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EDITORIAL ANALYSIS

Kaziranga Elevated Corridor — Can Linear Infrastructure Co-exist with Wildlife?

THE HINDU

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GS3

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MAINS RELEVANCE:

GS Paper 3

GS Paper 1



INTERVIEW ANGLE

"India's infrastructure expansion routinely bisects wildlife habitats, creating road kills, habitat fragmentation, and disruption to migration corridors. The Kaziranga Elevated Corridor (Rs 6,950 crore; 86 km; 35-km elevated section) is designed to solve exactly this problem. Is elevated infrastructure the future model for wildlife-sensitive areas? What are the limitations?"

WHY IN NEWS

The Kaziranga Elevated Corridor (Rs 6,950 crore; 86 km; 35-km elevated section along NH-37) was announced ahead of PM Modi's visit to Assam. The project aims to allow wildlife — particularly Indian one-horned rhinoceroses and Asian elephants from Kaziranga National Park — to move freely beneath the elevated highway while reducing the high number of animal deaths caused by vehicle collisions on the existing NH-37.

KAZIRANGA: WHY THE ROAD IS A PROBLEM

Kaziranga National Park and Tiger Reserve spans ~860 sq km in Golaghat and Nagaon districts of Assam, along the southern bank of the Brahmaputra. It holds:

~**2,600 one-horned rhinoceroses** — roughly **70% of the global population** of *Rhinoceros unicornis*

121 tigers (2023 tiger census — one of India's highest densities per 100 sq km)

~1,300 Asian elephants; swamp deer, wild buffalo, gangetic dolphins

NH-37 (now renumbered as NH-715, then NH-37) runs along Kaziranga's southern boundary for ~51 km. Every year:

Dozens of wild animals are killed on NH-37 — with reported deaths of rhinoceroses, elephants, deer, and wild buffalo during annual floods when animals move to higher ground across the highway

Annual flood migration: Kaziranga sits in the Brahmaputra floodplain. During monsoon floods (July-September), the park floods to 70-80%. All wildlife — including rhinos — migrate south across NH-37 toward Karbi Anglong hills. Animals attempting to cross the highway face fast-moving traffic. The corridor between Kaziranga and the Karbi Anglong hills has been progressively fragmented by highway widening, human settlements, and tea gardens

The conflict between NH-37 and Kaziranga’s wildlife is not new — but the Kaziranga Elevated Corridor represents the most ambitious attempt yet to resolve it.

THE ELEVATED CORRIDOR: WHAT IS BEING BUILT

Project parameters:

Total project length: **86 km**

Elevated section: **35 km** (raised highway allowing animal movement underneath)

Additional components: 21-km bypass road, 30-km road widening

Cost: **Rs 6,950 crore**

Districts: Nagaon, Karbi Anglong, Golaghat (Assam)

Highway: Along and near NH-37 / the Kaziranga southern boundary

How it works: The elevated section raises the road 5-8 metres above ground level, creating an **open underpass** beneath the highway. Animals can move through this underpasses without crossing the road surface. The elevated sections are designed at specific points that align with established wildlife movement corridors identified through camera trap surveys, rhino radio-collaring data, and traditional knowledge from Assam Forest Department.

Design specifics: The underpass openings are designed to meet minimum width requirements for different species:

Rhinoceroses require wider openings (minimum ~20-30 metres wide to avoid avoidance behaviour)

Elephants require tall openings (minimum 5m height) and vegetative cover near approaches to reduce stress

Smaller mammals use narrower underpasses

INDIA’S LINEAR INFRASTRUCTURE-WILDLIFE CONFLICT: THE BROADER CRISIS

Kaziranga is a high-profile case — but India’s wildlife is being impacted by linear infrastructure across the country:

Roads:

NH-7 (now NH-44) bisects the Pench-Kanha-Satpuda corridor in Madhya Pradesh — tiger movement between these reserves has declined 40% since highway widening

NH-8 (Mumbai-Ahmedabad) cuts through leopard habitat in Gujarat; estimated 100 leopard deaths per year on this stretch

Tiger corridors in Terai (Corbett-Rajaji; Dudhwa-Sohagi Barwa) are fractured by NH-58, NH-74, NH-24

Railways:

Elephant deaths on railways: ~60-80 per year nationally

Assam is disproportionately affected — Northeast Frontier Railway (NFR) tracks cut through elephant corridors in Assam, Meghalaya, and West Bengal

The Bengaluru-Mysuru infrastructure project passes through an elephant corridor

Transmission lines:

Bird electrocution on transmission lines is poorly studied but estimated in the tens of thousands annually

Great Indian Bustard (Rajasthan) fatalities on power lines have become a Supreme Court case

The fundamental tension: India's infrastructure investment target under PM GatiShakti is Rs 100 lakh crore over 5 years — a massive expansion of roads, railways, ports, and power infrastructure. The Wildlife Protection Act 1972 designates wildlife sanctuaries and national parks as “no construction zones” — but projects can be permitted with approval from the Standing Committee of the National Board for Wildlife (NBWL).

The NBWL has approved 800+ linear infrastructure projects through protected areas and eco-sensitive zones since 2014. Critics argue the approval process has become a rubber stamp.

ELEVATED INFRASTRUCTURE: THE RIGHT SOLUTION?

Elevated corridors are an established global technique for wildlife-friendly infrastructure:

Success cases:

Banff National Park, Canada: Wildlife overpasses (six) and underpasses (38) along the Trans-Canada Highway. Studies show wolves, elk, bears, and mountain lions all use the crossings regularly. Black bear road mortality decreased 96% in the equipped zones.

Netherlands: The Netherlands has built 50+ wildlife ecoducts (green bridges over highways); they have been shown to reconnect populations of badger, boar, deer, and amphibians

Malaysia: Wildlife underpasses on highways through Taman Negara approach

Limitations of elevated infrastructure for Kaziranga:

Cost vs. scope: 35 km of elevated highway at ~Rs 200 crore/km is expensive. The remaining 51 km of NH-37 along Kaziranga's boundary will still be surface road unless included in future phases.

Animal habituation: Not all animals use underpasses. Rhinos in particular show avoidance behaviour near artificial structures; underpasses must be designed with appropriate dimensions and vegetated approaches, and animals may take years to habituate.

Flood dynamics unresolved: The monsoon flood migration is a vertical movement (animals moving from flooded lowland to highland). Even with elevated roads, if the Karbi Anglong hills side of the highway has been encroached or degraded, rhinos crossing successfully will find nowhere safe to shelter.

Tea garden encroachment: ~40,000 hectares of former wildlife corridor between Kaziranga and Karbi Anglong has been converted to tea gardens, human settlements, and agricultural land since the 1970s. No amount of elevated highway can restore this.

WHAT INDIA'S WILDLIFE-INFRASTRUCTURE POLICY NEEDS

National Wildlife Corridor Policy: India does not have a comprehensive national policy specifically addressing wildlife corridors. The Wildlife Institute of India (WII) has mapped critical corridors, but no legal framework mandates their protection.

Highway Authority accountability: NHAI (National Highways Authority of India) should be required to prepare a **Wildlife Impact Assessment (WIA)** — similar to an Environmental Impact Assessment (EIA) but specifically focused on wildlife connectivity — for all highways within 10 km of Protected Areas.

Retrofitting existing highways: The Kaziranga Elevated Corridor is a new intervention — but most of the damage to wildlife corridors in India is done by existing roads. Low-cost interventions like **speed limits, wildlife warning signs, and night-time speed enforcement** can significantly reduce wildlife mortality even without major construction.

UPSC RELEVANCE

Kaziranga NP (UNESCO WHS 2000; Golaghat + Nagaon + Sonitpur, Assam; ~860 sq km; Brahmaputra flood plain; 2,600 one-horned rhinos; 70% global population; 121 tigers; swamp deer; wild buffalo); Indian One-Horned Rhino (*Rhinoceros unicornis*; IUCN Vulnerable; Schedule I WPA; Pobitora WS also in Assam); NH-37 (along Kaziranga southern boundary); NBWL (National Board for Wildlife; Chair: PM; Standing Committee: MoEFCC Minister); Wildlife Institute of India (WII; Dehradun; corridor mapping); PM GatiShakti (2021; multimodal infrastructure; Rs 100 lakh crore); Linear infrastructure impacts (road kills, habitat fragmentation, migration disruption)

MAINS GS-3:

“India’s infrastructure expansion and wildlife conservation are increasingly in conflict. Critically evaluate the Kaziranga Elevated Corridor as a model for reconciling these interests. What systemic policy changes are needed?” | “Habitat fragmentation due to linear infrastructure is a major driver of wildlife population decline in India. Suggest a comprehensive policy framework to address this challenge.”

MAINS GS-1:

“Discuss the ecological significance of Kaziranga National Park. What are the threats it faces and how is India responding to them?”

ESSAY:

“No road is neutral. Every highway is a statement about which lives we value — and India’s wildlife corridors are paying the price.”

★ FACTS CORNER — KNOWLEDGEPEDIA

KAZIRANGA NATIONAL PARK:

Location: Golaghat, Nagaon, Sonitpur districts; Assam; on southern bank of Brahmaputra
 Area: ~860 sq km (core); total with buffer ~1,307 sq km
 UNESCO World Heritage Site: Since 2000
 Tiger Reserve: Since 2006; 21st Tiger Reserve of India
 Rhinos: ~2,600 one-horned rhinos (~70% of global Rhinoceros unicornis population)
 Tigers: 121 (2023 census; among highest densities in India)
 Other wildlife: 1,300+ elephants, swamp deer, wild buffalo, gangetic dolphin
 Flood dynamics: 70-80% floods annually in monsoon; wildlife migrates south across NH-37

KAZIRANGA ELEVATED CORRIDOR:

Cost: Rs 6,950 crore
 Total length: 86 km
 Elevated section: 35 km
 Other: 21-km bypass + 30-km road widening
 Districts: Nagaon, Karbi Anglong, Golaghat
 Purpose: Wildlife passage over/under NH-37; reduce animal-vehicle collisions

INDIAN ONE-HORNED RHINOCEROS:

Scientific name: Rhinoceros unicornis
 IUCN status: Vulnerable (downlisted from Endangered in 2008 due to recovery)
 WPA 1972: Schedule I (highest protection)
 Habitat: Terai + Brahmaputra floodplains
 Key locations: Kaziranga (Assam), Pobitora WS (Assam; highest density per area), Orang NP (Assam), Jaldapara NP (West Bengal), Dudhwa NP (UP)
 Indian Rhino Vision 2020: Target to establish rhino populations in 7 sites in Assam; largely achieved

LINEAR INFRASTRUCTURE-WILDLIFE CONFLICT — INDIA:

Elephant deaths on railways: ~60-80/year nationally
 Key problematic highways: NH-44 (Pench-Kanha corridor); NH-8 (Gujarat leopards); NH-58, NH-74 (Terai tiger corridors)
 NBWL approval: 800+ linear infrastructure projects through PAs/ESZs cleared since 2014

NATIONAL BOARD FOR WILDLIFE (NBWL):

Chair: Prime Minister of India
 Vice-Chair: Union Minister of Environment, Forest and Climate Change
 Standing Committee: Day-to-day approvals; chaired by MoEFCC Minister
 Statutory basis: Wildlife Protection Act, 1972 (Section 5A)
 Wildlife Institute of India (WII): Autonomous institute under MoEFCC; Dehradun; provides technical inputs for NBWL decisions

Sources: The Hindu, PIB, NHAI, Wildlife Institute of India, IUCN Red List

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