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Daily News Analysis

The Hindu Important News Articles & Editorial For UPSC CSE

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A team of wildlife conservationists tagged the Ganges river dolphin for the first time.

Wildlife experts tag almost-blind Ganges river dolphin for the first time in India

Rahul Karmakar
GUWAHATI

A team of wildlife conservationists tagged the almost-blind Ganges river dolphin for the first time.

A healthy male river dolphin from Kulsi, a tributary of the Brahmaputra, was tagged and released under veterinary care.

An initiative of the Ministry of Environment, Forest, and Climate Change, it was executed by the Wildlife Institute of India (WII) in collaboration with the Assam Forest Department and biodiversity conservation group Aaranyak.

The tagging under Project Dolphin is expected to help understand the dolphin's seasonal and migratory patterns, range, distribution, and habitat utilisation, particularly in fragmented or disturbed river systems. Officials said the lightweight tags emit signals compatible with Argos satellite systems even with limited surfacing time and are designed to minimise interference with dolphin movement.

A wildlife team with a healthy male river dolphin that was tagged.
SPECIAL ARRANGEMENT

"The first-ever tagging of the Ganges river dolphin is a historic milestone for the species and India. This project funded by the National CAMPA Authority will deepen our understanding of conserving our national aquatic animal," Environment Minister Bhupender Yadav said.

"Tagging river dolphins will contribute to evidence-based conservation strategies," Virendra R. Tiwari, the director of WII said.

The Ganges river dolphin is unique for being nearly blind and relies on echolocation for its biological needs. India houses about 90% of the global population of the dolphin, istributed across the Ganga-Brahmaputra-Meghna and Karnaphuli river systems. However, its distribution has drastically declined over the past century. Despite its wide range, knowledge gaps remain regarding this species due to its elusive behaviour. It surfaces for only 5-30 seconds at a time.

About Ganges River Dolphin:

- The Ganges River Dolphin, declared as India's National Aquatic Animal in 2009, is an endangered freshwater dolphin species primarily found in the Ganges, Brahmaputra, and Meghna river systems.
- Known locally as Susu, it serves as an indicator of the health of river ecosystems due to its apex predator role.
- **Key Features:**
  - **Physical Characteristics:** Nearly blind, it uses echolocation to navigate and hunt.
  - **Habitat:** Prefers slow-moving waters with adequate depth and prey availability.
  - **Diet:** Carnivorous, feeding primarily on fish and invertebrates.

- **Geographical Distribution:**
  - Found in the Ganga, Brahmaputra-Meghna, and Karnaphuli-Sangu river systems in India, Nepal, and Bangladesh.
  - Historically widespread, but populations are now fragmented due to anthropogenic pressures.
- **Ecological Significance:**
  - **Keystone Species:** Plays a crucial role in maintaining riverine ecosystem balance.
  - **Indicator Species:** Reflects the overall health of freshwater ecosystems.
- **Conservation Status:**
  - **IUCN Status:** Endangered
  - **CITES:** Appendix I
  - **Indian Wildlife Protection Act, 1972:** Schedule I

Major Threats:

- **Habitat Degradation:**
  - Pollution from industries, agriculture, and urban runoff.
  - Dams and barrages fragment habitats, reducing population connectivity.
- **Bycatch and Hunting:**
  - Accidental entanglement in fishing nets.
  - Targeted for oil and meat in some areas.
- **Water Abstraction:**
  - Excessive withdrawal of water for agriculture and industry impacts river flow.
- **Riverbed Alteration:**
  - Sand mining and dredging disrupt habitats.

Conservation Efforts by the Government:

- **Project Dolphin (2020):**
  - Announced by Prime Minister Narendra Modi, focusing on the conservation of both river and marine dolphins.
- **Protected Areas:**
  - Designated dolphin sanctuaries like Vikramshila Gangetic Dolphin Sanctuary in Bihar.
- **Community Awareness:**
  - Initiatives to educate local communities about sustainable fishing and conservation.
- **Technological Interventions:**
  - Satellite tagging projects for studying migration and habitat needs.
- **Legislative Measures:**
  - Strict enforcement of the Wildlife Protection Act and bans on harmful practices like sand mining.

News Summary:

- India marked a significant milestone in wildlife conservation with the first-ever satellite tagging of a Ganges River Dolphin in Assam.
- This initiative, spearheaded by the Ministry of Environment, Forest and Climate Change (MoEFCC), was executed by the Wildlife Institute of India (WII).
- The project is part of the larger Project Dolphin.
- **Objectives and Significance:**
  - **Understanding Habitat Needs:** The tagging aims to fill knowledge gaps regarding the Ganges River Dolphin's habitat requirements, migratory patterns, and range distribution.
  - **Conservation Efforts:** By studying their behaviour and movement, the project seeks to develop a conservation action plan for protecting this apex predator, which plays a vital role in maintaining the health of river ecosystems.
  - **Technological Advancement:** Lightweight satellite tags compatible with Argos systems were used, ensuring minimal interference with the dolphins' movement.
- **Broader Implications:**
  - The project underscores India's commitment to wildlife conservation and sets a benchmark for protecting endangered species globally.
  - It also highlights the need for continued technological advancements and comprehensive research to ensure the sustainability of river ecosystems.
  - This landmark effort reflects the growing awareness and proactive measures toward conserving India's rich aquatic biodiversity.

UPSC Prelims PYQ : 2015

Ques : Which one of the following is the national aquatic animal of India?

(a) Saltwater crocodile

(b) Olive ridley turtle

(c) Gangetic dolphin

(d) Gharial

Ans : c)

Page 03 : Prelims Fact

The Indian Space Research Organisation on Wednesday commenced the assembly of the Human Rated Launch Vehicle Mark-3 (HLVM3) for the Gaganyaan mission's maiden uncrewed flight.

ISRO begins assembly of HLVM3 for Gaganyaan's flight

The ISRO begins assembly of HLVM3 in Sriharikota on Wednesday. ANI

The Hindu Bureau
BENGALURU

The Indian Space Research Organisation on Wednesday commenced the assembly of the Human Rated Launch Vehicle Mark-3 (HLVM3) for the Gaganyaan mission's maiden uncrewed flight.

The assembly of the HLVM3 is taking place at the Satish Dhawan Space Centre (SDSC) in Sriharikota and the uncrewed flight is expected to take place early next year from the spaceport.

"At 0845 hrs on December 18, 2024, at SDSC, the stacking of the nozzle end segment with full flex seal nozzle of the S200 motor took place, thus commencing the official launch campaign of the HLVM3-G1 / OM-1 mission," it said.

It further added that the preparation of both S200 motors will now involve assembling segments, control systems, and avionics.

"L110 and C32 stages for the HLVM3 are ready at the launch complex. The crew escape systems elements are also received at SDSC. The integration of the Crew Module is happening at VSSC and the integration of the Service Module at URSC, Bengaluru. The Orbital Module (OM) level integration and tests will take place subsequently at URSC," it added.

Project background

The Gaganyaan project envisages a demonstration of human spaceflight capability by launching a crew of three members to an orbit of 400 km for a three-day mission and bringing them back safely to Earth by landing in sea waters.

Under the programme, ISRO intends to carry out three uncrewed missions and one crewed mission.

The assembly of the HLVM3 coincides with the 10th anniversary of the LVM3-X/CARE mission, which took place on December 18, 2014.

"It was on December 18, 2014, that the Indian Coast Guard recovered the Crew Module from the turbulent seas of the Bay of Bengal, approximately 1600 km from SDSC-SHAR. On the same day, LVM3-X, in its maiden flight, had lifted a Crew Module of mass of 3775 kg (LVM3-X/CARE mission) into a suborbital altitude of 126 km from where it was controlled using thrusters to orient it for a favourable re-entry," the agency said.

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With Donald Trump potentially returning to the White House, OPEC+ delegates express concern over higher US oil production.

- His administration's focus on deregulating the energy sector could lead to increased oil output, contributing to a further erosion of OPEC+'s market share.

'OPEC+ wary of renewed U.S. oil output rise under Trump'

Reuters
LONDON

OPEC+ is wary of a renewed rise in U.S. oil output when Donald Trump returns to the White House, delegates from the group said, because more U.S. oil would further erode OPEC+ market share and hamper the group's efforts to support prices.

OPEC+ pumps about half of the world's oil and earlier this month delayed a plan to raise output until April. The group extended some of its supply cuts until the end of 2026 due to weak demand and booming production from the U.S. and some other non-OPEC+ producers.

OPEC has a history of under-estimating U.S. output gains going back to the start of the shale oil boom, which has seen the U.S become the world's top oil producer.

Poor record: OPEC has a history of under-estimating U.S. output gains going back to the start of the shale oil boom. REUTERS

Some delegates are more bullish now on U.S. oil and say the reason behind this is Mr. Trump. Following an election centred on the economy and the cost of living, Mr. Trump's transition team put together a package to deregulate the energy sector.

"A return of Trump is good news for the oil industry, with possibly less stringent environmental policies," a delegate from a U.S. ally OPEC+ member said. "But we may see higher production in the U.S., which is not good for us."

A further rise in U.S. output would hinder plans by the Organization of the Petroleum Exporting Countries and allies such as Russia to start raising output from April 2025 without risking a drop in prices. A drop in prices would hurt OPEC+ countries who rely on oil revenues.

Mr. Trump campaigned on promises to bring down energy prices and inflation.

About 'Organization of the Petroleum Exporting Countries' Plus (OPEC+)

What is OPEC+?	**Formation and Purpose**: ➧ **OPEC+** is a coalition of **OPEC** members and **non-OPEC oil-producing nations** that work together to manage oil production and stabilize global oil prices. ➧ The alliance was formed in **2016** in response to increasing oil production in the **United States**, particularly from shale oil, which led to falling oil prices. **OPEC Members**: ➧ **OPEC** was founded in **1960** and includes **12 member countries**: **Algeria, Angola, Equatorial Guinea, Gabon, Iran, Iraq, Kuwait, Libya, Nigeria, Saudi Arabia, United Arab Emirates (UAE), Venezuela**. **Non-OPEC Members in OPEC+**: ➧ **OPEC+** includes **10 non-OPEC members**: **Azerbaijan, Bahrain, Brunei, Kazakhstan, Malaysia, Mexico, Oman, Russia, South Sudan, Sudan**. **Global Influence**: ➧ **OPEC+** countries together produce approximately **40%** of the world's crude oil and control about **80%** of the world's proven oil reserves.
Factors are influencing OPEC+'s oil production cuts	➧ **Rising US oil production**: The shale boom in the US has increased its market share, impacting OPEC+'s influence. ➧ **Global price stability**: OPEC+ implements production cuts to prevent oil prices from falling too low. ➧ **Weak global demand**: Extended cuts due to low demand, especially in major economies.
Implications of OPEC+'s policies	➧ **Reduced market share**: OPEC+'s global oil share dropped from **55% in 2016** to **48% in 2024**.

	➧ **Price volatility**: OPEC+'s production cuts aim to stabilize prices, but increasing US production affects this goal. ➧ **Economic stability**: Production cuts help sustain favorable prices for oil-producing economies.

In News : Arctic Tundra as a Carbon Source

The Arctic Tundra has transitioned from a carbon sink to a carbon emitter as confirmed by a new analysis in the 'Arctic Report Card' by the National Oceanic and Atmospheric Administration (NOAA).

About Arctic Tundra:

- The Arctic Tundra is a vast, treeless biome characterized by its cold, dry, and rocky terrain.
- The term "tundra" originates from the Finnish word tunturi, meaning a 'treeless plain.'

Characteristics of the Arctic Tundra:

- **Permafrost:** It refers to permanently frozen soil, starting within a meter of the surface. During summer, only the upper layer thaws, while deeper layers remain frozen.
  - The frozen layer restricts plant root growth and prevents tree growth, resulting in a treeless landscape.
- **Soil composition:** The tundra's soil is rocky and nutrient-poor due to low decomposition rates.
  - Organic material accumulates in the form of peat (decayed sphagnum moss) and humus (organic matter), making it a significant carbon sink.
- **Geographic location:** The Arctic tundra is the northernmost biome, covering areas north of the Arctic Circle up to the polar ice cap, parts of Canada, Iceland, and Greenland.
  - It spans approximately 5 million km^2.
- **Climate:** Temperatures range from 5°C in summer to -60°C in winter, with mean temperatures below 0°C for 6–10 months.
  - Annual precipitation is low, ranging between 150–250 mm, but evaporation is minimal.

- Features 24-hour sunlight in summer and 24-hour darkness in winter.

- **Natural vegetation:** Vegetation is predominantly herbaceous due to the cold climate and short growing season.Includes grasses, mosses (e.g., reindeer moss), lichens, and liverworts.
  - Woody plants like dwarf willows remain short and spread to withstand high winds.
- **Animal life:** Large mammals such as polar bears, caribou, musk ox, and Arctic foxes inhabit the tundra.
  - Smaller animals like lemmings and Arctic hares adapt with fur that changes color seasonally.
  - Migratory birds, such as loons and snow geese, breed in the tundra during summer.
- **Arctic Tundra as a Carbon Sink**: Despite the absence of trees, the Arctic Tundra is a significant carbon sink.
- **This is due to the accumulation of organic matter in:** Peat (Decayed sphagnum moss) and Humus (Decomposed organic material).
  - The cold conditions slow decomposition, trapping carbon in the permafrost for millennia.
- **Reasons for Emissions:**
- **Thawing permafrost:** Rising temperatures activate microbes, breaking down organic matter and releasing CO_2 and CH_4 (methane).
  - Increased wildfires release additional GHGs and accelerate permafrost thawing.
- **Temperature trends:** The Arctic is warming four times faster than the global average. 2024 marked the second-warmest year since records began in 1900.
- **Global carbon trends**:
  - CO2 emissions in 2024 are projected to be 6 billion tonnes, up from 40.6 billion tonnes in 2023.
  - Land-use changes add 2 billion tonnes of emissions annually.

In News : Baiga Tribe: Jodhaiya Bai

Jodhaiya Bai, a celebrated Baiga tribal artist and Padma Shri awardee, passed away on December 15, 2024, at the age of 86 after a prolonged illness. Her death was reported from her native Lodha village in Umaria district, Madhya Pradesh.

About Baiga Tribe:

- The Baiga Tribe is one of India's Particularly Vulnerable Tribal Groups (PVTGs). They primarily reside in Chhattisgarh, Jharkhand, Bihar, Odisha, West Bengal, Madhya Pradesh, and Uttar Pradesh.
- **Traditional Practices:**
- **Livelihood:** Traditionally semi-nomadic, they practised slash-and-burn cultivation, locally called "Bewar", and now depend mainly on minor forest produce.
- **Tattooing:** This is integral to their culture, with specific tattoos designated for different body parts and age groups. Tattoos are made using kajal derived from Ramtilla seeds (Niger seeds).
- **Mahua Tree:** These are fermented and distilled to prepare an intoxicant, forming an essential part of their diet and culture.
- **Cultural Identity:**
- **Bamboo:** A vital resource used in their daily life.

- **Habitat Rights:** The Baiga tribe is the first community in India to be granted habitat rights, reflecting their deep connection with forests.

Jodhaiya Bai's Contribution:

- Jodhaiya Bai was pivotal in bringing international recognition to Baiga tribal art.
- She was honored with the Padma Shri in 2023 for her exceptional contribution to the field of arts.
- Her artwork, which portrays Baiga tribal culture on canvas, has been exhibited in multiple countries around the world.

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Daily News Analysis

Page : 08 Editorial Analysis

Strengthening the roots of an agri-carbon market

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Carbon markets hold the potential to transform Indian agriculture, turning sustainable farming practices into a lucrative opportunity for farmers while combating climate change. In this, carbon pricing is a critical tool for mitigating climate change. It functions through compliance and voluntary carbon markets. Compliance markets, regulated by governments or international bodies such as the United Nations, impose emissions caps on companies. Businesses exceeding these caps must either purchase carbon credits from projects that mitigate greenhouse gas (GHG) emissions, such as agroforestry or sustainable agriculture projects, or pay carbon taxes for their extra emissions. In contrast, the voluntary carbon market operates without regulation, allowing organisations to trade carbon credits through mechanisms such as the Clean Development Mechanism, Verra, and Gold Standard, among others. Together, these systems aim to reduce GHG emissions and support global climate goals.

Carbon markets, their working

Carbon markets are gaining momentum. At COP29, in November 2024, for instance, a centralised carbon market under the UN got a green signal. Last year, India announced that it would launch its own compliance and voluntary carbon markets. Recently, the National Bank for Agriculture and Rural Development, in collaboration with the Indian Council of Agricultural Research and State universities, listed five agriculture carbon credit projects in Verra.

Carbon markets rely on two key principles: additionality and permanence. Additionality ensures emission reductions happen only due to carbon credits, requiring farmers to adopt new practices. This means that those who already use sustainable methods are not eligible for credits. Permanence refers to the long-term durability of these benefits. Permanence guarantees these benefits last, such as ensuring carbon stored in soils through reduced tillage is not lost due to a return to conventional ploughing. Therefore, projects that aim to generate and trade carbon credits must adhere to certain conditions, including additionality and permanence.

In India, existing carbon credit projects listed under non-governmental entities need to be examined to ensure inclusivity and efficiency

To assess the readiness of India's agriculture sector for a full-scale carbon market, we must examine the existing carbon credit projects listed under non-governmental entities such as Verra. This highlights challenges and the necessary fixes before scaling up. If projects fail to deliver promised environmental benefits, producing unreliable credits, buyers may lose confidence and stop purchasing agriculture carbon credits. This deprives farmers of extra income and discourages the adoption of sustainable practices. Ensuring high-quality credits from the start of Indian carbon markets is crucial for trust and long-term farmer participation.

In just four years, over 50 agriculture carbon farming projects have been listed in the Verra registry, targeting 1.6 million hectares of farmland in India. These projects aim to generate approximately 4.7 million carbon credits annually, equivalent to offsetting the GHG emitted from 11 billion miles driven by an average gasoline-powered vehicle. However, none of these projects is registered, which means carbon credits have not been issued and that farmers have not received the money.

Carbon farming projects in India

A recent study by the writers of this article published in Climate Policy – "Carbon farming in India: are the existing projects inclusive, additional, and permanent?" – examines seven such carbon farming projects in Haryana and Madhya Pradesh, focusing on socio-economic inclusiveness, additionality, and permanence. The findings show that marginalised communities and small farmers were largely excluded, with women making up only 4% of participants. Carbon farmers in these States cultivated significantly more land – 51% more in Haryana and 32% more in Madhya Pradesh – than non-carbon farmers. Among non-carbon farmers, 46% of the land was owned by non-marginalised castes (general castes) and 17% by Scheduled Caste-Scheduled Tribe (SC/ST) farmers, whereas among carbon farmers, 63% of the land was under non-marginalised castes and only 13% was owned by SC/ST farmers.

Further, while some sustainable practices were already in place before the projects began, others such as zero tillage, alternate wetting and drying, intercropping, reduced chemical fertilizer use, micro-irrigation, and tree planting were newly adopted, which satisfies the additionality condition. This demonstrates that, when implemented effectively, these projects can genuinely reduce GHG emissions.

Significant challenges remain in these projects: 45% of farmers reported no communication, over 60% lacked training in new techniques, and 28% stopped sustainable practices by the second year, mainly due to insufficient financial incentives. Alarmingly, 99% had not received carbon credit payments, with additional issues including yield penalties and inadequate information on carbon farming.

Despite these setbacks, projects managed by startups focused solely on carbon credits, termed "Carbon Core" in this study, performed better than those run by subsidiaries or offshoots of larger corporations. However, these projects were less inclusive of smallholders and marginalised communities.

To address these issues, India's carbon market must incentivise socially inclusive projects by offering higher prices for carbon credits from projects that include smallholders and marginalised communities. Effective communication, regular training, and guaranteed, timely payments can enhance farmer participation. Collaborating with national and international research institutions to target suitable regions and interventions can prevent yield penalties and protect food security.

An improving science

The science of measuring soil carbon and GHG emissions is expected to improve over time. In recent years, digital technologies have advanced significantly. Tools such as remote sensing, satellite imagery, drones, and sensors for monitoring project activities will soon become more accessible. However, for carbon markets to succeed, the critical focus must be addressing the grand old implementation challenges.

Building a thriving agricultural carbon market in India requires collaboration among policymakers, researchers, and private entities to ensure inclusivity, transparency, timely rewards for farmers, and improved project implementation.

GS Paper 03 : Agriculture

UPSC Mains Practice Question: Discuss the role of carbon markets in transforming Indian agriculture into a sustainable and profitable sector. Highlight the challenges and suggest measures for their effective implementation. (150 Words /10 marks)

Context :

- Carbon markets offer an opportunity to transform Indian agriculture by incentivizing sustainable practices while addressing climate change.
- However, challenges like socio-economic exclusivity, lack of training, and delayed payments hinder their effectiveness.
- Ensuring inclusivity, technological advancements, and policy support is crucial for building a successful carbon market in India.

Introduction to Carbon Markets and Agriculture

- Carbon markets present an opportunity to transform Indian agriculture into a profitable venture for farmers by adopting sustainable practices while addressing climate change.
- Carbon pricing plays a key role in mitigating climate change through compliance and voluntary carbon markets.
- Compliance markets are regulated by governments or international bodies like the UN and enforce emission caps, requiring companies to either purchase carbon credits or pay carbon taxes.
- Voluntary markets, unregulated, enable trading of carbon credits through mechanisms like the Clean Development Mechanism, Verra, and Gold Standard.

India's Carbon Market Initiatives

- At COP29 in November 2024, a centralized UN carbon market was approved.
- India announced plans to launch compliance and voluntary carbon markets.
- The National Bank for Agriculture and Rural Development (NABARD) and Indian Council of Agricultural Research (ICAR) have listed five agriculture carbon credit projects with Verra.

Key Principles of Carbon Markets

- **Additionality:** Credits are issued only if emission reductions occur due to the project, requiring new practices to be adopted.
- **Permanence:** Benefits, such as carbon storage, must be long-lasting to avoid reversals.

Existing Projects in India

- Over 50 carbon farming projects have been listed in the Verra registry, targeting 1.6 million hectares and aiming to generate 4.7 million credits annually.
- None of these projects have been registered, and farmers have not received payments.

Challenges

- **Communication and Training:** 45% of farmers reported no communication, and 60% lacked training.
- **Financial Incentives:** 28% discontinued sustainable practices due to inadequate financial support.

- **Payments and Support:** 99% of farmers had not received carbon credit payments, leading to dissatisfaction.
- **Inclusivity:** Projects by startups performed better but were less inclusive of smallholders and marginalized groups.

Recommendations for Improvement

- Higher prices for credits from inclusive projects to encourage participation by smallholders and marginalized groups.
- Regular training, effective communication, and timely payments to ensure participation.
- Collaborations with research institutions to identify suitable interventions and avoid yield penalties.

Advancing Technology and Collaboration

- Improved tools like satellite imagery, drones, and sensors can enhance monitoring and implementation.
- Policymakers, researchers, and private entities must collaborate to ensure transparency, inclusivity, and efficient implementation.