagnosis process and leading to patient frustration.

#### ACCESS TO TREATMENT AND CARE:

1. **High cost of treatments:** Even when treatments are available, their high cost can create significant financial burdens for patients and their families. This can limit access to necessary therapies and impede their ability to manage their condition effectively.
2. **Limited availability of specialists:** Due to the rarity of these conditions, specialists with expertise in specific rare diseases may not be readily available in all regions, creating geographical barriers to accessing appropriate care.

### GOVERNMENT INITIATIVES FOR RARE DISEASES IN INDIA

Recognising the challenges faced by individuals living with rare diseases, the Indian government has implemented several initiatives to improve their access to diagnosis, treatment, and support. Here's an overview of these key efforts:

- **National Policy for Rare Diseases 2021 (NPRD-2021):** This comprehensive policy serves as a roadmap for addressing various aspects of rare diseases in India. Some of its central features include:
  1. **Categorisation of Rare Diseases:** The policy classifies rare diseases into three distinct groups based on treatment needs and associated costs:
    - **Group 1:** Diseases amenable to one-time curative treatment.
    - **Group 2:** Diseases requiring long-term or lifelong treatment with relatively lower costs.
    - **Group 3:** Diseases with available definitive treatment but with very high costs and lifelong therapy requirements.
- **Establishing Support Infrastructure:**

1. **Centres of Excellence (CoEs):** Twelve CoEs have been established across India to provide specialised diagnosis, prevention, and treatment services for individuals with rare diseases.
  2. **Nidan Kendras:** These centres offer genetic testing and counselling services, playing a crucial role in the early detection and management of rare conditions.
- **Financial Support:** Under NPRD-2021, provisions are in place to offer financial assistance of up to Rs. 50 lakhs to patients suffering from any category of rare disease, facilitating their treatment at designated CoEs.

### PRELIMS PRACTISE QUESTIONS

**Q1. What financial assistance is offered to patients under NPRD-2021 for rare disease treatment?**

- (a) Up to Rs. 10 lakhs
- (b) Up to Rs. 25 lakhs
- (c) Up to Rs. 50 lakhs
- (d) Up to Rs. 75 lakhs

**Answer: C**

**Q2. According to NPRD-2021, how are rare diseases categorised based on treatment needs and costs?**

- (a) Low-cost and high-cost categories
- (b) Curative, preventive, and lifelong treatment categories
- (c) Common, uncommon, and rare categories
- (d) Group 1, Group 2, and Group 3 categories

**Answer: D**

### MAINS PRACTISE QUESTIONS

**Q1. Examine the potential impact of artificial intelligence and machine learning on the diagnosis, treatment, and research landscape of rare diseases. Discuss both the potential opportunities and challenges associated with these advancements.**

# DEFCONNECT 2024

*THIS ARTICLE COVERS 'DAILY CURRENT AFFAIRS' AND THE TOPIC DETAILS OF "DEFCONNECT 2024". THIS TOPIC IS RELEVANT IN THE "INTERNAL SECURITY" SECTION OF THE UPSC CSE EXAM.*

## WHY IN THE NEWS?

The Ministry of Defence recently sponsored DefConnect 2024, which aims to promote innovation, entrepreneurship, and self-reliance in the defence industry. India's Defence Minister also established the Acing Development of Innovative Technologies with iDEX (ADITI) project to stimulate innovation in essential and strategic defence technologies.

## KEY POINTS FROM DEFCONNECT 2024

DefConnect 2024 served as a pivotal platform for showcasing advancements and fostering future initiatives in the Indian defence sector.

- **Propelling Innovation and Self-Reliance:** DefConnect 2024 witnessed the launch of several key initiatives aimed at accelerating innovation and fostering self-reliance in the country's defence production. These initiatives included the **ADITI (Acing Development of Innovative Technologies with iDEX) Scheme and DISC 11 (Defense India Startup Challenge)**, demonstrating the government's unwavering commitment to cultivating a dynamic and robust defence innovation ecosystem in India.
- **A Glimpse into Cutting-Edge Technologies:** The event featured a technology exhibition **organised by iDEX-DIO**, where startups displayed their ground breaking **innovations in various fields critical to defence, including artificial intelligence, robotics, cybersecurity, unmanned aerial vehicles, and wearable technology**. This showcase highlighted the immense potential of the Indian innovation ecosystem to contribute significantly to national defence capabilities.
- **Nurturing the Next Generation of Innovators:** In a strategic move to cultivate young talent and build a future generation of innovators, DefConnect 2024 marked the launch of a rolling internship program under the iDEX initiative. This program **provides aspiring innovators in defence technology with invaluable hands-on experience and mentorship opportunities**.
- **Engaging Discussions on Defense Innovation:** Through insightful panel discussions, DefConnect 2024 explored critical topics related to defence innovation and entrepreneurship. These discussions shed light on the current state of the Indian defence landscape, emerging trends shaping the future, promising opportunities for startups, and effective strategies to promote diversity and inclusion within the sector.
- **Recognising Women in Defense Innovation:** DefConnect 2024 held a special felicitation ceremony to acknowledge the invaluable **contributions made by women entrepreneurs to the defence innovation ecosystem**, particularly those associated with iDEX.

## ADITI SCHEME: BOOSTING INNOVATION AND SELF-RELIANCE IN INDIAN DEFENCE

- The Ministry of Defence (MoD) unveiled the **Acing Development of Innovative Technologies with iDEX (ADITI) scheme**, marking a significant step towards bolstering innovation and technological advancements in India's defence sector. This initiative, alongside other iDEX programs, aims to propel India towards becoming a global leader in defence technology and achieving self-reliance in this critical domain.
- **Launched during DefConnect 2024 in New Delhi**, the ADITI scheme focuses on fostering innovation in crucial and strategic defence technologies, particularly among young minds. Its **primary objective is to bridge the gap between the modern needs of the Armed Forces and the Indian defence innovation ecosystem** by facilitating the development of approximately 30 deep-tech technologies within the designated period (2023-24 to 2025-26).
- The scheme is backed by a dedicated **₹750 crore corpus**, enabling it to provide startups with **grants of up to ₹25 crore**. These grants aim to support research, development, and innovation endeavours in the defence technology sector. Furthermore, the **iDEX Prime initiative**, an extension of iDEX, **increased the financial assistance from ₹1.5 crores to ₹10 crores**, providing additional impetus to young innovators.
- ADITI presents exciting **opportunities for startups and entrepreneurs**. Its launch coincides with the announcement of 17 challenges across various branches of the armed forces and defence agencies, seeking innovative solutions from the aforementioned groups.

### KEY FEATURES OF THE ADITI SCHEME:

- **Promoting Self-Reliance:** The scheme aligns with India's vision of self-reliance in defence production, which is evident in the significant growth of domestic defence production, rising from ₹44,000 crore in 2014 to over ₹1 lakh crore today.
- **Encouraging Innovation and Entrepreneurship:** The launch of ADITI, alongside other initiatives, signifies the government's commitment to fostering innovation, fostering a culture of entrepreneurship, and achieving self-reliance in defence production.
- **Facilitating Investment:** The iDEX Investors Hub (IIH) established MoUs with new investors, paving the way for increased investment in defence startups. Additionally, technology showcases organised by iDEX-DIO provide a platform for startups to exhibit their groundbreaking work in fields like Artificial Intelligence, Robotics, Cybersecurity, and Wearable Technology.
- **Supporting Growing Startups:** The iDEX-Prime initiative caters to projects requiring larger financial support (up to ₹10 crore), empowering and nurturing the growth of startups in the Indian defence sector.

### POTENTIAL BENEFITS OF THE ADITI SCHEME FOR THE INDIAN DEFENSE SECTOR

The ADITI scheme holds promise for the Indian defence sector in several ways:

- **Reduced reliance on foreign imports:** By fostering the development of critical technologies domestically, ADITI can potentially help India lessen its dependence on external sources for defence



equipment, thereby promoting self-sufficiency.

- **Enhanced defence capabilities:** The scheme's focus on cutting-edge technologies will likely lead to the development of more advanced defence equipment, potentially bolstering India's preparedness and ability to address security threats.
- **Cross-pollination of knowledge:** The collaboration between industry, academia, and the armed forces encouraged by ADITI can facilitate the exchange of knowledge and expertise, leading to advancements in various fields relevant to defence.
- **Boost for innovation, manufacturing, and job creation:** By stimulating innovation in the defence technology sector, ADITI has the potential to spur not only the development of new technologies but also create opportunities for domestic manufacturing and job creation in related industries.

### PRELIMS PRACTISE QUESTIONS

**Q1. Consider the following statements:**

1. The Defence Innovation Organisation is responsible for managing iDEX.
2. The primary goal of iDEX is to oversee military cooperation.

**Which of the above statements is/are correct?**

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

**ANSWER: C**

**Q2. What type of funding does ADITI offer to startups?**

- (a) Loans with high-interest rates
- (b) Equity investments in startups
- (c) Grants for research and development
- (d) Subsidies for manufacturing costs

**ANSWER: C**

### MAINS PRACTISE QUESTION

**Q1. Do you think iDEX is effectively bridging the gap between the needs of the Armed Forces and the Indian defence innovation ecosystem? Why or why not?**

# FOURTH MASS CORAL REEF BLEACHING EVENT

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## WHY IN THE NEWS?

According to the United States NOAA, the world is on the cusp of a fourth global coral bleaching catastrophe, which could kill large areas of tropical reefs, including regions of Australia's Great Barrier Reef.

## KEY FINDINGS OF THE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

- **Threat of Fourth Mass Bleaching Event:** The National Oceanic and Atmospheric Administration (NOAA) warns that the world is on the verge of experiencing a fourth mass coral bleaching event.
- **Criteria for Global Event:** For an event to be classified as global, widespread coral bleaching must be observed across **three major ocean basins: the Atlantic, Pacific, and Indian.**
- **Devastating Past Event:** The last global mass bleaching event, **spanning 2014 to 2017**, caused significant damage, with the Great Barrier Reef losing nearly a third of its coral. Preliminary data suggests that roughly 15% of the world's reefs experienced significant coral die-offs during that period.
- **2023 Poised to Be Worse:** Early indications suggest that 2023 may be even more detrimental to coral reefs. For instance, the Caribbean region reported its worst coral bleaching ever following the recent Northern Hemisphere summer.
- **El Niño and Climate Change:** Coral bleaching is frequently linked to **El Niño**, a natural climate phenomenon causing warmer ocean temperatures. However, climate change adds another layer of concern. The world recently experienced its first 12-month period with an average temperature exceeding **1.5 degrees Celsius** above pre-industrial levels, a threshold believed to be a tipping point for widespread coral death. Scientists estimate that a 1.5°C increase could lead to the loss of 90% of the world's coral reefs.

## HISTORY OF MASS CORAL BLEACHING EVENTS

Coral reefs around the world have faced large-scale bleaching events with significant consequences. Here's a look at some of the major incidents:

- **1998: First Mass Bleaching:** This event, triggered by El Niño-induced warming in the Pacific Ocean, caused the first widespread coral bleaching observed globally. An estimated 8% of the world's coral reefs died during this event.

- **2002: Second Mass Bleaching:** While details about the 2002 event are scarcer, it serves as a reminder that mass coral bleaching remained a threat in the early 21st century.
- **2014-2017: Third Mass Bleaching:** This extended bleaching episode, considered the most severe on record, impacted reefs across a vast geographic area. Regions affected included Guam (Western Pacific), the North and South Pacific Ocean, and the Indian Ocean. The Great Barrier Reef suffered immensely, losing nearly a third of its coral during this period.

## ABOUT CORAL AND CORAL REEFS

- Corals are marine invertebrates belonging to the **phylum Cnidaria**, typically forming colonies of polyps that secrete a calcium carbonate skeleton. These organisms often exhibit a **sympiotic relationship with photosynthetic algae called zooxanthellae**, which reside within their tissues and contribute to the vibrant colours seen in coral reefs.
- Coral reefs, on the other hand, are diverse ecosystems composed of coral colonies, associated marine life, and a complex structure of calcium carbonate. These reefs **thrive in warm, shallow waters, providing habitat and sustenance for a myriad of marine species**. Coral reefs play a crucial role in marine biodiversity, supporting numerous ecological functions and serving as vital resources for coastal communities.

## SIGNIFICANCE OF CORAL REEFS

Coral reefs are more than just beautiful underwater formations. They are essential for the health of our oceans and the planet.

- **Underwater Rainforests:** Teeming with life, coral reefs are often referred to as the “rainforests of the sea” due to their incredible biodiversity. They provide habitat for a vast array of marine species, from fish and invertebrates to sea turtles and sharks.
- **Economic Powerhouses:** Healthy reefs aren’t just ecologically important. They also contribute significantly to the global economy. Fisheries that rely on healthy coral reef ecosystems support millions of people worldwide and generate billions of dollars in revenue. Additionally, tourism thrives in areas with vibrant coral reefs, attracting scuba divers, snorkelers, and nature enthusiasts.
- **Coastal Guardians:** Coral reefs act as natural barriers, protecting coastlines from the full force of waves, storms, and hurricanes. By absorbing wave energy, they shield beaches and coastal infrastructure from erosion, saving billions of dollars in potential damage.

## UNDERSTANDING CORAL BLEACHING

Coral reefs are under threat from a phenomenon called coral bleaching. This occurs when corals become stressed by changes in their environment, such as rising water temperatures. This stress disrupts the vital relationship between coral polyps and the algae living within them (zooxanthellae). As a defence mechanism, the coral expels the algae, losing its vibrant colours and turning stark white.

### Some of the causes of Coral Bleaching are:

- **Environmental Shifts:** Changes in water temperature, light, and nutrients can all stress corals. It disrupts their symbiotic relationship with algae and leading to bleaching.
- **Climate Change:** Rising global temperatures, a hallmark of climate change, are a major driver of coral bleaching by creating a stressful environment for coral.
- **Ocean Acidification:** The ocean's absorption of excess carbon dioxide makes it more acidic, hindering coral's ability to maintain its symbiotic partnership and increasing bleach risk.
- **Pollution:** Pollution from agriculture, industry, and waste disposal disrupts the delicate balance within coral and contributes to bleaching.
- **Sunlight Exposure:** Excessive sunlight, especially during low tides, combined with high temperatures, can intensify stress and increase bleaching risk.
- **Water Quality Fluctuations:** Changes in water salinity and nutrient levels can disrupt the coral-algae balance, contributing to bleaching.
- **Disease:** Coral diseases, often worsened by environmental stressors, weaken corals and make them more susceptible to bleaching.

### PRELIMS PRACTISE QUESTIONS

#### Q1. Consider the following statements:

1. The majority of the global coral reefs are situated in tropical waters.
2. Australia, Indonesia, and the Philippines collectively harbour over one-third of the world's coral reefs.
3. Coral reefs accommodate a greater diversity of animal species compared to tropical rainforests.

#### Which of the provided statements is/are correct?

- (a) Only 1 and 2
- (b) Only 3
- (c) Only 1 and 3
- (d) All of the above

**Answer: D**

### MAINS PRACTISE QUESTION

**Q1. Analyse the role of coral reefs in providing shoreline protection. How do coral structures act as natural barriers against coastal erosion and storm damage?**

# ISRO TO DEPLOY V-SAT STATIONS IN 80 TRIBAL COMMUNITIES

*THIS ARTICLE COVERS 'DAILY CURRENT AFFAIRS' AND THE TOPIC DETAILS OF "ISRO TO DEPLOY V-SAT STATIONS IN 80 TRIBAL COMMUNITIES". THIS TOPIC IS RELEVANT IN THE "SCIENCE AND TECHNOLOGY" SECTION OF THE UPSC CSE EXAM.*

## WHY IN THE NEWS?

The Ministry of Tribal Affairs intends to work with the Indian Space Research Organisation (ISRO) to deploy V-SAT stations in approximately 80 tribal communities in Jharkhand, Madhya Pradesh, Odisha, and Maharashtra as a pilot project to provide Internet access.

## MORE ABOUT THE NEWS

- A government assessment by the **Ministry of Tribal Affairs** revealed that nearly **18,000 tribal villages** across India face significant connectivity issues due to their remote locations and challenging terrain. This lack of access to mobile and internet networks hinders these communities' ability to access essential services.
- To address the network problem, a **pilot program is being launched to install V-SAT stations in 80 tribal villages** located in Jharkhand, Madhya Pradesh, Odisha, and Maharashtra. **These villages** are among the **most geographically isolated and have difficult terrain**, making traditional connectivity solutions impractical.
- ISRO's **V-SAT technology**, which **utilises satellites for communication**, offers a promising solution to bridge this connectivity gap. The V-SAT stations **can be either fixed or mobile, providing flexibility for deployment**. These stations will deliver **Wi-Fi with a capacity of 100 Mbps**, with the potential to be doubled using boosters. This enhanced connectivity will significantly improve access to essential services for these tribal communities.

## BRIDGING THE GAP: HOW V-SAT CONNECTIVITY CAN EMPOWER TRIBAL COMMUNITIES

The rollout of ISRO's V-SAT internet solution holds immense potential to transform the lives of tribal communities in remote areas. This initiative is expected to act as a catalyst for development and inclusion by delivering a range of benefits:

- **Education:** Enhanced access to quality education through e-learning platforms, digital libraries, and virtual classrooms.
- **Healthcare:** Improved healthcare delivery via telemedicine consultations, remote diagnostics, and online consultations with specialists.
- **Government Services:** Increased participation in government programs and easier access to ser-

vices through user-friendly digital platforms.

- **Economic Empowerment:** A boost to local entrepreneurship and economic activities through digital payment systems, e-commerce opportunities, and wider market reach.
- **Youth Development:** Equipping tribal youth with valuable digital skills and opening doors to new employment opportunities in the digital economy.

### ABOUT VERY SMALL APERTURE TERMINAL (VSAT):

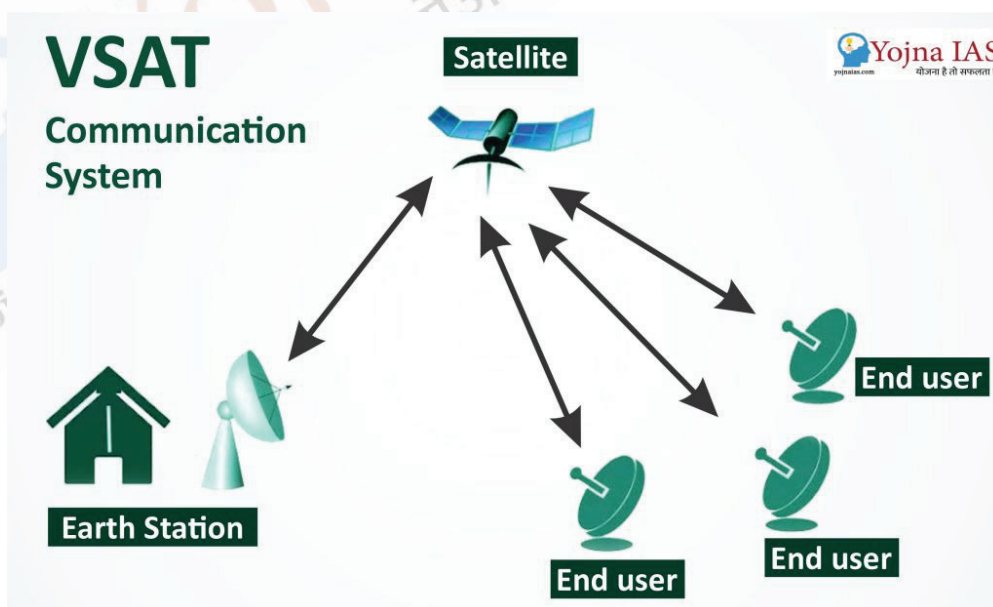
- A Very Small Aperture Terminal, or VSAT, is a **bidirectional ground station** designed to transmit and receive data to and from satellites. Standing at **less than three metres in height**, a VSAT is capable of handling both narrow and broadband data, establishing **real-time communication with satellites in orbit**. The transmitted data can be redirected to various remote terminals or hubs across the globe.
- Beyond its technical aspects, VSAT networks offer significant benefits **for various commercial applications**. One of the most prominent examples lies in **Enterprise Resource Planning (ERP) systems**. Retail giant **Walmart** serves as a **prime example**. They utilised VSAT technology for real-time inventory tracking. This innovation enabled Walmart to:

1. **Effectively Manage Vast Inventory:** VSAT provided real-time data, allowing for precise stock management across their extensive network.
2. **Reduce Delivery Costs:** By optimising delivery routes based on accurate inventory levels, Walmart minimised unnecessary transportation expenses.

3. **Streamline Inventory Movement:** The combination of VSAT and a centralised hub system reduced the number of times products needed to be moved before reaching store shelves.

- Similarly, manufacturers leverage VSAT for functionalities typically reliant on wired networks. These include:

1. **Order Relay:** VSAT facilitates the rapid transmission of orders from various locations.
2. **Real-time Production Monitoring:** Manufacturers can gain instant insights into production figures, allowing for adjustments and optimisation.



**3. Enhanced Communication:** VSAT enables efficient communication channels for various business operations.

### ADVANTAGES OF VSAT

**Infrastructure Independence:** Unlike traditional wired networks that rely on cables and physical connections, VSATs utilise satellite signals. This eliminates the need for extensive infrastructure development, reducing the risk of damage caused by structural issues.

**Backup for Wired Networks:** VSAT systems can operate independently, serving as a reliable backup for existing wired networks in case of outages or failures. This ensures uninterrupted communication during critical situations.

**Easy Deployment in Remote Areas:** Traditional wired networks can be challenging to install in remote locations. Here, VSAT shines. With minimal infrastructure requirements, VSATs can be readily deployed, enabling connectivity even in the most isolated regions. Satellite signals can be directed to various locations through a central hub, further enhancing accessibility.

### DISADVANTAGES OF VSAT

**Latency Issues:** Due to the distance data travels between satellites and Earth stations, VSATs experience a delay in signal transmission (latency). This can be particularly noticeable in real-time, two-way communication situations, such as video conferencing.

**Weather and Obstruction Dependency:** Heavy rain, snow, or strong winds can disrupt satellite signals, leading to temporary connectivity issues. Additionally, physical obstructions like buildings or trees can also cause signal distortion, affecting data transmission quality.

### PRELIMS PRACTISE QUESTIONS

**Q1. What are the potential benefits of the V-SAT initiative for tribal communities?**

- (a) Improved farming techniques
- (b) Enhanced digital skills for tribal elders
- (c) Increased access to essential services like healthcare and education
- (d) Restricted economic activities

**Answer: C**

### MAIN PRACTISE QUESTION

**Q1. Discuss the potential benefits of the V-SAT initiative for tribal communities, focusing on its impact on education, healthcare, government services, and economic empowerment.**