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# White-bellied Heron vs Kalai-II Dam — A Critically Endangered Species and India's Northeast Hydropower Dilemma

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**SUBJECTS COVERED****ENVIRONMENT****SCIENCE & TECH****CURATED & WRITTEN BY****Bharat Choudhary**

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# White-bellied Heron vs Kalai-II Dam — A Critically Endangered Species and India's Northeast Hydropower Dilemma

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## WHY IN NEWS

Conservation scientists raised alarm in January 2026 over the proposed 1,200 MW Kalai-II Hydropower Project on the Lohit River (Anjaw district, Arunachal Pradesh), warning it would destroy critical nesting and foraging habitat of the White-bellied Heron (*Ardea insignis*) — one of the world's rarest birds, with fewer than 60 individuals surviving globally.

## THE WHITE-BELLIED HERON — PROFILE OF A CRITICALLY ENDANGERED SPECIES

The **White-bellied Heron** (*Ardea insignis*) — also called the **Imperial Heron** or **Great White-bellied Heron** — is one of the largest herons in the world and one of the rarest birds alive.

### Taxonomy and description:

Family: **Ardeidae** (herons, egrets, bitterns)

Height: ~127 cm (among the tallest herons globally)

Plumage: dark grey-slate upper body, white belly, black-streaked throat and neck

Behaviour: highly solitary; nests in tall trees near undisturbed river banks; depends on clear, shallow, fast-flowing rivers for foraging

### IUCN Status: Critically Endangered (CR)

A Critically Endangered listing means the species faces an **extremely high risk of extinction in the wild** — the threshold before Extinct in the Wild. The global population of White-bellied Herons is estimated at **fewer than 60 individuals**, making it one of the rarest large birds in the world.

**CITES:** Appendix I (strictest trade prohibition) **Wildlife Protection Act 1972:** Schedule I (highest legal protection in India)

## WHERE THE LAST WHITE-BELLIED HERONS LIVE

The species has collapsed from a broader historical range (Eastern Himalayas, Assam, Myanmar, Bangladesh) to a few fragmented populations:

Country	Population	Key Sites
Bhutan	~27 individuals (~45% of global)	Jigme Singye Wangchuck NP; Manas NP
India	~10–12 individuals	Namdapha Tiger Reserve; Kamlang Wildlife Sanctuary
Myanmar	<10	Fragmentary sightings
Bangladesh	Near-zero	Historical records only

### India's two remaining sites:

#### 1. Namdapha Tiger Reserve (Changlang district, Arunachal Pradesh):

India's easternmost Tiger Reserve and one of the largest Protected Areas in the Eastern Himalayas  
The Noa-Dihing River within Namdapha provides suitable shallow, braided-river habitat

#### 2. Kamlang Wildlife Sanctuary (Lohit district → now overlapping Anjaw district, Arunachal Pradesh):

Located in the Lohit River basin

One of the last confirmed nesting sites for White-bellied Heron in India

**Directly in the zone of the proposed Kalai-II Hydropower Project**

**Why this habitat is critical:** The White-bellied Heron is completely dependent on:

**Undisturbed braided river channels** — for wading and fishing

**Sand bars and gravel banks** — for nesting (ground-level nests near river edges)

**Tall riparian trees** — for roosting and alternate nest sites

**Absence of human disturbance** — it is one of the most disturbance-sensitive birds; any regular human activity near nest sites causes abandonment

## THE KALAI-II HYDROPOWER PROJECT — INFRASTRUCTURE VS. CONSERVATION

### Project details:

**Name:** Kalai-II Hydropower Project

**Location:** Lohit River, Anjaw district, Arunachal Pradesh

**Capacity:** 1,200 MW (major project under India's Northeast power development plan)

**Implementing agency: THDCIL (Tehri Hydro Development Corporation India Limited)** — a joint venture of NTPC and Government of Uttarakhand; operates several Northeast hydropower projects

**Status:** Under Environmental Impact Assessment (EIA) and regulatory review as of 2026

### Why it threatens the heron:

**Reservoir flooding:** A dam on the Lohit will create a large reservoir upstream, submerging the shallow braided-river sections the heron depends on

**River flow alteration:** Regulated flow downstream disrupts the natural flood-pulse that creates sandbars and maintains riverbed structure for nesting

**Construction disturbance:** Multi-year construction with blasting, heavy machinery, and worker camps near Kamlang WLS would directly disturb nesting birds

**Road access:** Infrastructure roads built for construction open previously inaccessible areas to poachers and habitat disturbance

**The hydropower imperative:** Arunachal Pradesh has an estimated **50,000+ MW** of hydropower potential — the highest of any Indian state. India has committed to **500 GW of non-fossil fuel electricity capacity by 2030** (under NDC commitments). Northeast hydropower is central to this target.

The Kalai-II project would:

Add 1,200 MW of clean, baseload power (unlike solar/wind)

Provide significant revenue to Arunachal Pradesh (under Power Purchase Agreements)

Reduce India's dependence on coal power in the East and Northeast grids

## GOVERNANCE AND REGULATORY FRAMEWORK

**Environmental clearance process:** Under the **EIA Notification 2006** (MoEFCC), large hydropower projects (>50 MW capacity) require:

**Category A clearance** from the Central-level Expert Appraisal Committee (EAC-River Valley & Hydroelectric)

**Forest clearance** under the Forest Conservation Act, 1980 (FC Act)

**NBWL clearance** if the project is within or adjacent to a Protected Area

### The biodiversity conflict:

The **National Board for Wildlife (NBWL)** must evaluate impacts on the White-bellied Heron specifically — a Schedule I species under WPA 1972

India's **National Biodiversity Action Plan (NBAP)** identifies several bird species at risk from dam projects in the Northeast

The **Biological Diversity Act 2002** and **National Biodiversity Authority (NBA)** have advisory roles in EIA processes

### Legal protections working for the heron:

A Schedule I species under WPA 1972 cannot have its habitat degraded without NBWL clearance

The Supreme Court has ruled (in T.N. Godavarman case and others) that “significant reduction in biodiversity” can override development approvals

However, the Forest Advisory Committee (FAC) and NBWL have historically prioritised hydropower over small bird populations when energy security arguments are made

## CONSERVATION INTERVENTIONS AND RESEARCH

**Bhutan's model:** Bhutan has the most significant White-bellied Heron population (~27 birds) and has:

Maintained strict hydropower exclusion zones around key nesting sites

Funded dedicated heron monitoring programmes

Established the **White-bellied Heron Conservation Centre** at Trongsa, Bhutan (ex-situ breeding + monitoring)

### India's gaps:

No dedicated monitoring programme for Indian populations as of 2026

No ex-situ (captive) breeding programme in India

Kamlang WLS is not well-staffed or well-equipped for anti-poaching and habitat protection

## UPSC RELEVANCE

**Prelims:** White-bellied Heron (*Ardea insignis*; Critically Endangered; CITES Appendix I; WPA Schedule I; India: Namdapha TR + Kamlang WLS); Lohit River (major tributary of Brahmaputra; originates in Tibet; Anjaw dist, Arunachal); THDCIL (Tehri Hydro Development Corporation India Limited; NTPC + Uttarakhand JV); EIA Notification 2006 (MoEFCC; Category A/B1/B2); NBWL (PM chairs; Standing Committee: Environment Minister).

**Mains GS-3:** Species conservation when threat is infrastructure, not poaching | Hydropower vs. biodiversity — EIA and governance gaps | Northeast India hydropower dilemma: energy security vs. ecological sensitivity | IUCN Red List categories and criteria (explain the difference between EN, CR, EW) | Wildlife governance: WPA 1972, Forest Conservation Act, NBWL, EIA Notification.



**★ FACTS CORNER — KNOWLEDGEPEDIA**
**WHITE-BELLIED HERON (ARDEA INSIGNIS):**

Common names: White-bellied Heron, Imperial Heron, Great White-bellied Heron

Family: Ardeidae; Size: ~127 cm (one of world's largest herons)

IUCN: Critically Endangered (CR); global population: <60 individuals

CITES: Appendix I (highest trade protection)

WPA 1972: Schedule I (highest protection in India)

India range: Namdapha TR (Changlang, AP) + Kamlang WLS (Anjaw/Lohit, AP)

~45% of global population in Bhutan

Habitat requirement: clear, shallow, braided rivers; sandbars for nesting; tall riparian trees

**KALAI-II HYDROPOWER PROJECT:**

Location: Lohit River, Anjaw district, Arunachal Pradesh

Capacity: 1,200 MW (major Northeast power project)

Implementing agency: THDCIL (Tehri Hydro Development Corporation India Limited)

THDCIL: JV of NTPC + Govt. of Uttarakhand; implements hydro projects in North/Northeast

Status (2026): Under EIA review; NBWL clearance pending

**LOHIT RIVER:**

Major right-bank tributary of Brahmaputra

Origin: Zayal Chu (Tibet → Arunachal Pradesh border)

Districts: passes through Anjaw → Lohit → enters Assam (Sadiya), joins Brahmaputra

Sacred: Parshuram Kund on Lohit River (pilgrimage site, Lohit district)

**NAMDAPHA TIGER RESERVE:**

Location: Changlang district, Arunachal Pradesh (easternmost TR in India)

Area: ~1,985 sq km; also a National Park

Biodiversity: only Park in world with four big cat species: tiger, leopard, snow leopard, clouded leopard

River: Noa-Dihing (White-bellied Heron habitat)

**EIA (ENVIRONMENTAL IMPACT ASSESSMENT) — CATEGORY SYSTEM:**

Category A: Central-level; EAC appraisal; mandatory EIA; >50 MW hydropower

Category B1: State-level; mandatory EIA

Category B2: State-level; only screening

Governed by: EIA Notification 2006, MoEFCC

**IUCN RED LIST CATEGORIES (IN ORDER OF EXTINCTION RISK):**

LC → NT → VU → EN → CR → EW → EX

CR = Critically Endangered: ≥50% probability of extinction within 10 years or 3 generations

EW = Extinct in the Wild (survives only in captivity)

**OTHER RELEVANT FACTS:**

Arunachal Pradesh hydropower potential: ~50,000 MW (highest in India)

India's NDC target: 500 GW non-fossil fuel capacity by 2030

White-bellied Heron Conservation Centre: Trongsa, Bhutan (ex-situ programme)

Biological Diversity Act 2002: establishes NBA (National Biodiversity Authority); protects Biological Diversity Act components

Sources: IUCN Red List, WII, MoEFCC, PIB

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