Charting a Sustainable Future for Andaman and Nicobar

This editorial is based on "[How a wildlife sanctuary in the Great Nicobar Island was made to vanish"](#) which was published in The Indian Express on 14/08/2024. The article brings into focus the alarming reality of environmental mismanagement and legal maneuvering that threatens the delicate ecosystems of India's coastal zones, particularly in the Andaman and Nicobar Islands.

For Prelims: [Great Nicobar Island Project](#), [Galathea Bay](#), [Andaman and Nicobar Islands](#), [Coral reefs](#), [Act East policy,](#) [Andaman and Nicobar Command](#), [2004 Indian Ocean tsunami,](#) [Renewable energy,](#) [Malacca Strait,](#) [Intergovernmental Panel on Climate Change](#), [El Nino Southern Oscillation.](#)

For Mains: Significance of Andaman and Nicobar Islands for India, Major Challenges Related to Andaman and Nicobar Islands.

The [Great Nicobar Island Project,](#) centered around a **Rs 42,000 crore** transshipment port in [Galathea Bay](#), exemplifies the tension between development ambitions and environmental conservation in India. Despite the **area's rich biodiversity,** including nesting sites for **endangered sea turtles and the endemic Nicobar megapode**, as well as coral colonies and mangroves, authorities have pushed forward with the project through a series of controversial decisions. These include **denotifying a wildlife sanctuary, granting environmental clearance despite clear violations,** and reclassifying the area's coastal regulation zone status.

This case highlights diluting **environmental regulations to accommodate large-scale development projects.** The process involved questionable administrative maneuvers, potential conflicts of interest in review committees, and a disregard for scientific evidence and conservation imperatives. As India pursues its development goals in the [Andaman and Nicobar Islands,](#) this episode raises serious concerns about the long-term environmental costs and the integrity of India's environmental protection framework. It underscores the need for a **more balanced approach** that genuinely considers ecological preservation alongside economic aspirations.

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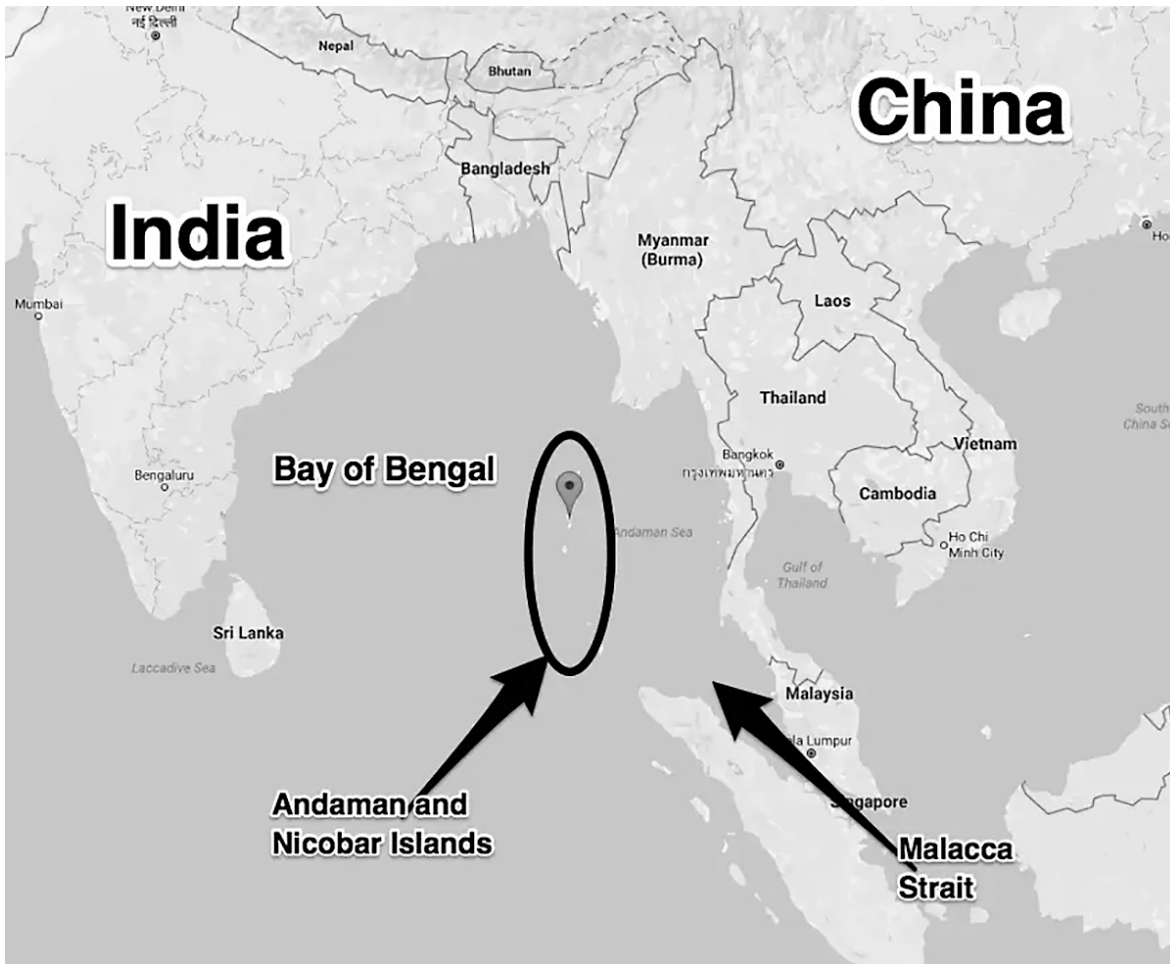# What is the Significance of Andaman and Nicobar Islands for India?

- **Blue Economic Gateway:** The islands are at the crossroads of **major shipping routes,** offering immense potential for India's blue economy initiatives.
    - The proposed transshipment port in Great Nicobar, aims to leverage this strategic location.
    - It could potentially handle **4 million TEUs (Twenty-foot Equivalent Units) annually**, rivaling major ports like Singapore.
    - The islands' rich marine biodiversity also **presents opportunities in fisheries,**

- **aquaculture, and** marine biotechnology, contributing significantly to India's economic growth.
- **Ecological Treasure Trove:** The Andaman and Nicobar archipelago is a biodiversity hotspot, home to over 9,100 species of fauna.
  - Coral reefs are stretched over an area of 11,000 sq km in the Andamans while the Nicobars have 2,700 sq km under coral reefs.
  - Notable species like the leatherback turtle **and Nicobar megapode** find their nesting grounds here.
  - This unique ecosystem not only supports scientific research but also positions India as a key player in global biodiversity conservation efforts.
- **Geopolitical Leverage:** The islands significantly extend India's strategic reach into Southeast Asia, serving as a **fulcrum for its** Act East policy.
  - They lie just **90 nautical miles from Indonesia** offering India a gateway for diplomatic, economic, and military engagement with ASEAN countries.
  - The **tri-service** Andaman and Nicobar Command, established in 2001, enhances India's ability to project power and conduct joint operations in the region, countering China's 'String of Pearls' strategy.
- **First Responder in the Bay of Bengal:** Given their location, the islands play a crucial role in disaster management for the entire Bay of Bengal region.
  - They serve as an **early warning system for tsunamis and cyclones,** with the **Indian National Centre for Ocean Information Services (INCOIS**) operating key monitoring stations here.
  - During the 2004 Indian Ocean tsunami, these islands were instrumental in coordinating relief efforts.
    - The proposed infrastructure developments aim to enhance this capability, positioning India as a reliable first responder in regional humanitarian crises.
- **Energy Security**: The Andaman offshore basin is estimated to hold significant hydrocarbon reserves.
  - Developing these resources could substantially boost India's energy security, reducing dependence on imports.
  - The islands' **potential for** renewable energy, particularly **ocean thermal energy conversion and tidal power,** also presents opportunities for sustainable development and energy innovation.
- **Cultural Melting Pot**: The Andaman and Nicobar Islands are home to six indigenous tribes, including the **Sentinelese,** one of the world's last uncontacted peoples.
  - This unique cultural diversity presents both a responsibility and an opportunity for India to showcase its commitment to preserving indigenous ways of life.
  - The islands' **multicultural society, blending influences from mainland India, Myanmar, and colonial history,** offers a microcosm of India's cultural diplomacy and inclusive development model.

What are the Major Challenges Related to Andaman and Nicobar Islands?

- **Paradise in Peril-Environmental Degradation:** The Andaman and Nicobar Islands face an acute dilemma between **preserving their unique biodiversity and pursuing economic growth.**
  - The proposed Rs 42,000 crore transshipment port in Great Nicobar threatens critical habitats.
    - The **denotification of the Galathea Bay Wildlife Sanctuary in 2021** to accommodate this project exemplifies the prioritization of development over conservation.
  - This trend, if continued, could lead to **irreversible ecological damage,** potentially impacting **biodiversity and climate regulation.**
- **Geopolitical Chessboard:**The islands' strategic location, while advantageous, places them at the **center of** Indo-Pacific geopolitical tensions.
  - China's growing presence in **the Indian Ocean**, evidenced by its "**String of Pearls" strategy,** poses significant security challenges.
  - The proximity to the Malacca Strait, through which about **40% of India's trade passes,** adds to the strategic complexity.

- **Infrastructure Deficit**: Despite their strategic importance, the islands suffer from a **severe infrastructure deficit.**
    - Only **38 out of 572 islands are inhabited,** with limited connectivity between them.
    - The capital, **Port Blair, is over 1,200 km from the mainland,** complicating logistics and resource allocation.
- C**ultural Crossroads:** The indigenous tribes of the Andaman and Nicobar Islands, including the **Jarawa, Onge, and Sentinelese**, face existential threats from modernization and outside contact.
    - The population of the Great Andamanese has dwindled from **5,000 in the 1850s to just 59 individuals in 2021.**
    - The construction of the **Andaman Trunk Road through Jarawa territory** has led to increased interactions and potential exploitation.
- **Tourism Tightrope:** Tourism is a major economic driver for the islands, with visitor numbers growing continuously.
    - While this brings economic benefits, it also **strains local resources and ecosystems.**
    - The islands face challenges in developing sustainable tourism infrastructure, managing waste, and protecting sensitive areas.
- **Climate Vulnerability:** The islands are at the forefront of climate change impacts, facing threats from **sea-level rise, increased cyclone intensity, and changing precipitation patterns.**
    - The Intergovernmental Panel on Climate Change **(IPCC)** warns of potential submergence of low-lying areas by 2050.
    - In **2010,** a mass coral bleaching event, driven by sea surface temperature anomalies and the El Nino Southern Oscillation **(ENSO)**, resulted in the loss of nearly **70%** of live coral in **South Button Island, Havelock Island, North Bay, Chidiyatapu, and Redskin Island.**
- **Natural Disaster Hotspot:** The Andaman and Nicobar Islands are located in a **seismically active zone V,** making them highly susceptible to earthquakes and tsunamis.
    - The **devastating 2004 Indian Ocean tsunami,** which severely impacted the islands, highlights this vulnerability.

- In **2009, a 7.5 magnitude earthquake struck near Port Blair,** causing significant damage and demonstrating the ongoing seismic risk.
- The islands' location and topography also make them prone to landslides, particularly during monsoon seasons.

What Steps can India take Concerning the Andaman and Nicobar Islands?

- **Sustainable Infrastructure Development:** Implement a comprehensive sustainable infrastructure plan that prioritizes **renewable energy, water conservation, and eco-friendly waste management.**
  - Focus on developing solar and wind power installations to reduce dependency on diesel generators.
  - Introduce **rainwater harvesting systems and desalination plants** to address water scarcity.
  - Establish a **robust waste management system** with emphasis on recycling and composting.
  - Ensure all new construction adheres to green building standards, incorporating local materials and traditional designs adapted for climate resilience.
- **Enhanced Coastal and Marine Protection**: Strengthen the existing marine protected area network by **increasing no-take zones** and **implementing stricter enforcement measures.**
  - Invest in advanced monitoring technologies like **underwater drones and satellite imaging** to combat illegal fishing and protect endangered species.
  - Develop **community-based conservation programs,** engaging local fishers in sustainable practices and marine ecosystem monitoring.
  - Implement a **comprehensive coral restoration program,** combining artificial reefs with **active replanting of resilient coral species.**
  - Establish a dedicated marine research center to study and preserve the unique biodiversity of the islands' waters.
- **Cultural Sanctuaries- Preserving Indigenous Heritage**: Create buffer zones around **territories of indigenous tribes** to prevent encroachment and unwanted contact.
  - Develop **culturally sensitive healthcare programs** that combine modern medicine with traditional practices, respecting indigenous knowledge.
  - Establish an **Indigenous Knowledge and Culture Center** to document and preserve traditional languages, customs, and ecological knowledge.
  - Implement strict regulations on **tourism near indigenous areas, with heavy penalties for violations.**
  - Provide legal and administrative support to indigenous communities to assert their rights and participate in decision-making processes affecting their lands.
- **Green Tourism-Ecotourism and Sustainable Visitor Management**: Develop a comprehensive ecotourism strategy that **limits visitor numbers based on carrying capacity studies** of each island.
  - Implement a **certification program for eco-friendly accommodations** and tour operators, incentivizing sustainable practices.
  - Create immersive, educational experiences focusing on the **islands' unique ecosystems and cultures,** promoting conservation awareness.
- **Disaster Resilience-Fortifying Against Nature's Fury:** Develop a multi-hazard early warning system integrating **seismic, tsunami, cyclone, and landslide alerts,** ensuring rapid dissemination to all inhabited islands.
  - Implement **strict building codes and land-use regulations** that account for seismic activity, storm surge, and landslide risks, retrofitting existing critical infrastructure.
  - Create a network of **disaster-resistant shelters and evacuation routes** across the islands, with regular community drills and awareness programs.
  - Invest in creating **disaster resilient infrastructure** and **nature-based solutions like mangrove restoration and coral reef protection** to act as natural buffers against storms and tsunamis, while also enhancing biodiversity.
- Adaptive Strategies for Climate Change**: Implement a comprehensive climate change** adaptation plan, including **sea-level rise mapping and vulnerability assessments** for all inhabited islands.
  - Develop **nature-based coastal defense systems**, combining mangrove restoration with

engineered solutions like **permeable sea walls.**
- Introduce **climate-resilient agriculture practices**, promoting **salt-tolerant crop varieties a**nd water-efficient farming techniques.
- Establish an **early warning system for extreme weather events,** coupled with community-based disaster preparedness programs.
- Create a d**edicated climate change research station t**o monitor local impacts and develop tailored adaptation strategies.
- **Island Connectivity-Sustainable Transportation Network:** Develop an **integrated, sustainable transportation system** combining **electric ferries, solar-powered water taxis, and eco-friendly land transport options.**
    - Implement a smart traffic management system to optimize vehicle flow and reduce emissions in urban areas.
- **Blue Economy Boost**: Develop sustainable aquaculture projects, focusing on native species and employing circular economy principles to minimize waste.
    - Invest in **seaweed farming as a sustainable industry** that also contributes to carbon sequestration and provides alternative livelihoods.
    - Establish a **marine biotechnology research** center to explore potential pharmaceutical and industrial applications of the islands' marine biodiversity.
    - Promote sustainable fishing practices through training programs, gear modernization, and market incentives for responsibly caught seafood.
- **Leveraging Technology for Island Development**: Expand **high-speed internet connectivity to all inhabited islands,** enabling remote work opportunities and improved access to education and healthcare.
    - Implement **IoT-based environmental monitoring systems f**or real-time tracking of air and water quality, wildlife movements, and ecosystem health.

Drishti Mains Question:

Discuss the strategic importance of the Andaman and Nicobar Islands in India's maritime security and foreign policy. What challenges do these islands face, and what measures should be taken to ensure their sustainable development and security?

UPSC Civil Services Examination, Previous Year Questions (PYQs)

Q1. Which one of the following pairs of islands is separated from each other by the 'Ten Degree Channel'? (2014)

(a) Andaman and Nicobar

(b) Nicobar and Sumatra

(c) Maldives and Lakshadweep

(d) Sumatra and Java

Ans: (a)

Q2. Which of the following have coral reefs? (2014)

1. Andaman and Nicobar Islands
2. Gulf of Kachchh
3. Gulf of Mannar
4. Sunderbans

Select the correct answer using the code given below:

(a) 1, 2 and 3 only

(b) 2 and 4 only

(c) 1 and 3 only

(d) 1, 2, 3 and 4

Ans: (a)

Q3. In which one of the following places is the Shompen tribe found? (2009)

(a) Nilgiri Hills

(b) Nicobar Islands

(c) Spiti Valley

(d) Lakshadweep Islands

Ans: (b)