

Hidden Casualties of War: Spatiotemporal Analysis of Forest Loss in Conflict-Affected Regions of Central Myanmar between 2020 and 2025

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01. Introduction

Background

- 2021 Military Coup → rapid escalation of armed conflict
- Myanmar ranks as the world's **2nd most conflict-affected country**
- Central Dry Zone (CDZ)** → environmentally vulnerable dry-forest ecosystem
- Remote sensing offers a unique way to investigate inaccessible conflict zones.



Research Questions

- How has forest cover changed across the CDZ (2001-2025)?
- To what extent are forest-cover changes associated with armed conflict?
- What conflict-related mechanisms may explain observed environmental change?

03. Key Findings



Annual forest loss rose from 1.2 kha (2001) to a peak of 13.5 kha (2024).

+33%

Annual forest-loss rate after the 2021 coup



Conflict hotspots **broadly coincided** with forest loss and vegetation decline in the **Northern CDZ**.

Fig 1. Spatial Overlap between Conflict Hotspots and Forest Cover Loss (2021–2025)

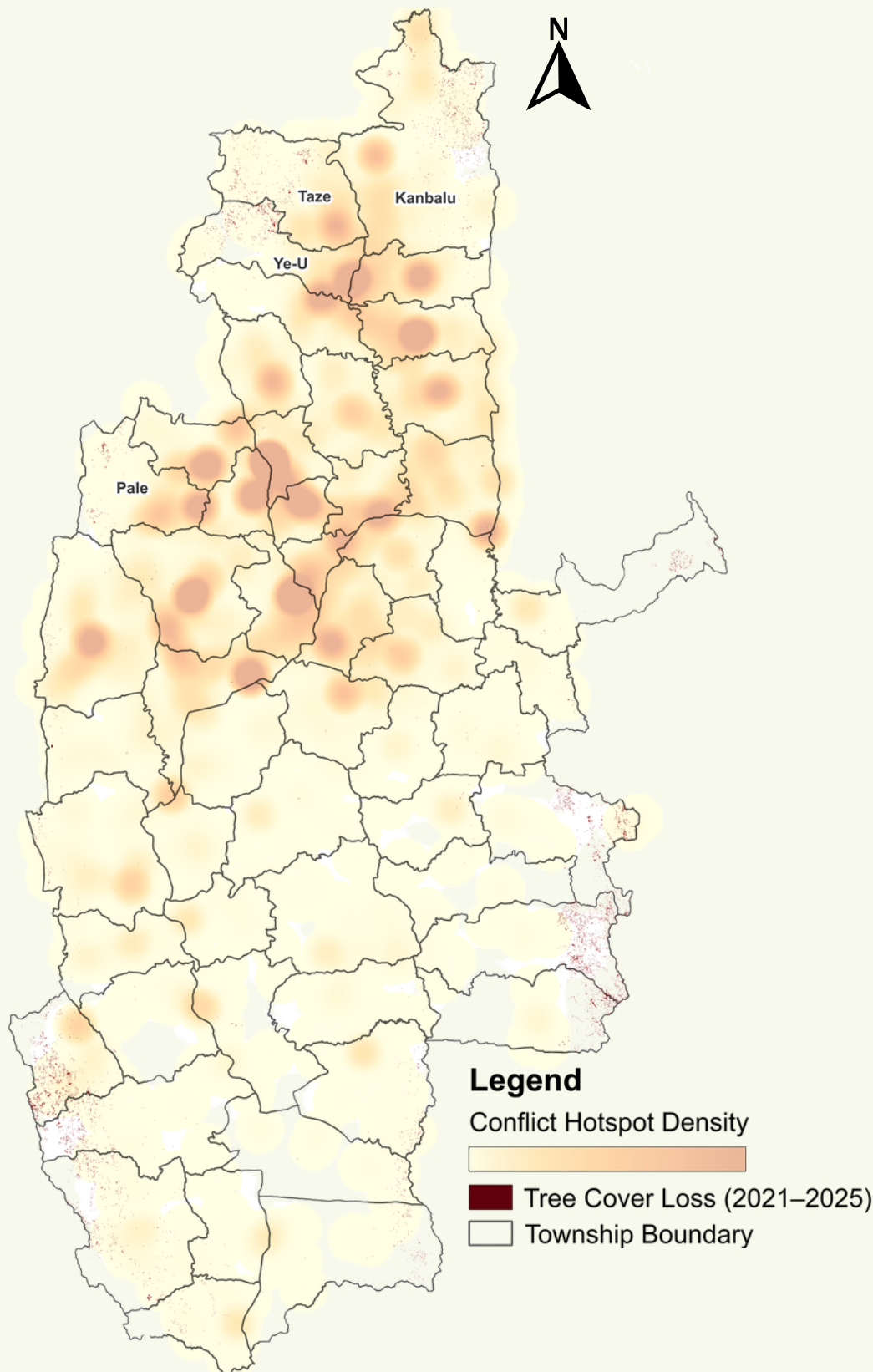
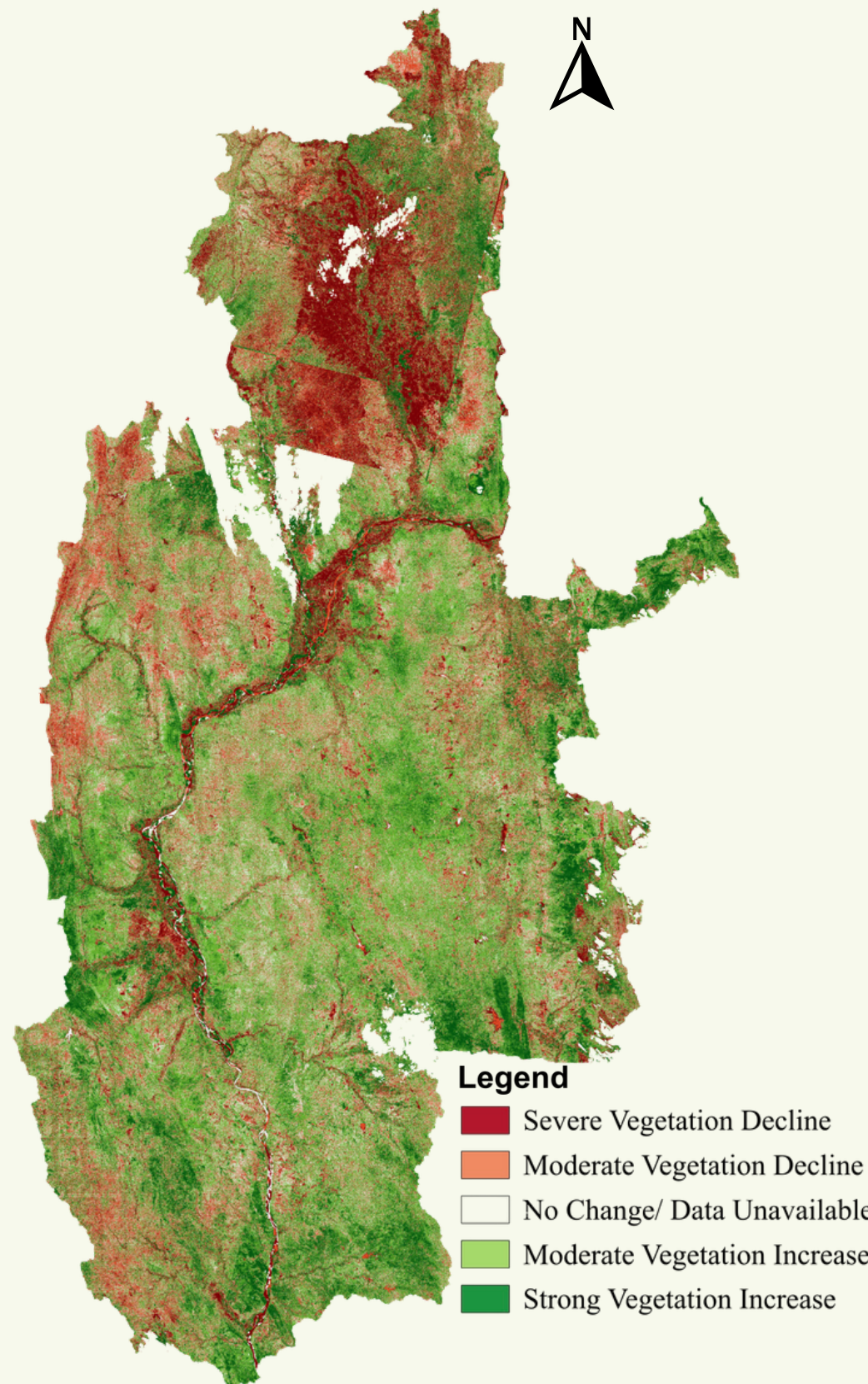


Fig 2. NDVI Change Map (2020–2025)



3.1. Case Studies

1. Pazigy Village, Kanbalu Township

(2019) (2025)

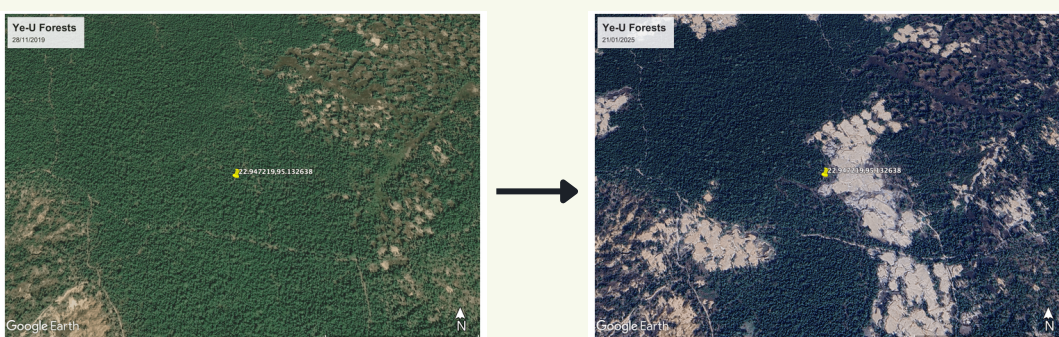


Direct Conflict Mechanism

- 12 Conflict events | 10.6 ha forest loss
- Airstrike destroyed village infrastructure
- Environmental Change → **Settlement destruction**

2. Forest in Ye-U Township

(2019) (2025)

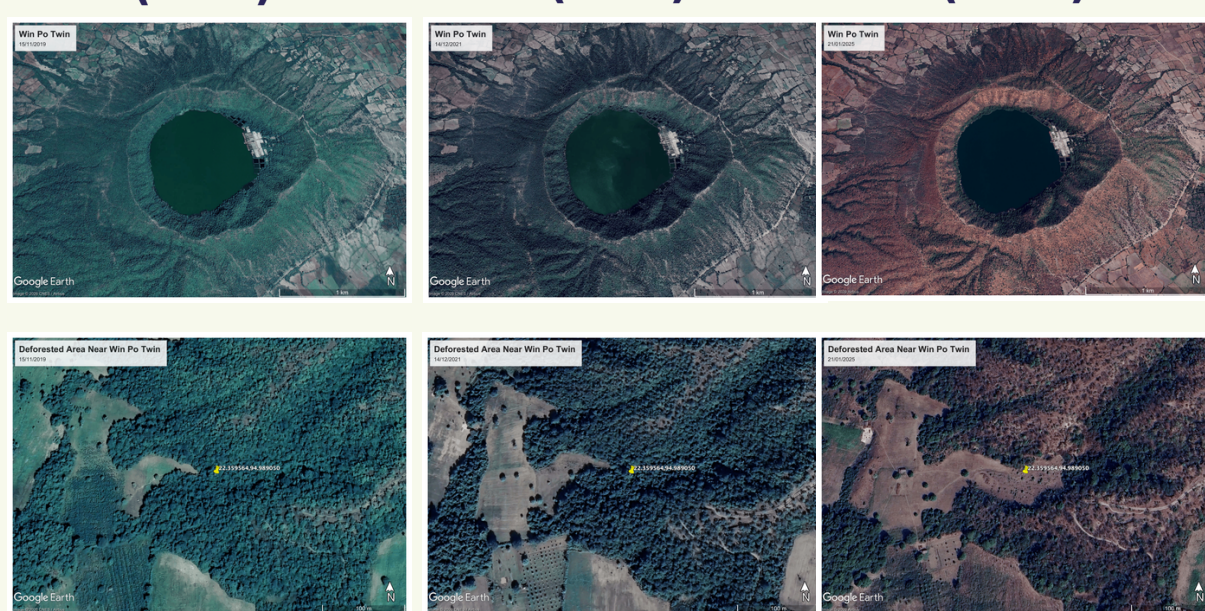


Indirect Conflict Mechanism

- 0 Conflict events | 554 ha forest loss
- Environmental Change → **Extensive forest fragmentation**
- Weakened environmental governance**

3. Win Po Twin Lake, Budalin Township

(2019) (2021) (2025)

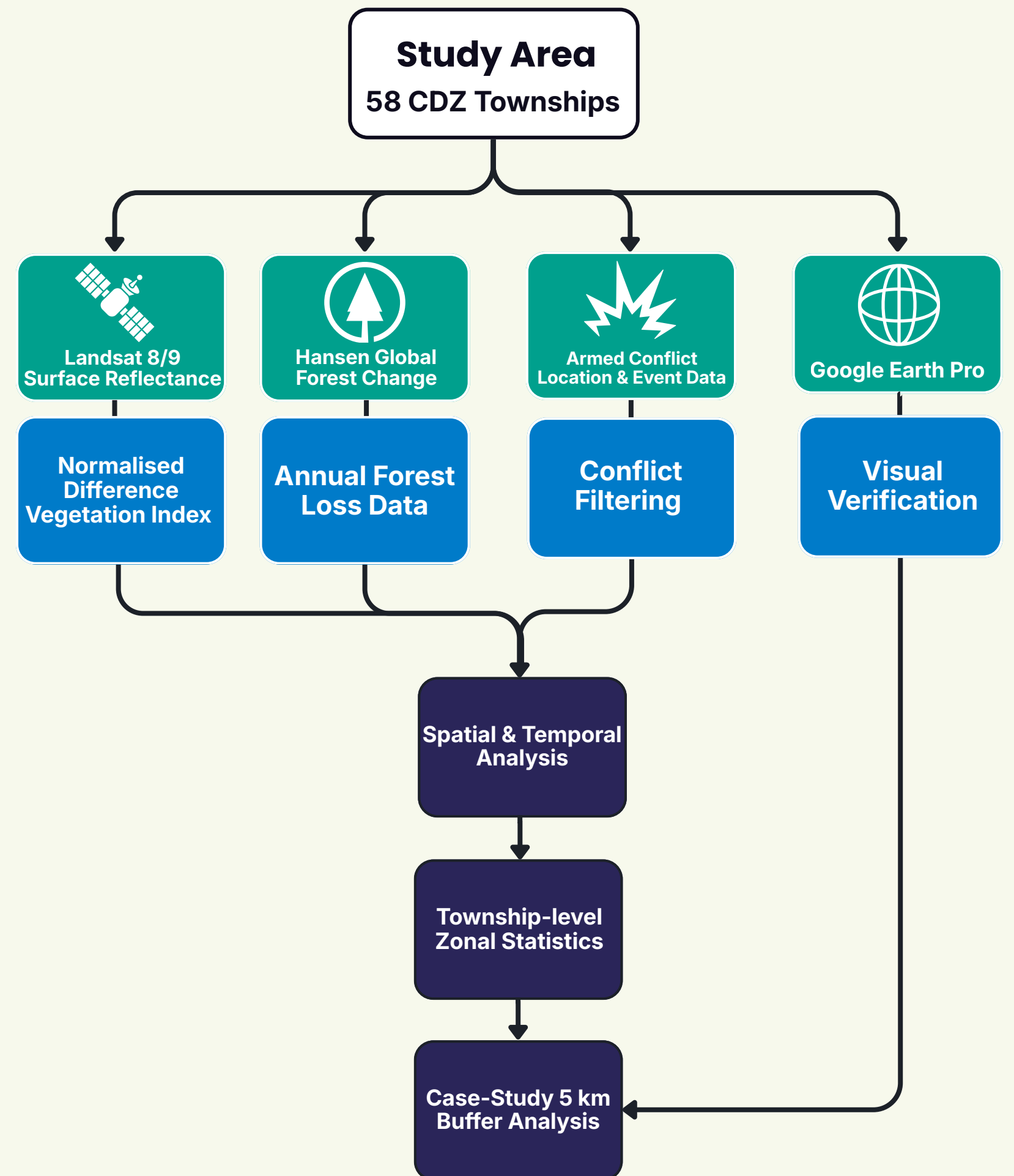


Indirect Conflict Mechanism

- 2 Conflict events | 0.45 ha forest loss | -0.025 NDVI decline
- Environmental Change → **Severe vegetation degradation, Forest clearing**
- Reduced stewardship and displacement pressures**



02. Methodology



04. Discussion

1

Environmental degradation extends beyond deforestation

→ Vegetation degradation occurred despite minimal Hansen-detected deforestation.

2

Armed Conflict Shapes Landscapes Through Complex and Contextualised Pathways

→ Armed conflict rarely acts as a single or uniform driver of environmental change.

3

Governance and Stewardship Influence Environmental Outcomes

→ The weakening of environmental governance, conservation capacity, and community stewardship may contribute to landscape change.

05. Future Work

- Consider population settlement, natural hazards, and geophysical attributes
- Expand case studies across Myanmar's highly diverse conflict and environmental contexts
- Investigate remote sensing methods to track long-term conflict-related environmental change
- Explore how environmental monitoring can support post-conflict recovery, conservation planning, and peacebuilding initiatives.



Environmental degradation is a critical, yet often overlooked, casualty of war.