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Varkala (Kerala) Selected in UN's Inaugural "20 Cities Towards Zero Waste" Initiative

Why in News?

- Varkala in Kerala has been named in the inaugural list of 20 Cities Towards Zero Waste initiative.
- This global recognition highlights cities that are demonstrating ambitious, innovative, and practical approaches to waste reduction, circular economy practices, and building sustainable urban systems.

About "20 Cities Towards Zero Waste" Initiative

- **Leading Organisations**
 - Led by the UN Secretary-General's Advisory Board on Zero Waste.
 - Supported by UN-Habitat and the United Nations Environment Programme (UNEP).
- **Objectives**
 - Recognise city-level leadership and innovation in waste management.
 - Promote exchange of best practices and lessons learned among cities.
 - Inspire other urban centres to accelerate their transition towards **zero waste**.
 - Support implementation of **circular economy** approaches at the local level.
- **Focus Areas**
 - Reducing waste generation.
 - Advancing reuse, recycling, and resource recovery.
 - Building resilient, inclusive, and sustainable urban systems.

Significance of the Initiative

- **Global Recognition**

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- Positions selected cities as role models for sustainable urban development.
- Encourages peer learning and scaling up of successful models worldwide.
- **For India**
 - Varkala's selection brings international spotlight to Kerala's efforts in waste management and coastal sustainability.
 - Aligns with India's **Swachh Bharat Mission, Plastic Waste Management Rules**, and **Circular Economy** push under the Ministry of Environment, Forest and Climate Change.
 - Demonstrates the potential of smaller cities and towns in achieving zero-waste goals.

About United Nations Environment Programme (UNEP)

- **Establishment**
 - Founded in **1972** following a UN General Assembly resolution.
- **Mandate**
 - Leading global authority on the environment.
 - Monitors the state of the global environment.
 - Coordinates international responses to major environmental challenges.
- **Headquarters**
 - **Nairobi, Kenya** (only major UN agency headquartered in the Global South).
- **Key Functions**
 - Develops and supports global environmental treaties (e.g., CBD, CITES, Minamata Convention).
 - Hosts secretariats of major conventions.

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- Publishes flagship reports such as **Global Environment Outlook** and **Emissions Gap Report**.
- Provides capacity building, technical assistance, and funding support to developing countries.

UPSC CSE & State Relevance

Prelims

- Key terms: 20 Cities Towards Zero Waste, UNEP, UN-Habitat, Circular Economy, Zero Waste
- Location: Varkala (Kerala)
- Related: Swachh Bharat Mission, Plastic Waste Management, Sustainable Urban Development

GS-3 (Environment)

- Waste management, circular economy, and urban sustainability.

GS-2 (IR)

- Role of UN agencies (UNEP, UN-Habitat) in global environmental governance.

Essay / Interview

- “Zero Waste Cities: The Future of Sustainable Urbanisation in the 21st Century”
- “From Global Goals to Local Action: India’s Journey Towards Circular Economy and Zero Waste.”

MCQs

1. Varkala, recently selected in the “20 Cities Towards Zero Waste” initiative, is located in which state?



- (a) Tamil Nadu
- (b) Kerala
- (c) Karnataka
- (d) Andhra Pradesh

Answer: (b)

2. The “20 Cities Towards Zero Waste” initiative is supported by which of the following UN agencies?
- 3. UNEP
 - 4. UN-Habitat
 - 5. UNDP

Select the correct answer using the code given below:

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

Answer: (b)

3. The United Nations Environment Programme (UNEP) was established in:
- (a) 1962
 - (b) 1972
 - (c) 1982
 - (d) 1992



Answer: (b)

4. Which of the following is NOT an objective of the “20 Cities Towards Zero Waste” initiative?
- (a) Recognise city leadership in waste reduction
 - (b) Promote circular economy solutions
 - (c) Regulate international trade in hazardous waste
 - (d) Inspire other cities to adopt zero-waste practices

Answer: (c)

Mains Questions

1. “Achieving zero waste at the city level is crucial for sustainable urban development.” Discuss the significance of the UN’s “20 Cities Towards Zero Waste” initiative with special reference to Varkala’s selection. (15 marks / 250 words)
2. Examine the role of UNEP in global environmental governance and how it supports initiatives like zero-waste cities. (10 marks / 150 words)
3. “Transitioning to a circular economy is essential to address the mounting urban waste crisis in India.” Analyse the challenges and suggest measures for Indian cities to move towards zero waste. (15 marks / 250 words)
4. **Essay (250 marks)** “From Linear to Circular: Building Zero-Waste Cities for a Sustainable Future.”



40 New Species Added to CMS Protected List at COP15

Why in News?

- At the 15th Conference of the Parties (COP15) to the Convention on the Conservation of Migratory Species of Wild Animals (CMS), 40 new species were added to the protected list.
- This decision strengthens global efforts to conserve migratory animals and their habitats amid rising threats from habitat loss, climate change, pollution, and illegal hunting.

About Convention on the Conservation of Migratory Species (CMS)

- **Full Name & Popular Name**
 - Convention on the Conservation of Migratory Species of Wild Animals
 - Also known as the **Bonn Convention**.
- **Nature & Parent Body**
 - An **environmental treaty** under the aegis of the **United Nations Environment Programme (UNEP)**.
 - It is the **only global and UN-based intergovernmental organisation** dedicated exclusively to the conservation and management of migratory species.
- **Signing & Objective**
 - Signed on **23 June 1979** in **Bonn, Germany**.
 - Provides a global platform for the **conservation and sustainable use** of terrestrial, aquatic, and avian migratory species throughout their range.
 - Parties acknowledge the need to give special attention to species with **unfavourable conservation status**.



- **Structure**

- **Conference of the Parties (COP):** The main decision-making body.
- Two Appendices:
 - **Appendix I:** Lists **endangered migratory species**; prohibits taking (hunting, fishing, capturing) of these species.
 - **Appendix II:** Lists species with unfavourable conservation status; encourages Range States to conclude agreements for their conservation and management.

- **Instruments**

- Legally binding treaties (called **Agreements**).
- Less formal instruments such as **Memoranda of Understanding (MoUs)**.

Significance of COP15 Decisions

- **Global Conservation Boost**

- Addition of 40 new species expands the scope of legal protection and international cooperation.
- Promotes transboundary conservation efforts since migratory species cross national borders.

- **For India**

- India is a Party to CMS and has been actively involved in protecting migratory species such as the Great Indian Bustard, Siberian Crane, and various marine species.
- The decision reinforces India's commitments under international environmental law and supports domestic efforts like Project Tiger, Project Elephant, and wetland conservation.



Key Challenges Addressed by CMS

- Habitat fragmentation and loss along migration routes.
- Climate change impacts on migratory patterns.
- Illegal hunting, bycatch, and pollution.
- Need for coordinated action among Range States.

UPSC CSE & State Relevance

Prelims

- Key terms: CMS (Bonn Convention), COP15, Appendix I & II, Migratory Species, UNEP
- Facts: Signed 1979 in Bonn; 40 species added at COP15
- Related: CITES, CBD, Ramsar Convention, IUCN Red List

GS-3 (Environment & Ecology)

- Conservation of migratory species and international environmental agreements.

GS-2 (International Relations)

- Global environmental governance and India's role in multilateral environmental agreements.

Essay / Interview

- "Transboundary Conservation: The Critical Role of CMS in Protecting Migratory Species"
- "From Bonn to COP15: Strengthening Global Cooperation for Migratory Wildlife in the Era of Climate Change."



MCQs

1. The Convention on the Conservation of Migratory Species (CMS) is also known as:

- (a) Ramsar Convention
- (b) Bonn Convention
- (c) Cartagena Protocol
- (d) Minamata Convention

Answer: (b)

2. With reference to CMS, consider the following statements:

- 3. It is administered by the United Nations Environment Programme (UNEP).
- 4. Appendix I lists endangered migratory species and prohibits their taking.
- 5. It was signed in 1979 in Bonn, Germany.

Which of the statements given above is/are correct?

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

Answer: (d)

3. At COP15 of CMS, how many new species were added to the protected list?

- (a) 20
- (b) 30



(c) 40

(d) 50

Answer: (c)

4. Which of the following is NOT covered under the CMS framework?

(a) Terrestrial migratory species

(b) Aquatic migratory species

(c) Avian migratory species

(d) Domesticated animals

Answer: (d)

Mains Questions

1. "The Convention on the Conservation of Migratory Species (CMS) plays a unique role in transboundary wildlife conservation." Discuss its structure, objectives, and recent developments at COP15. (15 marks / 250 words)
2. Examine the challenges in conserving migratory species and how international agreements like CMS address them. (10 marks / 150 words)
3. "Climate change and habitat fragmentation pose existential threats to migratory species." Analyse India's role and responsibilities under the CMS framework. (15 marks / 250 words)
4. **Essay (250 marks)** "Protecting the Journeys of Nature: The Imperative of Global Cooperation for Migratory Species in a Changing World."



PM e-DRIVE Scheme

Why in News?

- The **Ministry of Heavy Industries** has announced extensions of subsidies under the **PM e-DRIVE Scheme**:
 1. Electric two-wheelers (e-2W): subsidy extended till **31 July 2026**.
 2. Electric rickshaws and electric carts (e-3W categories): subsidy extended till **31 March 2028**. This move aims to sustain momentum in electric vehicle (EV) adoption, support manufacturers, and accelerate India's transition to cleaner mobility.

About PM e-DRIVE Scheme

- **Full Form**
 - **PM E-DRIVE** → **Electric Drive Revolution in Innovative Vehicle Enhancement**.
- **Launch & Validity**
 - Launched in **October 2024**.
 - Came into effect from **1 October 2024**.
- **Primary Objectives**
 - Accelerate widespread adoption of electric vehicles (EVs).
 - Establish a robust nationwide charging infrastructure.
 - Build a strong domestic EV manufacturing ecosystem.
 - Provide upfront incentives to buyers and promote manufacturing.

Key Components

- **Demand Incentives / Subsidies** → For e-2 wheelers, e-3 wheelers, e-ambulances, e-trucks, and emerging EV categories.

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- **Capital Asset Creation Grants** → For procurement of electric buses (e-buses), setting up charging stations, and upgrading testing facilities of the Ministry of Heavy Industries.
- **Administrative & IEC Activities** → Including Information, Education & Communication (IEC) and Project Management Agency (PMA) costs.
- **Implementation Mechanism**
 - Overseen by an **inter-ministerial Project Implementation and Sanctioning Committee (PISC)** chaired by the Secretary, Ministry of Heavy Industries.
 - PISC has powers to monitor progress, revise incentives, increase e-bus numbers, and approve guidelines.
- **Complementary State Incentives**
 - States are encouraged to provide additional benefits such as road tax waivers, reduced toll/parking fees, and permit exemptions.
- **Eligibility Criteria**
 - Vehicles must be registered as “Motor Vehicles” under the **Central Motor Vehicles Rules (CMVR)**.
 - Must be equipped with advanced battery technology.

Significance of the Scheme

- **Environmental & Energy Security**
 - Reduces dependence on fossil fuels and lowers vehicular emissions.
 - Supports India’s climate commitments under NDCs and net-zero goals.
- **Economic Impact**
 - Boosts domestic manufacturing, creates jobs in the EV value chain, and strengthens the battery ecosystem.

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• Mobility Transition

- Makes EVs more affordable for the common citizen, especially in the two-wheeler and three-wheeler segments that dominate Indian roads.

Recent Extensions & Implications

- **e-2 Wheelers:** Subsidy extended till 31 July 2026 → Provides longer policy certainty to manufacturers and buyers.
- **e-Rickshaws & e-Carts:** Extended till 31 March 2028 → Supports last-mile connectivity and urban mobility.
- **Overall Effect:** Sustains demand, prevents market disruption, and gives time for scaling up local production and charging infrastructure.

UPSC CSE & State Relevance

Prelims

- Key terms: PM e-DRIVE Scheme, PISC, Central Motor Vehicles Rules (CMVR), e-2W, e-3W
- Facts: Launched October 2024; Subsidies extended for e-2W till July 2026 and e-3W till March 2028
- Related: FAME-II Scheme, National Electric Mobility Mission Plan

GS-3 (Economy, Environment & Science & Technology)

- Government schemes for EV promotion, green mobility, and sustainable development.

GS-2 (Governance)

- Inter-ministerial coordination through bodies like PISC.

Essay / Interview

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- “Electric Mobility as a Cornerstone of India’s Energy Transition and Climate Strategy”
- “From Policy Push to Market Pull: Challenges and Opportunities in India’s EV Ecosystem.”

MCQs

1. The PM e-DRIVE Scheme was launched in:

- (a) October 2023
- (b) October 2024
- (c) January 2025
- (d) April 2024

Answer: (b)

2. Which of the following is NOT a component of the PM e-DRIVE Scheme?

- (a) Demand incentives for EVs
- (b) Grants for e-bus procurement and charging infrastructure
- (c) Subsidies for fossil fuel vehicles
- (d) IEC activities and Project Management Agency support

Answer: (c)

3. The recent extension of subsidy under PM e-DRIVE is valid for electric two-wheelers till:

- (a) 31 March 2026
- (b) 31 July 2026
- (c) 31 March 2027



(d) 31 December 2026

Answer: (b)

4. The Project Implementation and Sanctioning Committee (PISC) under PM e-DRIVE is chaired by:

- (a) Secretary, Ministry of Road Transport
- (b) Secretary, Ministry of Heavy Industries
- (c) NITI Aayog CEO
- (d) Secretary, Ministry of Environment

Answer: (b)

Mains Questions

1. "The PM e-DRIVE Scheme represents a comprehensive push towards electric mobility in India." Discuss its key components and evaluate its significance for India's energy transition and climate goals. (15 marks / 250 words)
2. Examine the challenges in scaling up electric vehicle adoption in India and how schemes like PM e-DRIVE address them. (10 marks / 150 words)
3. "Extension of subsidies under PM e-DRIVE reflects policy continuity for green mobility." Analyse the recent extensions and their expected impact on the EV ecosystem. (15 marks / 250 words)
4. **Essay (250 marks)** "Driving India's Future: The Role of Electric Mobility in Achieving Sustainable Development and Energy Security."



Navegaon-Nagzira Tiger Reserve (NNTR)

Why in News?

- From **1 April 2026**, the **Navegaon-Nagzira Tiger Reserve (NNTR)** in Maharashtra's Gondia district will assume control of the **buffer notified area** in its vicinity.
- This administrative change is expected to strengthen conservation efforts, improve habitat management, and reduce human-wildlife conflict in the fringe areas of the reserve.

About Navegaon-Nagzira Tiger Reserve (NNTR)

- **Location**
 - Situated in **Gondia district**, eastern Maharashtra.
 - Lies in the heart of the **Central Indian Tiger Landscape**, which harbours nearly **1/6th** of India's total tiger population.
- **Status**
 - Declared a **tiger reserve in 2013** – the **fifth tiger reserve** in Maharashtra.
- **Constituent Areas**
 - Includes:
 - Navegaon National Park
 - Navegaon Wildlife Sanctuary
 - Nagzira Wildlife Sanctuary
 - New Nagzira Wildlife Sanctuary
 - Koka Wildlife Sanctuary
- **Ecological Linkages**

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- Connected with **Kanha, Pench, and Tadoba** Tiger Reserves, forming part of an important tiger corridor in Central India.
- **Topography**
 - Undulating terrain with the highest point **Zenda Pahad** at **702 m** above mean sea level.
- **Vegetation**
 - **Southern Tropical Dry Deciduous** forest type.
- **Flora**
 - 364 species of plants recorded.
 - Major tree species: *Terminalia tomentosa*, *Lagerstroemia parviflora*, *Anogeissus latifolia*, *Pterocarpus marsupium*, *Diospyros melanoxylon*, *Ougeinia oojeinensis*, etc.
- **Fauna**
 - Major mammals: Tiger, Leopard, Sloth Bear, Gaur, Sambar, Chital, Four-horned Antelope, Mouse Deer, Pangolin, Wild Dog, Jackal, Wolf, etc.
 - Also supports Small Indian Civet, Palm Civet, Ratel, and Common Giant Flying Squirrel.

Significance of Buffer Zone Control

- **Better Management**
 - Allows unified administration of core and buffer zones for more effective habitat protection and corridor management.
- **Human-Wildlife Conflict Reduction**
 - Enables better regulation of activities in fringe areas and improves community engagement.



- **Conservation Value**

- Strengthens the Central Indian Tiger Landscape and supports long-term tiger conservation goals under Project Tiger.

UPSC CSE & State Relevance

Prelims

- Key terms: Navegaon-Nagzira Tiger Reserve (NNTR), Central Indian Tiger Landscape, Buffer Zone, Southern Tropical Dry Deciduous Forest
- Facts: Declared in 2013 (5th tiger reserve in Maharashtra); Linkages with Kanha-Pench-Tadoba; Highest point - Zenda Pahad (702 m)
- Related: Project Tiger, Tiger Corridors, Wildlife Sanctuaries & National Parks

GS-3 (Environment & Biodiversity)

- Tiger conservation, habitat management, and buffer zone importance.

GS-1 (Geography)

- Physical geography and biodiversity of the Central Indian highlands.

Essay / Interview

- “Buffer Zones in Tiger Reserves: Balancing Conservation and Community Needs”
- “Central Indian Tiger Landscape: A Critical Stronghold for India’s Tiger Population.”

MCQs

1. Navegaon-Nagzira Tiger Reserve is located in which district of Maharashtra?
(a) Chandrapur
(b) Gondia



- (c) Nagpur
- (d) Bhandara

Answer: (b)

2. NNTR was declared a tiger reserve in:

- (a) 2008
- (b) 2013
- (c) 2018
- (d) 2020

Answer: (b)

3. Which of the following is NOT part of the Navegaon-Nagzira Tiger Reserve?

- (a) Navegaon National Park
- (b) Nagzira Wildlife Sanctuary
- (c) Tadoba National Park
- (d) Koka Wildlife Sanctuary

Answer: (c)

4. The Central Indian Tiger Landscape, of which NNTR is a part, contributes approximately what fraction of India's total tiger population?

- (a) 1/10th
- (b) 1/6th
- (c) 1/4th
- (d) 1/3rd



Answer: (b)

Mains Questions

1. “Effective management of buffer zones is crucial for the long-term success of tiger conservation in India.” Discuss with special reference to the recent administrative change in Navegaon-Nagzira Tiger Reserve. (15 marks / 250 words)
2. Examine the ecological importance of the Central Indian Tiger Landscape and the role of reserves like Navegaon-Nagzira in maintaining connectivity. (10 marks / 150 words)
3. “Human-wildlife conflict in tiger reserves can be minimised through better buffer zone management and community participation.” Analyse this statement. (15 marks / 250 words)
4. **Essay (250 marks)** “Saving the Tiger: The Imperative of Landscape-Level Conservation in Central India.”

500 MW Floating Solar Plant to be Installed at Kariba Dam, Zimbabwe

Why in News?

- A **500 MW floating solar plant** is being designed by **Green Hybrid Power** in partnership with the **Intensive Energy User Group** for installation at **Kariba Dam** in Zimbabwe.
- This project marks a significant step towards hybrid renewable energy development at one of Africa’s largest hydropower installations and highlights the growing global trend of combining floating solar with existing hydroelectric infrastructure.

About Kariba Dam

- **Location**
 - A concrete arch dam built across the **Zambezi River** at the **Kariba Gorge**.

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- Lies on the border between **Zambia** and **Zimbabwe**.

- **Key Facts**

- Construction completed in **1959**.
- Height: **128 metres** (double-curvature concrete arch dam).
- Provides critical electricity to both Zambia and Zimbabwe.
- Created **Lake Kariba** – the **world's largest human-made lake by volume**.

About Zambezi River

- **Significance**

- Africa's **4th longest river** and the continent's **longest east-flowing river**.

- **Course**

- Originates in the southern highlands of **Angola** (source: Lungwebungu River).
- Flows for about **3,421 km** through Angola, Zambia, Namibia, Botswana, Zimbabwe, and Mozambique.
- Empties into the **Indian Ocean**.

- **Major Features**

- Famous waterfalls: **Victoria Falls** and **Chavuma Falls**.
- Major dams: **Kariba Dam** and **Cahora Bassa Dam** – two of Africa's largest hydroelectric power sources.

- **Tributaries**

- Important tributaries include Shire, Kafue, Luangwa, Kabompo, and Cuando (Kwando) rivers.

Significance of the Floating Solar Project

- **Hybrid Energy Model**

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- Combines floating solar with existing hydropower, optimising water surface use without additional land acquisition.
- Improves overall energy output and grid stability.
- **Environmental & Economic Benefits**
 - Reduces pressure on land resources.
 - Minimises evaporation from the reservoir.
 - Promotes clean energy transition in Africa.
- **For the Region**
 - Addresses power shortages in Zambia and Zimbabwe.
 - Demonstrates innovative renewable integration at large water bodies.

UPSC CSE & State Relevance

Prelims

- Key terms: Kariba Dam, Lake Kariba, Zambezi River, Floating Solar Plant, Hybrid Renewable Energy
- Facts: Kariba Dam - 1959, 128 m high, on Zambia-Zimbabwe border; Zambezi - 4th longest in Africa, 3,421 km long
- Related: Victoria Falls, Cahora Bassa Dam, African Hydroelectric Projects

GS-1 (Geography)

- Major rivers and dams of Africa, transboundary water resources.

GS-3 (Environment & Economy)

- Renewable energy, floating solar technology, and sustainable development in developing regions.



Essay / Interview

- “Floating Solar: An Innovative Solution for Land-Constrained Renewable Energy Expansion”
- “Transboundary Rivers and Energy Cooperation in Africa: Lessons from the Zambezi Basin.”

MCQs

1. Kariba Dam is built across which river?

- (a) Nile
- (b) Congo
- (c) Zambezi
- (d) Niger

Answer: (c)

2. With reference to Kariba Dam, consider the following statements:

- 3. It is located on the border between Zambia and Zimbabwe.
- 4. It was completed in 1959.
- 5. It created Lake Kariba, the world's largest human-made lake by volume.

Which of the statements given above is/are correct?

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



Answer: (d)

3. The Zambezi River is:

- (a) Africa's longest river
- (b) Africa's 4th longest river and longest east-flowing river
- (c) Entirely within South Africa
- (d) Known for the Aswan Dam

Answer: (b)

4. The proposed 500 MW project at Kariba Dam is a:

- (a) Coal-based power plant
- (b) Floating solar plant
- (c) Nuclear power station
- (d) Wind energy farm

Answer: (b)

Mains Questions

1. "Floating solar technology offers a sustainable solution for land-scarce regions." Discuss its advantages with special reference to the proposed project at Kariba Dam. (15 marks / 250 words)
2. Examine the strategic and economic importance of the Zambezi River basin for Southern Africa, highlighting major dams and hydropower projects. (10 marks / 150 words)



3. “Transboundary water resources like the Zambezi require cooperative management for energy and environmental security.” Analyse the challenges and opportunities in the Zambezi basin. (15 marks / 250 words)
4. **Essay (250 marks)** “Harnessing Water Bodies for Dual Benefits: The Rise of Floating Solar in Hydropower Reservoirs.”

