Mains Analysis: Cyclone Arnab – From Relief to Zero-Casualty Cyclone Management

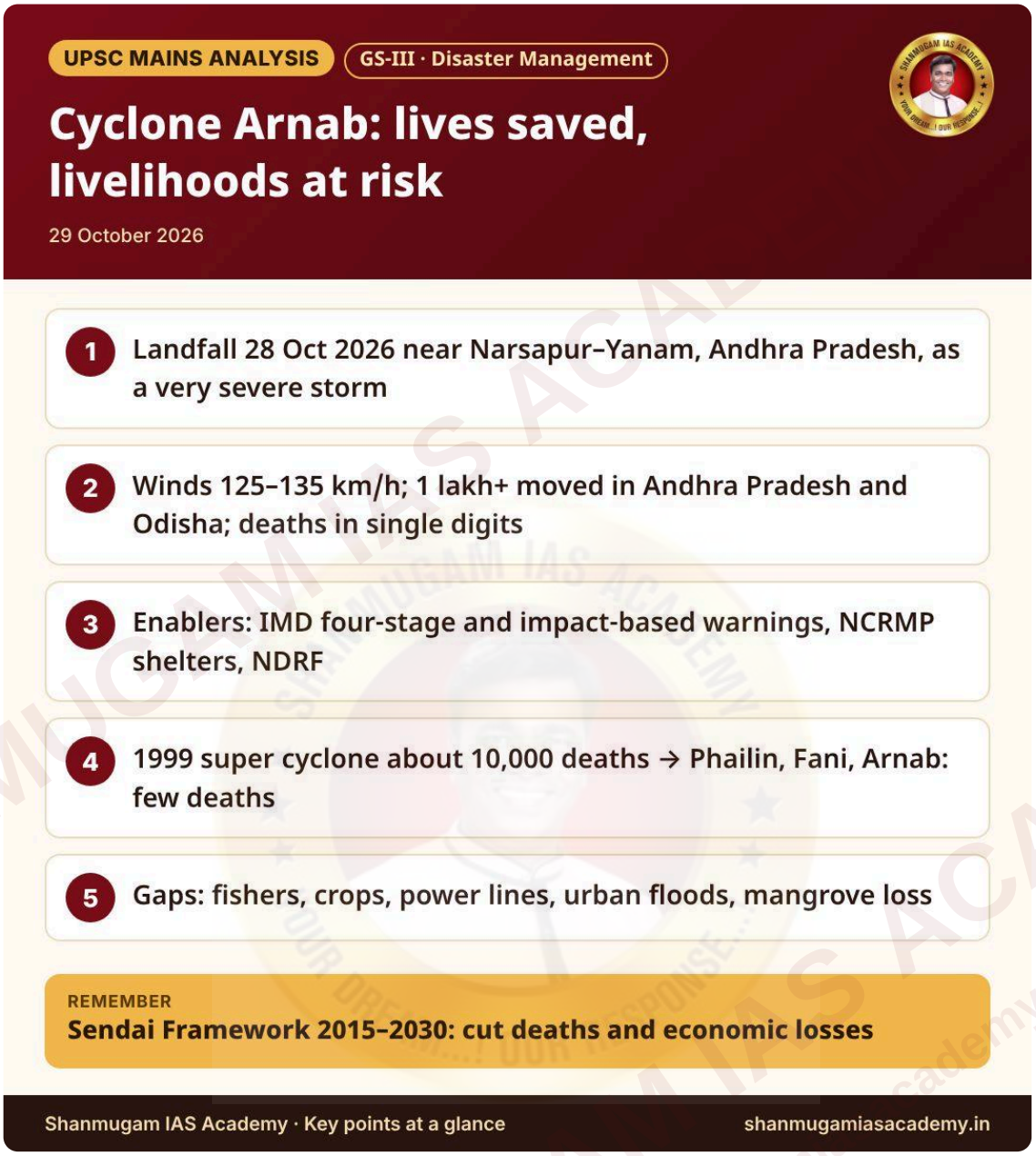
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Context

Cyclone Arnab – a name contributed by Bangladesh and commonly linked to the Bengali word for the sea – grew out of a low-pressure area over the Bay of Bengal that formed on 23 October 2026 and became a cyclonic storm on 26 October. According to the India Meteorological Department (IMD), it crossed the **Andhra Pradesh–Yanam coast** south-west of Yanam, about 20 km east-north-east of Narsapur and about 60 km south-west of Kakinada, in the early hours of **28 October 2026**, as a **very severe cyclonic storm** (VSCS) with sustained winds of 125–135 km/h gusting to 150 km/h, and then weakened over land. More than 1.2 crore people lived in its projected path. Andhra Pradesh moved over 50,000 people from low-lying and coastal areas and Odisha about 48,000; more than 2,000 cyclone shelters were readied in 20 Andhra districts and, according to the NDRF, 39 of its teams were deployed in Andhra Pradesh. The NDRF reported **three deaths** on landfall day; later reports cited up to five deaths in related incidents such as falling trees and electrocution. Houses, power lines, coconut plantations and standing paddy were damaged. A storm of this strength killing so few people is now normal in India – and that itself is the story.

GS mapping: GS-III – Disaster and disaster management. Also GS-I (tropical cyclones, Bay of Bengal), GS-II (federalism, statutory bodies like NDMA) and Essay (resilience, governance).



Background – how India changed

Cyclone	What happened	Lesson
Odisha Super Cyclone, Oct 1999	About 10,000 deaths; weak last-mile warning, few shelters	Odisha set up OSDMA – before the national DM Act
Phailin, Oct 2013 (Gopalpur, Odisha)	Nearly 9–10 lakh people evacuated; deaths kept to a few dozen	Mass pre-emptive evacuation works

Fani, May 2019 (Odisha)	About 12 lakh evacuated; 64 deaths in India despite an extremely severe storm	Lives saved, but weeks of power and water outages
Arnab, Oct 2026 (Andhra Pradesh–Yanam)	VSCS landfall; 1 lakh+ moved in two States; deaths in single digits	Zero-casualty goal near; losses shift to livelihoods

The system behind low casualties

Link	What it does
IMD four-stage warning	Pre-cyclone watch (72 h) → Cyclone alert, yellow (48 h) → Cyclone warning, orange (24 h) → Post-landfall outlook, red (12 h)
Impact-based forecasting	Bulletins say what the wind will do – "total destruction" of thatched houses, poles uprooted – not only wind speed; storm-surge height (1–1.5 m for Arnab) tells who must leave
NDMA guidelines	National Guidelines on Management of Cyclones (2008): warning, shelters, coastal zoning, mangroves, community preparedness
NCRMP	National Cyclone Risk Mitigation Project (World Bank-aided, from 2011): multipurpose cyclone shelters, evacuation roads, saline embankments, last-mile warning systems (sirens, mass SMS)
Response forces	NDRF pre-positioned and airlifted before landfall; State forces (Odisha's ODRAF, SDRFs)
Law	Disaster Management Act, 2005 (NDMA–SDMA–DDMA); amended in 2025 (passed March 2025)

The **Disaster Management (Amendment) Act, 2025** lets NDMA and SDMAs prepare plans themselves, requires national and state disaster databases, allows **Urban Disaster Management Authorities** for state capitals and municipal-corporation cities, gives statutory status to the National Crisis Management Committee and the High Level Committee, and lets States form a State Disaster Response Force. Globally, India follows the **Sendai Framework for Disaster Risk Reduction 2015–2030** – four priorities and seven targets, which ask countries to cut not only deaths but also people affected, economic loss and damage to infrastructure.

Why it matters – from relief to risk reduction

- **From reactive to proactive:** the old model counted bodies and distributed relief; the new one acts 72 hours before landfall.
- **Odisha model:** a dedicated agency, shelters managed by trained village committees, a "zero-casualty" political goal and repeated drills made evacuation a habit – and other States copied it.

- **Federal teamwork:** IMD warns, NDMA and MHA coordinate, States evacuate, districts run shelters, NDRF fills gaps.
- **Global credibility:** India's cyclone record supports its leadership in the Coalition for Disaster Resilient Infrastructure (CDRI).

The Tamil Nadu angle

- **Gaja (November 2018):** crossed near Vedaranyam (Nagapattinam); lakhs were evacuated, but the coconut, banana and fishing economy of the delta was flattened – a classic "lives saved, livelihoods lost" case.
- **Michaung (December 2023):** crossed the Andhra coast near Bapatla, yet its slow movement and heavy rain flooded Chennai, with at least 17 deaths reported – urban flooding, not wind, was the killer.
- **Tools:** TNSDMA's **TNSMART** web-GIS platform and the **TN-Alert** app give impact-based, location-wise warnings; Pichavaram's mangroves remind us of nature as a shield.

Challenges – what "zero casualty" hides

- **Livelihood losses:** fishers lose days at sea, boats and nets; farmers lose paddy at harvest stage and coconut trees that take years to regrow. Relief norms under SDRF/NDRF pay little for this.
- **Power and communication:** uprooted poles cut electricity and mobile networks for days – Fani showed that restoration, not evacuation, becomes the main public grievance.
- **Urban flooding:** cities like Chennai and Visakhapatnam face rain-driven floods that wind-focused cyclone plans do not cover.
- **Indirect deaths:** most Arnab deaths came from falling trees, live wires and wall collapse – hazards after the storm, not the surge.
- **Ecosystem loss:** mangroves and coastal dunes – natural buffers – are lost to aquaculture, ports and construction.
- **Warning fatigue:** some residents ignore repeated warnings, especially when a storm weakens before landfall.

Way forward

1. **From zero casualty to minimum loss:** track economic loss and recovery time as Sendai asks, not just deaths.
2. **Underground and hardened power lines** in high-risk coastal belts; pre-staged restoration crews and materials.
3. **Livelihood protection:** parametric insurance for fishers and coconut growers; faster crop-loss assessment by drones and satellites.
4. **Urban DM authorities** under the 2025 amendment to plan for drainage, lakes and flood-plains in coastal cities.
5. **Nature-based defences:** mangrove and shelter-belt plantation (MISHTI-type programmes) and strict Coastal Regulation Zone enforcement.

6. **Last-mile messaging** in local languages through cell-broadcast and the Common Alerting Protocol, with community volunteers (Aapda Mitra).

> **Conclusion:** Cyclone Arnab confirms that India has learnt how to keep people alive when a severe cyclone strikes – the distance from about 10,000 deaths in 1999 to a handful in 2026 is one of its quiet governance successes. The next test is harder: keeping homes, power, boats and crops standing, so that people return to a working life and not just a survived one.

Mains practice question

Q. "India has moved from a relief-centric to a zero-casualty approach in cyclone management, but loss of livelihoods remains high." Examine with recent examples and suggest measures. *(15 marks, 250 words)*

Answer framework: Introduction – Arnab (28 October 2026, VSCS, deaths in single digits) vs 1999 super cyclone · Body – (a) enablers: IMD four-stage and impact-based warnings, NDMA guidelines, NCRMP shelters, NDRF/SDRF, DM Act 2005 and 2025 amendment, Odisha model; (b) gaps: livelihoods, power, urban floods (Michaung), indirect deaths, mangrove loss · Way forward – Sendai targets, hardened grids, parametric insurance, urban DM authorities, nature-based solutions · Conclusion – faculty-view line.

Prelims pointers

- IMD scale (sustained wind): Depression 31–49 km/h; Deep Depression 50–61; Cyclonic Storm 62–88; Severe 89–117; Very Severe 118–166; Extremely Severe 167–221; Super Cyclonic Storm 222 and above.
- North Indian Ocean names: list of 169 names (13 each from 13 countries) adopted in 2020 by the WMO/ESCAP Panel on Tropical Cyclones; "Arnab" was proposed by Bangladesh.
- IMD's Regional Specialised Meteorological Centre (RSMC), New Delhi, issues advisories for the North Indian Ocean.
- Sendai Framework: adopted 2015 in Sendai, Japan; succeeds the Hyogo Framework (2005–2015).
- NCRMP (World Bank-aided): Phase I (2011) – Andhra Pradesh and Odisha; Phase II (approved 2015) – west-coast States such as Gujarat, Maharashtra and Kerala, plus West Bengal.

Asked before in UPSC Mains (PYQ)

Official question-paper wording, with how this analysis helps you answer it.

GS-III 2020 15 marks

"Discuss the recent measures initiated in disaster management by the Government of India departing from the earlier reactive approach."

How this helps: The core of this article: the 1999 to Phailin/Fani/Arnab shift, IMD four-stage warnings, impact-based forecasts, NCRMP shelters and the 2025 amendment.

GS-I 2022 10 marks

"Discuss the meaning of colour-coded weather warnings for cyclone prone areas given by India Meteorological department."

How this helps: Use the four-stage table (watch 72 h; yellow 48 h; orange 24 h; red 12 h) and the Arnab bulletins as a live example.

GS-III 2024 15 marks

"What is disaster resilience? How is it determined? Describe various elements of a resilience framework. Also mention the global targets of Sendai Framework for Disaster Risk Reduction (2015-2030)."

How this helps: Gives the Sendai link and the argument that resilience now means cutting economic and livelihood losses, not only deaths.

Faculty view – looking ahead (Shanmugam IAS Academy)

Learn the term **"Build Back Better"**: a Sendai Framework idea (Priority 4) that recovery should not rebuild the same weak house, pole or embankment, but a stronger and safer one, so that the next disaster causes less loss. India has mastered evacuation; its next frontier is recovery. Use the term to move your answer beyond "deaths were low" to "how quickly and how well did people recover".

- **What to watch next:** (1) the central team's damage assessment and NDRF assistance to Andhra Pradesh; (2) how long power and communication restoration takes in Konaseema and West Godavari; (3) whether States notify Urban Disaster Management Authorities under the 2025 amendment; (4) the north-east monsoon season (October–December), the main cyclone season for the Tamil Nadu coast.
- **Tamil Nadu angle:** compare Arnab with Gaja (2018) and Michaung (2023) in TNPSC Group 1 and UPSC answers.
- **Ready-made conclusion line:** "India has learnt to save lives from cyclones; to Build Back Better it must now save livelihoods, power lines and mangroves with the same urgency."

Sources: IMD national bulletins and RSMC New Delhi (four-stage warning, cyclone scale); NDMA cyclone guidelines; OSDMA (NCRMP); PRS Legislative Research (Disaster Management (Amendment) Bill, 2024); UNDRR (Sendai Framework); TNSDMA; reports by ThePrint/PTI, ANI, Euronews/AP, ABC/Reuters, Al Jazeera, The News Minute, Deccan Herald. Original analysis by Shanmugam IAS Academy.

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