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"AI-BASED 'ELE-FENCE' TO REDUCE MAN-ANIMAL CONFLICT"

THIS ARTICLE COVERS "DAILY CURRENT AFFAIRS" AND THE TOPIC DETAILS OF "AI-BASED 'ELE-FENCE' TO REDUCE MAN-ANIMAL CONFLICT". THIS TOPIC IS RELEVANT TO THE "ENVIRONMENT & ECOLOGY" SECTION OF THE UPSC—CSE EXAM.

WHY IN THE NEWS?

The inaugural deployment of the nation's pioneering artificial intelligence-driven smart barrier, known as **'Ele-fence,'** aims to reduce the increasing incidents of human-wildlife conflict in the area. Spearheaded by White Elephant Technologies, an R&D firm based in Kochi, this pilot initiative is supported by the Kerala Forest Department.

ABOUT NEWS:

- The proposed 70-meter **Ele-fence** integrates a comprehensive array of surveillance, real-time monitoring, control features, and preventive and protective measures.

- The design incorporates extensive research into elephant behaviour in conflict-prone scenarios. Equipped with AI-powered logical trip wires, the fence provides early detection of elephant intrusions.

- It includes auditory and visual alarms to deter elephants from approaching the protected areas.

- As elephants approach within a range of 50 to 60 meters, multiple cameras capture live footage, triggering immediate alerts to local communities.

- The system notifies the nearest Rapid Response Team (RRT), forest offices, and the central forest control room with real-time Video feeds of the fenced area. Commissioning of the Ele-fence is anticipated by the end of July.

HUMAN-ANIMAL CONFLICT:

Human-animal conflict occurs when wildlife's presence or behaviour directly threatens human interests, resulting in disputes and adverse effects on people and wildlife.

CAUSES OF HUMAN-ANIMAL CONFLICT:

- Loss of natural habitats

- Increasing wildlife populations

- Agricultural Practices Attracting Wildlife

- Wildlife encroachment into human settlements for resources

- Human intrusion into wildlife habitats for illegal activities

- Habitat degradation from invasive species

IMPACTS:

- Fatalities among humans and animals

- Injuries to both humans and animals

- Destruction of crops and agricultural land

- Increased incidents of violence against animals

DEATHS DUE TO HUMAN-ANIMAL CONFLICT:

- From 2018 to 2021, 222 elephants were killed due to **electrocution nationwide.** During the same period, 29 tigers fell victim to poaching, with an additional 197 tiger deaths currently under investigation.

- Regarding human casualties resulting from conflicts with animals, elephants were responsible for the deaths of 1,579 individuals over a three-year span: 585 in 2019-20, 461 in 2020-21, and 533 in 2021-22.

- The highest number of fatalities occurred in Odisha (332), followed by Jharkhand (291) and West Bengal (240).

- Tigers were responsible for 125 human deaths in reserves between 2019 and 2021, with Maharashtra accounting for nearly half of these fatalities (61).

GOVERNMENT INITIATIVES TO ADDRESS THE CONFLICT:

- The Standing Committee of the National Board of Wildlife (SC-NBWL) issued an advisory for managing Human-Wildlife Conflict (HWC), empowering gram panchayats under the Wildlife (Protection) Act of 1972 to address issues posed by troublesome wildlife.

- The Pradhan Mantri Fasal Bima Yojna offers additional coverage to compensate farmers for crop damage caused by HWC.

- Efforts include increasing fodder and water resources within forested areas, establishing **inter-departmental committees, implementing early warning systems, erecting barriers, setting up circle-specific control rooms with toll-free hotlines, and identifying conflict hotspots.**

- Immediate relief is provided through interim ex-gratia payments within 24 hours of an incident to victims and their families.

WAY FORWARD:

- **Habitat Management:** Protecting and Restoring Natural Habitats involves creating wildlife corridors, establishing protected areas, and implementing sustainable land-use practices to reduce the need for wildlife to encroach on human settlements in search of food and shelter.

- **Crop Protection Measures:** Fencing, Scare Devices, and Crop Diversification Techniques such as fencing, scare devices, and crop diversification can help protect crops from wildlife damage, reducing economic losses for farmers.

- **Deploying Early Warning Systems:** Developing and deploying early warning systems, such as alerting communities about the presence of wildlife nearby, can help prevent human-wildlife conflicts and mitigate threats to human safety.

- **Community Engagement and Education:** Educating local communities about coexisting with wildlife, raising awareness about the importance of conservation, and providing training in conflict resolution techniques can foster greater understanding and tolerance toward wild animals.

- **Setting Up Conflict Resolution Mechanisms**: Establishing wildlife conflict response teams or hotlines can facilitate timely interventions and minimise conflicts between humans and animals.

- **Protecting Ecological Connectivity**: Protecting the ecological connectivity of species and their habitats from threats such as infrastructure development can help ensure the safe movement of animals and reduce conflicts.

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- **Implementing Sustainable Land Use Practices**: Sustainable land use practices, such as land-use planning and advance warning systems, can help reduce human-wildlife conflict by keeping animals away from human settlements and crops.

- **Community-Led Interventions**: Supporting community-led interventions such as land-use planning, timely access to state support for damage, and advance warning systems can help mitigate human-wildlife conflict.

- **Innovative Solutions:** SMS Chips and GIS Mapping embedded in elephant tracking collars to send early warnings to nearby residents and GIS mapping to identify conflict hotspots can help proactively address human-wildlife conflict.

- **Ecotourism:** Assigning a monetary value to wildlife through ecotourism can uplift impoverished regions by providing job opportunities and boosting local economies, thereby reducing human-wildlife conflict.

PRELIMS BASED QUESTION:

Q. CONSIDER THE FOLLOWING STATEMENT RELATED TO TRAFFIC:

1. It is legally binding.

2. TRAFFIC is a collaboration of WWF and UNEP.

Which of the following is/are statements correct?

1. 1 Only

2. 2 Only

3. Both 1 and 2

4. Neither 1 nor 2

Answer: D

MAINS BASED QUESTION:

Q. Discuss repeated death of animals due to habitat destruction. How can human-animal conflict be reduced by an innovative environmental approach?

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