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Development and Indigenous Knowledge  
in Local Societies of East Nusa Tenggara

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# **Indonesian Seminar: Development and Indigenous Knowledge in Local Societies of East Nusa Tenggara**

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# Introduction :

## The Problems facing East Nusa Tenggara

Makoto Koike

Momoyama Gakuin University

### Introduction

East Nusa Tenggara is one of the least developed and poorest provinces in Indonesia. According to the Indonesian statistics in 2024, the poverty rate in East Nusa Tenggara is 19.48%, which is the fourth highest among all the 38 provinces (Pusat Statistik Indonesia 2024: 11-28). The highest poverty rate, 32.97% in the Highland Papua Province, followed by Central Papua at 29.76% and West Papua at 21.66%. When excluding the provinces in Papua, East Nusa Tenggara is the poorest province in Indonesia. The HDI<sup>1</sup> (Human Development Index) shows the same problem. According to the HDI in 2024, the fourth lowest in East Nusa Tenggara is 67.39, and the lowest is 53.42 in Highland Papua (74.20 in Indonesia in general)<sup>2</sup>.

East Nusa Tenggara had the same problems in the 1980s that the statistical data show in 2024. The book *Nusa Tenggara Timur: The Challenges of Development* (Barlow et al. eds. 1991) is a collection of the papers from the two seminars held in 1989. One seminar was in Kupang, Indonesia and the other in Canberra, Australia. It shows “NTT, with its dry climate, weak communication and badly developed infrastructure, is one of the poorest parts of Indonesia. It certainly deserves attention to its problems from official quarters, which must predominantly involve the NTT provincial government with support from Jakarta.” (Barlow and Alex 1991: 1). From 1985 to 1988 I conducted an anthropological research in the Haharu region, East Sumba. Because of this, I know how East Nusa Tenggara, especially East Sumba, has changed over the

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<sup>1</sup> The HDI combines three indexes, that is, life expectancy, education, and GDP.

<sup>2</sup> <https://www.bps.go.id/id/statistics-table/2/NDEzIzI=/-metode-baru--indeks-pembangunan-manusia.html>

last forty years. Infrastructure has improved a lot. This includes roads, and health center facilities. Concurrently, there has been a notable advancement in educational levels. Today, most villagers use smartphones to talk to their relatives and friends who live far away. They use social media apps like WhatsApp and Facebook. The villagers now use motorcycles instead of horses to get around. However, as the statistics above show, poverty and underdevelopment are still big problems in East Nusa Tenggara.

Despite the pervasive social and economic stagnation that characterizes East Nusa Tenggara, the region's diverse local cultures have persisted, reflecting its varied topographies and ecological niches. This seminar aims to determine the most effective development model for the local population, one that optimizes the use of the province's cultural heritage, especially indigenous and local knowledge (*kearifan lokal* in Indonesian). Many researchers have acknowledged the importance of recognizing the role of local communities and their knowledge in achieving the Sustainable Development Goals (SDGs).

This seminar will focus on the two regions of East Nusa Tenggara, that is, East Sumba and West Timor. The first part addresses the neglect of indigenous land use and crops in East Sumba. Rambu L.K.R. Nugrohowardhani (Universitas Kristen Wira Wacana Sumba) examines the intersection of large-scale agricultural investment and indigenous land use in the East Sumba regency. Using institutional economics and ethnographic fieldwork, she analyzes how recent cotton projects disrupt local livelihoods. The study emphasizes the importance of incorporating indigenous environmental knowledge into rural development policies to promote sustainability, socio-cultural integrity, and community resilience.

Stepanus Makambombu (Universitas Kristen Wira Wacana Sumba and the Stimulant Institute) explores how national food policies that prioritize rice, maize, and soybeans have marginalized local food systems in East Sumba. Through qualitative research and policy analysis, he found that national regulations undermine regionally adaptive and ecologically sustainable food crops. His paper argues that the exclusivity of food policies favoring strategic commodities weakens the importance of local foods as a vital component of national food security.

The second part of the seminar discusses two case studies from West Timor. These studies will examine how villagers have developed survival strategies adapted to their ecological, social and political conditions. Yulius PK Suni (Universitas Katolik Widya Mandira) examines the challenges and failures of clean water supply projects in West Timor's semi-arid regions. Drawing on case studies, particularly the project in the Kupang Regency, the paper highlights how top-down implementation, weak governance, and lack of community engagement hinder sustainability. Conversely, integrating formal and traditional

governance systems, having strong water committee leadership, and involving all water users in decision-making contribute to the sustainability of clean water projects.

Yoshinari Morita (Momoyama Gakuin University) explores the hybrid economy of a border community in West Timor adjacent to Timor-Leste's Oecusse exclave. Based on the ethnographic research, his paper explores how villagers pragmatically navigate between state regulations and informal local businesses via "mice roads" (Jalan Tikus). As the state is steadily increasing its presence, villagers attempt to craft new survival strategies.

## References

Badan Pusat Statistik

2024 *Data dan Informasi Kemiskinan Kabupaten/Kota di Indonesia Tahun 2024*, Jakarta: Badan Pusat Statistik.

Barlow, Colin et al. (eds.)

1991 *Nusa Tenggara Timur: the Challenges of Development*, Canberra: The Australian National University.

# Balancing Development: The Intersection of Large-Scale Agricultural Investment and Indigenous Knowledge of Land Use in East Sumba

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## **Abstract**

This study examines the profound impact of large-scale agricultural investments in East Sumba, Indonesia, with a specific focus on the cotton commoditization project and its intricate interaction with local land use practices, which are deeply rooted in Sumbanese cosmology. While large-scale investments are frequently promoted as a significant development strategy for marginal rural areas, they often overlook and consequently disregard indigenous knowledge, posing significant risks to local environments and the livelihoods of local people. Employing a qualitative research approach, this study applies resource theory within an institutional economics framework to scrutinize the implications of the large-scale cotton investment in East Sumba. The detailed empirical findings from Tanamang Village reveal that the cotton project frequently conflicts with customary land tenure and ecological practices, undermining sustainability. Despite its stated developmental intent, this investment has largely overlooked local perspectives, resulting in the displacement of traditional land uses and damage to food crops. The study emphasizes the crucial need to integrate indigenous knowledge into development policies to ensure sustainable rural livelihoods. Recognizing and incorporating local land use traditions can significantly enhance policy effectiveness while preserving the cultural and environmental integrity of East Sumba.

**Keywords:** agricultural investment, cotton, Sumba, indigenous knowledge, institutional economics, land use

## 1. Introduction

The agricultural sector serves as the fundamental backbone of Indonesia's economy, employing a substantial portion of its labor force and acting as a primary driver of economic growth. In pursuit of accelerated economic development, the Indonesian government has actively promoted large-scale agricultural investments (LSAIs), particularly in marginal rural areas (McCarthy et al. 2011, 2012). East Nusa Tenggara (Nusa Tenggara Timur/NTT) stands as one of Indonesia's least developed and poorest provinces. Nevertheless, it is a region that remarkably maintains its own unique local cultures, intricately shaped by its diverse natural environments, which lie in the tropical savanna climate zone (Islamy et al. 2024). The broader objective of development initiatives in such regions is to ascertain the most effective models that can optimally utilize this rich cultural heritage, predominantly indigenous and local knowledge, known as *kearifan lokal* in Bahasa Indonesia.

Despite the perceived necessity of LSAIs for economic advancement, there exists a critical gap in understanding their full implications, particularly concerning their clash with established indigenous knowledge systems, households food security, and the environmental risks they pose, such as biodiversity loss, extensive agrochemical use, land grabbing, and water resource depletion (Fitawek & Hendriks, 2021; McCarthy et al., 2012; Vel et al. 2022). This paper addresses this gap by focusing on a specific case study: the large-scale cotton investment by PT Ade Agro Industri (PT AAI) in East Sumba. In 2009, the Indonesian government designated PT AAI as the primary investor for cotton development in East Nusa Tenggara Province<sup>3</sup>. The company initiated its operations in East Sumba Regency, with a planned plantation area of 300 hectares, incorporating advanced agricultural technologies, including a center pivot irrigation system and mechanical cotton harvesters<sup>4</sup>. Beyond cultivation, PT AAI was also positioned as the primary purchaser of cotton produced by local farmers, with prices determined by the government based on global market rates, as well as a provider of cotton seeds to smallholder cultivators across Sumba. The establishment of this cotton company represents the first large-scale agricultural investment on Sumba Island and marks the beginning of cotton commoditization in the region (Nugrohowardhani 2014).

This cotton program was closely linked to the National Cotton Acceleration Program (Program Akselerasi Kapas Nasional/PAKN), a national effort spurred by the 2006 World Trade Organization (WTO) decision to eliminate

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<sup>3</sup> <https://kupang.tribunnews.com/2009/07/05/pengembangan-kapas-di-ntt-2500-ha>.

<sup>4</sup> <https://kupang.tribunnews.com/2009/09/04/kapas-sumtim-terbaik-di-indonesia>

export subsidies for cotton from developed countries. This global economic shift led to a sharp increase in international cotton prices, creating a direct impetus for Indonesia to enhance its domestic cotton productivity. Sumba Island was strategically selected as the initial implementation site for PAKN due to its expansive available land, a climate deemed well-suited for cotton cultivation, and a longstanding tradition of weaving, which was believed to foster local acceptance of the program (Nugrohowardhani 2015). The selection, however, implicitly framed the island's land as merely an "available" resource for commodification, often overlooking the complex existing indigenous land management systems and the deep cultural significance of land to the Sumbanese. As a result, this framing immediately foreshadows the central conflict between top-down development narratives and local socio-ecological realities that this paper aims to explore.

This study is structured to provide a comprehensive understanding of these dynamics. Following this introduction, the resource theory viewed from an institutional economics perspective as an analytical framework, is elaborated. Subsequently, the broader context of the global land rush and its implications for indigenous knowledge systems are discussed. The empirical findings section provides a detailed account of the demonstration plot as a showcase of the cotton project in Tanamang Village and its specific impacts on traditional land use and local livelihoods. The discussion then synthesizes these findings, linking them back to the theoretical framework and highlighting the complex interplay of challenges and opportunities. This paper concludes by emphasizing the critical need for integrating indigenous knowledge, particularly the local land use, into sustainable development policies.

## **2. The Resource Theory: An Institutional Economics Perspective**

In the field of economics, the concept of "resources" is central to understanding the creation of goods and services. However, the definition of resources is debated, particularly between neoclassical and Old Institutional Economics (OIE) perspectives (Nugrohowardhani 2015). Neoclassical economics, as the mainstream view, considers resources as physical with given, fixed, and finite characteristics. Resources act as direct inputs for maximizing economic satisfaction. The fixed and limited availability of resources leads to scarcity, which necessitates rational allocation for optimal and "profitable" use to meet unlimited needs. While central to neoclassical thought, this perspective gives less attention to the origin of resources or why something functions as a resource.

Conversely, institutional economics posits that resources are not inherent but "created." Zimmermann (1951) defined "resource" as a dynamic functional concept, not merely a physical one. From this viewpoint, a resource is a

collection of capabilities used to transform available elements into meeting human needs and sustaining life within a specific environment (De Gregory 1987; Zimmermann 1933). This definition highlights three characteristics of resources: human capability, functionality, and the goal of human survival (Nugrohowardhani 2015). Zimmermann and De Gregori's perspective emphasizes that resource availability is tied to humans, culture, and natural factors rather than being fixed or finite. Resources are a product of human intelligence and ingenuity, fostering scientific and technological development; as long as ideas persist, resources will be generated. The creation of resources involves human skills and knowledge gained from environmental experiences (De Gregory 1987). Human assessment of natural materials for resource transformation varies according to individual needs and local surroundings, and regional cultural norms also influence this transformation. Consequently, resources can be allocated through diverse institutional structures and power relations within society. In essence, resource creation and allocation are deeply intertwined with the environment and prevailing institutions.

The institutional economics framework, particularly resource theory, is crucial for analyzing interactions between large-scale agricultural investments (LSAIs) and indigenous knowledge (IK) of land use, such as in East Sumba. Unlike neoclassical models that primarily emphasize market forces and the efficient allocation of scarce resources based on individual utility maximization, institutional economics posits that economic activities are profoundly influenced by the "rules of the game" (North 1991). These rules encompass formal constraints, such as laws, regulations, and contracts, as well as informal constraints, including social norms, customs, conventions, and self-imposed codes of conduct, along with their enforcement characteristics (Hodgson 1991; Rutherford 2001). The institutional perspective acknowledges that power dynamics, social norms, and customary laws are crucial in determining land use outcomes, often revealing inefficiencies or injustices that are overlooked by purely market-driven analyses.

As one of the resources, land is not viewed as a static physical entity with intrinsic and fixed values from an Old Institutional Economics (OIE) perspective. Instead, the land is considered "functional and dynamic," with its value and meaning being actively shaped by social contexts, relationships, technologies, and prevailing discourses (De Gregory 1987). This understanding aligns with the work of scholars who argue that land's "resourceness" is not an inherent quality but rather an "assemblage" of materialities, relations, technologies, and discourses that must be "pulled together and made to align" to render it investable (Li 2014). Local communities often possess unique ecological knowledge and land-use practices that diverge from the views of development economists, highlighting the importance of understanding cultural and ecological contexts in planning

agricultural development (Niemeijer & Mazzucato 2003; WinklerPrins & Sandor 2003). This perspective is crucial for understanding the collision between LSAIs and IK of land use in East Sumba, as it highlights that the dispute is not merely about legal ownership or economic efficiency but about fundamentally different ways of conceiving, valuing, and utilizing land, which are deeply rooted in distinct institutional frameworks.

Applying this theoretical lens to land use in East Sumba, the study analyzes how different institutional frameworks—specifically, the formal, market-driven state legal system and the informal, cosmologically-rooted customary system—define, value, and regulate land use. The framework allows for an examination of how land is socially constructed and rendered investable by external economic forces, often at the expense of existing indigenous land-use systems. The conflict thus arises from the imposition of a commodified view of land, driven by national economic policies and large-scale investments, onto a local context where land is understood through a complex web of cultural, spiritual, and subsistence-oriented relationships. This approach provides a robust analytical foundation for understanding the complexities of development in East Sumba, revealing how the clash between these differing institutional logics drives land conflicts and impacts the long-term sustainability and well-being of local communities.

### **3. The Global Land Rush and its Impact on Traditional Land Use**

The late 20th and early 21st centuries have been marked by an unprecedented surge in demand for land, primarily driven by large-scale agricultural investments (LSAIs). This phenomenon, widely recognized as the "global land rush" (Borras & Franco 2024), is triggered by a growing global need for food, fuel, (animal) feed, and fiber, alongside increasing financial speculation and the search for new investment opportunities (Fitawek & Hendriks 2021). While LSAIs are frequently presented as catalysts for economic development and modernization in developing countries, promising benefits such as increased employment opportunities and infrastructure development, their implementation often carries significant risks and adverse consequences for local populations.

A significant concern is the displacement and dispossession of local communities, particularly indigenous peoples, who rely on customary land tenure systems that are frequently overlooked or overridden by formal legal frameworks (Vel & Makambombu 2010). Land acquisition processes for these investments often proceed without adequate consultation or compensation, leading to disputes and increasing the vulnerability of indigenous communities due to insecure land tenure. The emphasis on monoculture cropping systems, a hallmark of many LSAIs, further exacerbates these issues by reducing

agrobiodiversity and diminishing the resilience of local food systems to environmental changes (Fitawek & Hendriks 2021). This shift also introduces standardized, externally driven agricultural practices that can erode indigenous knowledge systems as communities become increasingly reliant on external inputs and technologies, leading to the gradual abandonment of traditional farming knowledge.

Indigenous Knowledge (IK) is a collective term encompassing the myriad place-based knowledge accumulated over generations within specific cultural contexts (Jessen et al. 2022). It is also referred to as Traditional Knowledge (TK), Indigenous and Local Knowledge (ILK), or Traditional Ecological Knowledge (TEK) (Camacho-Villa et al. 2021; Gonçalves et al. 2021; Koike 2019). This knowledge is not merely a static body of information but a "lived experience" that is deeply intertwined with the communities that uphold and embody it (McGregor, 2021). Indigenous knowledge systems offer invaluable insights into sustainable resource management, environmental adaptation, and climate-resilient agriculture. The knowledge is deeply intertwined with local communities that uphold and embody it. Ogunyiola et al. (2022) highlighted the importance of indigenous knowledge in Africa by arguing that incorporating local knowledge is essential for successfully expanding climate-smart agriculture in Africa. Moreover, the importance of integrating local knowledge into development strategies and achieving Sustainable Development Goals (SDGs) is increasingly recognized (Koike 2019). However, ensuring its effective integration requires acknowledging the systems that sustain it, which, in turn, necessitates support for indigenous self-determination. The integration necessitates acknowledging and supporting the systems that sustain Indigenous Knowledge (IK), which in turn requires upholding Indigenous self-determination.

The contradiction between the stated goals of LSAIs and their actual socio-economic impacts on local populations is stark. While LSAIs are promoted for economic benefits, the reality for indigenous communities often involves displacement, restricted access to natural resources, and a shift from diversified subsistence farming to market-dependent monoculture. This transition increases their vulnerability to market fluctuations and environmental shocks, thereby exacerbating existing inequalities. Furthermore, even when large-scale projects like the cotton investment in Sumba do not fully materialize or achieve sustained operations, the initial land alienation and disruption can cause significant, lasting negative impacts on local communities and traditional land use patterns without delivering the promised economic benefits. This highlights a systemic issue where the mere initiation of such projects, regardless of their long-term success, can lead to profound and enduring socio-ecological disruption.

#### **4. Methodology**

This study employs a qualitative research approach, which enables an in-depth understanding of local perspectives, the socio-cultural dimensions of land-use, and the lived experiences of the communities affected. Primary data collection was conducted through ethnographic fieldwork involving in-depth interviews and participant observations within the local East Sumbanese communities in Tanamanang Village. This immersive approach was crucial for gathering rich, detailed insights into traditional land use practices, the cosmological beliefs that underpin them, and the direct experiences of community members affected by the cotton project. Engaging directly with community members allowed the research to capture their nuanced understanding of land categorization and its profound significance in the Sumbanese worldview.

Secondary data collection methods included the analysis of various documents, such as online media, policy documents, investment reports, academic articles, and historical records related to land issues and agricultural development in East Sumba. The secondary data contextualized the economic forces driving large-scale cotton investments and their alignment with national development programs. It is essential to note that the review of secondary data revealed discrepancies regarding the operational status of PT AAI, with initial reports indicating active operations while later sources suggest inactivity. It acknowledges the complexities and potential gaps between policy intentions, corporate claims, and ground realities, demonstrating the study's rigor in navigating imperfect information and providing a more nuanced understanding of the project's trajectory and impacts. The combination of primary and secondary data enables a critical examination of these discrepancies and contributing to a more robust and comprehensive analysis.

#### **5. Sumbanese Cosmology of Land and Traditional Land Use**

In the cosmology of rural communities in East Sumba, a fundamental bipolar opposition structures their perception of the world, categorizing all things into contrasting pairs such as hot-cold, male-female, and day-night (Widyatmika & Hudiono 2013). Within this worldview, the sky, rainwater, rivers, hoes, and planting sticks symbolize masculine elements associated with heat and fertility. At the same time, the earth, soil, plant seeds, and planting holes embody feminine elements, considered cool.

The intricate cosmology forms the sacred foundation of daily life, traditional land-use management, and agricultural practices for the people of East Sumba. Land or soil, as a concrete form of the earth, is not merely an inanimate object but is revered as a living being possessing a head, tail, heart, fat, and breath

(Forth 1981). As feminine elements, land represents women, particularly her roles as mothers. Sumbanese consider the relationship between people and land as that of a child and mother. A mother will provide the basic needs of her children, such as food, clothing, and shelter. Likewise, the land will provide food, clothing, and shelter for humankind. Farming, in this context, transcends a mere means of livelihood; it is perceived as a sacred marital process between male and female forces, culminating in new life. The falling rain from the sky, moistening the earth, is an analogy for male seed fertilizing the female, thereby generating new life, marked by the growth of plants and trees. Consequently, like marriage, farming is considered sacred, necessitating strict adherence to customary rules that regulate human relationships with *Marapu*, the ancestral spirits of Sumbanese.

The deep cultural perspective is reflected in a sophisticated system of land use classification based on location, proximity to water sources, and historical use, particularly for essential human needs: traditional settlements (*kampung*), known as *paraingu* and *kotaku* in the local language; food production (agriculture); and grazing. This traditional land use category embodies the principle that "no land is perceived as unused" which demonstrates an adaptive strategy for managing scarce resources within the savanna ecosystem.

Land use changes in East Sumba result from complex interactions between resource scarcity, market pressures, government policies, and shifts in social organization. These changes are marked by a shift from subsistence farming to commercial agriculture, driven by market opportunities and government interventions (McCarthy et al. 2012; Vel 2014; Vel & Nugrohowardhani 2012). However, these transitions can lead to challenges, such as land grabbing and conflicts, particularly when large-scale agricultural investments prioritize economic development over local community rights (McCarthy et al. 2011, 2012).

## **6. The Cotton Project in Tanamang Village: Implementation and Initial Impacts**

The Indonesian government's designation of PT AAI in 2009 for cotton development marked the beginning of cotton commoditization in East Sumba. Tanamang Village, serving as a demonstration plot, was the key implementation site for the National Cotton Acceleration Program (PAKN) in the 2008/2009 fiscal year. The demonstration plot, rented from a local peasant, is located on a riverine floodplain of Kalionga River in the village. Two peasant groups living in the vicinity of the site were given a mandate to manage the demonstration plot. Between the 2009/2010 and 2012/2013 fiscal years, they were targeted for social assistance under PAKN, along with dozens of peasant groups spread across East Sumba Regency. Apart from the two peasant

groups, there were some other peasant groups in the village that cultivated cotton in their dryland fields. The cotton cultivation project in this village is conducted using a monoculture farming system and follows strict government procedures. The "new" institutional intervention agriculture system differs from the local agriculture system, which has characteristics of a polyculture farming system deeply embedded in the daily lives of Sumbanese from one generation to the next.

Meanwhile, PT AAI's role included establishing a 300-hectare plantation equipped with advanced irrigation and harvesting technologies, as well as purchasing cotton from local peasants and providing them with seeds. However, it is crucial to acknowledge that in 2013<sup>5</sup> until 2015<sup>6</sup> The company was reported to be involved in non-performing loans (NPLs) by the Bank of NTT. Later reports in 2016 indicated that PT AAI is one of 16 companies (investors) in East Sumba which "does not show any activity" despite holding a Right to Cultivate (*Hak Guna Usaha/HGU*)<sup>7</sup>. The significant impacts described below primarily relate to the initial phase of establishment, land allocation, and the program's intent rather than sustained large-scale production. Nevertheless, this initial phase itself constituted a profound disruption to traditional systems.

## 7. Impacts on Traditional Land Use and Livelihoods

The introduction of cotton commoditization fundamentally altered traditional land use patterns in East Sumba. Areas previously dedicated to subsistence needs were re-purposed for commercial agriculture. In Tanamang Village, riverine floodplain areas (*mondu*), which were traditionally vital for seasonal food production, were converted to cotton production. *Mondu* is naturally formed from overflowing river floods carrying mud, making it land with the best quality of soil. Traditionally, *mondu* is planted using a polyculture system of food crops, including maize, cassava, banana, papaya, and vegetables, in the late rainy season. Apart from subsistence needs, the production of *mondu* is also sold, sometimes, to earn cash for the peasant's households.

More critically, the land acquired for the company's cotton production was predominantly *padang*, a local terminology that refers to traditional grazing fields. For generations, the fields have been used to graze horses, water buffaloes, and cows. Although local people traditionally recognize ownership of *padang*, it is accessible to anyone. In Tanamanang, stones scattered in the

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<sup>5</sup> <https://daerah.sindonews.com/berita/813481/27/kredit-macet-2-pejabat-bank-ntt-jadi-tersangka>

<sup>6</sup> <https://www.waingapu.com/kredit-fiktif-bank-ntt-legislator-harapkan-tsk-di-tahan-wacanakan-panggil-kejari>

<sup>7</sup> <https://www.waingapu.com/catatan-kritis-untuk-investasi-di-sumba-timur/>

*padang* can be an alternative source of household income for anyone, as they can be sold as building materials. In the past, the Dangiwiki *padang* in Tanamang was popular as a famous horse racing venue. The conversion caused by cotton project significantly reduced land availability for traditional livestock farming, a practice deeply embedded in Sumbanese society and integrated to their way of life.

A severe consequence of this reduction in grazing land was the displacement of livestock. Cattle, no longer able to roam freely on their traditional *padang*, began encroaching upon *woka*, the cultivated food crop areas planted in the rainy season. *Woka* is planted with food crops, including maize, cassava, sorghum, edible tubers, peanuts, and vegetables. It is also planted with long-term trees such as mahogany, white teak, or a local tree known as *inju watu*. The encroachment not only represented a desperate search for food by the livestock but also resulted in significant damage to staple crops, directly impacting the food security issues. The shift towards monoculture cotton crops displaced traditional, diverse food crops, altering dietary patterns and potentially leading to malnutrition. Sumba already faces existing food security issues, including poor soil fertility, low rainfall, and an over-dependence on maize and cassava as main crops. The imposition of a single cash crop further undermined the resilience of local food systems.

Other traditional land categories are *talura* and *latang*. *Talura* is a local term that refers to the area around a house. It is also known as *kintal* in the local people's daily language. It can be left alone or planted by households. In Sumbanese traditional residential such as *kampung* (*paraingu* or *kotaku*), the boundary of *talura* is quite tricky to recognize. In Tanamanang, local cotton crops were usually grown freely without special treatment in this yard in the past.

Furthermore, *latang* is local term for irrigated rice field (*sawah irigasi*). Historically, the dam in Tanamanang is the first modern irrigation project in Sumba, built by the Dutch Government in 1925. In Tanamanang village, neither *talura* nor *latang* is directly noted as being converted to cotton fields. However, monoculture systems or a focus on market cash crops can shift priorities away from diverse food crops, thereby affecting household food security.

Furthermore, the introduction of modern agricultural techniques and reliance on external inputs, such as cotton seeds provided by companies and chemical fertilizer, contributed to the gradual erosion of indigenous farming knowledge and practices. These traditional methods are crucial for maintaining ecological balance and long-term sustainability in the region's unique savanna ecology. The following table (Table 1) presents the categories of land use and the impacts of cotton projects utilizing a monoculture system.

*Table 1*  
*Traditional Land Use Categories in East Sumba and*  
*Impacts of Cotton Monoculture*

| <b>Land category</b> | <b>Traditional function</b>                                                                                                      | <b>Local knowledge/practices</b>                                                                                                                       | <b>Cotton Monoculture's impacts</b>                                                                                                                                 |
|----------------------|----------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>Mundu</i>         | Riverine floodplains are utilized for seasonal food production, offering the best quality of soil and access to water.           | Ritual-based agriculture; polyculture system; subsistence food crops; source of income.                                                                | Converted to monoculture cotton field (in Tanamanang Village), leading to loss of seasonal food production and source of cash.                                      |
| <i>Padang</i>        | Grassland covering most of East Sumba is used for livestock grazing due to low water debit and undulating topography.            | Traditional livestock; communal land that allows anyone to access; alternative source of income.                                                       | Used by PT AAI for cotton production (in Ngohung, Kadumbul Village). Significantly reducing available grazing land and displacing livestock.                        |
| <i>Woka</i>          | Dryland fields, located away from settlements, are cultivated during the rainy season for subsistence crops (maize and cassava). | Polyculture system; adaptive strategies to savanna ecology; prioritizing sustainability and subsistence; subsistence food production; source of income | Intercropping cotton and food crops (in Tanamanang), livestock encroachment due to loss of <i>padang</i> , damage to staple crops potentially impact food security. |
| <i>Taluora</i>       | The field surrounds residential areas (house, <i>kampung</i> ) where villagers grow vegetables, fruits, and other crops.         | Daily subsistence food crop production: Local cotton grew in the past                                                                                  | Reduced overall food diversity if the focus shifts to cotton or other market cash crops.                                                                            |
| <i>Latang</i>        | Irrigated rice fields, cultivated year-round but dependent on seasonal water availability                                        | Seasonal farming; food crop production; source of income                                                                                               | Not directly noted as converted to cotton, but monoculture focus can shift priorities away from diverse food crops.                                                 |

## **8. Reconciling Development and Indigenous Knowledge in East Sumba**

The intersection of LSAIs and IK of land use in East Sumba presents a complex interplay of challenges and opportunities. While such investments are frequently introduced as part of national economic development strategies, their implementation often disregards the intricate knowledge systems that local communities have developed over generations. This discussion examines the implications of large-scale cotton investments, particularly their impact on indigenous land-use practices and ecological balance, while also highlighting potential pathways for more inclusive and sustainable development policies.

### **8.1. Clash of Worldviews and Institutional Tensions**

A central finding of this study is the profound clash between the market-oriented, commodified view of land, which underpins large-scale agricultural investments, and the Sumbanese cosmological understanding of land as a living, sacred entity and a source of life. The fundamental difference in how land is valued and understood forms the core of the intersection observed in East Sumba. From an institutional economics perspective, these disruptions highlight the tension between formal and informal land governance systems. Indigenous land management in East Sumba is characterized by communal ownership structures and customary land-use rights, which prioritize ecological sustainability and community well-being over market-driven productivity. In contrast, large-scale agricultural investments operate within formalized legal and economic frameworks that commodify land as an asset for capital accumulation, often failing to account for the complex and overlapping land-use rights of indigenous communities.

The case of cotton commoditization in Tanamang Village vividly illustrates how new institutional arrangements can conflict with existing local governance structures as one of non formal institutional types. The imposition of externally driven land-use policies frequently disregards the symbolic, social, and ecological significance of land within indigenous worldviews. The failure to account for indigenous knowledge systems has led to direct competition between traditional and commercial land uses, further marginalizing local communities. As institutional economists argue, resources are not merely physical entities but are shaped by human knowledge, institutions, and socio-economic interactions (De Gregory 1987). The commodification of land through large-scale investments represents a fundamental shift in how land is valued and utilized, often at the expense of indigenous land-use systems that have historically ensured both ecological balance and food security.

### **8.2. Socio-economic and Environmental Consequences**

The empirical evidence suggests that the introduction of large-scale cotton

investments has led to significant environmental consequences and socio-economic disruptions. The conversion of *mondu* (riverine floodplains) and *padang* (grasslands) to cotton fields directly led to the displacement of traditional land uses essential for subsistence and livestock farming. The conversion of *padang* to cotton fields subsequently forced livestock to encroach upon *woka* (cultivated food crop areas), causing substantial damage to staple crops and directly impacting local food security. The illustration of an apparent adverse ripple effect of the land use change highlights the interconnectedness of different traditional land uses and the vulnerability of the entire system to external shocks.

On a socio-economic level, while large-scale investments are often justified as mechanisms for economic growth and employment generation, they have reducing local people's access to land and resources necessary for livelihoods, in practices. Communities that previously relied on polyculture systems for food security have become more dependent on market-driven agricultural production, making them more vulnerable to fluctuations in global commodity prices. Furthermore, the emphasis on monoculture cropping systems reduces agrobiodiversity, thereby diminishing the resilience of local food systems to environmental changes (Fitawek & Hendriks 2021).

The reported inactivity of PT AAI in 2016, despite its initial establishment and role in the National Cotton Acceleration Program, suggests a potential failure or unsustainability of the large-scale investment model to achieve sustained operations. However, the initial land alienation and disruption (e.g., conversion of *padang* and *mondu*) would have already occurred, demonstrating that even failed projects can leave lasting negative impacts on local communities and traditional land use patterns without delivering the promised economic benefits.

### **8.3. Pathways for Sustainable and Inclusive Development**

Given these challenges, there is an urgent need to reconsider the approach to LSAIs (Large-Scale Agricultural Investments) in East Sumba. Rather than prioritizing short-term economic gains, development strategies should actively incorporate indigenous knowledge systems to foster sustainability and resilience in rural communities. Recognizing and integrating indigenous land management practices into policy frameworks would not only enhance ecological conservation efforts but also ensure that development initiatives align with local socio-cultural realities.

One potential pathway is the adoption of participatory land governance models that genuinely involve local communities in decision-making processes related to land management and agricultural investments. The principle of Free, Prior, and Informed Consent (FPIC) should be rigorously

applied to safeguard customary land rights and prevent land dispossession (Buxton & Wilson 2013). Additionally, alternative agricultural models such as agroecology and agroforestry could offer more sustainable approaches to land management, balancing economic productivity with environmental and cultural preservation (Gonçalves et al. 2021; Martini et al. 2016). Understanding and integrating local ecological knowledge and cultural values into development planning is critical for fostering sustainable rural economic growth while minimizing conflicts and ecological degradation (Jessen et al. 2022).

From a policy perspective, aligning large-scale investments with the Sustainable Development Goals (SDGs), particularly in East Sumba which has tropical savanna climate, requires a shift toward more holistic and context-specific agricultural development models. Rather than imposing externally designed agricultural schemes, development planners should work collaboratively with local communities to co-create investment strategies that are both economically viable and ecologically sustainable (Koike 2019).

## **9. Conclusion**

This study underscores the complex and often contentious relationship between large-scale agricultural investments (LSAIs) and indigenous knowledge (IK) in East Sumba. While these investments aim to drive economic growth, they often overlook the sophisticated local knowledge and deeply rooted cosmological understanding of the land that the Sumbanese people have developed over generations. This indigenous knowledge is crucial for sustainable land management and maintaining ecological balance within the region's unique savanna ecosystem.

The empirical findings vividly demonstrate how the introduction of large-scale cotton investments has disrupted traditional land use practices, leading to the conversion of vital communal lands, the displacement of livestock, local livelihoods, and subsequent damage to local food crops. The significant implications for food security and the erosion of traditional livelihoods, highlight the deep-seated opposition to development models that disregard local agency and cultural values, even when the projects do not sustained.

The analysis, framed within the resource theory in the light of an institutional economics perspective, reveals that the core of the conflict lies in the fundamental clash between a commodified, market-driven view of land and the indigenous perception of land as a living, sacred entity. This disparity in institutional frameworks leads to significant socio-economic disparities and environmental degradation.

Ultimately, the findings underscore the crucial importance of integrating indigenous knowledge into development strategies to enhance the resilience

and sustainability of local communities. By acknowledging and incorporating local practices, cosmologies, and forms of institutions, it is still possible to create development models that are not only economically viable but also culturally respectful and ecologically sustainable. Addressing these challenges requires a fundamental shift toward more equitable approaches to land management, emphasizing secure land tenure, participatory decision-making, and genuine respect for local people rights, thereby contribute meaningful to achieve the Sustainable Development Goals. Future research should explore more to the specific contexts of such conflicts, evaluate the effectiveness of various interventions, response of the local people, and develop innovative solutions that promote both economic development and social-environmental issues.

## References

- Borras, S. M., & Franco, J. C.  
 2024 Land rush. *Journal of Peasant Studies*, March.  
<https://doi.org/10.1080/03066150.2024.2317961>
- Buxton, A., & Wilson, E.  
 2013 *FPIC and the extractive industries: A guide to applying the spirit of free, prior and informed consent in industrial projects*. International Institute for Environment and Development, London.
- Camacho-Villa, T. C., Martinez-Cruz, T. E., Ramírez-López, A., Hoil-Tzuc, M., & Terán-Contreras, S.  
 2021 Mayan Traditional Knowledge on Weather Forecasting: Who Contributes to Whom in Coping With Climate Change? *Frontiers in Sustainable Food Systems*, 5(April).  
<https://doi.org/10.3389/fsufs.2021.618453>
- De Gregory, T. R.  
 1987 Resources Are Not; They Become: An Institutional Theory. *Journal of Economic Issues*, XXI(3), 1241–1263.  
<https://doi.org/10.1080/02508281.1979.11014986>
- Fitawek, W., & Hendriks, S. L.  
 2021 Evaluating the impact of large-scale agricultural investments on household food security using an endogenous switching regression model. *Land*, 10(3), 1–19. <https://doi.org/10.3390/land10030323>
- Forth, G. L.  
 1981 *Rindi: An Ethnographic Study of a Traditional Domain in Eastern Sumba*. <https://doi.org/10.2307/2802777>

- Gonçalves, C. de B. Q., Schlindwein, M. M., & Martinelli, G. D. C.  
 2021 Agroforestry systems: A systematic review focusing on traditional indigenous practices, food and nutrition security, economic viability, and the role of women. *Sustainability*, 13(20).  
<https://doi.org/10.3390/su132011397>
- Hodgson, G. M.  
 1991 The Approach of Institutional Economics. *Journal of Economic Literature*, 36(1), 166–192.
- Islamy, M. R., Sania, S. N., Anisa, & Satwikasari, A. F.  
 2024 Tropical Savanna Climate Zone Of East Nusa Tenggara, Indonesia. *International Conference on Engineering, Construction, Renewable Energy, and Advanced Materials (ICECREAM)*, April, 1–13.  
<https://jurnal.umj.ac.id/index.php/icecream/article/viewFile/22820/10549>
- Jessen, T. D., Ban, N. C., Claxton, N. X., & Darimont, C. T.  
 2022 Contributions of Indigenous Knowledge to ecological and evolutionary understanding. *Frontiers in Ecology and the Environment*, 20(2), 93–101. <https://doi.org/10.1002/fee.2435>
- Koike, M.  
 2019 Indigenous and Local Knowledge Promoting SDGs in Indonesia: The Case of The Sumbanese Cultural Festival. *Journal of Environmental Science and Sustainable Development*, 2(2), 218–227.  
<https://doi.org/10.7454/jessd.v2i2.1034>
- Li, T. M.  
 2014 What is land? Assembling a resource for global investment. *Transactions of the Institute of British Geographers*, 39(4), 589–602.  
<https://doi.org/10.1111/tran.12065>
- Martini, E., Roshetko, J. M., Purnomosidhi, P., & Sebastien, G.  
 2016 Agroforestry extension needs for land rehabilitation in East Sumba, East Nusa Tenggara, Indonesia. *ICRAF Working Paper No. 23*.  
<http://apps.worldagroforestry.org/downloads/Publications/PDFS/WP16078.pdf>
- McCarthy, J., Afiff, S., & Vel, J.  
 2011 A Land Grab Scenario for Indonesia? Diverse Trajectories and Virtual Land Grabs in the Outer Islands Global Land Grabbing. *Paper Presented at the International Conference on Global Land Grabbing*, 1–28.
- McCarthy, J. F., Vel, J. A. C., & Afiff, S.  
 2012 Trajectories of land acquisition and enclosure: Development schemes, virtual land grabs, and green acquisitions in Indonesia's Outer Islands. *Journal of Peasant Studies*, 39(2), 521–549.

<https://doi.org/10.1080/03066150.2012.671768>

McGregor, D.

- 2021 Indigenous Knowledge Systems in Environmental Governance in Canada. *KULA: Knowledge Creation, Dissemination, and Preservation Studies*, 5(1), 1–10. <https://doi.org/10.18357/kula.148>

Niemeijer, D., & Mazzucato, V.

- 2003 Moving beyond indigenous soil taxonomies: Local theories of soils for sustainable development. *Geoderma*, 111(3–4), 403–424. [https://doi.org/10.1016/S0016-7061\(02\)00274-4](https://doi.org/10.1016/S0016-7061(02)00274-4)

North, D. C.

- 1991 Institutions. *The Journal of Economic Perspectives*, 5(1), 97–112.

Nugrohowardhani, R. L. K. R.

- 2014 Perlawanan Perempuan dalam Industri Kapas: Kajian Kerusakan Lingkungan di Sumba Timur. *Jurnal Perempuan*, 19(1), 37–49.

Nugrohowardhani, R. L. K. R.

- 2015 Sumba: Dari Pulau Cendana Menjadi Pulau Kapas? *Jurnal Transformatif*, 5(1), 61–78.

Ogunyiola, A., Gardezi, M., & Vij, S.

- 2022 Smallholder farmers' engagement with climate smart agriculture in Africa: role of local knowledge and upscaling. *Climate Policy*, 22(4), 411–426. <https://doi.org/10.1080/14693062.2021.2023451>

Rutherford, M.

- 2001 Institutional Economics: Then and Now. *Journal of Economic Perspectives*, 15(3), 173–194. <https://doi.org/10.1257/jep.15.3.173>

Vel, J.

- 2014 Trading in discursive commodities: Biofuel brokers' roles in perpetuating the Jatropha hype in Indonesia. *Sustainability*, 6, 2802–2821. <https://doi.org/10.3390/su6052802>

Vel, J. A., & Makambombu, S.

- 2010 Access to Agrarian Justice in Sumba, Eastern Indonesia. *Law, Social Justice and Global Development Journal*, 15(February), 1–22.

Vel, J. A. C., & Nugrohowardhani, R.

- 2012 *Plants for Power: the potential for cultivating crops as feedstock for energy production in Sumba* (Issue April). The Hague : Hivos.

Vel, J., Bedner, A., Utama, T. S. J., & Ichlas, H.

- 2022 Law and Heritage for Protecting Water Resources and Access to Water in Indonesia. *Blue Papers*, 1(2), 12–23. <https://doi.org/10.58981/bluepapers.2022.2.01>

Widyatmika, M., & Hudiono.

- 2013 *Pasola* (S. A. Purwanto (ed.)). Direktorat Sejarah dan Nilai Budaya, Kementerian Pendidikan dan Kebudayaan.

WinklerPrins, A. M. G. A., & Sandor, J. A.

2003 Local soil knowledge: Insights, applications, and challenges.  
*Geoderma*, 111(3–4), 165–170.

[https://doi.org/10.1016/S0016-7061\(02\)00262-8](https://doi.org/10.1016/S0016-7061(02)00262-8)

Zimmermann, E. W.

1933 *World Resources and Industries*. <https://doi.org/10.2307/3138924>

# Marginalization of Local Food: Adaptive Crops in Savanna Ecology and the Threat to Food Security in Sumba

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## **Abstract**

Local food represents adaptive crops that have evolved in harmony with the local ecology in which they are grown. Their adaptability has made them the staple food for various communities for generations. However, since the New Order regime, Indonesia's national food security policies have prioritized rice as a strategic food commodity, leading to the marginalization of local food. The promotion of rice self-sufficiency as the foundation of national food security has proven to be superficial, failing to accurately reflect the actual food security conditions at the local level and inadequately meeting local dietary needs.

This qualitative study employs policy document analysis, field observation, and in-depth interviews with regional policymakers and farmers from two generational cohorts: those aged 60 and above and those aged 60 and below. The study finds that the national food security policy, centered on strategic commodities such as rice, has marginalized local food and consequently weakened both national and regional food security. This marginalization stems from regulatory inconsistencies within the food policy regime that undermine local and national efforts to secure food.

**Keywords:** food security, local food, savanna ecology, rice

## **1. Introduction**

Local food plays a crucial role in multiple dimensions of community life. It is not merely a substitute consumed during food shortages or between harvest seasons but an integral component of community resilience systems. At the

community level, local food is part of a food security system that is deeply intertwined with cultural traditions, social capital, and local belief systems (Fowler 2005; Martinez et al. 2010; Mudita 2013; Glowacki-Dudka et al. 2013; Christianto Rich 2019; Tjoe et al. 2019; Arif 2021). On a broader scale, local food contributes to local economic development and overall community well-being (Martinez et al. 2010; Giampiccoli & Kalis 2012; O'Hara & Pirog 2013; Christensen & Philips 2015; Derkatch & Spoel 2015; Deller et al. 2017; Rahmanto et al. 2021).

In Indonesia, Law No. 18 of 2012 on Food, which serves as the legal foundation for all national food security policies, acknowledges the existence of diverse local food sources across the archipelago. Local food embodies the nation's rich and diverse food biodiversity, cultivated using indigenous knowledge that aligns with the ecological characteristics of each region. Geographic diversity enables a wealth of food resources, not only in terms of quantity but also nutritional variety (Ula 2021). Empirical evidence from various studies, as well as legal recognition through the Food Law, demonstrates that local food has become an essential component of food security and resilience systems—both at the community level and, more broadly, at the national level.

However, in practice, such evidence has not been strong enough to support policies that are more favorable and sustainable toward local food systems. A significant gap exists between policy formulation and practice in the governance of local food. Arifin (2005) identified a misalignment between high-level political-strategic policies (i.e., laws, government regulations, and presidential decrees) and their implementation-level counterparts, such as ministerial regulations, in his study on Indonesia's food institutions. Echoing this finding, the present study also identifies a disconnect between the strategic and political policy level (Law, Government Regulation, and Presidential Regulation) and the practical and implementational level (Ministerial Regulation) in the governance of local food. Rather than demonstrating policy coherence, these levels produce a paradox that excludes the role and function of local food in supporting food security and community resilience.

While the Food Law provides space for recognizing local food, this space is often excluded at the implementation level, particularly through ministerial regulations. Examples include the Gerakan Mandiri (Independent Movement) for Rice, Soybean, and Maize (Gema PALAGUNG) during the Megawati administration (Cakranegara 2022) and the Upaya Khusus (special effort) Program for Rice, Maize, and Soybean (UPSUS PAJALE) during the Jokowi era (Hidayatulloh & Koestiono 2021)—both of which exemplify ministerial-level agricultural policies that exclude local food. These policies are uniformly applied without regard to the diversity of local food resources across regions. They prioritize rice as the primary strategic food commodity in building national

food security.

In practice, these policies serve national interests—specifically, rice self-sufficiency—yet they fail to address the needs and interests of local communities. While the central government may claim success in achieving rice self-sufficiency, such achievements do not equate to genuine food security—defined as the consistent availability and accessibility of sufficient food at the village, district, provincial, and national levels for individuals, households, and communities. At the same time, specific regions, such as East Sumba, continue to experience chronic food insecurity. These national policies, instead of reinforcing local initiatives to build ecologically grounded food security, have undermined them. The presence of such policies has thwarted local efforts to develop food security systems based on local resources and local food.

This study finds a policy-practice gap—a form of inconsistency in the food regulatory regime—between the stipulations of the Food Law and their implementation through ministerial regulations. The privileging of strategic food commodities, particularly rice, by ministerial policies has led to the exclusion of legally recognized local food systems, thereby fragmenting the potential strength of both national and regional food security. Socio-culturally rooted local food systems, which have historically fulfilled local needs and contributed to national food security, have been marginalized. Moreover, local bureaucracies, influenced by neo-patrimonial bureaucratic structures and cultures (Santoso 1993; Priyatmoko 2007; Imawan 2007; Dwiyanto et al. 2012; Gaus, Sultan, and Basri 2016), have created a compliant environment in which adherence to central directives takes precedence over local needs. Such uncritical compliance has further hindered regional efforts to return to ancestral practices of cultivating and consuming local food.

## **2. Materials and Methods**

This study was conducted in East Sumba Regency, located on Sumba Island in East Nusa Tenggara Province, Indonesia. According to the Köppen-Geiger climate classification map (Peel et al. 2007), the region falls within the tropical savanna climate category. The research focused on the local government's breakthroughs in food security policy since 2009, particularly those aimed at harnessing the potential of local food resources. These policy innovations were not limited to food production but encompassed a strategy rooted in local traditions and knowledge systems tailored to the ecological characteristics of the savanna landscape.

The policy innovation was formalized through a Regent Regulation known as *Gerbang Hilu Li Wanya*. “Gerbang” is an acronym for *Gerakan Pengembangan* (Development Movement). At the same time, *Hilu Li Wanya* comprises the names of several traditional staple foods consumed by ancestors in the past: *Hili*

or taro (*Colocasia esculenta*), *Luwa* or purple yam (*Dioscorea alata*), *Luwa ai* or cassava (*Manihot esculenta*), *Litang* or lesser yam (*Dioscorea esculenta*), *Iwi* or gadung (*Dioscorea hispida*), and *Ganyung* or canna (*Canna edulis*). In the local Sumba Kambera language, *Hilu Li Wanya* carries a philosophical meaning: “to return along the path once taken by the ancestors”—a kind of “retracing the ancestral footsteps.” In essence, it represents a movement for the re-habitation of local food based on ancestral practices of cultivating and consuming food that is ecologically adaptive to the savanna.

Data collection for this study was conducted in two main phases. The first involved extensive observation initiated concurrently with the issuance of the *Gerbang Hilu Li Wanya* regulation. Comprehensive observation techniques (Bungin 2017; Creswell 2018) allowed the researcher to participate in various events related to local food issues without disrupting the subjects being observed. These included attending local government meetings, forums on local food, and field visits to demonstration sites of local food crops. The researcher also monitored local media coverage—both print and online—regarding public forums and competitions promoting local food. The second phase consisted of in-depth interviews and analysis of national and regional policy documents. The researcher intentionally selected and categorized key informants into three groups (Alwasilah 2002; Bungin 2017; Maxwell 2013): Individuals aged 60 and above, Individuals under the age of 60, and Regional government officials, including heads and staff members of the Food Security and Community Empowerment Agency, as well as district-level heads of Balai Penyuluhan Pertanian, Perikanan dan Kehutanan (Agricultural, Fisheries, and Forestry) Extension Centers (BP3K). The age-based classification of informants was designed to elicit differences in farming experiences before and after the implementation of Green Revolution policies. All interviews and document analyses were transcribed, coded, and categorized by topic for systematic analysis (Creswell 2010).

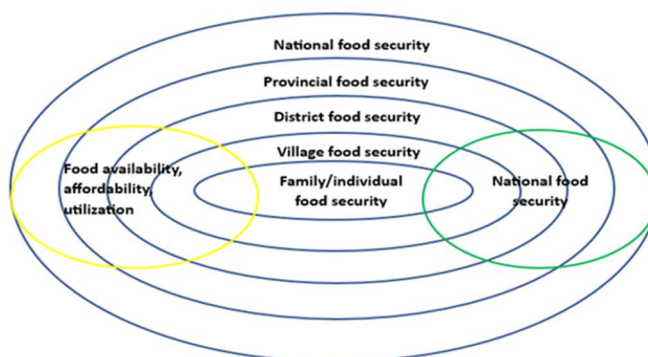
### 3. Building Food Security Based on Local Food

In Indonesia, efforts to build food security are regulated under Law No. 18 of 2012 on food. This legislation provides the framework for consolidating diverse food resources across different regions, recognizing their strategic value in strengthening both national and local food systems. Substantively, this legal framework operates through two primary approaches:

**First, a spatial approach.** This approach acknowledges and accommodates the diversity of food systems that are rooted in specific regional and cultural contexts throughout the archipelago. Indonesia is one of the world’s richest countries in terms of food biodiversity, boasting 77 sources of carbohydrates, 75 sources of

fats, 26 types of legumes, 389 fruits, 228 vegetables, 48 edible plants, and 110 types of spices (Nusantara Food Biodiversity). Much of this biodiversity is managed through culturally embedded food governance systems, commonly referred to as local wisdom, which are adapted to specific ecologies. This local knowledge provides the basis for regionally distinctive food security strategies that contribute to community resilience. The Food Law offers space to develop local food not only to ensure household and individual food security at the local level, but also as a reserve for national food security (Articles 23 and 33).

**Second, an authority-based approach.** This refers to the powers and rights granted to each level of administrative governance—from villages to regencies and provinces—to build their food security systems (Articles 12 and 29). Each level of administrative hierarchy is allowed to establish food security systems tailored to local potential, integrated within the broader national framework. These systems are expected to utilize local food sources that are ecologically appropriate to the region. Although local governments are authorized to develop their food systems independently, these systems remain integral to the national food security framework. As illustrated in the picture below:



*Figure 1: The Genuine Concept of National Food Security*

The combination of these two approaches—spatial and authority-based—is essential to achieving what the law describes as *genuine national food security*. As illustrated in the figure below, household food security and national food security are mutually reinforcing. Adequate food at the household level translates into national sufficiency and vice versa. This includes meeting all three dimensions of food security: availability, accessibility, and utilization.

### 3.1. Local Food in East Sumba

In East Sumba, a diverse range of local food crops is still cultivated. These

include local varieties of rice, maize, sorghum, tubers, and legumes (see Table 1). These crops are generally planted using an intercropping system (*tumpangsari*), either in structured rows or informally, by utilizing available space between more commonly consumed crops such as rice and maize. For instance, local rice and maize, sorghum, and cassava are typically planted systematically, while other crops are interspersed within the same plot.

Each of these crops also has multiple varieties. For instance, in the Haharu region, there are six known varieties of *litang* (lesser yam), such as *litang mopu* (commonly consumed by humans), *litang manggut* (fruit resembling the *lontar* palm), *litang kamba* (long-shaped), and others, including *litang bata*, *litang omang*, and *litang marrit*. Similarly, *luwa* (purple yam) includes varieties like

Table 1. List of Local Food Crops in East Sumba

| Local Name        | Indonesian               | Latin Name                 | Status of Cultivation                       |
|-------------------|--------------------------|----------------------------|---------------------------------------------|
| <i>Manila</i>     | Kacang tanah (Peanut)    | <i>Arachis hypogaea</i> L. | Still cultivated                            |
| <i>Kambi</i>      | Kacang hijau (Mung bean) | <i>Vigna radiata</i> L.    | Still cultivated                            |
| <i>Kambi uhu</i>  | Kacang nasi (Rice bean)  | <i>Vigna umbellata</i>     | Rarely cultivated                           |
| <i>Watar</i>      | Jagung (Maize)           | <i>Zea mays</i> ssp        | Still cultivated                            |
| <i>Kamanggih</i>  | Jali (Job's tears)       | <i>Coix lacryma-jobi</i>   | Nearly extinct                              |
| <i>Watar Hamu</i> | Sorgum (Sorghum)         | <i>Sorghum bicolor</i>     | Being reintroduced                          |
| <i>Uhu</i>        | Padi (Rice)              | <i>Oryza sativa</i>        | Widely cultivated                           |
| <i>Uhu Kanu</i>   | Jewawut (Foxtail millet) | <i>Setaria italica</i>     | Rarely cultivated (nearly extinct)          |
| <i>Katabi</i>     | Ubi jalar (Sweet potato) | <i>Ipomoea batatas</i> L.  | Widely cultivated                           |
| <i>Ganyung</i>    | Ganyong (Canna)          | <i>Canna edulis</i>        | Rarely cultivated                           |
| <i>Luwa ai</i>    | Singkong (Cassava)       | <i>Manihot esculenta</i>   | Seldom cultivated                           |
| <i>Luwa</i>       | Uwi (Purple yam)         | <i>Dioscorea alata</i>     | Rarely cultivated                           |
| <i>Litang</i>     | Gembili (Lesser yam)     | <i>Dioscorea esculenta</i> | Rarely cultivated                           |
| <i>Iwi</i>        | Gadung (Poison yam)      | <i>Dioscorea hispida</i>   | Grows in the wild; some cultivation efforts |
| <i>Hili</i>       | Talas (Taro)             | <i>Colocasia esculenta</i> | Still cultivated                            |

Sources: Makambombu (2024)

*luwa kamela rara* (red), *luwa hariu apu*, *luwa engal*, *luwa bara*, and *luwa tambulu*. These root crops are often planted near garden fences, where they can climb, or near trees in gardens where they use tree trunks for support.

Intercropping is particularly beneficial in the savanna ecosystem, which experiences short rainy seasons. Vel (2010), in her study in Lawonda (Central Sumba), noted that intercropping allows farmers to harvest a range of food crops throughout the year, except in October and November. In other months, at least one type of food crop is usually available for harvest.

Storage methods vary by crop type and are generally traditional. Grains and legumes are sun-dried for several days and stored until needed, with a portion set aside for seed production. Root crops, such as cassava, are peeled, cut into pieces, and sun-dried for weeks to facilitate long-term storage. Others, such as *luwa* and *litang*, are typically left in the soil and harvested only when needed, as they regenerate during the rainy season. Without special treatment, harvested tubers tend to spoil quickly, and there is little evidence of processing techniques to extend shelf life.

Currently, comprehensive data on local food consumption are lacking. Government statistics, such as those from the regional agricultural department and Statistics Indonesia (BPS), only track the consumption of mainstream staples, including rice, maize, and certain tubers. A local survey on nutritional and energy sufficiency found that energy intake from local food sources, such as maize and tubers, is relatively low—only 15.1% and 0.2%, respectively, of total daily carbohydrate intake per capita—compared to 82.3% from rice (East Sumba Agriculture Office 2020). Similarly, household expenditures on rice reach 28.8%—the highest among food categories—while only 0.4% is spent on tubers and 1.1% on legumes (BPS East Sumba, 2020). At the household level, local food is often consumed in simple forms: boiled, grilled, or fried. Slightly more modern preparation methods—typically for cakes and snacks—are usually reserved for special events such as Indonesia’s Independence Day (August 17) or World Food Day (October 16).

### **3.2. Shifts in Cultivation and Consumption Patterns of Local Food**

In the past, various types of local food crops were cultivated through intercropping systems (*tumpangsari*). However, this practice is now gradually being abandoned in favor of monoculture. These changes are observable in crop vegetation patterns and vary by generation. Farmers aged 60 years and above generally continue to use the intercropping system, although with reduced crop diversity—usually a combination of just two or three staple crops, such as maize, rice, and cassava. Meanwhile, among farmers under 60, monocropping is the dominant practice. Most of their fields are planted with only one type of crop, and if more, typically a combination of just two—usually rice and maize or

maize and cassava. The shift toward monoculture has become more pronounced, particularly with rice and maize, a trend that took hold after the adoption of Green Revolution policies under the New Order regime in the 1960s (Makambombu 2024).

The hilly and rocky topography of Sumba limits the availability of arable land suitable for extensive crop cultivation. Rainfed and irrigated paddy fields make up only about 3.5% of the total agricultural land (Agricultural Statistics 2020). Therefore, intercropping offers a strategic approach to maximizing limited land by growing various food crops to meet subsistence needs (Mulyoutami et al. 2018). Farmers seeking to expand cultivation must do so across multiple scattered plots, requiring minimal time and energy to travel between them.

Local food cultivation in Sumba's savanna ecology is generally concentrated in specific land types: **First, Mondu** (river valleys): These are seasonal or perennial riverbanks, also known as watershed areas, which vary in width from 0 to 50 meters and follow the course of rivers. Their structure is dynamic, often changing yearly due to flooding. Communities use these areas for cultivating maize, small quantities of rice, sweet potatoes, and horticultural crops. The valley soil consists of thick, sandy loam deposits (20–50 cm), making it fertile and suitable for cultivation during the dry season. However, during the rainy season, mondu areas are prone to flash floods, which may alter their landscape. **Second, Woaka or woka**: This is a general term for gardens or farmland used for planting seasonal or perennial crops. Based on Mulyoutami et al. (2018), in the Haharu region of northern Sumba, *woka* can be classified into: **Woka lola** (valley gardens): Typically planted with upland rice, maize, tubers such as *luwa*, *litang*, and *iwi* (a wild yam that is now being domesticated). These gardens may also include commercial crops like betel, areca nut, and white teak (*Gmelina arborea*). Water springs found in some valleys are vital sources for domestic use and livestock. **Woka palindi** (hilltop gardens): Located on hilltops near settlements and also referred to as *woka uma*. These are typically planted with maize, sorghum, cashew, and peanuts.

The intercropping system is predominantly practiced by farmers aged 60 and above. Their motivation lies in preserving ancestral traditions and in the belief that local crops are more climate-resilient. Based on their experience, even during years with poor rainfall, local food crops can still yield a harvest, unlike rice and maize, which are more water-dependent.

In consumption practices, local food is referred to using an emic term: *pangangu hariwat*, particularly in eastern Sumba. This term refers specifically to local foods other than rice and sorghum. The term carries multiple contextual meanings: First, It reflects accessibility and readiness for consumption—local foods can be harvested directly from the garden and consumed with minimal preparation, such as boiling or roasting. Second, It denotes their functional

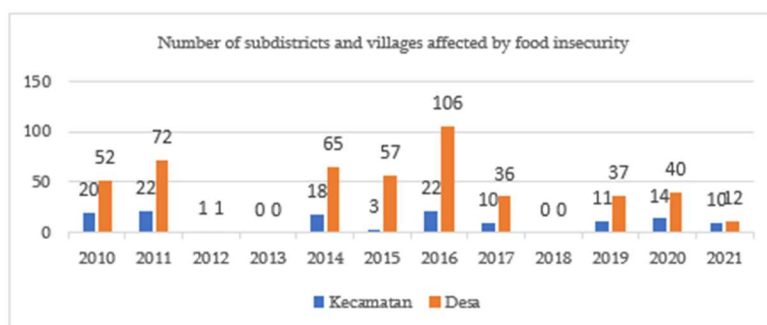
role—commonly consumed casually, often with tea or coffee or during daily tasks. Three, It suggests their temporal use—typically consumed as interim food while waiting for the rice harvest.

### 3.3. Gerbang Hilu Li Wanya

The rich diversity of local food in East Sumba has prompted the local government to develop a food security policy grounded in local food systems. The primary motivation for this initiative stems from the adaptive nature of local crops to climate change, particularly their low water requirements during the growing season. This policy is known as *Gerbang Hilu Li Wanya*.

The implementation of *Gerbang Hilu Li Wanya* aligns with both the region's food insecurity challenges and the spirit of local autonomy. It was driven by the persistent issue of food insecurity, which is experienced annually across several districts and villages. Data from 2010 to 2021 show that every year, there were areas affected by food shortages.

Table 2. Subdistricts and Villages Affected by Food Insecurity



Source: Compiled from Agriculture Office data (2010–2021), local and national media, FSVA 2021.

To achieve food security at the regional level, the *Gerbang Hilu Li Wanya* regulation (Regent Regulation) set specific targets. From a production standpoint, each farming household was required to allocate 25 ares of land for local food cultivation. To support this initiative, the local government established demonstration plots in several subdistricts and distributed local crop seeds to the community.

On the consumption side, all government offices were mandated to serve local food-based snacks during official meetings and for visiting guests. This policy was further reinforced by a Bupati Circular Letter instituting “One Day No Rice,” observed every Thursday of each week.

### **3.4. UPSUS PAJALE Ministerial Regulation and the Local Response**

The implementation of the *Gerbang Hilu Li Wanya* policy lasted for approximately one to two years before gradually disappearing from the local government agenda. The practice of serving local food at government functions also slowly faded. Today, the promotion of local food consumption typically occurs only during national celebrations, such as Indonesia's Independence Day on August 17 and World Food Day on October 16.

The decline of local food initiatives coincided with the introduction of a new Ministerial Regulation in 2015: the Special Effort Program for Accelerated Self-Sufficiency in Strategic Food Commodities—*UPSUS PAJALE*—focusing on increasing the production of rice, maize, and soybeans. This policy was framed as a national priority. It echoed earlier efforts under President Megawati's administration, such as the *Gema PALAGUNG* program (an acronym for *Padi, Kedelai, Jagung* or Rice, Soybeans, Maize) (Simatupang 2007; Suryana 2008).

As part of the national food self-sufficiency agenda, all regional governments across Indonesia were obligated to implement the program, despite vast differences in ecological suitability and local agricultural traditions. In East Sumba, only maize among the three PAJALE commodities is ecologically compatible and culturally embedded. For example, among the Kodi ethnic group in western Sumba, maize holds sacred value (Fowler 2005). Rice, on the other hand, is limited to a few irrigated or rainfed areas, and soybeans are largely unfamiliar to the local farming system due to the absence of a historical cultivation tradition.

Despite the ecological mismatch, regional governments had no choice but to comply with central directives. As extensions of the central bureaucracy, they were expected to “safeguard” ministerial instructions. A popular phrase among civil servants captured this dynamic: the NIP (Nomor Induk Pegawai, or Civil Servant Identification Number) became colloquially known as *Nomor Ikut Perintah* (“Obey Orders Number”). This mentality of blind obedience led to the reallocation of Anggaran Pendapatan dan Belanja Daerah (APBD) or (regional revenue and expenditure budget) and technical support toward the cultivation of PAJALE crops.

Consequently, the *Gerbang Hilu Li Wanya* policy lost institutional support and became ineffective in the face of national policy enforcement. The local government's initial steps toward building a food security system based on ecologically adaptive and culturally relevant crops were ultimately sidelined.

### **4. Inconsistency in the Food Policy Regime Weakens Local Initiatives**

Efforts to build rice-based food security in semi-arid, savanna-ecology regions with steep, hilly terrain, such as East Sumba, are tantamount to fostering long-term dependence on rice-producing regions. With an average rainy season

lasting only three to four months per year (BPS 2024), water availability is limited and insufficient to support rice cultivation, which requires high water input. Despite this, the central government continues to impose rice production targets as part of its national food security policy.

In contrast, local efforts to build food security using ecologically adaptive resources—namely, local food—have been obstructed by a disjointed and inconsistent regulatory regime. The comparative advantages of local food, including its adaptability to climate change and its ability to be harvested year-round through intercropping systems, could enrich national food security strategies. However, these advantages have not yet been recognized or prioritized by the central government. Instead, regions are still compelled to produce rice to support the national agenda.

From a regulatory perspective, regional governments are given strong legal authority to pursue food security based on local potential. The Food Law, along with Presidential and Government Regulations, provides space for regional food security planning using both the spatial and authority-based approaches (Makambombu 2024). These approaches encourage inclusive strategies by consolidating food resources across the archipelago and tailoring food security initiatives to local ecological contexts. Local food, in this context, refers to crops that are ecologically suitable and aligned with regional capacities.

Each region's geographical differences offer a wide variety of food sources that reflect not only agricultural abundance but also nutritional diversity. This principle is consistent with the Food Law's mandate (Articles 41 and 60), which emphasizes that food security must reflect not only quantitative sufficiency but also nutritional quality.

In East Sumba, food insecurity remains one of the most urgent and persistent challenges. Every year, certain districts are affected (see Table 2) despite the central government's continued claim to national rice self-sufficiency. In addressing this problem, the central government often relies on market-based solutions, such as rice imports (Timmer 2004; Ichwandi 2014; Arshad, Arifin, and Tey 2019)—a conventional approach that perpetuates food dependency over time.

Against this backdrop, the *Gerbang Hilu Li Wanya* policy stands out as a breakthrough local initiative. It offers a forward-looking and ecologically adaptive alternative to conventional strategies. On the one hand, the policy integrates local food potential into the national food system while addressing three significant challenges: ensuring access to nutritious food, reducing local food insecurity, and contributing to authentic national food security. On the other hand, this local breakthrough represents a regional contribution to national food governance, as envisioned by the Food Law.

Furthermore, *Gerbang Hilu Li Wanya* addresses the three internationally

recognized dimensions of food security: **Availability** – Despite being sidelined by mainstream crops, local food continues to be cultivated by communities in small-scale, subsistence-oriented systems. Its basis in local knowledge and ecological adaptability ensures continued production, even amid threats from climate change. These characteristics make local food a reliable, culturally embedded source of nourishment (Fowler 2005; Tjoe et al. 2019; Arif 2020; MacRae & Reuter 2020). **Accessibility** – While food accessibility is often linked to economic and infrastructural factors, local food systems, by their simplicity and proximity, eliminate the need for long distribution chains or advanced infrastructure. The direct-from-garden model makes food easily and affordably accessible to communities. **Utilization** – The nutritional diversity of local food, cultivated across various agroecological zones, provides communities with a broad array of essential nutrients—supporting both dietary health and resilience.

## **5. Differences in Food Security Resource Orientation: Central vs. Regional**

The differing orientations between central and regional governments in addressing food security have contributed to the failure of local food-based security policies. The central government's orientation is pragmatic, mainly prioritizing short-term, technical, and politically expedient solutions. Rice, as a staple consumed by the majority of Indonesians, fulfills these requirements. It has a robust supply chain and plays a crucial role in maintaining macroeconomic stability and controlling inflation (Aryani 2021; Lestari et al. 2024). Even when domestic production is insufficient, imports can fill the gap. Consequently, ministerial regulations serve as quick-fix solutions that bypass lengthy legislative processes, relying instead on the discretionary authority of ministers.

In contrast, regional governments tend to adopt an orientation grounded in socio-cultural, ecological, and long-term sustainability concerns. Local food, from this perspective, is ethically and ecologically relevant to local conditions—it is ecologically adaptive and deeply embedded in local food cultures. Due to its climate resilience, local food provides a more sustainable pathway for both production and ecological stewardship.

Despite the local relevance of these regionally driven approaches, they are often deemed misaligned with national interests and thus fail to garner support from the central government. This divergence in policy orientation reflects more profound strategic differences. The Food Law, along with related Government and Presidential Regulations, adopts an inclusive approach—one that seeks to consolidate the nation's diverse food resources, including local food, as part of the broader national food system.

In contrast, the Ministerial Regulation on Strategic Food Commodities (PAJALE) reflects an exclusive orientation by prioritizing only rice, maize, and soybeans—especially rice—as the focus of national food security efforts. This

designation of “strategic commodities” undermines the broader policy hierarchy above it and fragments what could otherwise be a consolidated national strategy. In practice, this privileging of rice manifests not only in terminology but in the allocation of resources—from funding to infrastructure and technical support—at both central and regional levels.

Although the Food Law recognizes local food as a critical national resource, it does not receive the same level of institutional support as strategic commodities. The very term “strategic commodity” has created a dichotomous, fragmented way of thinking—pitting “strategic” crops against local food. This mindset, embedded in the implementation of the Ministerial Regulation, has disrupted the spatial and authority-based food governance system envisioned by the Food Law.

Moreover, the PAJALE strategy often lacks alignment with local agroecological conditions. East Sumba, characterized by low rainfall and prolonged dry seasons (Vel & Makambombu 2023), is unsuitable for rice and soybean production, both of which require significant water inputs. In contrast, while local food may be seen as less economically or politically strategic, it possesses comparative advantages—such as climate adaptability, ecological relevance, and dietary diversity—that can make a meaningful contribution to national food security.

As part of the national regulatory regime, the PAJALE Ministerial Regulation has proven counterproductive for savanna-based regions, such as East Sumba. Instead of empowering these regions to leverage their unique agricultural strengths, the policy forces them to conform to a one-size-fits-all model that is ecologically mismatched. The regulation has diminished the role of local food, despite the existence of legal protection and local policy innovation such as *Gerbang Hilu Li Wanya*.

Ultimately, the PAJALE policy illustrates the inconsistency within Indonesia's food policy regime—undermining both the goals of the Food Law and the autonomy of local governments seeking to build context-specific, resource-based food security systems. The spirit of the Food Law, which envisions an integrated and consolidated approach to national food planning through spatial and authority-based strategies, is weakened by fragmented implementation. This fragmentation is not only evident in central–regional policy misalignment but also in conceptual divisions between what is deemed a “strategic food commodity” and what is not. This conceptual fragmentation marginalizes local food, casting it as secondary to national food security efforts despite its proven potential to contribute meaningfully to a more inclusive and ecologically sound food system.

## 6. Conclusion

The failure of food security policies is attributed to discrepancies in strategic orientations and approaches between national-level food security policies and those at the local level. In principle, both policies share the same goal; however, they differ in their strategic orientation toward building food security. These strategic orientations should be complementary in achieving national and regional food security based on the potential of available resources within the ecological carrying capacity. In practice, however, the strategic orientation of food security policies has shifted toward food standardization—a policy more oriented toward national interests while neglecting local interests and needs.

The paradigm debate on building national food security, characterized by a centralized approach focused on strategic food commodities—primarily rice—through market and economic policies, does not adequately address local food security challenges. This debate overlooks the potential and richness of local food sources spread throughout the archipelago. It fragments national food strength and politically strategically opens opportunities to consolidate local food resources, distributed across the archipelago (inclusively), into national food strength through the Food Law. However, at the implementation level, this results in food exclusion centered on strategic commodities (i.e., rice). The exclusivity of food policies favoring strategic commodities for achieving food self-sufficiency and national food security, implemented uniformly and hierarchically, weakens local food strength as a vital component of national food security.

The paradigm debate steering food security toward food exclusivism reflects inconsistency within the food regulatory regime between political-strategic policies and their implementation-level policies. At the local level, this regulatory inconsistency, increasingly entrenched within a neo-patrimonial bureaucratic environment, has created uncritical interaction dynamics between central and regional governments. This uncritical interaction fosters local bureaucratic compliance with central directives—not based on local needs, relevance, or urgency but on unquestioning obedience to central government mandates. Ultimately, this compliance undermines breakthroughs in local food security policy.

## References

Arifin, Bustanul

2005 *Ekonomi Kelembagaan Pangan*. Jakarta: Penerbit LP3ES

Arif, A .

- 2021 *Masyarakat Adat dan Kedaulatan Pangan*. Jakarta: PT Gramedia.
- Alwasilah, A., C.
- 2002 *Pokoknya Kualitatif: Dasar-Dasar Merancang dan Melakukan Penelitian Kualitatif*. Bandung: Pustaka Jaya.
- Amanda Dwi Lestari, Elfira Erlikasna, Ridho C. Simbolon,  
Irena Breta, Muhammad Daniyal, Rasidin Karo Karo S.
- 2024 Dampak Fluktuasi Harga Beras, Bawang Merah, Cabai Terhadap Inflasi, *Jurnal Sosial Ekonomi Pertanian*, p-ISSN 0853-8395; e-ISSN 2598-5922
- Aryani, Desi
- 2021 Instrumen Pengendalian Harga Beras di Indonesia: Waktu Efektif yang Dibutuhkan. *Jurnal Pangan*, Vol. 30 No. 2 Agustus 2021 : 75 – 86
- Bungin, B.
- 2017 *Penelitian Kualitatif: Komunikasi, Ekonomi, Kebijakan Publik, Ilmu Sosial Lainnya*, edisi kedua. Jakarta: Kencana
- Cakranegara, J.J.C.
- 2022 Diversitas Pangan Pokok Dalam Sejarah Kebijakan Pangan Di Indonesia. *Jurnal Sejarah dan Budaya* Vol. 6, No. 1, Desember 2022, hlm. 17-40
- Christensen, B. & Phillips, R.
- 2016 Local Food Systems and Community Economic Development Through the Lens of Theory. *Community Development*, 47, 638–651. <https://doi.org/10.1080/15575330.2016.1214609>
- Christianto, W. N.
- 2020 Cerita Tentang Pangan Dan Pakan di Daerah Kodi, Sumba Barat Daya. *Jurnal Kawistara*, 9(3), 309.
- 
- 2013 *Qualitative Inquiry and Research Design: Choosing Among Five Tradition*. California: Sage Publications.
- 
- 2016 *30 Keterampilan Esensial Untuk Penelitian Kualitatif*. Yogyakarta: Pustaka Pelajar.
- Creswell, J. W.
- 2010 *Research Design: Pendekatan Kualitatif, Kuantitatif, dan Mixed*. Yogyakarta: Pustaka Pelajar.
- Deller, S., C., Lamie D. &, Stickel, M.
- 2017 Local Foods Systems and Community Economic Development. <http://dx.doi.org/10.1080/15575330.2017.1373136>
- Deller, S., Canto & Brown, L.
- 2017 Food Access, Local Foods, and Community Health, Community Development. <http://dx.doi.org/10.1080/15575330.2017.1358197>
- Derkatch, C., & Spoel, P.
- 2015 Public Health Promotion of "local food": Constituting the Self-Governing Citizen-Consumer. *Health: An Interdisciplinary Journal for the Social Study of Health, Illness and Medicine*.

- <https://doi.org/10.1177/1363459315590247>
- Dinas Pertanian dan Pangan Sumba Timur  
2010-2021 *Laporan Rawan Pangan*
- Dinas Pertanian dan Pangan Sumba Timur  
2022 *Luas Penggunaan Lahan Sawah Menurut Kecamatan*  
-----
- 2015 Pemerintah Provinsi Nusa Tenggara Timur Badan Ketahanan Pangan dan Penyuluhan Bidang Ketersediaan dan Kerawanan Pangan dan WFP  
-----
- 2021 Dinas Pertanian Kabupaten Sumba Timur  
-----
- 2023 Dinas Pertanian dan Pangan Kabupaten Sumba Timur  
Dwiyanto, Agus dkk.  
2012 *Reformasi Birokrasi Publik di Indonesia*, Gajah Mada University Press, Yogyakarta
- Fowler, C.  
2005 Why is maize a sacred plant? Social history and agrarian change on Sumba. *Journal of Ethnobiology*, 25(1), 39–57.  
[https://doi.org/10.2993/0278-0771\(2005\)25\[39:WIMASP\]2.0.CO;2](https://doi.org/10.2993/0278-0771(2005)25[39:WIMASP]2.0.CO;2)
- Gaus, N., Sultan S., & Basri, M.  
2016 State Bureaucracy in Indonesia and its Reforms: An Overview. *International Journal of Public Administration*.
- Glowacki-Dudka, M., Murray, J. & Isaacs, K., P.  
2013 Examining Social Capital within a Local Food System. *Community Development Journal*. 48, 75–88. doi:10.1093/cdj/bss007
- Giampiccoli, A., & Kalis, J. H.  
2012 Tourism, Food, and Culture: Community-Based Tourism, Local Food, and Community Development in Mpondoland. *Culture, Agriculture, Food and Environment*, 34(2), 101–123.  
<https://doi.org/10.1111/j.2153-9561.2012.01071.x>
- Henneberry S. R., & Carrasco, C. D.  
2015 Food Security Issues: Concepts and the Role of Emerging Markets In Food Security in an Uncertain World.  
<http://dx.doi.org/10.1108/S1574-871520150000015005>
- Hidayatulloh, W., & Koestiono, Dj.  
2021 Dampak Program Upaya Khusus Padi, Jagung, Dan Kedelai (Upsus Pajale) Terhadap Tingkat Ketahanan Pangan Di Kabupaten Malang, *Jurnal Ekonomi Pertanian dan Agribisnis (JEPA)*. Volume 5, Nomor 4: 1059-1068.
- Imawan, R.  
2007 *Desentralisasi, Demokrasi dan Pembentukan Good Governance. Dalam Syamsuddin Haris (editor), Desentralisasi & Otonomi Daerah: Desentralisasi, Demokratisasi & Akuntabilitas Pemerintah Daerah* (hal 39 – 50). LIPI Press Jakarta.

- Makambombu, Stepanus  
 2024 *Gerbang Hilu Li Wanya: Kajian Kebijakan Ketahanan Pangan di Indonesia. Studi Kasus di Sumba Timur*. Disertasi. Fakultas Interdisiplin Universitas Kristen Satya Wacana, Salatiga.
- Martinez, S., Hand, M., Da Pra, M., Pollack, S., Ralston, K., Smith, T., Vogel, S., Clark, S., Lohr, L., Low, S., & Newman, C.  
 2010 *Local Food Systems: Concepts, Impacts, and Issues*, ERR 97, U.S. Department of Agriculture, Economic Research Service.
- Maxwell, J. A.  
 1996 *Qualitative Research Design: An Interactive Approach*. Thousand Oaks: Sage Publications.
- Mundita, I. W.  
 2013 *Pemetaan Pangan Lokal di Pulau Sabu Raijua, Rote Ndao, Lembata dan Daratan Timor Barat (Kab. Kupang & TTS) (W. Adiningtyas (ed.)).* Perkumpulan Pikul Kupang dan OXFAM
- Mulyoutami E; Purnomosidhi P; Suryadi A; Nugky I; Hanggawali N; Sabastian G; Anggrayani S; Roshetko JM.  
 2002 *Indonesia Rural Economic Development Series. Growing plants on a barren hill: local knowledge as part of land restoration in Sumba Timur, Indonesia. Working Paper 290.* Bogor, Indonesia: World Agroforestry Centre (ICRAF) Southeast
- O'Hara, J. K., & Pirog, R.  
 2016 Economic impacts of local food systems: Future research priorities. *Journal of Agriculture, Food Systems, and Community Development*, 3, 35–42. <https://doi.org/10.5304/jafscd.2013.034.003>.
- Peel, M. C., B. L. Finlayson, B. L., & McMohan, T. A.  
 2007 Updated World Map of the Koppen-Geiger Climate Classification. *Hydrology and Earth System Sciences Discussion*, 4, pp.439-473.
- Priyatmoko  
 2007 “Peningkatan Kinerja Eksekutif dan Implementasi Otonomi Daerah”. Dalam Syamsuddin Haris (editor), *Desentralisasi & Otonomi Daerah: Desentralisasi, Demokratisasi & Akuntabilitas Pemerintah Daerah*, pp.83-91. LIPI Press Jakarta
- Rahmanto, F., Purnomo E.P., & Kasiwi A.N.  
 2021 Food Diversification: Strengthening Strategic Efforts to Reduce Social Inequality through Sustainable Food Security Development in Indonesia. Caraka Tani: *Journal of Sustainable Agriculture*, 36(1), 33-44.
- Suryana, Achmad  
 2007 Menelisik Ketahan Pangan, Kebijakan Pangan dan Swasembada Beras. *Badan Penelitian dan Pengembangan Pertanian, Departemen Pertanian*, Bogor
- Simatupang, Pantjar Analisis Kritis Terhadap Paradigma Dan Kerangka Dasar Kebijakan Ketahanan Pangan Nasional: A Critical Review on Paradigm and Framework of National Food Security Policy, *Pusat Analisis Sosial Ekonomi dan Kebijakan Pertanian*
- Tjoe, Y., Ratumakin, P. A., Hossain, M., & Davey, P.

- 2019 *Disadvantaged Communities in Indonesian Semi-Arid Regions: An Investigation of Food Security Issues in Selected Subsistence Communities in West Timor, Sustainable Solutions for Food Security* pp 381-408. A. Sarkar et al. (eds.), *Sustainable Solutions for Food Security*: Springer Nature Switzerland AG 2019 381.  
[https://doi.org/10.1007/978-3-319-77878-5\\_19](https://doi.org/10.1007/978-3-319-77878-5_19)

Ula, Azizatul

- 2021 Visi Sustainable Development Goals (Sdgs) Terhadap Kebijakan Diversifikasi Pangan Lokal Dalam Mengatasi Kelaparan, *Jurnal Sains Edukatika Indonesia* (JSEI), Vol. 3, No. 2, Hal. 58-64, Oktober 2021

Vel, J.A.

- 2010 *Ekonomi Uma: Penerapan Adat Dalam Dinamika Ekonomi Berbasis Kekerabatan*. Jakarta: HuMA-Van Vollenhoven Institute, Leiden University, KITLV

Vel, J.A. & Makambombu, S.

- 2023 *Agrarian Change, Vulnerability and the Community Economy in Sumba*, in John F. McCarthy, Andrew McWilliam and Gerben Nooteboom (Eds.), *The Paradox of Agrarian Change: Food Security and the Politics of Social Protection in Indonesia*, NUS Press, Singapore

Badan Pusat Statistik

2010; 2011; 2012; 2013; 2014; 2015; 2016; 2017; 2018; 2019; 2020; 2021; 2022; 2023 Sumba Timur dalam Angka

Peraturan Bupati Sumba Timur Nomor 130 Tahun 2009 Tentang Diversifikasi Pangan Melalui Gerbang Hilu Liwanya Di Kabupaten Sumba Timur

Peraturan Menteri Pertanian Nomor 03/Permentan/ OT.140/2/2015 tentang Pedoman Upaya Khusus Peningkatan Produksi Padi, Jagung, dan Kedelai melalui Program Perbaikan Jaringan Irigasi dan Sarana Pendukungnya Tahun Anggaran 2015.

Peraturan Menteri Pertanian Nomor 14.1/Permentan/ RC.220/4/2015 Tentang Pedoman Upaya Khusus Percepatan Swa Sembada Pangan dan Peningkatan Produksi Komoditas Strategis Melalui Anggaran dan Pendapatan Belanja Negara Perubahan Tahun Anggaran 2015

Peraturan Presiden (Perpres) Nomor 22 tahun 2009 tentang Percepatan Penganekaragaman Pangan

Undang-Undang Republik Indonesia Nomor 18 Tahun 2012 Tentang Pangan

Undang-Undang Republik Indonesia Nomor 23 Tahun 2014 tentang Pemerintahan Daerah

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# Water Supply in West Timor, Indonesia: Lessons Learnt and Options for Drought Mitigation

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## **Abstract**

Limited access to clean water is a significant challenge for communities living in semi-arid regions, especially in the Timor area of Indonesia. The dry geographic conditions and inadequate water infrastructure mean that residents struggle to meet their basic water needs. This study aims to explore sustainable clean water provision strategies to mitigate drought in the semi-arid region of Timor, considering environmental, social, and economic factors. The research methods include data collection through field surveys, interviews, and relevant literature analysis. The most widely used water supply is a piped network that is financed by both international donors and government funding. In the Regency of Kupang, South Central Timor (TTS), North Central Timor (TTU), and Belu, the World Food Program established piped water networks to give potable water to settlements between 2007 and 2009. Over 30 projects were carried out for schools and communities. However, initial identification found that only one project still exists today in Buraen village, Kupang Regency. Poor operation and maintenance management was the reason behind the other projects' long-term failure. As a result, alternative strategies for family water supplies are required, such as the provision of 1100-liter water tanks in Sainoni rural village, Bikomi Utara District, TTU. The findings from this study are expected to provide insights into effective technical solutions and policies to address clean water issues in similar areas, thereby improving community quality of life through enhanced access to safe and affordable water resources.

**Keywords:** Water supply, lesson learnt, drought, West Timor

## **1. Introduction**

The semi-arid region of Timor, Indonesia, is frequently affected by recurrent droughts that exacerbate water scarcity, limiting access to clean water and sanitation (Fox 2006). This persistent water shortage has far-reaching consequences, particularly for vulnerable populations, such as children, who face heightened risks of malnutrition, including stunting and wasting. These conditions pose a significant public health challenge, perpetuating cycles of poverty and limiting socioeconomic development (Algur et al. 2021).

Despite the urgent need for intervention, government funding constraints hinder the implementation of sustainable water infrastructure solutions. In response, international organizations, including the World Food Programme (WFP) Indonesia, have stepped in to address these challenges. WFP has initiated 30 clean water projects under Community Development Program (CDP) aimed at improving water access for communities and schools, supporting both immediate needs and long-term resilience-building efforts (WFP Indonesia, 2009). The project was carried out in four regions of West Timor, Indonesia, between 2006 and 2009. However, ensuring the sustainability and efficiency of such interventions requires an integrated approach to water resource management.

Integrated Water Resources Management (IWRM) provides a holistic framework for addressing water scarcity in semi-arid regions like Timor. IWRM promotes the coordinated development and management of water, land, and related resources to maximize social and economic welfare without compromising the sustainability of vital ecosystems (Agarwal et al. 2000). By integrating multiple stakeholders, including local communities, government agencies, and international organizations, IWRM facilitates participatory decision-making and adaptive management strategies (Biswas 2004).

Compared to traditional sectoral approaches, which often focus on isolated aspects of water management, IWRM offers a more comprehensive and sustainable solution. Conventional methods, such as solely expanding water infrastructure or relying on emergency aid, tend to be reactive rather than proactive. They often fail to address the root causes of water scarcity, such as poor governance, inadequate financial resources, and environmental degradation. Furthermore, fragmented management approaches can lead to inefficiencies, conflicting policies, and uneven water distribution, exacerbating the crisis rather than alleviating it (Hassing et al. 2009).

In contrast, IWRM emphasizes the interconnectedness of water systems and integrates policies for water conservation, equitable distribution, and climate adaptation. It ensures that water resource planning is inclusive, incorporating scientific data, local knowledge, and economic considerations to create long-term resilience. For example, implementing decentralized water management

systems, enhancing community participation, and promoting sustainable agricultural practices can optimize water use efficiency and reduce vulnerability to droughts (Leigh & Lee 2019). The adoption of IWRM principles in Timor is crucial for creating a sustainable water strategy that supports public health, economic growth, and environmental sustainability.

Applying IWRM principles to the water crisis in Timor entails improving water governance, enhancing infrastructure resilience, and incorporating climate adaptation strategies. Community-based water management approaches, such as rainwater harvesting and small-scale irrigation systems, have shown promise in other drought-prone regions and could be adapted to the Timor context (Elmahdi 2024). Furthermore, leveraging public-private partnerships and international aid could help bridge financial gaps, ensuring long-term water security and improved health outcomes.

This paper explores the application of IWRM principles to enhance water access and mitigate child malnutrition in Timor, Indonesia. It examines current challenges, evaluates existing interventions, and proposes sustainable, integrated solutions to address water scarcity in the region.

## **2. Methods**

### **2.1. Study Area**

On western part of Timor Island in East Nusa Tenggara Province, Indonesia, there are four out of six Regencys: Belu, North Central Timor (Timor Tengah Utara, later referred to TTU), South Central Timor (Timor Tengah Selatan, later referred to TTS), and Kupang Regency that implemented clean water project funded by WFP. The general description of each Regency is explained in brief below.

#### ***Belu Regency***

The Belu Regency is roughly 2,445.57 square kilometers in size and borders Timor Leste to the east. It consists of 12 urban village (kelurahan) and 69 rural villages (BPS Belu 2024). Agriculture is the main driver of the region's economy, and many of its citizens work as farmers (BPS Belu 2024). The average temperature of Belu is between 29.31°C and 31.39°C, indicating a tropical environment (BPS Belu 2024). July through September are the driest months, with little to no rainfall, while December usually has the most rainfall, with an average of 305 mm (BPS Belu 2024).

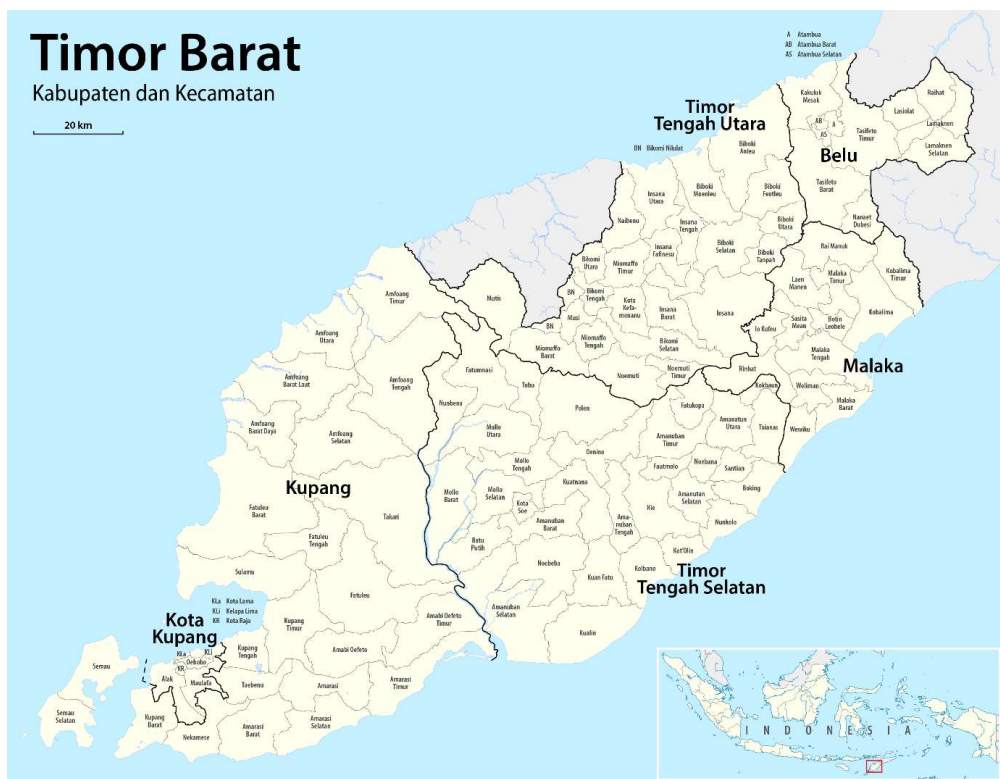
#### ***TTU Regency***

The administrative center of the TTU Regency, which spans 2,669.70 square kilometers, is located in Kefamenanu (BPS TTU 2024). With 182 rural villages and 11 urban village, the Regency is divided into 24 Districts (BPS TTU 2024).

For many locals, agriculture—with an emphasis on farming and animal husbandry—is their main source of income. The average annual rainfall is 1,363.83 mm, distributed over roughly 71 days, making this region a semi-arid tropical climate (BPS TTU 2024). Temperatures vary across the region, but it is generally warm throughout the year.

### ***TTS Regency***

The TTS Regency, which has Soe as its capital, is roughly 3,995.88 square kilometers in size (BPS TTS 2024). There are 32 Districts (kecamatan) in the Regency, which includes 12 urban village and 228 rural villages (BPS TTS 2024). The local economy is based mostly on agriculture, with most of the population engaged in farming and raising cattle. There are distinct rainy and dry seasons in the region's tropical climate. The regency frequently receives less rainfall than other regions of Indonesia because of its close proximity to Australia.



*Figure 1. Study area map*

### ***Kupang Regency***

The western entrance to Timor Island is Kupang Regency, which is separate from Kupang City. There are multiple subRegencys inside the Regency, each with a large number of settlements. Agriculture, fishing, and small-scale enterprises all play important roles in the diverse local economy (BPS Kab Kupang 2024). The climate is tropical, with a dry season with little rainfall and a wet season affected by monsoon winds. With differences in temperature and humidity, the Regency's coastal sections have somewhat distinct climates than its inland areas.

## **2.2. Data collection and analysis**

This study employs a qualitative approach, analyzing data from WFP project reports, community feedback, and case studies. The analysis focuses on the sustainability of clean water projects, with particular attention to the role of local leadership, community participation, and resource management. A case study approach is used to examine lessons learned from the Buraen project, providing a basis for developing recommendations for future initiatives.

Data is collected through document reviews of project reports and field studies, as well as interviews with key stakeholders, including community leaders, government officials, and WFP representatives. The qualitative analysis involves identifying patterns and themes related to the effectiveness and sustainability of water interventions. By focusing on community-driven strategies and governance frameworks, the study aims to highlight best practices that can be scaled to other regions facing similar water challenges.

The methodological framework is rooted in an interdisciplinary approach, drawing insights from water resource management, public health, and development studies. This ensures a comprehensive understanding of the factors that influence the success of water sustainability projects, with the goal of providing actionable recommendations for policymakers and development practitioners.

## **3. Results**

### **3.1. Clean Water Project in West Timor**

From 2006 to 2009, the Community Development Program (CDP) under WFP Indonesia attempted to provide clean water and sanitary facilities. During that period, I was the Program Assistant of WFP Sub Office Kupang and was responsible for the implementation of the CDP program in West Timor. Targeted beneficiaries were communities and elementary schools' children in the four Regencys listed in the study area. CDP projects were carried out in 15 schools and 8 communities, benefiting 224 teachers, 3,230 students, and 3,869 households. Table 1 displays the project's detailed list.

The table shows that in total WFP spent IDR 3.36 billion for constructing 30 projects. There are nine clean water projects in Belu with IDR 771 million in funding, six in TTU with IDR 909 million, and eight in TTS with a budget of IDR 721 million for six projects. However, there is no information available regarding the funding for two projects in TTS. Seven projects totaling IDR 959 million are located in Kupang.

The CDP initiative had the support of both official and informal community leaders, and it was implemented in areas with limited access to safe drinking water. The project required the provision of land for both the main water facility and unit storage tanks. Community members actively participated in the project by contributing to the building design, installing water pipe networks, and supplying essential materials such as stones, sand, and land. Additionally, they engaged in social work, such as transporting materials, providing food and drinks for workers, and ensuring the security of construction materials in temporary warehouses. Regular community meetings were held to facilitate collaboration and ensure the smooth implementation of the project.

To ensure the sustainability of the water facility, a local committee was established to oversee facilities operation and maintenance. At least 50% of the committee members were women, emphasizing gender inclusivity in decision-making and management. The community committed to paying a monthly fee for maintenance, ensuring the long-term functionality of the water supply system. A set of rules and agreements was established among the community members to regulate maintenance responsibilities and financial contributions.

The project allocated 8% of the total budget for administrative costs and required 10-15% community contribution, which can be in the form of labor, materials, or financial input. By integrating local participation, the project supported a sense of ownership and long-term sustainability, improving the overall quality of life in villages and schools.

### **3.2. Failed Project**

#### ***Top-Down Implementation with Minimal Community Involvement***

Access to clean water is a critical necessity for communities in Belu, Timor Tengah Utara (TTU), Timor Tengah Selatan (TTS), and Kupang Regency. Despite efforts to implement clean water supply projects in these areas, several initiatives have failed due to systemic challenges. The primary causes of failure include a top-down implementation approach, lack of governance structures for maintenance, weak coordination between local authorities, and unclear water rights and access regulations.

One of the key reasons for the failure of clean water projects in these Regencies was the lack of meaningful community involvement. Many projects were designed and executed using a top-down approach, where external

Table 1. List of CDP project in West Timor 2006-2009

| No | Project                                                         | Location                                                                | Budget (IDR)   | NGO     | FY        | # project |
|----|-----------------------------------------------------------------|-------------------------------------------------------------------------|----------------|---------|-----------|-----------|
| 1  | Provision of clean water facilities for 314 HH                  | Manuaman Village of Atambua City, Belu Regency, NTT                     | 325,461,500.00 | YASO    | 2006/2007 | 1         |
| 2  | Water and sanitation for 6 elementary schools                   | Belu, NTT                                                               | 353,930,000.00 | PPSE    | 2008      | 6         |
| 3  | Water and sanitation for 2 elementary schools                   | Belu, NTT                                                               | 91,435,000.00  | YDM     | 2008      | 2         |
| 4  | Provision of clean water facilities for 1,546 HH                | Numafo, Manuain A and Ainut villages, Insana District, TTU Regency, NTT | 309,016,879.00 | YBS     | 2007      | 3         |
| 5  | Provision of clean water facilities for 104 HH and 105 students | Fatuneno village, Mionafo Barat District, TTU, NTT                      | 368,935,900.00 | LCB     | 2007      | 2         |
| 6  | Provision of clean water facilities for 356 HH                  | Fafinesu A village, Insana Utara District, TTU, NTT                     | 230,950,000.00 | ATONI   | 2008      | 1         |
| 7  | Water and sanitation for 2 elementary schools                   | Nullu and Haumenbaki villages, TTS Regency, NTT                         | 368,970,111.00 | ANIMASI | 2007      | 2         |
| 8  | Water and sanitation for 3 elementary schools                   | SD Yaswari, SDN Oefafi, SD Sifunke, TTS, NTT                            | No data        | ANIMASI | 2008      | 3         |
| 9  | Provision of clean water facilities for 1,781 people            | Oelet village, Amanuban Timur District, TTS, NTT                        | No data        | ANIMASI | 2008      | 1         |
| 10 | Water and sanitation for 1 elementary schools                   | SDN Oebesa, TTS, NTT                                                    | 185,823,100.00 | YSSP    | 2007      | 1         |

|              |                                                     |                                             |                         |           |      |           |
|--------------|-----------------------------------------------------|---------------------------------------------|-------------------------|-----------|------|-----------|
| <b>11</b>    | Water and sanitation for 1 elementary schools       | SD GMT Bakitba, TTS, NTT                    | 166,210,000.00          | YSSP      | 2008 | 1         |
| <b>12</b>    | Water and sanitation for 1 elementary schools       | SDI Bipolo, Kupang, NTT                     | 109,580,000.00          | YASPELING | 2007 | 1         |
| <b>13</b>    | Provision of clean water facilities for communities | Tunbaun, Amarasi Barat, Kupang, NTT         | 281,847,000.00          | WVI-ADP   | 2008 | 1         |
| <b>14</b>    | Provision of clean water facilities for communities | Buraen, Amarasi Selatan, Kupang, NTT        | 278,530,000.00          | WVI-ADP   | 2008 | 1         |
| <b>15</b>    | Water and sanitation for 2 elementary schools       | SD GMT Pukdale and SDI Pukdale, Kupang, NTT | 197,350,000.00          | YAO       | 2008 | 2         |
| <b>16</b>    | Water and sanitation for 2 elementary schools       | Kupang Regency, NTT Province                | 91,589,000.00           | LCB       | 2009 | 2         |
| <b>Total</b> |                                                     |                                             | <b>3,359,628,490.00</b> |           |      | <b>30</b> |

organizations such as local NGO made decisions without truly engaging local communities in the planning and implementation process.

Without community participation, projects often failed to address the specific needs of residents. For instance, water supply systems were sometimes built in locations that were inconvenient or inaccessible to the people who needed them most. Additionally, local knowledge about water sources, land conditions, and traditional water management practices was not considered, leading to technical and logistical problems after installation. These cases occurred in the villages of Manuaman, Belu, Nunmafo, Manunai A, Ainiut, Fafinesu A, and Fatuneno in TTU, and Oelet village in TTS.

In Indonesia, the national constitution states that land, water, and natural resources are controlled by the state and utilized for the greatest benefit of the people. However, in Timorese culture, land, water, and forests belong to the tribe. The tribe plays a crucial role in managing and utilizing water resources. Therefore, any clean water network project in villages must consider local knowledge, particularly the role of the indigenous tribes.

Integrating local wisdom into water management projects can improve community participation, prevent conflicts over resource ownership, and ensure long-term sustainability. This approach acknowledges the deep connection between indigenous people and their environment while aligning national policies with local traditions.

### ***Lack of Clear Governance Structures for Ongoing Management***

Sustaining a water supply system requires a well-defined governance structure that includes maintenance protocols, fee collection for repairs, and responsibility allocation among users. In many cases, failed projects lacked a **clear management system for long-term operation**.

The water committees that were established frequently failed to fulfill their responsibilities months or years after the infrastructure was constructed. Water users (community) stopped paying water usage fees for maintenance. Furthermore, there was not enough water discharge from the source to guarantee a year-round supply. Due to this circumstance, the community was reluctant to contribute to water use. Without proper maintenance, pipes and storage tanks deteriorated quickly, leading to breakdowns and water shortages. Additionally, without a structured financial model (such as a small monthly fee for maintenance), communities lacked the funds necessary to repair damaged facilities. As a result, many water supply projects became non-functional within a short period after completion.

### ***Weak Coordination Between Traditional Authorities and Formal Institutions***

In many rural areas of NTT, traditional leadership structures (such as village

elders or customary leaders) play a significant role in decision-making. However, clean water projects often failed to integrate traditional leaders with formal institutions, such as local government offices or NGOs.

This weak coordination led to conflicts over project ownership and management. In some cases, traditional leaders were bypassed entirely, resulting in resistance from local communities who were more inclined to follow customary authorities. Conversely, formal institutions sometimes imposed regulations that clashed with local traditions, making it difficult for residents to accept and integrate new water management systems. The lack of cooperation between these two governance structures led to confusion, inefficiency, and eventual project failure.

### ***Unclear Water Rights and Access Arrangements***

Another critical issue was the absence of clear regulations regarding water rights and usage. In several cases, disputes arose between villages or households over who had the right to use the water supply. Some facilities were placed on privately owned land without legally binding agreements, leading to landowners restricting access or demanding payment from users.

Moreover, there were no well-defined policies on how water resources should be distributed, particularly during the dry season when demand was high. Without a legal framework governing water access, conflicts frequently emerged, undermining the sustainability of the projects

### **3.3. Successful Buraen Project**

The water supply project in Buraen, Amarasi Selatan District, Kupang Regency, stands out as a model of success due to its strong governance system, community participation, and sustainable water management practices. Unlike many failed projects, this initiative effectively integrated formal governance structures with traditional leadership, established clear water use rights, and maintained transparency in decision-making. These factors contributed to a reliable water supply that serves the community year-round.



Water reservoir



Water tank for school



Water tap for community

*Figure 2. Water supply facilities of CDP project in Buraen village, Kupang*

### ***Integration of Formal and Traditional Governance Systems***

A key success factor of the project was the collaboration between formal village authorities and traditional leaders. In many rural communities, water sources are often located on land owned by traditional leaders or specific families. Historically, conflicts over water use rights have led to project failures. However, in Buraen, a well-structured water committee worked closely with traditional authorities, ensuring mutual respect and cooperation.

The water committee maintained open communication with the traditional leader, who owned the water source, preventing disputes and ensuring long-term access. This collaboration allowed for smooth project implementation and fostered trust between all stakeholders.

### ***Bridging the Church, Village Government, and Traditional Authorities***

Another crucial element was the role of a strong leader who connected various community institutions. In Buraen, the water committee leader is a local (Figure 3). The committee leader held dual roles as a church official and a village government official, making them a respected figure across different social structures.



*Figure 3. Water committee leader, a local from Buraen village*

This leadership ensured harmonization between religious, governmental, and customary systems, which played a significant role in mobilizing community support. The church provided moral guidance, the village government contributed administrative oversight, and traditional leaders ensured cultural alignment. This unique governance model created a stable foundation for managing the water supply project.

### ***Clear Water Use Rights and Sustainable Payment System***

One of the major challenges in rural water projects is the issue of water rights and fair distribution. In Buraen, the water committee successfully addressed this by recognizing the traditional ownership of the water source and establishing a fair payment system. Water users, including committee members, contributed a small fee to the water source owner as a form of cultural recognition and economic sustainability. This agreement ensured that water remained available throughout the year, as the owner had a vested interest in maintaining the source. Unlike other projects where disputes over ownership led to restricted access, the clear arrangement in Buraen fostered long-term cooperation.

The water committee first asked water users to pay on a monthly basis. However, some people stopped making payments along the way because they thought money was being used in an unclear way. Therefore, the community and the water committee agreed that monthly payments would no longer be made.

This structured payment system demonstrated how traditional values and modern governance could work together to create a self-sustaining water supply system.

### ***Transparent Decision-Making and Community Representation***

Another pillar of the project's success was its transparent decision-making process. Many failed projects suffer from exclusionary planning, where only a few individuals make key decisions. In contrast, the Buraen project actively involved the wider community in discussions about water use, maintenance, and financial contributions. Regular community meetings were held, allowing villagers to voice their opinions and concerns. Financial transactions and expenditures were made public, ensuring accountability and trust in the committee. Broad representation, including both men and women, ensured that decisions reflected the needs of the entire community. By prioritizing inclusivity and openness, the project gained strong local support, which significantly contributed to its long-term sustainability.

## **4. Discussion**

### **4.1. Alternatives for Clean Water Provision**

The clean water supply scheme is ineffective in terms of sustainability, as seen

by the numerous failing clean water pipe networks for communities. Projects using the same concept were completed in Central Java, Indonesia, in the 1980s and 1990s (Isham & Kähkönen 1999). The 1999 evaluation's findings demonstrated that not all community clean water projects were effective. The failure of the clean water project in the village was primarily due to a lack of community involvement in the decision-making process, as all key decisions were made solely by the village leader. The community preferred individual water distribution points rather than shared public ones, which were implemented instead. Additionally, many residents were unwilling to pay for water usage, leading to a lack of funds for the maintenance of the water network facilities. Furthermore, the water committee, which was established to manage the system, ceased to function after the project was completed, resulting in poor management and eventual system failure. Therefore, policy makers need to employ various options to address clean water needs.

In Sainoni Village, Bikomi Utara District, TTU Regency, there is an alternative strategy for addressing the community's clean water needs. Each household receives a 1,100-liter water tank from the local authority. It is the responsibility of every family to supply water. They can purchase it for IDR 150,000 per tanker truck from a seller of clean water. There are 5,000 liters of water in one tanker truck. Families who cannot afford to buy one tank can share it with 3-4 neighboring families. In this village, this mechanism has been in existence for more than 10 years. The advantage of this arrangement is that there is no need for a water committee to handle operations and maintenance and regulate charges for water consumption.

#### **4.2. Pull Factor for Village Infrastructure Sustainability**

In Indonesia, utilizing village government funds to provide clean water services acts as a significant pull factor, attracting and retaining residents by enhancing living conditions and promoting sustainable development (Permatasari et al. 2021). This approach aligns with the nation's goal of achieving universal access to clean water and sanitation, as outlined in its National Medium-Term Development Plan (Brodjonegoro 2022).

Allocating village funds for clean water projects empowers local communities to take charge of their development (Permatasari et al. 2021). For instance, the World Bank's Third Water Supply and Sanitation for Low-Income Communities Project emphasized community-driven planning and management (Soraya, 2013). This initiative enabled rural populations to access improved water and sanitation facilities, fostering a sense of ownership and responsibility that is crucial for the sustainability of such projects (Permatasari et al. 2021).

## 5. Conclusion

Early research on the efficacy of clean water pipe network projects for rural communities demonstrates that not all well-intentioned efforts to provide a reasonable standard of living for the community can be implemented in a sustainable manner. Inhibiting issues include unclear water rights and access arrangements, weak coordination between traditional authorities and formal institutions, top-down implementation with little community involvement, and a lack of clear governance structures for ongoing management. The integration of formal and traditional governance systems, strong water committee leadership, and decision-making that involves all water users are all elements that contribute to the sustainability of clean water projects in Buraen. Policymakers must consider a variety of strategies of supplying clean water that are suitable for the local communities' needs. To identify the underlying reasons for failure, comprehensive evaluations of unsuccessful projects must be carried out for future research.

## References

- Agarwal, A., de los Angeles, M. S., Bhatia, R., Chéret, I., Davila-Poblete, S., Falkenmark, M., Gonzalez-Villarreal, F., Jønch-Clausen, T., Ait Kadi, M., & Kindler, J.  
2000 *Integrated water resources management*. Global water partnership Stockholm.
- Algur, K. D., Patel, S. K., & Chauhan, S.  
2021 The impact of drought on the health and livelihoods of women and children in India: A systematic review. *Children and Youth Services Review*, 122, 105909.  
<https://doi.org/10.1016/j.childyouth.2020.105909>
- Biswas, A. K.  
2004 Integrated Water Resources Management: A Reassessment. *Water International*, 29(2), 248–256.  
<https://doi.org/10.1080/02508060408691775>
- BPS Belu  
2024 *Belu Dalam Angka 2024*. Badan Pusat Statistik Kabupaten Belu.
- BPS Kab Kupang  
2024 *Kabupaten Kupang Dalam Angka 2024*. Badan Pusat Statistik Kabupaten Kupang.
- BPS TTS  
2024 *Timor Tengah Selatan Dalam Angka 2024*. Badan Pusat Statistik Kabupaten TTS.

BPS TTU

2024 *Timor Tengah Utara Dalam Angka 2024*. Badan Pusat Statistik Kabupaten TTU.

Brodjonegoro, B.

2022 Mainstreaming the sustainable development goals in Indonesia: An experience from the Ministry of Development Planning 2016-2019. *Asia-Pacific Sustainable Development Journal*, 29(1), 179–183.

Elmahdi, A.

2024 Addressing water scarcity in agricultural irrigation: By exploring alternative water resources for sustainable irrigated agriculture. *Irrigation and Drainage*, 73(5), 1675–1683.

Fox, J. J.

2006 Perspektif Pembangunan di NTT. *SMERU*, 20.

Hassing, J., Ipsen, N., Clausen, T. J., Larsen, H., & Lingdgaard-Jorgensen, P.

2009 *Integrated Water Resources Management in Action*. UNESCO.

Isham, J., & Kähkönen, S.

1999 What Determines the effectiveness of community-based water projects. *Social Capital Initiative Working Paper*, 14(1).

Leigh, N. G., & Lee, H.

2019 Sustainable and resilient urban water systems: The role of decentralization and planning. *Sustainability*, 11(3), 918.

Permatasari, P., Ilman, A. S., Tilt, C. A., Lestari, D., Islam, S.,

Tenrini, R. H., Rahman, A. B., Samosir, A. P., & Wardhana, I. W.

2021 The Village Fund Program in Indonesia: Measuring the Effectiveness and Alignment to Sustainable Development Goals. *Sustainability*, 13(21), 12294. <https://doi.org/10.3390/su132112294>

Soraya, G.

2013 *Indonesia-Third Water Supply and Sanitation for Low Income Communities Project: P085375-Implementation Status Results Report: Sequence 09*.

WFP Indonesia

2009 *Community Development Program: Water and Sanitation in Nusa Tenggara Timur, Indonesia*.

# Between Local and National Economies: The Case of Hybrid Economy in the Oecusse Border Area, West Timor

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## **Abstract**

Napan Village located in North Central Timor Regency of West Timor, Republic of Indonesia, borders Oecusse Municipality, an exclave of the neighboring Democratic Republic of Timor-Leste. Timor-Leste restored its sovereignty in May, 2002 gaining its independence from Indonesia, which resulted in a drastic transformation of the lives of Napan's inhabitants. Until quite recently, the border region was a place where two peripheries of two countries met, but now the area is being developed, with an ever increasing presence of both states in the villagers' everyday lives. This paper will look into the economy of Napan, a village adjacent to the Oecusse Municipality of East Timor, and examine how the relationship between the national and the local contexts has been built and how this hybrid balance has evolved in recent years. Furthermore, we will describe how in the current changing environment, villagers attempt to craft new strategies to survive.

**Keywords:** borderland, jalan tikus, Oecusse, smuggling, Timor-Leste, West Timor

## **1. Introduction**

In this paper, we will take a look at the economy of Napan, an Indonesian small village adjacent to the Oecusse Municipality of East Timor, and examine how the relationship between the local and the national contexts has been adjusted, and how this hybrid balance has evolved in recent years. Furthermore,

we will describe how in the current changing environment, villagers are attempting to craft yet further strategies to survive.

Napan Village located in the North Central Timor Regency of West Timor, Republic of Indonesia, borders Oecusse Municipality, an exclave of the neighboring Democratic Republic of Timor-Leste. Timor-Leste restored its sovereignty in May, 2002, officially gaining its independence from Indonesia, radically transforming the lives of those living in the village of Napan. The region has customary (*adat* in Indonesian) ceremonies, agricultural activities, and kinship and friendship networks extending across the present national border. People on both sides of the national border, which previously used to function as a prefectural and a provincial one, speak Meto, a language of the ethnic group the villagers belong to. But once Timor-Leste restored its sovereignty, the border became a national one, dividing the region into two territories governed by distinct political and economic systems. Now, when one looks from Napan, on the other side of the border lies a territory of a country separate from Indonesia, one with different national languages (not Indonesian but Tetun and Portuguese) and a different currency (not Rupiah but US Dollar). The movements of people and goods across this border became restricted to official routes established by the two countries' immigration control offices, requiring a permission as well as customs and quarantine procedures to pass.

The Oecusse border region has always lacked significant natural resources or industries and received little attention from the state centers of either country. In fact, from the point of view of Indonesia, West Timor has always been singled out as "one of the poorest regions of the country", lagging behind in terms of



Figure 1. Map of Timor Island and Oecusse

development as compared to the other regions (Ormeling 1956). Similarly, Oecusse municipality in Timor-Leste has been largely disregarded – from its time as a Portuguese colony<sup>8</sup> to the time under the Indonesian occupation and also after its independence – and was seen as a periphery lacking good access to political and economic centers, thus inviting only limited interest of the state (Gunn 2015; Holthouse and Grenfell 2008; ICG 2010; World Bank 2016). This lack of interest meant that the villages in this region seen as remote and underdeveloped in the eyes of the central authorities maintained relative degree of political and economic autonomy. However, it would be a mistake to assume that the villagers here were pursuing a self-sufficient lifestyle in a traditional small-scale agrarian society (Rose 2016, 2020). On the one hand, villagers have engaged in agriculture, achieving a high level of self-sufficiency. They have maintained a lifestyle that values history and life rituals based on the customs of their kin group, imagined as a straight line from the spirits of ancestors to oneself. On the other hand, villagers have traveled between their village and the outside world in search of opportunities, such as cash income and education. Their lifestyle was neither unaffected by the various aspects of modernization – such as the creation/imagining of the nation-state as well as the transition to market economy – nor did it display a direct resistance to these trends. Faced with such momentous changes as transformation of their social system and life environment, development, and transition to market economy implemented by the state with its own agenda and priorities, their lives in the village have become firstly a platform for adapting to and adjusting the impacts of these changes, and secondly functioned as a redoubt, preventing villagers from being unilaterally overwhelmed by these changes, and having their lives threatened into poverty (Rose 2016).

Since Timor-Leste gained independence, the economy of Napan Village, which borders the Timor-Leste exclave of Oecusse Municipality, has undergone radical changes. The economic center of Oecusse is a small coastal town of Pante Makassar with a population of about 22,000 (as of 2022). Aside from the agricultural products, most of the goods essential for daily life have always been brought in from outside the municipality. The nearest city to Pante Makassar is a city of Kefamenanu (known locally as Kefa, with a population of 49,000 as of 2023), the capital city of TTU Regency in Indonesia. Napan Village is located right in the middle of the route connecting these two towns, on the Indonesian side of the border (see Figure 1).

After the independence of Timor-Leste, villagers of Napan continued to move

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<sup>8</sup> However, Oecusse is also considered the birthplace of the country of Timor-Leste. In the national history, Oecusse is where the Portuguese first landed on the island and established their base there. In 1769, they moved its center of power from Oecusse to Dili, the current capital of Timor-Leste.

between the two countries, developing new means to transport various commodities to the Oecusse side. This has led to the emergence of loophole routes, known as 'Mice Roads' (*Jalan Tikus* in Indonesian), used for cross-border travel and transportation of goods, circumventing official procedures. This was an attempt by the villagers to adjust to the changes happening to their environment and create new ways of livelihood that are more 'wealthy (*kaya*)' and 'developed (*maju*)', by subtly adjusting their relationship with the state authority at the level of everyday life. Rather than taking the risk of directly negating their relationship with the state or confronting the state authority, they strove to make the best of their financial capital as well as the social, commercial, and physical means at their disposal. It was a strategy, in which they acknowledged their status as citizens of one of the two states, while simultaneously pragmatically adjusting the meaning of such status and their distance to the powers that be, attempting to find ways for a new and better life (Morita 2019).

Twenty years have passed since the independence of Timor-Leste. A part of Oecusse Municipality is now being developed as a special economic zone. Also on the Indonesian territory surrounding Oecusse, new roads are being constructed alongside the border and a new border post facility has been built under the Joko Widodo administration (which was in power for two terms totaling ten years until October 2024, whose policies strove to develop the peripheral areas of the country. These recent development initiatives have altered the landscape of the Oecusse border area, changing it from a place where two peripheries of two countries met to one with an increasing presence of both states. Since Timor-Leste's independence, villagers' lives have been enmeshed in a process, in which national and local contexts mixed in a nuanced balance, giving rise to a hybrid economy.

## **2. Hybridity of *Jalan Tikus***

Ever since it was decided that East Timor is to become an independent state, an opinion started to be voiced by many parties that Oecusse, due to its special geographical situation of an exclave, should be given special autonomy or become a special administrative region (Holthouse and Grenfell 2008). In reality, however, the necessary improvements to systems and infrastructure were delayed. Consequently, logistics in Oecusse were disrupted, and the area began to suffer from constant shortages of daily necessities.

For people of Napan, for whom means of earning cash had been highly limited, this shortage of commodities became a truly golden opportunity<sup>9</sup>. Villagers

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<sup>9</sup> The term 'people of Napan' includes those who migrated to the village from Oecusse at the time of the East Timorese independence referendum. The issue of these 'former refugees' shall be discussed in a separate article.

began stocking up on gasoline, kerosene, alcoholic beverages, and other necessities to sell to their business partners on the Oecusse side. In Oecusse with its limited logistical opportunities, these products never failed to fetch a good price. Furthermore, the money they got from this business was U.S. dollars – the official currency used in Timor Leste. A great number of villagers started to get involved in the *Jalan Tikus* (mice roads) business in various capacities – from people with certain amount of capital playing the role of leaders to those who merely carried goods to the border for a fee.

When I visited Napan for the first time in 2014, villagers took great pleasure describing to me, an outsider they met for the first time, the tales of *Jalan Tikus* as an uncommon subject peculiar to their village. They said that the transactions done via the *Jalan Tikus* were an 'open secret (*rahasia umum*)'. All the government officials working in the immigration control office, the soldiers and the policemen who guarded the border not only knew full well of the *Jalan Tikus*, they even talked of their existence as of something totally natural. At one meeting held in the Napan Village Office in 2016, a member of the prefectural assembly (*Anggota Dewan Perwakilan Rakyat Daerah Kabupaten*) said: "The proportion of people in this village who are not in any way connected to mice roads is twenty percent, thirty percent at most" (Morita 2019).

When engaging in 'business (*bisnis*)' of the *Jalan Tikus*, the fact that the area is located in the periphery played to villagers' advantage. In this border region, there are no lucrative industries or resources, and in terms of development it was lagging behind the rest of the country. And exactly because the village is located in a peripheral area of the state, an area that has been of little concern for the state center, the business of *Jalan Tikus* became possible. Another asset they had working for them is the fact that they already had the same language (not the national language but Meto Language of their ethnic group), culture and customs as their counterparts on the other side of the border. Furthermore, they already had a network of relatives, friends and acquaintances spread out and ready right across the border. These local similarities, connections and relationships existing across the international border were vital for the villagers' business. And what cannot be stressed enough is the fact that for *Jalan Tikus* business to work, the state with its logic, systems, and power was not at all an obstruction or an unrelated entity – quite the contrary, it was a very much required constituent factor.

One night I had a chance to accompany one of the villagers, who loaded on a pickup truck some wooden doors and window frames made in a woodworking shop in the city of Kefa and was going to transport them to his business contact waiting for him on the other side of the border. The truck strayed off the road leading to a Border Post halfway and drove on another narrower unpaved road for a while. When we stopped, I saw a soldier wearing a T-shirt and shorts, sitting

all alone on a chair in a relaxed manner. He was relaxed for a reason – both for him and for the villager the fact that goods were being transported that night across the border was nothing special, they had already talked it over beforehand, so the first was not surprised and the second drove with no caution and parked right next to him. The soldier, still nonchalant and care-free, approached the back of the truck, touched the wooden door that was lying there and smilingly said: "It's good, solid wood. It would fetch a high price in Java".

In order to smuggle products on *Jalan Tikus* across the border, villagers needed to do what they called 'coordinating (*kordinasi*)' with soldiers beforehand. When villagers talked about their business, they always stressed that they were "only transporting daily necessities to make ends meet, not guns or drugs like some criminals". What they meant was that they were breaking the law "out of necessity because there is no other way to earn a living", but they did not intend to harm the state. In other words, they were 'good citizens'. This logic is not a mere empty excuse – it has a deep and important meaning. And this meaning is the very reason why soldier and policemen "let them be".

Essentially, the work of soldiers and policemen is to prevent smuggling. But they also approved the status quo, in which smuggling via *Jalan Tikus* was done as a most normal thing in this area. One of the soldiers explained to me that as the villagers are merely carrying some trifle daily necessities to earn their living, it does not warrant treating them like some dangerous offenders and crack down on them hard. He added, as a justification of his actions, that "leaving them be is only humane (*kemanusiaan*)". This way, soldiers managed to somewhat alleviate one of the more irksome aspects of their work of border security on the one hand, and, on the other, got a percentage of the profits villagers got by smuggling – as a mark of "villagers' voluntary gratitude".

For villagers, soldiers became not only adversaries, but also an entity very much needed to continue their business, since by 'coordinating' with soldiers they obtained their 'permission (*ijin*)' to conduct their business, and the soldiers guarantee them their 'safety (*aman*)'. This way, *Jalan Tikus* smuggling never negated or ignored the state – on the contrary, having positioned themselves as 'good citizens', they engaged in smuggling and, through that process, both affirmed their relationship with the state and showed their recognition of the state's authority (Morita 2019). In this sense, the business of *Jalan Tikus* was an economic activity of hybrid nature, in which the local and the national contexts were connected into a delicately balanced integrated whole.

### **3. Expansion of the National Economy**

In the past five years or so, the border region where the village of Napan is located has been experiencing an evident increase in the presence of 'national economy', bringing with it substantial changes to the delicate balance of the

various heterogeneous entities that so far had made the *Jalan Tikus* business possible.

The change began with the measures implemented in 2020 to combat COVID-19. To prevent the spread of infections, the authorities strictly prohibited any border crossings at the Napan Village Cross Border Post, and both soldiers and policemen started to crack down on anyone attempting to cross the border in any other location as well. Faced with these COVID-19 countermeasures – an all-out effort by the government – The soldiers had so far allowed villagers to pass back and forth through the *Jalan Tikus* based on their informal decisions and the realities of their particular station. However, they probably decided that they simply could not do so any longer. As the cross border posts suspended all work related to arrivals and departures, not only the *Jalan Tikus* but even the option to follow the formal procedures and cross the border legally became no longer available. Furthermore, when the COVID-19 countermeasures were eventually eased, villagers had to deal with yet another change – the start of a construction project remaking the small border post of the Napan Village into a large-sized complex, as part of a range of policies by the Joko Widodo government to develop rural areas and strengthen border control.

Even after the countermeasures were finally lifted, the border passage procedures remained entirely suspended due to the construction work. To add to that, yet another construction work began – that of a new road along the Oecusse international border, conducted under the jurisdiction of the Indonesian state<sup>10</sup>. The construction of the border complex was also eventually completed, and on October 2, 2024, President Joko, a short while before his retirement, visited Napan Village and formally declared the new facility as completed (Sekretariat Presiden 2024). However, as renovation work started also at the border post in Oesilo, on the East Timor side of the border. The staff members of the Oecusse custom house recently visited the border post in Napan, and the two sides discussed ways to resume processing of the cross-border traffic as promptly as possible, without waiting for the completion of the construction at the Oesilo border post (BNPP RI 2025a).

In August, 2023, after the COVID-19 countermeasures were eased and it became possible for foreigners to enter Indonesia again, I went to Napan Village for the first time in three years and asked the villagers about the *Jalan Tikus*. They told me that "soldiers boosted security at the border", and "installed CCTV cameras, so you get caught in a second". According to them, it became quite difficult to cross the border and get back using byroads, like they used to do. Another option to enter Oecusse from the Indonesian side is to follow the formal procedures, but as the Napan Cross Border Post is now closed, one needs to go

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<sup>10</sup> In Indonesian, the road is to be called *Jalan Sabuk Merah* (Red Belt Road).



*Figure 2. Changes in the landscape around the Napan Border Post. The photo above is from March 2018 and the below is from June 2024 (by Google Earth).*

about fifty kilometers to the seashore and go through customs at the Wini Cross Border Post (see Figure 1).

At the same time, the situation where it was said that "you just can't make money in the village" has also started to change. Although not everyone in the village can earn money, the ways to obtain cash income have, indeed, increased

– one can get a job related to the new road construction, purchase a car and rent it out with a driver, or open a small shop and sell daily necessities to the villagers. There are also those who are employed as full-time employees in the newly erected border post complex, or work there in a less regular capacity – selling food or cleaning.

The subject of *Jalan Tikus* used to be openly and eloquently discussed by everyone in the village. Many people told their stories even to me, an outsider, describing their experiences vividly and in great detail. Even soldiers, policemen and government officials showed the same attitude – albeit with less intensity.

But this time I got an impression that it is no longer the case, that people became more reluctant to openly touch on this subject. First there was a crackdown in the border region to combat COVID-19, and even after it was lifted, for a long time the renovation work was under way, an ambitious project aiming to ensure that the border post is a facility worthy to be an entranceway to the nation. For this reason, it became impossible for the villagers to easily cross the border using *Jalan Tikus*, resulting in an increase of the time and effort required to continue the business on the one hand and the risk of being arrested or goods being confiscated on the other. As far as I could ascertain, there is only a small number of villagers in Napan, who are still continuing the *Jalan Tikus* business as before. One of them, S, told me that she no longer engages in



*Figure 3. A villager walking along with a narrow unpaved road (2015)*

'coordination' with soldiers. S said that soldiers raised the price too high, making it no longer viable for her, which is why she said she "will not cooperate with them" or "play on the same team" with them anymore. Instead, she now carries the products beforehand to a house near the border, and, keeping close communication with her business contact on the Oecusse side using a mobile phone, carries the products over the border at night, making every effort to avoid being spotted by the soldiers.

To receive the money S is owed for the products directly from her counterparts, she visits them in Oecusse every week. On these weekly visits, she goes to the Wini Cross Border Post, has her passport ready and follows the formal border passage procedures. In August, 2024, I accompanied her on her trip to Oecusse. We left Napan by car in the morning and drove for about an hour and a half along a winding road until we arrived at the border post gate. A soldier she knew well came out to meet us, having been informed of our visit in advance. S handed him her passport, was shown by the soldier through the gate and into the building. Indonesians are currently exempt from requiring a visa to enter East Timor<sup>11</sup>, so the soldier led her through the baggage inspection counter, where she was not checked, and she casually greeted the immigration office personnel. Her departure from Indonesia was thus finished in no time at all, and she parted from the soldier as she left the building. We walked a little to a bridge over a small



*Figure 4. Jalan Sabuk Merah (Red Belt Road) along the Oecusse international border (2024)*

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<sup>11</sup> Villagers living in the border region used to be able to get a Border Crossing Pass. This allowed them to legally leave and come back without a passport or visa. If certain conditions were met, they could also stay in Oecusse for several days. However, this system has also been suspended as a part of COVID-19 countermeasures, and remains suspended so far.

river that marks the international border and entered the Sakato Cross Border Post building on the Oecusse side. She was acquainted with the personnel of the immigration office here as well, and the formalities required for entry into East Timor were also quickly finished. As I expected, no baggage inspection was conducted here either.

As we entered Oecusse District this way, we found a 'Tum-Tum' - an electric three-wheeled taxi - drove on a road along the seashore to the town of Pante Makassar, and paid a visit to a store run by S's customer. She collected money owed to her for goods transported earlier via Jalan Tikus. She also purchased fabrics printed with traditional woven patterns to sell in Indonesia. Having done that, she found us a pickup truck to go yet further inland – about 15 kilometers – where we paid visits to the shops of some of her other business contacts in the Tono Market. Here also she collected money, handed some products that she brought over with her in a bag (such as threads and dyes required to make textiles, cold and headache medicine and other over-the-counter medications – things not too bulky to be brought over this way), and also stocked on some new goods, such as canned drinks and cloth, which are hard to come by in West Timor. Not so long ago people used to say that logistics-wise, Oecusse was a one-way road – "everything came from Kefa", but things have changed, and today goods from Dili come here more easily, both via the sea route and the land route. Moreover, merchants from China have gained certain prominence in the town of Pante Makassar launching several large shops here, which, for the Oecusse residents like S's clients who are running small businesses, is becoming an increasingly annoying problem. For those reasons, the *Jalan Tikus* business not only became riskier, it is also getting less and less lucrative. Nevertheless, some villagers such as S are still continuing, adjusting their relationships with the soldiers, policemen, and immigration office personnel of both countries to fit the new reality, striving hard to make things work in these new and more elaborate ways.

#### **4. Conclusion: Future of *Jalan Tikus***

The villagers who live in the area adjacent to the border came to accept the fact that their world is divided into two states, East Timor and Indonesia. They have lived, frequently going back and forth between the two countries, finely adjusting within their daily lives their relationship with these two state powers and building for themselves a hybrid economy highly adapted to the great transformation they experienced – the establishment of a new international border. They never openly negated their relationship with the state to which they belong, never tried fighting the state power. Instead, they minutely adjusted their distance from the state, skillfully using sometimes the local and sometimes the national context to suit their needs best, connecting the two in superbly crafted ever changing balance. And, through this process, they strove to create

opportunities for new livelihood.

The environment surrounding the Oecusse border is currently undergoing a massive physical transformation, unseen before both in terms of its scale and speed. The movement of people, things, and money related to the national border, which had changed substantially after the independence of Timor-Leste, is now turning into something else again. The area is attracting different kind of interest from the state center on the Indonesian side, and border control is being increasingly reinforced. On the Oecusse side, a part of Timor-Leste, the border post as well as the road leading to it is being renovated in an ambitious construction project. Once the area on the Oecusse side is developed, the logistics will change once more, yet again transforming the movement of people, things, and money involving the national border established at the time of independence of Timor-Leste. Will villagers like S be able to continue earning their livelihood? It will become increasingly difficult for them to make profits from their *Jalan Tikus* business in the way they have done so far.

The *Jalan Tikus* business was an effective way to make money because this peripheral area had not attracted much attention from the state center, and people in their various positions – villagers and immigration office personnel, soldiers and policemen – could strike out a delicately balanced hybridity between the national and the local contexts, perfectly adjusted to their financial needs. But today, the state is steadily increasing its presence. Will the economy of the village be engulfed by the market economy and undergo massive changes? The villagers are anxious about what the future will hold for the *Jalan Tikus*. At the same time, they are openly welcoming the fact that thanks to the development, their lives are becoming more and more convenient. They say that the fact that the border invited the state's interest and brought in a large-scale development project transforming their lives is a "stroke of luck, a blessing (*rezeki*)", and look forward to further changes.

Before the independence, the lives of people on the two sides of the border used to be quite similar and most of the differences appeared only after the border's establishment, so the new developments would be quite interesting to watch. How have people who live in the periphery of the state connected their local economy to the national, how is this connection going to change from now on? These are important questions. And their importance lies in the fact that by focusing on these concrete processes, we can learn what establishment of a state really means, how citizens of a state are imagined, and how they are created.

\* On April 10, 2025, when this paper was being written, the Napan Border Post has officially resumed operations (BNPP RI 2025b).

## References

- Badan Pusat Statistik Kabupaten Timor Tengah Utara  
2023 *Kecamatan Kota Kefamenanu dalam Angka 2023*.
- Government of Timor-Leste  
2022 *Timor-Leste Population and Housing Census 2022 Preliminary Results*
- Gunn, Geoffrey C.  
2015 East Timor - Indonesia: Oecusse District, In *Border Disputes: A Global Encyclopedia*. Emmanuel Brunet-Jailly (ed.), pp.175-185, ABC-Clio.
- Holthouse, Kym and Damian Grenfell  
2008 *Social and Economic Development in Oecusse, Timor-Leste*, The Globalism Institute.
- International Crisis Group (ICG)  
2010 Timor-Leste: Oecusse and the Indonesian border, *Policy Briefing: Asia Briefing*, 104: 1-17.
- Ormeling, F.J.  
1956 *The Timor Problem: A Geographical Interpretation of an Underdeveloped Island*. The Hague: J.B. Wolters.
- Morita, Yoshinari  
2019 'Mice' of Transborder Trade in Timor Island: Timorese Smugglers and 'Reconciliations' in *Bulletin of the National Museum of Ethnology* 43(3): 367–390.
- Rose, Michael  
2016 ZEESM: Destructive 'Development' in Timor's Special Economic Zone. *State, Society & Governance in Melanesia*, In Brief 2016/4.
- Rose, Michael  
2017 'Development', Resistance and the Geographies of Affect in Oecussi: Timor-Leste's Special Economic Zone (ZEESM). *Singapore Journal of Tropical Geography* 38 (2): 201-215.
- Rose, Michael  
2020 *Indigenous Spirits and Global Aspirations in a Southeast Asian Borderland: Timor-Leste's Oecussi Enclave*, Amsterdam University Press.
- World Bank  
2016 *Democratic Republic of Timor-Leste: Oecusse Economic and Trade Potential, Vol.1 Overview of Oecusse Today and Long Term Potential*. Washington DC: World Bank.

## Reference Websites

Badan Nasional Pengelola Perbatasan Republik Indonesia (BNPP RI)

2025a PLBN Napan Terima Kunjungan Direktur Bea Cukai Oecusse Timor Leste, Bahas Pembukaan Perlindungan di Border Post Oesilo (15 Feb 2025)

<https://bnpp.go.id/berita/plbn-napan-terima-kunjungan-direktur-bea-cukai-oecusse-timor-leste-bahas-pembukaan-perlintasan-di-border-post-oesilo>

Badan Nasional Pengelola Perbatasan Republik Indonesia (BNPP RI)

2025b Usai Diresmikan, PLBN Napan Langsung Dipadati Pelintas Batas (12 Apr 2025)

<https://bnpp.go.id/berita/usai-diresmikan-plbn-napan-langsung-dipadati-pelintas-batas>

Sekretariat Presiden

2024 “Presiden Jokowi Resmikan 7 Pos Lintas Batas Negara Terpadu, Timor Tengah Utara, 2 Oktober 2024,” Sekretariat Presiden Republik Indonesia (03/10/2024)

<https://www.youtube.com/watch?v=rT6eOQlCqVE&t=33s>

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