

Successful Disaster Recovery in Displaced Communities by Transdisciplinary Approach

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The 2021 Semeru Eruption

The eruption caused extensive destruction, displacing thousands

- 51 people have been killed
- 4,252 people have been displaced and lost their livelihood and assets.
- Over 5,000 houses and public facilities destroyed

Table of House Damages

Sub-District	Heavy Damage	Moderate Damage	Low Damage
Candipuro	287	95	537
Pronojiwo	820		120
Total Population	1,107	95	657
Total	1,859		

- 1,850 housing units have been rendered uninhabitable and require relocation to safer areas.

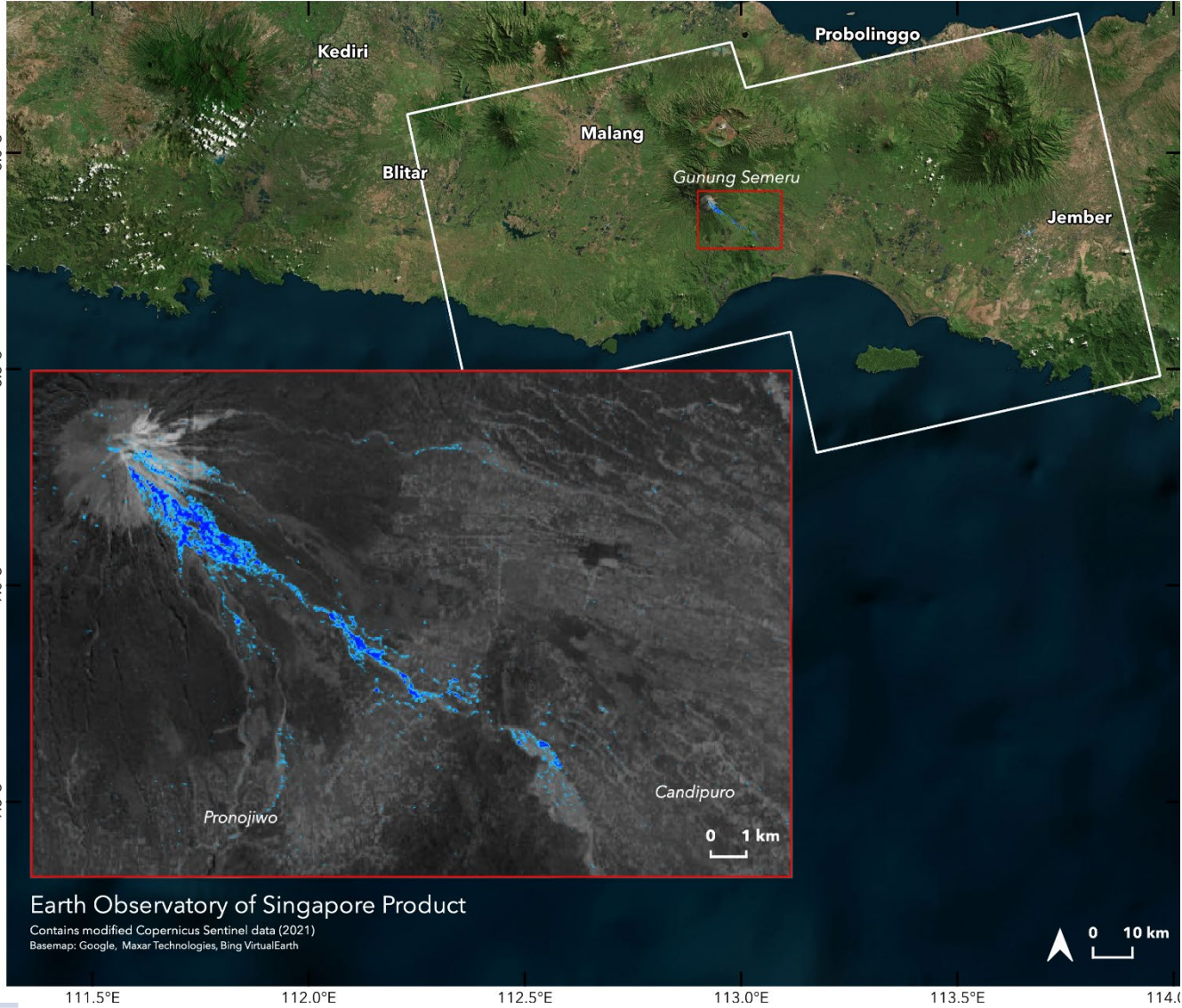


Figure - Damaged areas by pyroclastic flow (EOS-RS, 2021)

Research Framework

This research aims to address the critical role of a transdisciplinary approach (TDA) in disaster recovery management to build sustainable, resilient, and inclusive societies through a phenomenological qualitative case study of post-eruption community relocation to Sumber Mujur Village.

TDA emphasizes good governance with scientific knowledge-based decision making, involving all relevant disciplines, sectors, and community stakeholders working collaboratively.

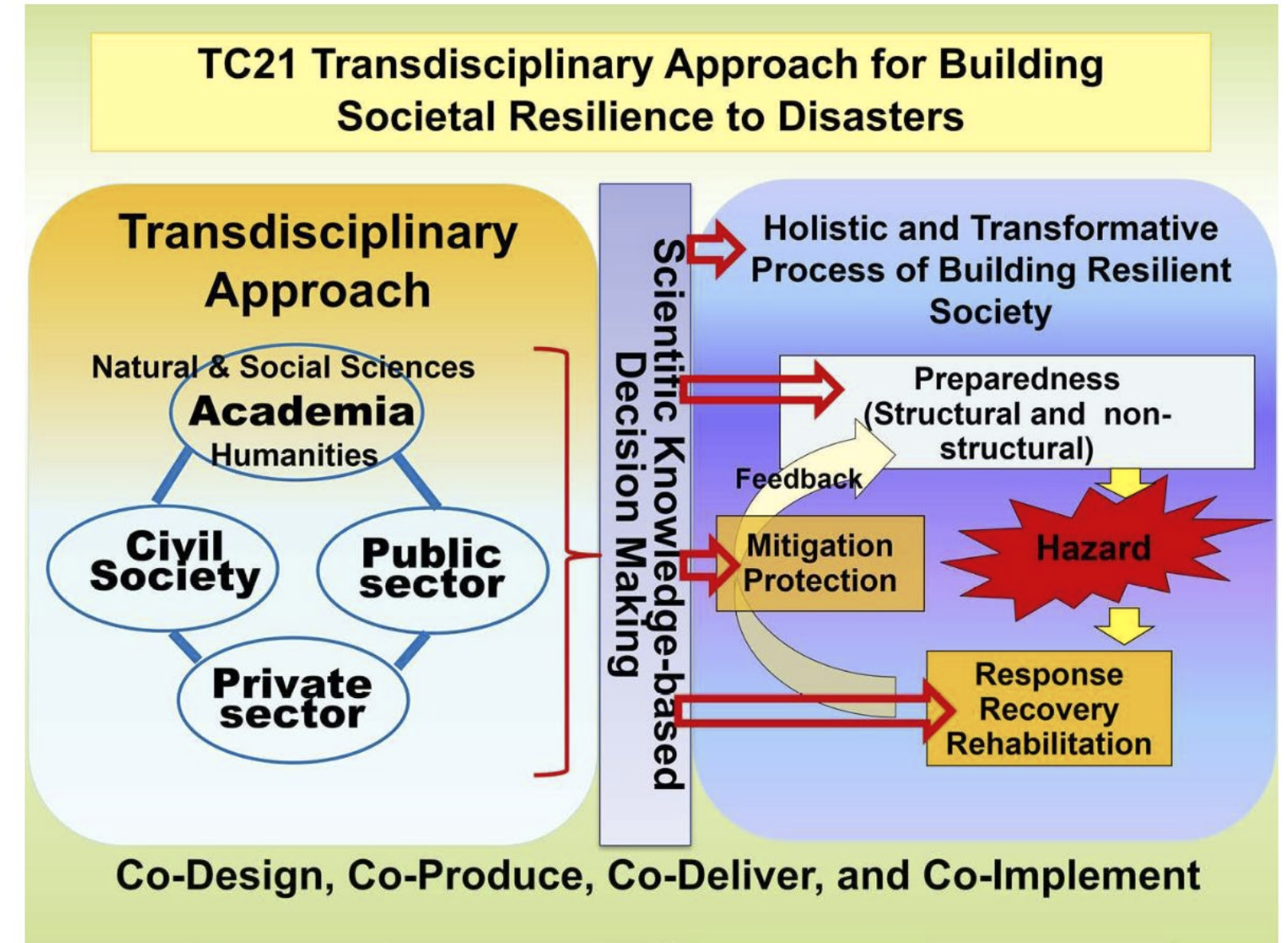


Figure. The basic concept of TC21 TDA

Research Methods

- Qualitative phenomenological case study
- Data: in-depth interviews, observation, and field documentation
- Frameworks used: Build Back Better, Incremental Housing, Transdisciplinary Approach



Initial		Sex	Age Range Categories	Occupation	Interview Time
1	S	F	51-60	Merchant	October, 2024
2	L	M	51-60	Farmer, Village Volunteer	September, 2024
3	SA	F	41-50	Women's Group	March, 2025
4	N	M	41-50	Chairman of KUBE	March, 2025
5	SR	M	51- 60	Hamlet Coordinator	February, 2025
6	RO	M	31-40	Sand Miner Labor	March, 2025
8	AN	F	41-50	District BPBD	May, 2025
9	AR	M	31-40	Provincial BPBD	April, 2025
10	EM	M	41-50	District Public Works Office	March, 2024
11	ER	F	41-50	District Planning and Development Agency	December, 2024
12	NH	M	41-50	Red Cross Organisation	March, 2024

Findings

Relocation to Sumber Mujur



BUPATI LUMAJANG
PROVINSI JAWA TIMUR
KEPUTUSAN BUPATI LUMAJANG
NOMOR : 188.45/191/427.12/2022

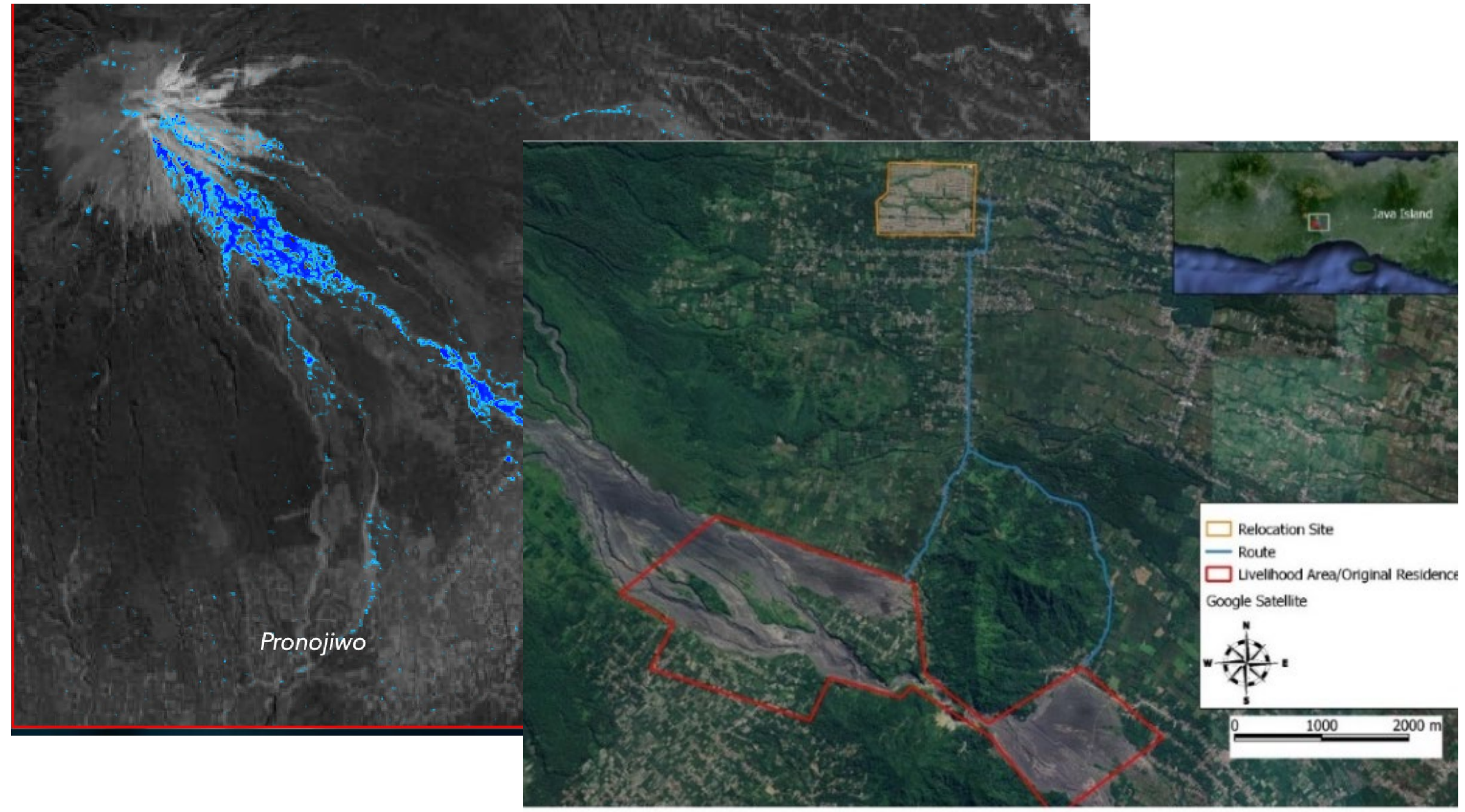
TENTANG

RENCANA INDUK (*MASTER PLAN*) RELOKASI
BAGI KORBAN BENCANA ALAM ERUPSI GUNUNG SEMERU

BUPATI LUMAJANG,

- Menimbang : a. bahwa bencana alam erupsi Gunung Semeru yang terjadi pada tanggal 4 Desember 2021 berdampak pada kerusakan hunian, rumah ibadah, fasilitas umum dan fasilitas sosial serta korban jiwa sehingga perlu dilakukan langkah-langkah penanganan lanjutan agar kehidupan dan penghidupan kembali pulih;
- b. bahwa penanganan dampak Bencana Alam Erupsi Gunung Semeru utamanya masyarakat yang kehilangan tempat tinggal agar dapat kembali hidup secara layak dan bermartabat serta aman, maka pemerintah pusat, pemerintah provinsi dan pemerintah daerah akan merelokasi korban Erupsi Gunung Semeru pada lokasi yang direkomendasikan, maka diperlukan sebuah panduan berupa rencana induk (*master plan*) agar relokasi dapat terarah dan sesuai dengan kaidah yang ditetapkan;
- c. bahwa memperhatikan rekomendasi dari Badan Geologi Kementerian Energi dan Sumber Daya Mineral Nomor :T-501/GL.04.04/BGL/2021 perihal Rekomendasi Geologi Tata Lingkungan dan Surat Keputusan Menteri Lingkungan Hidup dan Kehutanan Republik Indonesia Nomor SK. 1256/MENLHK/SETJEN/PLA.2/12/2021 tentang Persetujuan Penggunaan Kawasan Hutan untuk Kegiatan Penampungan Sementara Korban Bencana Alam Erupsi Gunung Semeru dan

- The relocation areas should be in safe areas of volcanic eruption and accessible to resident livelihoods.
- District government designated 81.55 Ha of official land to facilitate the resettlement.



Temporary to Permanent Housing

- 1,620 temporary housing established by 40 NGOs and private sectors. And 300 units by districts government.
- National Government built 1,920 permanent housing with incremental housing model – attached to temporary housing. Provided public facilities and household needs.
- Prioritizing the provision of disability housing that ensures accessibility and proximity to public facilities



Figure

- Site plan of Resettlement Areas
- The model of permanent houses

Social Cohesion and Community Representation



- Formation of internal 'Community Forum'
- Digital communication via WhatsApp for coordination
- Strengthened participatory governance and social bonding
- Local leadership as liaison between residents and government

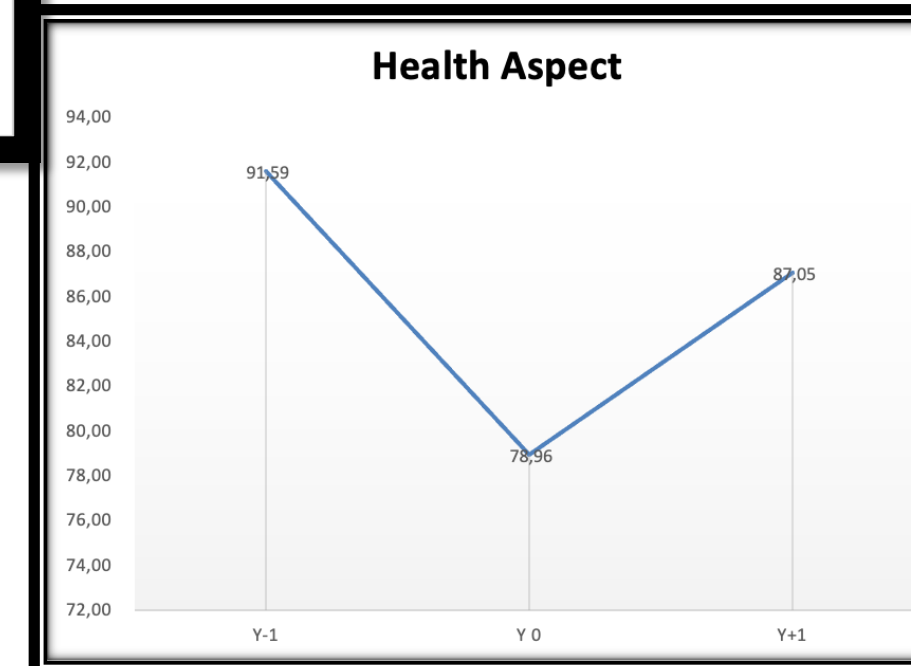
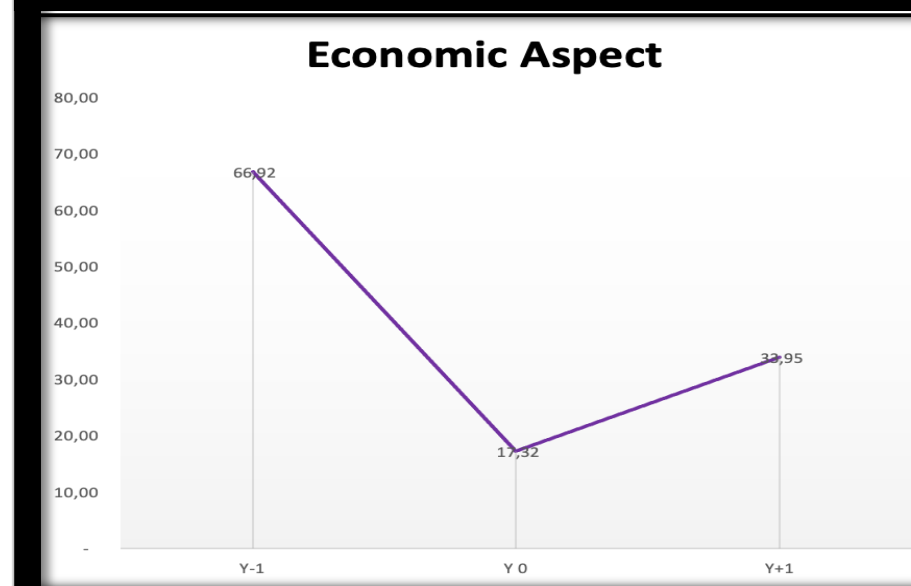
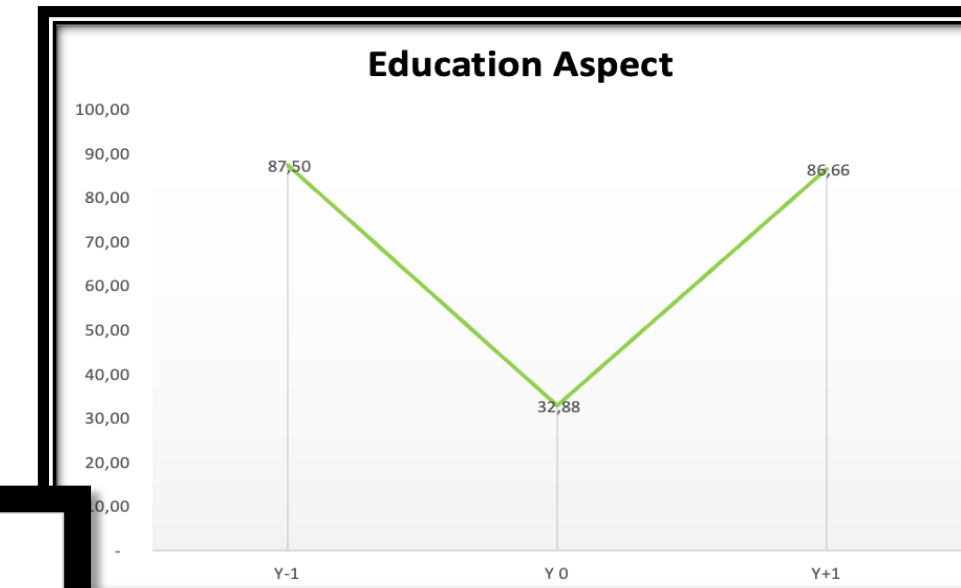
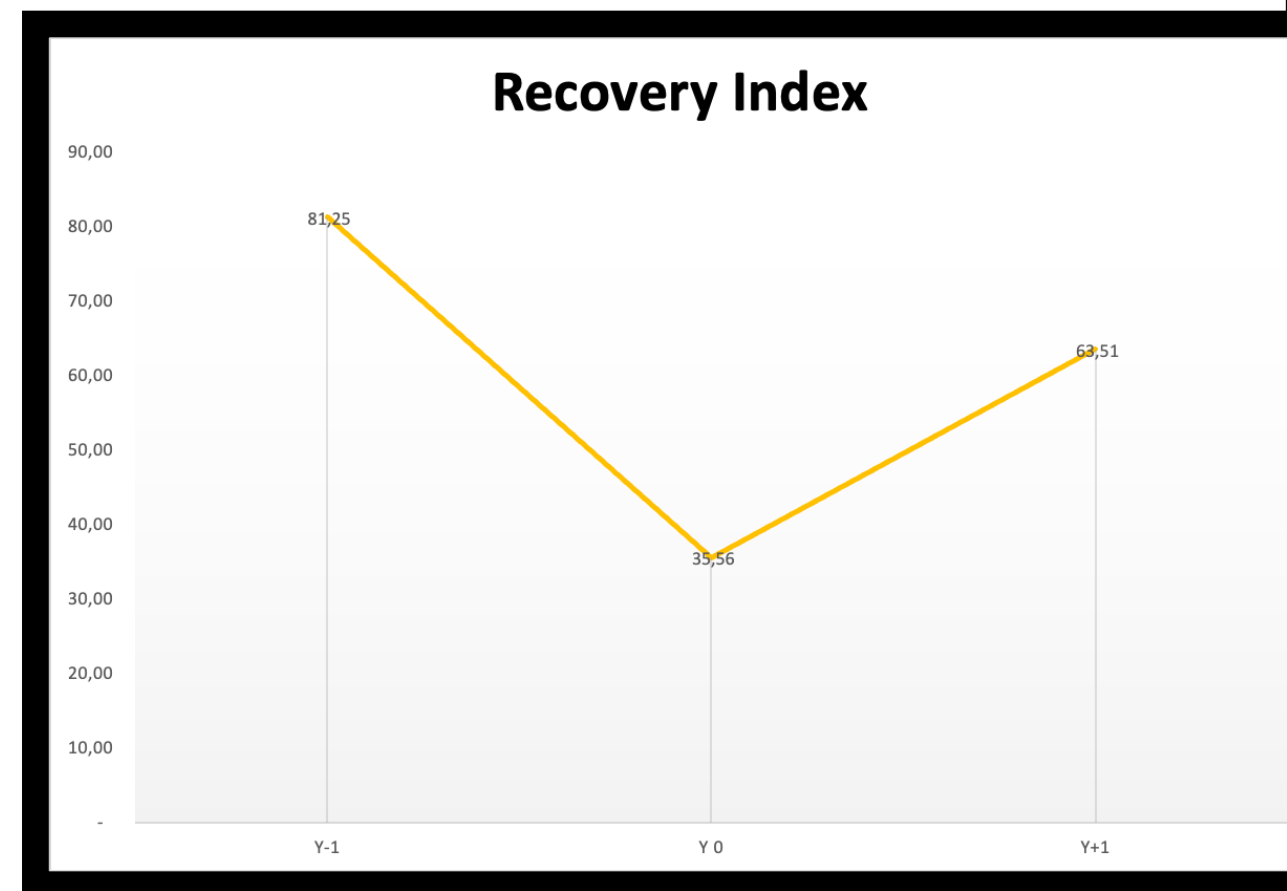
Economic Reorganization and Livelihood Diversification

- Household-level innovation and income diversification (Maintain original livelihood & Shift from agriculture to small business and urban labor)
- Building economic resilience through microenterprise - Supported by GO (BNPB), NGOs (DT Peduli, MDMC)



Recovery progress Evaluation Through Ina-PDRI

Ina-PDRI is a recovery index method that measures post-disaster recovery success through three main aspects: education, health, and economy. It uses various indicators which reflect HDI indicators to quantify recovery stages before, during, and after rehabilitation efforts.



Success Factors

Sectoral cooperation to provide well accepted houses for the community

Participatory approach, primarily manifested in the active engagement of residents' associations

Recovery index to assess progress and inform adaptive recovery strategies

Discussions

Transdisciplinary Approach to Recovery

Synergy: Governance collaboration across institutions

Coordination among BPBD, BNPB, PUPR, local government, NGOs, and residents reflects transboundary disaster response networks—multi-level institutional arrangements and breaking the complicated bureaucracy.

Holistic Solution: Integrated socio-cultural, spatial, and economic needs

The recovery process was not linear only physical but involved a complex negotiation of social norms, emotional loss, and spatial transformation.

Inclusiveness: Ensuring inclusive, adaptive, and sustainable recovery

Sustainable resettlement as both a physical and social process rooted in the lived experiences of disaster survivors including how to provide access and protect vulnerable group.

Lessons and Policy Implications

- Resettlement = Rebuilding lives, not only houses
- Encourage inclusive and participatory governance
- Integrate local culture and social structures
- Institutionalize transdisciplinary collaboration



Thank You