

## TYOLOGI OF LAND TRANSFORMATION IN COASTAL SEAWEED FARMING VILLAGES :

### Spatial and Social Perspectives from Dusun Puntondo, South Sulawesi

Fauzan Isya Duri, Ninik Suhartini, Heru Purboyo Hidayat Putro, Rima Yulia Mihardi

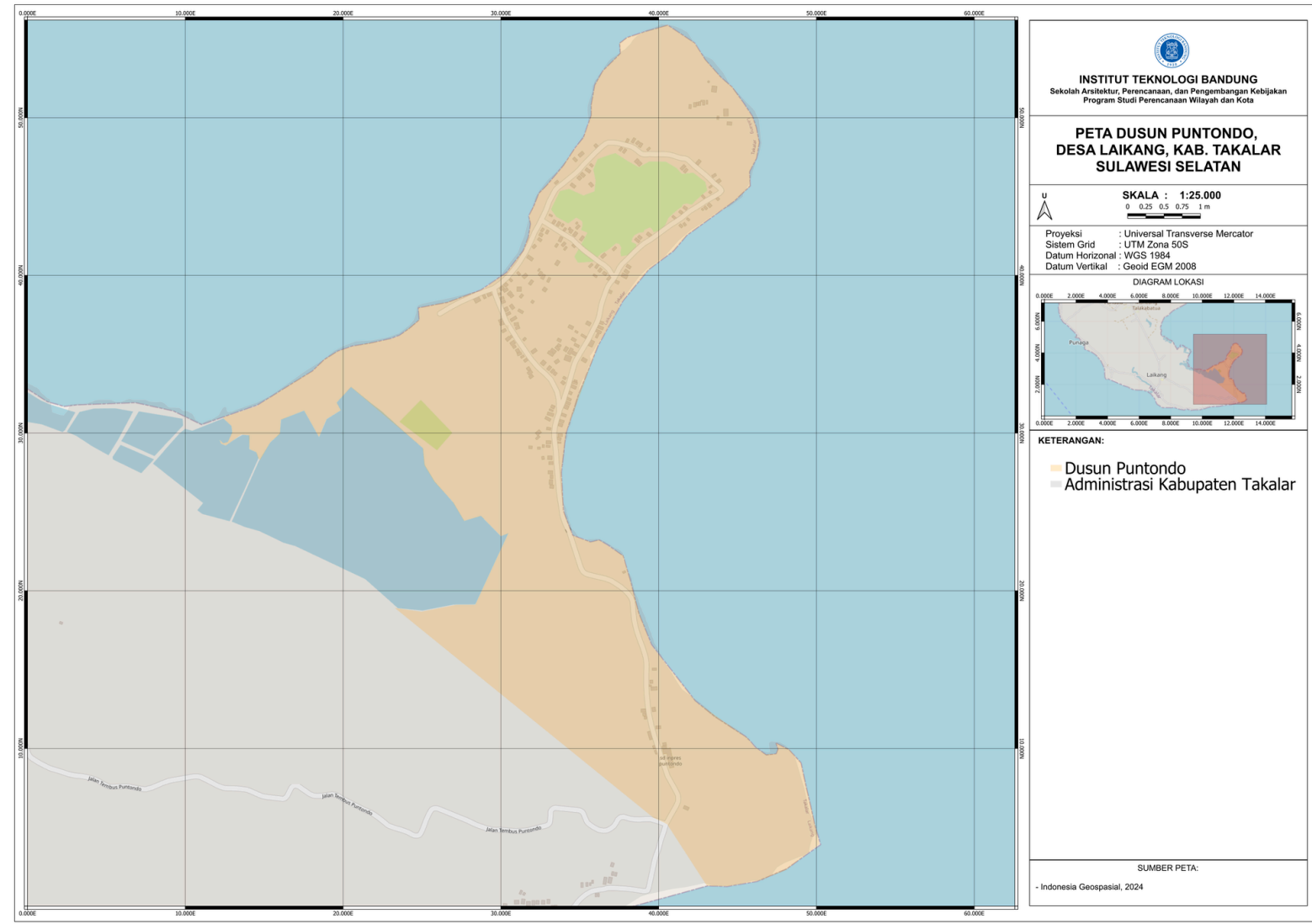
School Architecture, Planning and Policy Development, Institut Teknologi Bandung (ITB), Indonesia

#### 1 INTRODUCTION

Coastal settlements in Puntondo have experienced significant land transformation driven by marine livelihoods, kinship-based housing growth, migration, and shoreline-oriented economic activities

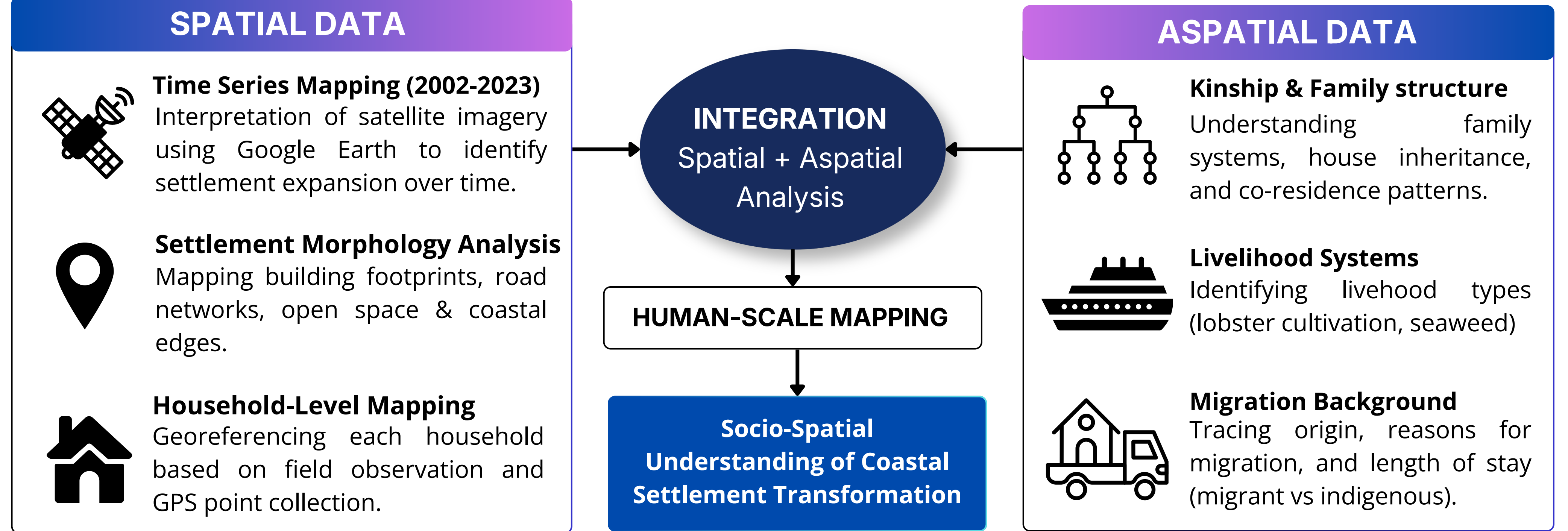
Existing land-use studies often focus on remote sensing and physical land-cover change, while overlooking socio-spatial relationships shaping settlement morphology (Long, 2022).

This study applies a human-scale mapping approach integrating spatial and aspatial analysis simultaneously to understand how social structures and livelihoods influence coastal settlement transformation (Suhartini & Jones, 2020).



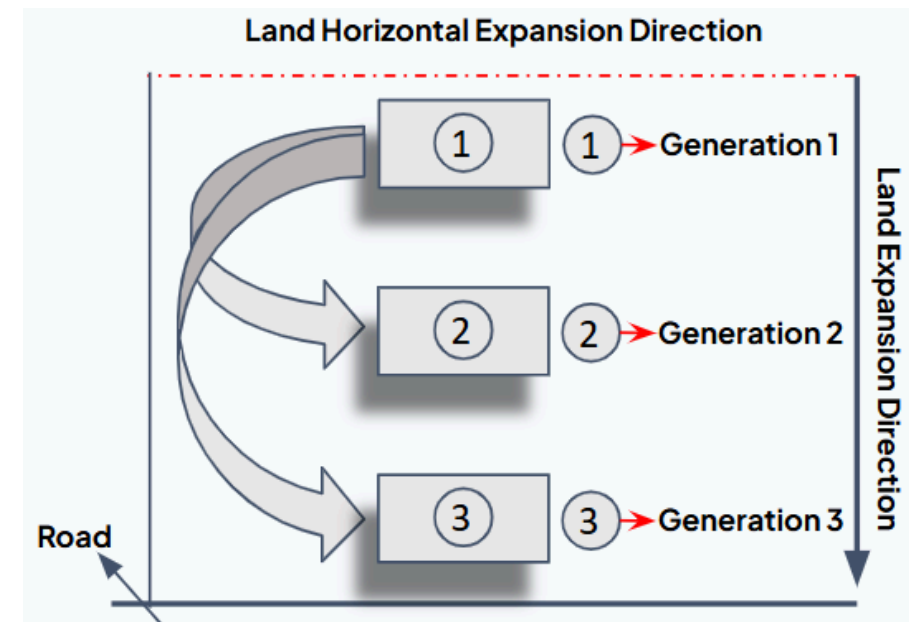
Maps Study Dusun Puntondo

#### 2 METHODOLOGY : HUMAN-SCALE MAPPING APPROACH



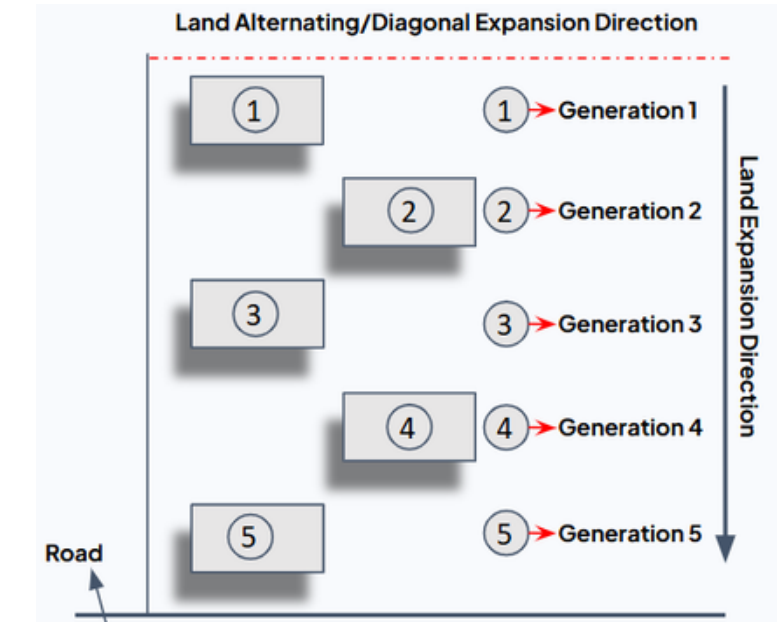
#### 3 HOUSING EXPANSION TYOLOGIES

##### HORIZONTAL EXPANSION



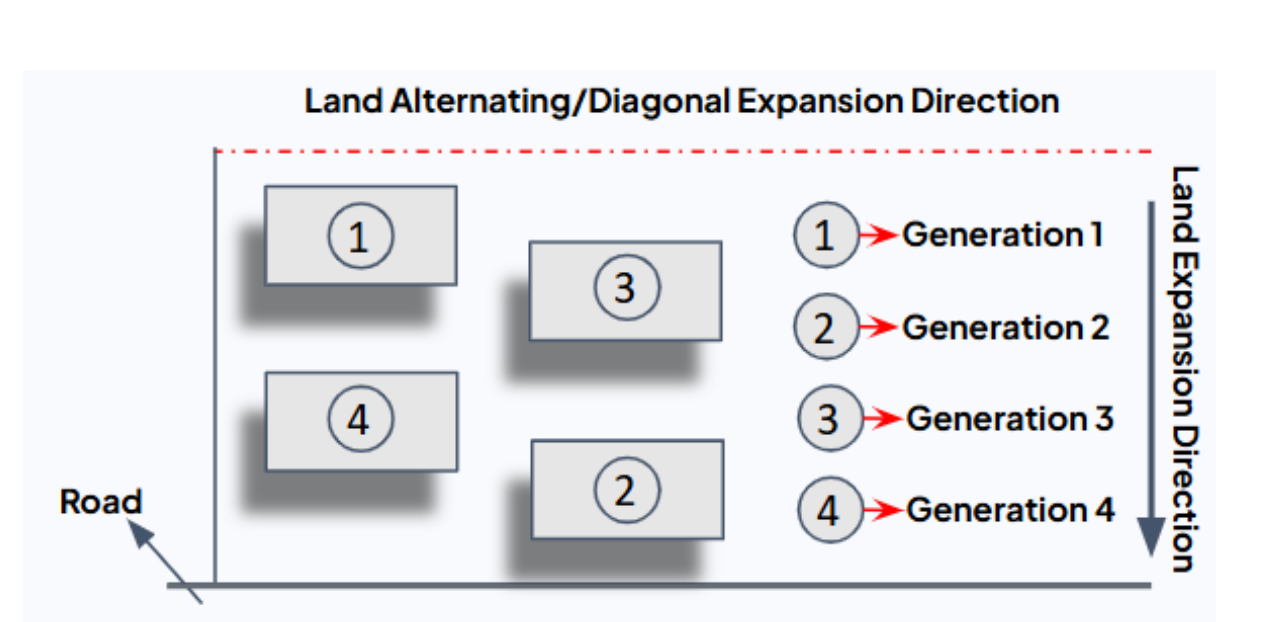
Expansion follow a kinship-based Horizontal pattern where younger generations progressively build toward the road and coastal access. (Turner, 1976; Long, 2022)

##### DIAGONAL EXPANSION



Settlement growth alternates diagonally between family members, producing irregular coastal housing morphology shaped by limited land availability & inheritance adaptation. (UN-Habitat, 2015)

##### CROSS EXPANSION



Cross-expansion patterns emerge through intergenerational land subdivision and spatial negotiation among related household (Suhartini & Jones, 2020)

#### 4 COASTAL-ORIENTED SETTLEMENT GROWTH (2002-2023)



Initial settlement concentrated in the central part of the island

Slight growth toward the coastline following access routes

Expansion begins along the coastal edge, especially in the north & east

Coastal densification increases more houses near marine acces

Continous growth along the shoreline and toward productive coastal area

Settlement is now highly concentrated along the coast, facing the sea

Settlement expansion consistently moves towards coastal edges where marine livelihoods, accesbity, and economic opportunities are comentrated (Long, 2022). Similar to coastal morphology observed in Cangkol and other informal coastal settlement, shoreline becomes the dominant growth corridor (Triana et al., 2023)

#### 5 SOCIO-SPATIAL DIFFERENTIATION



##### NOTHERN ZONE

- Lobster & seaweed cultivation
- Migrant communities
- Inter-island markets & networks
- Higher settlement density
- Faster coastal transformation

##### SOUTHERN ZONE

- Seaweed farming
- indigenous communities
- indigenous market orientation
- Lower settlement density
- Slower coastal transformation

#### 6 KEY FINDINGS

- Coastal transformation is strongly influenced by marine livelihoods, accesbity, and economic opportunities
- Settlement morphology follows kinship-based intergenerational expansion patterns
- Human-scale mapping reveals hidden socio-spatial dynamics overlooked by converntional land use mapping
- Coastal accssbity becomes the dominant driver of settlement growth and densification
- Socio-spatial differentiation emerges between nothern and southern zones based on livelihood and migration

##### REFERENCES

- Long, H. (2022). Theorizing land use transitions: A human geography perspective. Progress in Human Geography.
- Siddik, M. A., & Islam, A. R. M. T. (2024) Review of coastal land transformation under global change
- Borzi, L., Anfuso, G., & Williams, A. T. (2025). Impact of coastal land use on long-term shoreline change.
- Suhartini, N., & Jones, P. (2020). Better Understanding Self-Organizing Cities: Theories, Informal Practices, and Hidden Rules, Routledge.

#### 7 CONCLUSION

Coastal land transformation in Putondo is not merely a physical expansion process, but a socio-spatial process shaped by kinship structures, migration, marine livelihoods, and intergenerational adaptation.

The integration of spatial and aspatial analysis through human-scale mapping provides a more comprehensive understanding of how coastal communities organize space and adapt to environmental and economic change.

This approach contributes to coastal planning policies that are more inclusive, culturally sensitive, and grounded in the lived realities of coastal communities.

- Turner, J. F. C. (1976), Housing By People: Towards Autonomy in Building Environments. Marion Boyars.
- Triana, L., Putri, Q. A, & Iskandar, A. (2023). Coastal settlement growth and livelihood transformation in informal coastal villages.