

**DAILY  
CURRENT  
AFFAIRS  
ANALYSIS**



LAKSHYA ACADEMY®

**30 JULY 2024**

# 1 - A 2,600-year-old Method for Combating Climate Change:

## GS III

### Environmental Conservation related issues

- **Which aspects of the report stand out the most?**
- **Climate Adjustment Throughout Millennia:**
  - The historic site of Vadnagar in Gujarat's semi-arid region has revealed a resilient agricultural industry that flourished over a 2500-year span despite centuries-long variations in the Monsoon Rains.
  - Different amounts of monsoon precipitation fell on Vadnagar in different periods: Historic, Mediaeval (c. 800–1300 CE), and post-Medieval (c. Little Ice Age).
- **Adaptable Crop Economy:**
  - The post-Medieval period (1300-1900 CE) saw a resilient agrarian economy centred on small-grained cereals, especially millets (C4 plants), despite variations in monsoon rains.
  - The community's adaptive reaction to a protracted weakening of the summer monsoon during the Little Ice Age is seen in the utilisation of C4 plants.
  - C4 plants are a particular class of plant that use the C4 carbon fixation pathway, which is a specialised photosynthetic mechanism. This pathway is adapted to hot, dry circumstances and situations when photorespiration is highly probable.
- **Crop Diversification for Food:**
  - These ancient communities managed to overcome the difficulties presented by fluctuations in precipitation and dry spells thanks to the diversification of their food crops and socioeconomic systems.
- **What Importance Does This Study Have?**
  - It emphasises how crucial it is to comprehend past climatic trends and how people have responded to them.
  - It implies that institutional reasons, in addition to climatic deterioration, also played a role in earlier famines and social breakdowns.
  - The study's conclusions can help guide current approaches to coping with climate change, highlighting the significance of comprehending past climatic trends and human reactions.

- **What are the initiatives in India to mitigate climate change?**
- **The National Climate Change Action Plan (NAPCC):**
  - established in 2008 to address India's climate change challenges.
  - Aim for India's development to be low-carbon and robust to climate change.
  - The NAPCC's core consists of eight national missions that reflect multifaceted, long-term, integrated strategies for accomplishing important climate change goals.
- **These are:**
  - The National Solar Mission
  - The National Initiative to Promote Energy Efficiency
  - The National Sustainable Habitat Mission
  - The National Water Mission
  - The National Initiative to Preserve the Himalayan Ecosystem
  - India's National Mission to Go Green
  - The National Centre for Sustainable Agriculture
  - The National Climate Change Strategic Knowledge Mission
- **About NDCs:**
  - India's pledges to mitigate greenhouse gas emissions and adjust to the changing climate.
  - promised to produce 50% of the power from non-fossil fuel sources by 2030 and to cut the GDP's carbon intensity by 45% from 2005 levels by that time.
  - declared their intention to build more carbon sinks and reach net zero emissions by 2070.
  - The National Fund for Climate Change Adaptation (NAFCC):
    - Founded in 2015 with the goal of giving state governments financial support to carry out adaptation projects across a range of industries.
- **State-Level Climate Change Action Plan (SAPCC):**
  - encourages each state and union territory to create its own SAPCC in accordance with its own needs and goals.
  - Sub-national climate change action plans and strategies are outlined in SAPCCs.
  - in line with the goals of the NDC and NAPCC.

**Source → The Hindu**

## 2 - National Conference for the Advancement of Seaweed Production:

### GS III

#### Environmental Conservation

- **Seaweeds: What Are They?**

- About: Seaweeds are multicellular, macroscopic marine algae. They are available in a range of colours, including as brown, green, and red.
- The phrase "Medical Food of the 21st Century" is used to describe them.
- Distribution: Seaweeds are primarily found in the intertidal zone, as well as in estuaries, backwaters, and shallow and deep sea waters.
- Big seaweeds create kelp forests, which are dense underwater forests that serve as fish, sea urchin, and snail nurseries.
- Seaweed Species in India: There are over 844 known seaweed species in India's waters.
- Certain species, including *Cystoseira trinodis*, *Gracilaria* spp., *Sargassum* spp., *Turbinaria* spp., and *Gelidiella acerosa*, are grown in order to produce alginates, agar, and liquid seaweed fertiliser.
- While alginate is derived from brown algae and is used as a thickener and stabiliser in ice cream, sauces, and dressings, agar is derived from red algae and is used as a thickening and gelling agent in jellies, puddings, jams, and other recipes.
- India has 46 seaweed-based enterprises, including 25 for the production of alginate and 21 for agar, but the lack of raw materials makes these sectors less efficient.
- Major Seaweed Beds in India: The beaches of Gujarat and Tamil Nadu, as well as the area surrounding Lakshadweep and the Andaman & Nicobar Islands, are rich in seaweed resources.
- Around Mumbai, Ratnagiri, Goa, Karwar, Varkala, Vizhinjam, and Pulicat in Tamil Nadu, Andhra Pradesh, and Chilka in Orissa, there are notable seaweed beds.

- **Importance:**

- Bio-indicator: They serve as bio-indicators by taking up excess nutrients and indicating marine chemical harm brought on by home, industrial, and agricultural waste, which frequently results in algal blooming.
- They are essential to reestablishing the equilibrium of ecosystems.
- Food Source: Packed with vitamins, minerals, and dietary fibre, seaweed is a nutritional powerhouse.
- It is used in many different food products, such as thickeners, salad dressings, sushi, and snacks.
- Anti-inflammatory and antibacterial properties can be found in several seaweeds. The greatest place to get iodine is from seaweed.

- **Bioproducts:** Extracts from seaweed are utilised in a variety of goods, such as bioplastics, medications, and cosmetics. They provide long-term substitutes for traditional solutions.
- **Carbon Capture:** Seaweed is a possible weapon in the fight against climate change since it takes up carbon dioxide from the atmosphere as it grows.
- Research indicates that seaweed cultivation and sinking may be a useful long-term carbon store.
- **Livelihoods:** Growing seaweed gives coastal communities—especially women and small-scale farmers—an income and a sense of empowerment.
- It gives comparatively fast profits with little initial commitment.
- **Additional Benefits:** Seaweeds are used in laxatives, medication capsules, cancer treatments, goitre treatment, bone replacement, and cardiovascular surgery, among other medical procedures.
- Additionally, anecdotal evidence points to their possible usage as a breast cancer treatment by the ancient Egyptians.

- **Associated Government Programmes:**

- The mission of Seaweed Mission is to commercialise seaweed production and processing in order to add value. It also seeks to extend farming over 7,500 km of shoreline in India.
- **Commercialization of Seaweed Products:** Cadalmin<sup>TM</sup> Immunalgin extract (Cadalmin<sup>TM</sup> IMe) and Cadalmin<sup>TM</sup> Antihypercholesterolemic extract (Cadalmin<sup>TM</sup> ACe), two seaweed-based nutraceutical products, have been successfully commercialised by the Central Marine Fisheries Research Institute (CMFRI) of the Indian Council of Agricultural Research (ICAR).
- These environmentally friendly "green" solutions are designed to fight dyslipidemia (an imbalance of fats) and increase antiviral immunity.
- An all-purpose seaweed park located in Tamil Nadu.

*Source → The Hindu*

### **3 - Gentoo Penguins:**

#### **GS II**

#### **Health related issues**

- **Avian influenza: What is it?**
- The highly contagious viral infection known as "avian influenza," or "bird flu," mostly affects birds, especially domestic poultry and wild birds.

- The highly virulent H5N1 avian influenza virus was initially discovered in Southern China in 1996 in domestic waterfowl. Name of the virus: A/goose/Guangdong/1/1996.
- **Human Transmission and Associated Symptoms:**
  - Although there are few human instances of H5N1 avian influenza, the virus is not easily spread from person to person. The World Health Organisation (WHO) reports that the death rate from infection is approximately 60%.
  - It can range from moderate flu-like symptoms, such as fever, coughing, and sore muscles, to serious respiratory problems, such as pneumonia, breathing difficulties, and even cognitive disorders, such as seizures and altered mental state.
- **India and Avian Influenza:**
  - **First Outbreak:**
    - The year 2006 saw the first known epidemic of Highly Pathogenic Avian Influenza (HPAI) H5N1 in India, which was followed by yearly outbreaks in Navapur, Nandurbar district, Maharashtra.
    - When H5N8 was initially discovered in India in November 2016, it mostly affected wild birds in five different states, Kerala having the highest number of cases.
    - 24 states and union territories have reported cases of the disease, leading to the slaughter of almost 9 million birds in an effort to stop its spread.
  - **Associated Initiative:**
    - The National Action Plan for Prevention, Control, and Containment of Avian Influenza (updated - 2021) outlines India's "detect and cull" strategy for managing Highly Pathogenic Avian Influenza (HPAI).
  - **Therapy:**
    - Antivirals have shown promise in treating human cases of avian influenza virus infections, reducing disease severity and mortality risk.
    - Highly Pathogenic Avian Influenza is referred to as HPAI, and Low Pathogenic Avian Influenza as LPAI.
  - **Which are the most important gentoo penguin facts?**
    - A band of white feathers that starts just above each eye and runs across the top of the head is what distinguishes them.

- A black throat, a huge brush tail compared to other penguin species, and a bill that is primarily deep orange or red are other characteristics that set them apart.
- **Distribution:**
  - They are only found in the Southern Hemisphere, mostly on the Antarctic Peninsula and many sub-Antarctic islands. The Falkland Islands in the South Atlantic Ocean are home to a significant population of them.
- **Habitat:**
  - Typically, these penguins are found near shorelines where they can easily reach food supplies and remain close to their eggs. The nesting and foraging processes are made more efficient by this tactical placement.
- **Hazards:**
  - Predators: Skuas, sheathbills, caracaras, giant fulmars, killer whales, Weddell seals, leopard seals, and South American sea lions are among the animals that could prey on them.
  - Human Impact: Traditional methods like blubber and skin harvesting and egg collection for replenishment.
  - Environmental Changes: Population sizes may be impacted by shifting environmental factors as well as competition from humans for prey.
- **Status of Conservation:**
  - Red List of the IUCN: Least Concern.
  - Which are the most important Falkland Islands facts?
  - Situated in the South Atlantic Ocean, the Falkland Islands are a British Overseas Territory. They are located roughly 500 km east of Argentina's coast.
  - The largest and capital city of the Falkland Islands is Stanley.
  - Territorial Status: Although Argentina asserts sovereignty over the Falkland Islands, which are a British Overseas Territory, there has always been hostility between the two nations. For instance, the 1982 conflict over the Falkland Islands' territory between Argentina and British soldiers.
  - The official language is English.
  - Animal life: A wide variety of birds, seals, and penguins can be found in the Falkland Islands. The King Penguin and the Magellanic Penguin are two of the many species of penguins that call the islands home.

## **4 - Northern White Rhino Conservation via Surrogacy:**

### **GS III**

#### **Environmental Conservation related issues**

- **How are Rhinos Made in Test Tubes by Scientists?**
- **Innovation in In-Vitro Fertilisation (IVF):**
  - With the first-ever IVF pregnancy of a rhino, a global partnership of experts called BioRescue accomplished a historic first.
  - A lab-created rhino embryo was implanted into a southern white rhino surrogate as part of the procedure.
  - With the loss of the last male northern white rhino in 2018, surrogacy became the only practical means of reviving the species.
  - It was discovered that Najin and Fatu, the two surviving females, were pathologically incapable of reproducing.
  - The only viable option left for the NWR is to employ frozen male and female reproductive cells to generate embryos in a lab, and then transfer those embryos into genetically related and more common southern white rhino (SWR) surrogate moms.
- **Issues with the Rhinos in Test Tubes:**
- **Concerns about Genetic Viability:**
  - The procedure limits the gene pool for a viable northern white population by using the sperm and eggs of two deceased guys to create the embryos.
  - The special characteristics of the northern white rhino, which are specialised for marshy environments, would be lost through crossbreeding with southern white rhinos, so this is not a viable solution.
  - Even in cases where IVF and surrogacy are effective, genetic diversity is still a worry.
- **Behavioural Difficulties in Offspring of IVF:**
  - IVF babies are not genetically predisposed to display the usual characteristics of northern white rhinos.
  - The maintenance of features distinctive to the species depends on early interaction and learning from northern white adults.



- The urgency stems from the ages of Najin (35), and Fatu (24), the two surviving white girls from the north.
- The first IVF calves must be born in time to learn from the surviving females in order to guarantee that behavioural and social abilities are passed on.

- **Conservation Outside of Test Tubes:**

- Critics contend that in addition to concentrating on species regeneration, efforts should also be made to address the underlying factors that lead to extinction, such as poaching and threats to habitat.

- A woman (the surrogate) consents to bear and give birth to a child on behalf of a person or couple (the intended parent(s)) under this arrangement.
- A woman who becomes pregnant, carries, and gives birth to a child on behalf of another individual or couple (intended parents) is known as a surrogate, often known as a gestational carrier.

- **What Are the Most Important Details About Northern White Rhinos?**

- Native to central and eastern Africa, the white rhino (*Ceratotherium simum*) is the parent species of the NWR subspecies.
- After elephants, white rhinos are the second largest terrestrial mammal. White rhinos, also referred to as square-lipped rhinoceroses, have a square upper lip and very little hair on them.
- There are two genetically different subspecies of white rhinos: the northern and southern white rhinos.

- **Present Situation:**

- The White Rhino's status on the IUCN Red List is Near Threatened. For this subspecies, the IUCN has the following status:
  - White rhinos in the North are critically endangered.
  - The Southern White Rhino is almost extinct.
  - The population of the NWR has drastically decreased as a result of sickness, habitat degradation, poaching, and civil strife.
  - There were roughly 2,000 NWRs in the wild in the 1960s. There were just four left by 2008.
  - Only two female NWRs, Najin and Fatu, remain; they reside in a Kenyan conservancy. The last male NWR, Sudan, passed away in 2018.
  - There are just four nations where the bulk of southern white rhinos (98.8%) can be found: South Africa, Namibia, Zimbabwe, and Kenya.
  - There are about 18,000 southern white rhinos living in private game reserves and protected regions.

*Source → The Hindu*



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