

Waves of Bugis Migration to the Mahakam Delta: Livelihood Trajectories and Landscape Changes along the Rural Coastlines of East Kalimantan

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ABSTRACT

This article describes an often overlooked dimension of land use change, namely the extent to which migration affects livelihoods and landscapes in destination areas. We concentrate on the long history of migration of Bugis from South Sulawesi province to the Mahakam Delta on the east coast of Kalimantan, which has taken place over hundreds of years. To understand this migration pattern, we first delve into the dynamics of Bugis mobility across the Sulawesi Strait by examining the push and pull factors that reshape the Mahakam Delta. We then examine the livelihood trajectories of the migrants, their political economic contexts in their sites of origins and destination areas, as well as the ways these dynamics result in social and ecological change. We categorized Bugis migration to the Mahakam Delta during the 20th and early 21st century as taking place in three different waves. Violence and security were the main push factors for migration, namely fleeing the chaos of civil war during the colonial and post independence periods. Along the way households sought out employment and access to arable land. Meanwhile, the pull factor involved abundant livelihood sources and relatively safe conditions in the Mahakam Delta. Working as farmers and fishermen during the earlier periods, migrants' livelihoods changed significantly in the 1980s with the arrival of international shrimp companies stimulating decades of conversion of the Delta's mangrove forest ecosystems. The financial crisis in the late 1990s that sparked the initial shrimp boom intensified the conversion, which also included turning migrant agricultural lands into ponds. The global commodity chains integrated the migrants into capitalist relations controlled by a few money lenders and pond owners, turning migrants into patrons in the form of pond workers. The few studies that discuss the relationship between migrants' livelihoods and landscape change generally address rural-to-urban out-migration. This study shows specifically that rural to rural migration can have significant effects on livelihoods and landscape in the migration destination areas.

KEYWORDS

Bugis Migration; Push and pull factors; Livelihood; Landscape change; Mahakam Delta; Coastal Rural Landscape.

1. INTRODUCTION

Both permanent and circular migration are often the main livelihood options in agricultural areas (Fox, 2018; Kelley et al., 2019). Push factors such as conflict, poverty, and disasters as well as pull factors such as employment opportunities lead to migration (Stark & Bloom 1985; Massey et al., 1993). Migration has a major impact on national economic development, rural transformation, and land use transitions (Long et al., 2022; Hugo, 1982; 2006; Rudiarto et al., 2020). Studies have revealed that rural out-migration is an important factor in land use and cover change in the area of origin (Kates & Parris, 2003; Lambin & Meyfroidt, 2011; Seto et al., 2012). In China, rural-to-urban out-migration has reduced the labor force in rural areas, increased the population in urban areas, and led to abandonment of rural settlements and farmlands

(Chen, 2014). Rudel et al. (2009) also pointed out that one of the causes of land conversion from agriculture to forest or grassland is migration (Rudel et al., 2009). Furthermore, migration of men from rural areas led to a decline in farm size and village labor, and women assume a greater workload and decision-making responsibilities to take care of the household and manage the land (Jaquet et al., 2016).

Furthermore, migration studies have linked livelihoods, land use change, and land cover in an area. However, these studies tend to focus on the rural-urban migration and landscape changes in the rural areas left behind. Kelley et al. (2019) studied migration, livelihood dynamics, and landscapes in Southeast Asia, and focused more on circular labor migration and landscape change around industrial concession areas for agriculture, plantations, and forestry. Where these studies are not directly focused on the issue of migration, they help explain that the presence of concessions for oil palm plantations can trigger labor migration and landscape changes to destination areas (Santika et al., 2019; Kelley et al., 2019). Migration will continue to have a significant influence on land use change, and studies that exclude the relationship between migration and land use change are likely to overlook the important relationship between the two (Bell et al., 2010; Carr, 2009; Chen et al., 2014).

The topic of migration is a central topic in critical studies in Indonesia. One of the largest migration destination areas is Kalimantan due to the rapid plantation and mining industries, as well as the abundance of land. One of the most migrant-dense areas is the Mahakam Delta Region. The majority of the population of the Mahakam Delta is Bugis from South Sulawesi province, who have migrated to the Mahakam Delta for hundreds of years (Sidik, 2010; Lenggono, 2011). They migrated in response to the political, social and economic situation in their place of origin in South Sulawesi (Abidin, 1983; Pelras, 2006). Historically, Bugis people first arrived and settled in the Mahakam Delta region in the 19th century. Pemangkar village (today located in the Village of Sepatin) holds evidence of the earliest Bugis civilization in the region (Bourgeois et al., 2002; Sidik, 2010; Lenggono, 2011).

The migrants' livelihood in the Mahakam Delta is mostly driven by capture fisheries and agriculture, resulting in a substantial impact to mangrove conversion (Latifa et al., 2017; Rachmawati & Latifa, 2020). By the 1970s, migrants arrived in the Mahakam Delta as a response to rapid growth of the export fishing industry, oil and gas mining, and the opening of mangrove forest areas for aquaculture activities. The conversion of mangrove forests in the Mahakam Delta region for aquaculture became more widespread and had a totalizing effect on the delta's conversion in the 1990s, with many areas of previous coconut plantations and seasonal agriculture replaced for new ponds (Sidik, 2010, Safitri, 2013). This period marked a significant landscape change in the Mahakam Delta.

This study examines the extent to which Bugis migration has influenced livelihoods and landscape change in the destination area, with specific reference to the Mahakam Delta region. Specifically, this research examines the history, process and causes of Bugis migration to the Mahakam Delta region. To this end, the research utilized historiographic and ethnographic approaches to gather information on the livelihoods of the migrants and the changing landscape of the migration destination. The research examined the push and pull factors of migration (Lee, 1966; Bilsborrow, 2002; Menton & Cronkleton, 2019) and the livelihood trajectories of the migrants (Bagchi et al., 2008; Sallu et al., 2010), which play an important role in stimulating a commodity boom and agrarian transition to the more commonly encountered forms of capitalist aquaculture production (Hall, et al., 2011; Scoones, 2015).

2. METHODOLOGICAL AND THEORETICAL FRAMEWORK

2.1 Research approach

To provide a historical perspective, specifically with reference to the flow and factors of Bugis migration to Tani Baru village, this research uses a combination of historiographic and ethnographic approaches. To obtain information on the dynamics of migration on livelihoods and landscape change, Bilsborrow's (2002) *migration decision* analysis was used to examine the push and pull factors of migration in Tani Baru Village. In addition, we applied a *livelihood trajectories* approach to examine the extent to which migration served as an adaptation strategy, as well as the ways such decisions influenced livelihoods and changes across various rural landscapes (Sallu et al., 2010).

2.2 Research site

We conducted fieldwork in Tani Baru Village, one of the easternmost settlements in the Delta, administratively part of the Regency of Kutai Kartanegara in the province of East Kalimantan.



Figure 1. Settlement in Tani Baru Village (Photo credit: Ramlah, August 2023)

The total population of Tani Baru Village is 3,798 people, with 2,004 men and 1,794 women (BPS Kutai Kartanegara, 2019). As a terraqueous landscape, the village has limited landmass and can only be reached by water transportation (*Dompeng, Ketinting, Speed Boat, etc.*). The Bugis of South Sulawesi make up nearly the entire population of the village.

2.3 Data collection

We carried out purposive sampling and applied snowball techniques to select key informants. In collecting data, we conducted participant-observation, focus group discussions and in-depth interviews. By emphasizing Bugis migrants in Tani Baru Village who are assumed to be the ones who experience the influence of migration on livelihoods and changes in the rural landscape, the researchers do not intend to ignore the influence of non-Bugis migrants. This is, rather, because Bugis migrants make up nearly the entirety of the village population.

To provide a comprehensive picture of the dynamics of migration in Tani Baru village over time, in-depth interviews and focus group discussions were conducted with

four groups of Bugis migrants in Tani Baru village. In-depth interviews and focus group discussions were conducted with four groups of Bugis migrants in Tani Baru village, covering different generations of migrants, namely: first wave migration (1920-1943), second wave (1944-1970), third wave (1971-1990), and fourth wave (1991-2023). The researcher also conducted focus group discussions with several informants who have broader and more credible information related to the research topic. These include researchers/students from Gadjah Mada University and Mulawarman University who conducted long term village stays as part of an associated research program in the Mahakam Delta (in both Tani Baru and Muara Pantuan villages). The researchers' program is the "*Vulnerable Deltas in Southeast Asia: Climate Change, Water Pollution, and Socio-Economic Transformation.*" funded by the Henry Luce Foundation and implemented by the East-West Center in partnership with the previously mentioned Indonesian universities.

We applied a two-part qualitative data analysis method. First, an exploratory analysis of general statements about the relationship between various categories of data was undertaken to gain a conceptual understanding of reality based on empirical findings. In addition, historical data and texts about events related to the migration dynamics were also analyzed to provide a historical perspective of Bugis migration to Tani Baru. Second, to facilitate interpretation, selection, and explanation in the form of analytical descriptions, data categorization was carried out in accordance with the formulation of questions.

2.4 Theoretical approach to analyzing the data

The two ethnic groups of South Sulawesi (Bugis and Makassar) have long been known as migrants that spread across the Nusantara (Indonesian) archipelago, even to neighboring countries, such as Singapore, Malaysia and northern Australia (Heriyanti, 2020). For the Bugis, migrating is generally associated with seeking to resolve personal conflicts, avoiding humiliation, insecurity, or the desire to escape both unsatisfactory social conditions and the unwanted consequences of violence committed in the place of origin (Pelras, 2006). Armed with the courage to sail the seas, the Bugis leave home in search of a promising new life (Bakti, 2010). For the Bugis, the term *merantau* implies more than just the pursuit of profit, but also an effort to seek knowledge as well as wealth, which includes efforts to improve wellbeing (Pelras, 2006). Therefore, Bugis is known to be hardworking and successful in opening up previously unexploited economic niches by clearing agricultural land, raising fish, and establishing small businesses (Ammarell, 2002; Bakti, 2010). This tendency to migrate is a well-known fact, but its contemporary factors and processes have yet to be adequately studied.

Why do Bugis people leave their homeland (South Sulawesi)? Studies emphasize the importance of positive and negative variables relating to the origin and destination, barriers that prevent migration, include distance, physical barriers, and lack of road access (Lee, 1966; Bilsborrow, 2002). Push factors are factors from the area of origin that force people to migrate. These factors tend to be negative, or shortcomings of the area of origin. While pull factors are factors originating from the destination area, which can attract people to migrate, these factors tend to be positive, or have advantages in the destination area (Bilsborrow, 2002; Menton & Cronkleton, 2019). Furthermore, analyses of internal migration in developing countries reveal that migration is influenced by: (a) differences in economic opportunities and living conditions between places; (b) people's awareness of these differences and desire to improve their lives by moving; and (c) their ability to act on these desires (Bilsborrow 2002; Menton and Cronkleton, 2019).

In relation to social and ecological changes, studies suggest that migration plays an important role in many aspects of land use and livelihood changes (Kelley et al., 2019). Some suggest that migration trends will continue to have a significant influence on land use change (Bell et al., 2010). Meanwhile, commodity booms have seen how a rush to a certain commodity have similarly had significant environmental effects, including land clearing to make way for monocrop industrial plantations (Hall et al. 2011; Junquera and Grêt-Regamey 2019; Castella et al. 2023). However, these studies tend to examine migration and land use change separately, or pay more attention to the commodity booms and less attention to the migrants, and therefore are likely to overlook the important relationships between the two (Bell et al., 2010; Chen et al., 2014). This current study aimed to fill this gap.

To explore the relationship between migration, migrants' livelihoods and landscape changes in migration destinations, the present research applies the push and pull factors of migration (Lee, 1966) and livelihoods trajectories approaches (Bagchi et al., 2008). The term 'livelihoods trajectories' is understood as the direction and pattern of individuals or group livelihoods of migrants (Bagchi et al., 2008). Furthermore, De Haan & Zoomers (2005) revealed that this approach makes it possible to understand household behavioral strategies recorded in the history of the adaptation journey by considering social and environmental conditions (Sallu et al., 2010; Rachmawati & Latifa, 2020). Additionally, this study also pays attention to the structural change that affects livelihood trajectories of migrants, by examining the social relational changes implicated by wider structural factors such as national policies and market dynamics (Scoones, 2015). In accordance with the research focus, only adaptations related to changes in livelihoods and rural landscapes will be described.

3. RESULTS AND DISCUSSION

3.1 The beginning of Bugis migration to Kalimantan

The beginning of the massive migration of the people of South Sulawesi, especially from Wajo, occurred starting in the 17th century after the fall of Gowa Kingdom, near current day Makassar. Many Wajo people at that time migrated to East Kalimantan, where with the permission of the Sultan of Kutai, they formed a "democratic republic" in the Mahakam Delta, which is today modern day Samarinda (Abidin, 1983). Since then, Samarinda has been the center of trade for the Bugis people (Abidin, 1983).

Pelras' study (2006) reveals that in the beginning of the eighteenth century, a Wajo prince named La Ma'dukelleng left South Sulawesi and travelled across the Makassar Strait with around 3,000 followers for Pasir in East Kalimantan. Here a small community of Bugis traders from Wajo had settled. While trading, La Ma'dukelleng stayed there until 1737, when he returned to Wajo as the newly elected Arung Matoa (king), to fight against Bone and the Dutch. Before leaving East Kalimantan, La Ma'dukelleng established a political relationship with the local ruler through marriage by marrying one of his sons to the daughter of the Sultan of Pasir. The couple's daughter was later married off to Sultan Idris of Kutai, when La Ma'dukelleng himself became Sultan of Pasir. He also actively organized Wajo communities throughout the east coast of Borneo through the *Pua' Adu'* (Bugis community leaders) (Pelras, 2006). This means that La Ma'dukelleng not only left his influence on the land of Borneo but also left a large number of his followers in Talake-Pasir. It was their descendants who later migrated northwards to the village of Pamangkaran around the Mahakam Delta area.

The migration of Bugis Talake descendants is thought to have taken place in waves since the governmental chaos of the Pasir Kingdom, after Dutch intervention in the appointment of Sultan Muhammad Ali Alamsyah as Sultan of Paser on July 7, 1885.

This led to a conflict between the previous Sultan (Sultan Abdurachman Alamsyah) and Sultan Muhammad Ali Alamsyah, who was supported by the Dutch. Dutch control of the Paser kingdom forced some Bugis Wajo migrants who did not want to submit to Dutch colonialism, but also did not want to betray the commitment of their predecessors, to move elsewhere (Lenggono, 2011).

Apart from conflict or warfare, the Bugis people's migration was due to their *enterprising character*, especially among the Wajo people in the 18th and 19th centuries (Crawford, 1856; Abidin, 1983). However, not all Bugis left Sulawesi with the sole intention of trading. Some left for adventure, to make a living, and others came to settle in another country or region, because of *Siri'* or other difficulties (Pelras, 2006). As migrants, the Bugis are known to be hardworking and successful in opening up previously unexploited economic niches by clearing agricultural land, raising fish and establishing small businesses (Bakti, 2010).

By the early 20th century, out-migration from South Sulawesi persisted (Abidin, 1983). This can be proven in Volkstelling in 1930, which states that the largest number of South Sulawesi people living outside their area is in Kalimantan, and as many as 103,982 individuals migrated to improve their lives (Volkstelling, 1930; Abidin, 1983). After independence, another migration wave took place to Kalimantan from South Sulawesi as a result of the DI/TII rebellion (1951-1965) (Lineton, 1975; Vayda & Sahur, 1985), and the treatment by warlords who controlled economic resources (Harvey, 1974; Abidin, 1983). Vayda & Sahur (1985) further explained that migrants in Bontang and the outskirts of Samarinda (around Bukit Soeharto) received relatives or friends who told them of locations where forest areas could be converted into profitable agricultural land (Vayda & Sahur, 1985; Bakti, 2010).

3.2 Waves of Bugis migration to Tani Baru village

The history of Tani Baru is closely tied to several periods of migration of Bugis to the Mahakam Delta. The waves of Bugis migration to the Delta, especially in Tani Baru Village, went through different periods, with migrants coming from various areas of origin, and driven by diverse reasons. Details can be seen in Table 1 and Figure 2.

Table 1. Stage and Periods of Migration in Tani Baru Village

Migration Stages	Migration Period (Year)	Migrant Origin	Reasons for Migration
First Wave	1920-1949	Talake-Paser, east coast of Kalimantan	Escape from chaos or war between local kingdoms. Opening up coconut plantations and agricultural lands for a better livelihood.
Second Wave	1950-1965	South Sulawesi	Escape from economic hardship and military turmoil in South Sulawesi.
Third Wave	1970s to 1990	South Sulawesi, east coast of Kalimantan	Operation of export fisheries companies (<i>cold storage</i>). Large tracts of mangrove forests converted into traditional ponds.
Fourth Wave	1990-Present	South Sulawesi, east coast of Kalimantan	The emergence of retainers (capital owners), the creation of modern ponds (<i>excavators</i>), and the <i>booming</i> shrimp prices.

[Source: Tani Baru Village Profile Book, 2019; Pelras, 2006; Bakti, 2010; Lenggono, 2011; Primary data processed, 2023]

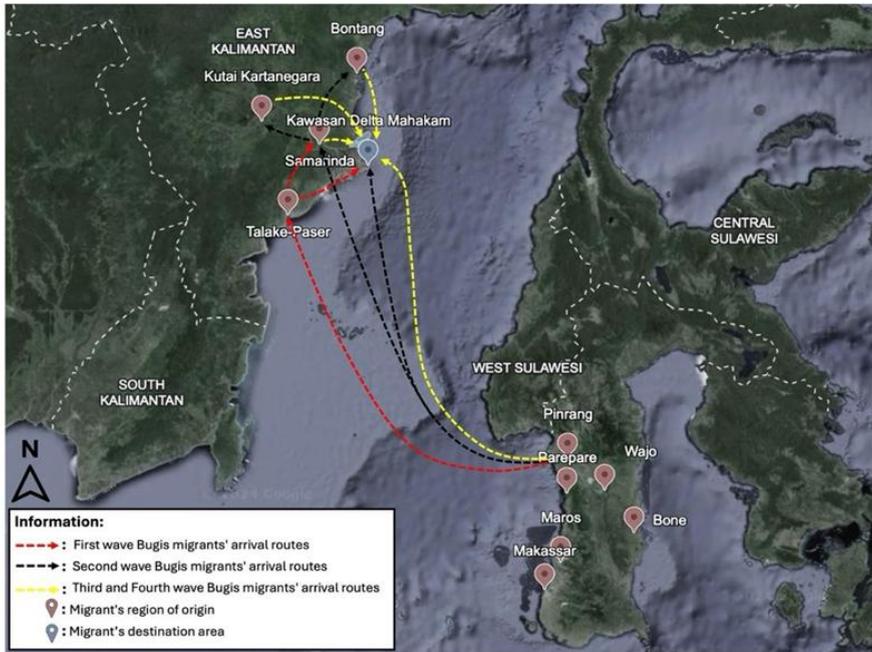


Figure 3. Map illustrating the arrival of Bugis migrants to the Mahakam Delta Region in different waves [Sources: Abidin, 1983; Pelras, 2006; Bakti, 2010; Lenggono, 2011; Primary data processed, 2023].

3.2.1 First wave Bugis migration to Tani Baru Village

The first settlement in the area that is today Tani Baru Village dates back to 1920, specifically on Tunu Island (Village Profile Book, 2019), which was settled by Bugis Wajo migrants who settled in Pemangkar village (current day Sepatin Village) in the mid-19th century (Bourgeois et al., 2002; Sidik, 2010; Lenggono, 2011). For security and economic reasons, they migrated to this area. They migrated into small groups consisting of several close relatives and nuclear family members, led by someone who has extensive experience in the group (*to maradeka*). The migrants' livelihoods are mostly based on fishing and a small part of the mangrove area is converted to crop land for seasonal crops or tree groves, especially coconuts.

In 1935, the settlement on Tunu Island (today located in the northern part of Muara Ilo Village) had to move due to a group of pirates who burned settlements and agricultural land at that time. The settlers moved to the Rugayya River around Tanjung Adjoe (north of Muara Ilo). In 1943, some local people (in Tanjung Adjoe) moved and opened plantations and settlements in Tani Baru Tengah and Tani Baru Dalam (South of Muara Ilo) (Tani Baru Village Profile Book, 2019). Haji Baso, a second-generation migrant in Tani Baru Village, claimed that his parents (the late Haji Dg. Malinta) were pioneer migrants as well as the first village head of the village. He recounts the initial conditions of the village and the livelihoods of the population at that time.

"... before Muara Ilo, my parents used to live in Tani Baru Dalam (South of Muara Ilo). Their livelihoods depended on their coconut groves, and they made copra. Then there are also others who became fishermen" (Haji Baso, Interview, August 2023).

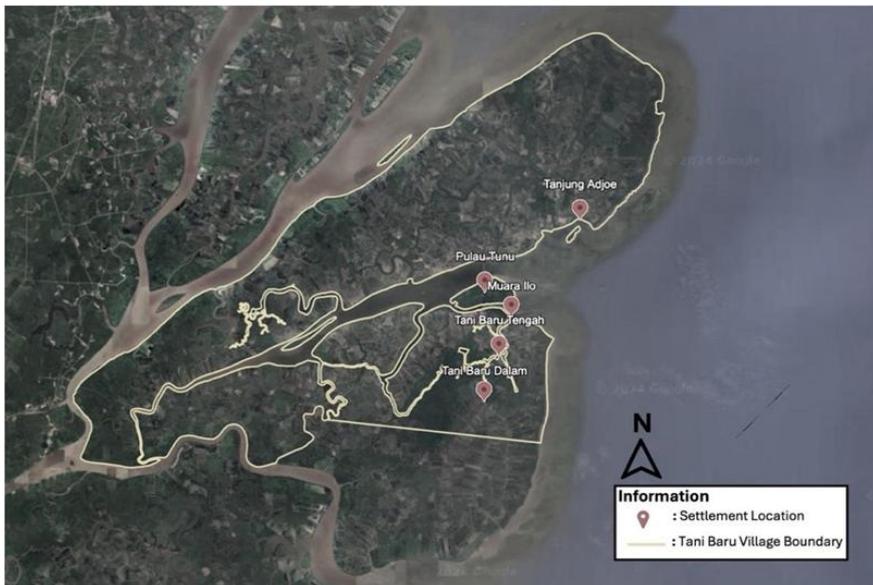


Figure 3. Location Map of Tani Baru Village Settlement [Source: Tani Baru Village Profile Book 2019; Primary data processed, 2023].

The main livelihoods of the people in this area were mostly farming (sweet potatoes, cassava) and coconut groves by clearing land in mangrove areas with makeshift equipment such as machetes, *kong*, hoes, machetes, etc. A small portion became *perenerol* or fishermen (fish and shrimp), with fishing activities carried out manually using wooden row boats made by themselves using fishing gear such as trawls, fishing rods, etc.

At the beginning of 1944, in line with the development of coconut grove activities in Tani Baru, there was a new wave of Bugis migration to the village from different regions in South Sulawesi (Bone, Wajo, Pinrang, etc.) as well as Bugis who had already settled in the Mahakam Delta (Muara Badak Village, Muara Pantuan, Sepatin, etc.). These are families or relatives who have established relationships on the basis of fellow "ethnic Bugis" with migrants who have settled earlier, thereby gaining easy access to resources. Village officials (village authorities at the time) easily gave permission for the new migrants to utilize the vast mangrove forests for plantation and agricultural activities and the abundant fisheries resource in the area.

3.2.2 Second wave Bugis migration

The second wave of migration, according to the oral and written accounts, took place between 1950 and 1965. This generation of Bugis migrants in Tani Baru appears to have had similar reasons as other Bugis people who moved to other areas across the region during the same period. These included Bugis migration to Bontang and the outskirts of Samarinda (around Bukit Soeharto) (Vayda & Sahur, 1985; Bakti, 2010). The reasons why Bugis migrants moved into this area was to escape the economic and military turmoil caused by the DI/TII rebellion in South Sulawesi led by Kahar Muzakkar. They followed advice from relatives or friends who told them of locations where forest areas could be converted into profitable agricultural land (Bakti, 2010).

Several villagers claimed that their parents left their home villages in South Sulawesi and migrated to Kalimantan around that period. Acong (48 years old), a second generation Bugis migrant admitted that his parents and some of his peers were

members of the *gorilla* who migrated to Kalimantan during this period to escape the chaos caused by the event. Gorilla is a local term for gerilya (guerilla war), signalling membership of the DII/TII rebel group.

"... anyway, that's the story, some of the old people used to be gorilla troops whether in Sulawesi. Then they went to Kalimantan on sailboats to hide and run away from the attacks of the army (Indonesian national army, TNI) ...arriving in Kalimantan, some went to the mainland, and some went to the estuaries" (Acong, interview, July 2023).

Similar to the earlier migrants already in the village, the second wave of migrants were initially oriented towards the agricultural sector as coconut planters and fishermen. Bugis leave their home villages for a particular area if it has potential resources to improve their lives (Vayda & Sahur, 1996). Another factor contributing to the Bugis high mobility rates in migration and the ease with which they can find work, especially in obtaining land to cultivate, is that there are already Bugis in the area where they migrate who voluntarily help the newly arriving Bugis both in shelter and finding arable land (Bakti, 2010).

3.2.3 Third wave Bugis migration

In the early 1970s until the 1990s, there was a massive wave of migration to the Mahakam Delta, involving not only migrants from Sulawesi but also Bugis migrants who had settled in areas around the Mahakam Delta such as Samarinda, Bontang, Tenggarong, etc., as well as Javanese from the north coast of East Java, such as Lamongan (Lenggono, 2011). These migrants arrived as the Mahakam Delta region began to operate several export fishery industries and oil and gas mining activities. These fishery companies cooperated with local fishermen who needed substantial funds for fishing activities around the Mahakam Delta and the Makassar Strait. The company provided credit in production facilities and infrastructure to local fishermen. In return, the company received the total production from the fishermen, who gradually paid their credit back to the company. The presence of "cold storage" companies, which require a large supply of fishery products and offer more attractive prices, is important for the development of fishing activities in the Mahakam Delta region.

The presence of cold storage companies resulted in a rapid increase in fisheries production on the east coast of Kalimantan and the proliferation of trawl net fishing vessels. The uncontrolled development and operation of trawl vessels can have devastating consequences to the marine biological resources, and cause unrest among traditional fishermen (Dutrieux, 1990). In order to save marine products and encourage increased production of traditional fishermen and avoid conflicts between trawl and non-trawl fishermen, the government issued Presidential Decree Number 39 of 1980 concerning the elimination of trawl nets. In Tani Baru, the trawl ban was merely momentum for the local community to develop new adaptation strategies. Some residents who had information on how to build ponds tried to expand by building new ponds (Lenggono, 2011).

Around the 1980s, new migrants began arriving in Tani Baru with the uniform goal of clearing mangrove forests by purchasing property or cultivation rights from the local residents, most of whom were fishermen. Others obtained concessions from *punggawa* and received permission from the local village officials to build new ponds by converting croplands or clearing mangrove forests. Lenggono (2011) reported that pond activities in the Mahakam Delta actually began around 1978, when several migrants from Sulawesi spread information about traditional pond-making. Among the local people who were interested in trying to put the information into practice was Haji

Buhairah in Tani Baru Village.

Haji Buhairah, a Bugis migrant who arrived in 1976 (the Third Migration Wave) from Bone, recounts the history of ponds in Tani Baru Village as follows:

"...around the 1980s, Haji Alim [of Muara Pantuan Village] made an experiment of spotted shrimp ponds (natural seedlings from the estuary). That's where we also tried to follow his lead. For my pond here, I made it on the cropland that was inundated with water [from the estuary due to the dam break]." (Haji Buhairah, interview, December 2023).



Figure 4. Pond and pond sluice gate (Photos credit: Muh. Ilham Basmar, August 2023).

Furthermore, Haji Buhairah recounted the traditional construction of the pond. He first cleared his unproductive (inundated) coconut grove to build a ½ m deep pond with makeshift equipment (hoe, machete, *kong* etc.). With satisfactory harvests at the time, many other coconut grove owners and fishermen tried their luck in opening new ponds.

"...it starts with making the embankment (using kong and hoes). Then while cleaning and digging about ½ meter deep channels [of empang], ... [we] cut down the trees (mangroves, bushes, coconuts, etc.) with a machete. Then we made a door (from wood) ... where the water comes in and out (from the estuary), ...After the pond was finished, then we waited for about 3-4 months before we harvested. Alhamdulillah, the results at that time were not bad in increasing our income... That's why this village (Tani Baru) has become all ponds, and you don't see any croplands anymore."

The clearing of mangrove forest land into ponds was initially carried out by migrants from Sulawesi, especially the Bugis who migrated to the Mahakam Delta (Sepatin, Tani Baru, Muara Pantuan). They made ponds only for family needs, complementing farming with fishing. The success of the pond business in Tani Baru at that time attracted other local people with capital and large land areas to build and expand ponds by lending money to their relatives to clear the remaining mangrove forest. These local creditors were known as *punggawa* or *puang haji*.

3.2.4 Fourth wave of Bugis migration

In the 1990s, *punggawa* began using excavators, replacing manual labor in pond construction (Sidik, 2010; Rachmawati & Latifa, 2020). Pond expansion reached its peak during the regional economic crisis of 1997-1998, triggered by the high exchange rate of the dollar against the rupiah. This resulted in a shrimp boom (Lenggono, 2011). The boom triggered massive in-migration to the Mahakam Delta region by migrants who wanted to try their luck in the aquaculture sector. Some aspired to become farmers or collectors, but many also hoped to get jobs as pond workers. As a result, the conversion of mangrove forests expanded rapidly, along with the conversion of the coconut groves and croplands.

This land conversion was closely related to the presence of several global fishing companies operating around the Mahakam Delta. Here, the *punggawa* (local landowners and moneylenders) responded to the global market demand for fishery products (especially tiger shrimp). Haji Ilyas (the Head of Tani Baru Village at that time) revealed that, some *punggawa* provided loans to people who wanted to try their luck in the pond business. This trend (re)created a model of patron-client relationship between the *punggawa* or pond owner (patron) and the farmer or pond workers (client). Pelras (2006) suggests that in the field of shrimp rearing in *ponds*, patron-client relationships play an important role. None of the farm owners cultivate their own ponds. They all delegate the task to a supervisor (pond keeper/worker) who is chosen from among trusted relatives or family.

Patrons usually possess scarce resources, such as ponds that are difficult to replace because they are highly valued by both parties. Clients, on the other hand, only have labor, which means they can be easily replaced by others. However, since the exchange is a combination of resources, none of the resources can be exchanged in isolation. As a result, the relationship between the two must be vertical, with the pond workers positioned as inferior and weak, and the owners as superior and strong. However, both parties consider the relationship to be in their favor. However, in the patronage tradition among the Bugis in Tani Baru the relationship can be terminated at any time, as long as the client does not owe the *punggawa*.

The patron-client relationship model between pond owners (patrons) and pond workers (clients) became one of the entry points for migration beginning around the period of the 1990s to early 2000s. Migrants arrived in Tani Baru with almost a uniform goal, namely, to become pond owners, collectors, of work in fishery products. Many also hoped to get jobs as pond workers. The new migrants that came to the east coast of Kalimantan and Sulawesi at that time were not only from Bugis ethnic groups but also included other ethnic groups from across Sulawesi (Mandar and Kaili), Flores, Java (especially Lamongan) and various local ethnic groups along the east coast of Kalimantan (Kutai, Tidung, and Banjar).

For most new migrants who are less financially prepared, there is little option than to lend money from a familiar lender to stay and improve their livelihood in the village. A new migrant would prefer a loan that is acquired easily with a repayment pattern that is not burdensome. In return, the client must sell his harvest or catch to the *punggawa* (patron) who has provided the capital.

3.3 Pond activities and mangrove cover change

3.3.1 Pond activities in Tani Baru

The Presidential Decree No. 39/1980 banned the use of trawlers in fishing activities was only effectively implemented beginning in 1983. Shrimp production from fishing declined after this ban and reduced the supply for the cold storage company. The trawl bans at that time became a momentum for local people to develop new adaptation strategies, by shifting their livelihood sources to aquaculture mainly by clearing the mangrove forests to build ponds.

The clearing of mangrove forests was originally carried out by migrants from Sulawesi, especially the Bugis who migrated to the coastal areas the Mahakam Delta (Sepatin, Tani Baru, Muara Pantuan). Initially they made ponds only for family needs, complementing activities in their coconut groves and captured fisheries. The success of the pond business in Tani Baru at that time created a new rush to pond expansion. Lenggono (2011) revealed that large-scale pond activities in the Mahakam Delta actually began in the early 1990s and reached its peak during the economic crisis in 1997-1998, triggered by the high exchange rate of the dollar against the rupiah

resulting in a shrimp boom. One informant revealed that the accelerated conversion of mangrove forests into ponds began in 1996-1999 when Indonesia experienced a severe economic crisis.

"During the crisis [in Indonesia], when Mr. Soeharto stepped down to be replaced by Mr. Habibie, the people in the village were all prosperous or rich, because the price of shrimp shot up dramatically. ... Some of them invested in building new ponds" (Haji Baso, interview, 2023).

However, different conditions occurred in the 2000s. Several residents of Tani Baru stated that since around the beginning of the 2000s the productivity of ponds in the village had decreased, as many shrimps in the ponds died and were affected by disease.

"In the early 2000s, many of the shrimps in the ponds died from diseases such as yellow head, black gills, white spots, etc. And until now there is no cure" (Haji Pudding and Haji Ilyas, Interview, August 2023).

The low productivity of the ponds in the village at that time forced farmers to try to develop strategies by building larger or new ponds, assuming that it would overcome the large number of shrimps affected by disease and increase production. In reality, the production of their ponds still did not increase, practically relying only on the harvest of spotted shrimp trapped in their ponds. Furthermore, they stated that the villagers suspected that the production failure was caused by waste from drilling activities and the gas pipeline built by *Total E&P Indonesia* around the village, which polluted the water in the ponds. Responding to this, the local people negotiated with the company.

"So often we made demands to Total, ... Once we sued Total regarding pirik (i.e. disease) ... Finally, we went to Tenggarong, Total drove us, ... there was also a team from Jakarta [conducting research related to pirik caused by the water and soil conditions in the ponds being too acidic] ... but that's the problem we don't know how to sample good water and soil. Because of what he [the Jakarta researcher] said, we just accepted it" (Haji Buhairah, interview, August 2023).

As a result of the meeting, some of the farmers in the village were encouraged to return to their profession as catch fishermen or other fisheries, and those who had enough money expanded in other businesses such as oil palm and trading outside the village, while some of them chose to migrate out of the village or seek better livelihoods in other areas.

3.3.2 Mangrove cover change in the Mahakam Delta area

Based on the Decree of the Minister of Forestry No. 79/Kpts-II/2001 and the latest Decree of the Minister of Forestry No. 6628/MENLHK-PKTL/KUH/PLA.2/10/2021 regarding the Map of Forest Area Stipulation Progress of East Kalimantan Province until 2020, more than 50% of the mangrove forest area in the Mahakam Delta has been converted into aquaculture ponds (KPHP Delta Mahakam, 2023). Changes and damage to mangrove cover in the Mahakam Delta were and continue to be caused by the rampant conversion of ponds within the mangrove ecosystem. Several studies confirmed that increasing shrimp export opportunities in Indonesia and the devaluation of the Rupiah in 1997-1998, dramatically increased the shrimp prices on the export market, and stimulated the shift of shrimp production methods from fishing to aquaculture (Bourgeois et al., 2002; van Zwieten et al., 2006; Persoon & Simarmata, 2014; Sidik, 2010).

In addition to the conversion of mangrove forests into ponds, another cause of environmental degradation in the Mahakam Delta is the increasing activity of oil and

gas waste disposal in the offshore part of the Delta. According to Hidayati & Setiadi (2006), the impact of oil and gas waste pollution by oil and gas explorers has damaged and reduced aquaculture production and damaged the mangrove ecosystem and its biota. This condition occurs mostly around the northern part of the Mahakam Delta, namely in Muara Badak and Anggana Districts at the mouth of the Mahakam River. Furthermore, another study concluded that by the 2000s, the decline in shrimp production was also due to the traditional pond management system, where the shift to large plots of ponds prevented the farmers from paying adequate attention to the water circulation system in the ponds (Rachmawati & Latifa, 2020). On the other hand, farmers considered that the decline in shrimp production was triggered by oil and gas company activities such as pipeline construction and oil and gas drilling near their ponds. This condition has caused some farmers in the village to return to their old profession as fishermen and sought other livelihoods outside the village.

Some of the ponds were abandoned and have become naturally overgrown with mangroves. The decline in pond area is also caused by losses in pond management, including a decrease in pond productivity, a decrease in the price of fishery products, an increase in the price of shrimp seedlings, and the relatively expensive cost of repairing embankments. As a result, some ponds are no longer active in operation, indicating pond closure and natural regeneration of mangrove vegetation in ponds that are no longer in use. Our field observation in 2023, found several new mangrove vegetation colonies on the inside of the pond due to the natural regeneration and reforestation activities within the ponds.



Figure 5. Natural mangrove ponds and mangrove reforestation activities in 2023 in Tani Baru Village (Photos credit: Muh. Ilham Basmar (left) and Ramlah (right), August 2023)

3.4 Typology and push and pull factors of Bugis migration in Tani Baru village

This research shows that migration typology and patterns are essentially contextual, including the causes of migration or the push and pull factors of migration. This study aimed to contextualize internal migration in Indonesia, especially the migration of ethnic Bugis from South Sulawesi to the Mahakam Delta in East Kalimantan. We connect migration patterns to livelihoods and landscape changes in migration destination areas.

In Tani Baru, the migration was both forced and voluntary. Forced migration occurred during the colonial period (pre-independence) and the DI/TII rebellion (1950-1965) unfolding in South Sulawesi. The migrants arrived in Tani Baru to escape the economic and military chaos caused by the war and DI/TII rebellion in South Sulawesi. Furthermore, during these turbulent and violent eras, forced migration reshaped access to agricultural/plantation lands. Diminishing employment opportunities meant that in order to obtain a better livelihood, the Bugis people at that time were forced to migrate or leave their home villages.

In the 1980s, as pond activities began to develop in the village, a wave of migrants entered Tani Baru village voluntarily for economic reasons. This type of migration was carried out not only by Bugis migrants from South Sulawesi but also involved Bugis migrants who had settled in Samarinda, Bontang and other areas around the Mahakam Delta. They migrated using their own expenses aiming to become farmers or collectors of fishery products, but many also migrated in hopes of working in aquaculture.

The following discusses some of the main push and pull factors that have been identified in Tani Baru Village. Push factors originate from the area of origin that force people to migrate and tend to be negative, representing the shortcomings of conditions at the area of origin. Meanwhile, pull factors originate in the destination areas attracting people to migrate. These elements tend to be positive, showcasing advantages in the destination region (Lee, 1966; Bilborrow, 2002; Menton & Cronkleton, 2019).

Table 2. Push and Pull Factors of Bugis Migrants in Tani Baru Village

Push Factors (Region of Origin)	Pull Factors (Destination Area)
<p>Conflict</p> <ul style="list-style-type: none"> Armed conflict during the Dutch colonial period and the DI/TII rebellion 	<p>More peaceful</p> <ul style="list-style-type: none"> Relative absence of armed conflict in the Mahakam Delta Region Region is coastal and isolated
<p>Land scarcity</p> <ul style="list-style-type: none"> Lack of access to agricultural/fishing land 	<p>Land abundance</p> <ul style="list-style-type: none"> Land available for agriculture/fisheries sector Easy to obtain and relatively cheap
<p>Limited economic opportunities</p> <ul style="list-style-type: none"> Lack of job opportunities 	<p>Perception of better economic opportunities</p> <ul style="list-style-type: none"> Easy to get a job (fisherman, farmer, etc.) Economic boom (shrimp booms) Lack of labor in the pond sector

[Source: Primary data processed, 2024]

3.4.1 Push factors Bugis migration to Tani Baru village

Historically, the people of South Sulawesi, especially the Bugis ethnic group, have always been amenable to migrating, as evidenced by the centuries of Bugis outflows, even in times of relative stability. Abidin (1983) concluded that the existence of wars between kingdoms, fierce competition, trade monopolies by the VOC, chaos, and lack of employment and unfair treatment by local rulers are factors that influenced the increasing number of Bugis migrants.

This includes the Bugis people who came to the Mahakam Delta area such as Tani Baru. For security reasons and to escape the chaos of the colonial period (pre-independence), the war between kingdoms and the DI/TII rebellion (1950-1965), migrants at that time chose to migrate to the relatively safe and isolated Mahakam Delta region. In addition, the Bugis migrants left their home due to the lack of income. Several informants suggested that they came to Tani Baru because income in their home villages was limited, making it difficult to fulfill daily needs. This was mainly caused by the lack of access to arable land.

3.4.2 Pull factors Bugis migration to Tani Baru village

The pull factor in this case is closely related to the geographical condition of Tani Baru in the Mahakam Delta area. The Mahakam Delta is a wetland area dominated by mangroves and nipah palms (Rachmawati & Latifa, 2020). This fan-shaped delta is mostly sedimentary soil with endemic mangrove species (*Avicennia sp.*, *Rhizophora sp.* and *Nypah sp.*). The potential for high productivity in the Delta area is supported by the large amount of deposited organic material carried by the river, causing this area to

have high biodiversity, such as abundant shrimp, shellfish, and crab species (Cahyadi, 2011).

Historically, migration to Tani Baru occurred in the early 19th century, with most people working as farmers, cultivating coconut and other secondary crops. Some of them also worked as fishermen. Catches such as shrimp and fish were quite abundant, given the dense mangrove forests that served as ideal breeding grounds for shrimp and fish. Nevertheless, due to its remoteness until the early 1970s, the population of the Mahakam Delta was sparse. That all changed with the beginning of oil exploitation and production. Locals were offered new job opportunities as day labourers, supervisors, speed boat drivers, security guards and others. As employment opportunities became more important and could not be fulfilled by the local population, there began to be a wave of migration from Sulawesi in the 1970s. Another significant event during this period was the opening of the first cold storage facility for shrimp preservation in East Kalimantan in 1974. By providing access to international markets for local produce, especially shrimp, it offered better prices and a stable market and credit access for local fishermen, such as by providing credit to certain fishermen to upgrade their fleets and equipment. The cold storage facilities established by the company have had a major impact on the local economy.

The presence of cold storage companies propelled an increase in fishery production on the east coast of Kalimantan and the proliferation of trawl net fishing vessels. The uncontrolled expansion of trawlers pushed the national government to issue a Presidential Decree (No. 39/1980) to ban the use of trawlers, resulting in a decline of shrimp production from fishing. Consequently, a replacement emerged to meet the ever-increasing demand for shrimp in the international market. Thus, the trawl ban became a momentum for the shifting livelihoods by converting mangrove forests into ponds. The first mangrove forest clearing started in 1974 for milkfish farming in Muara Jawa and Anggana by Bugis migrants (Bourgeois et al., 2002; Sidik, 2010), for shrimp ponds in 1978 in Muara Pantuan (Lenggono, 2011) and Tani Baru in the 1980s, some Bugis migrants had passed on information about traditional pond construction techniques (Haji Buhairah, interview, 2023). Migrants began arriving in Tani Baru with almost uniformly oriented goals of becoming farmers, pond guards or laborers and other jobs that support pond activities.

The cold storage companies required a sustainable and larger supply of fisheries products, through their containers, began to provide financial assistance to aquaculture farmers to ensure the supply of fresh shrimp. The large-scale aquaculture activities in the Mahakam Delta actually started in the early 1990s, reaching its peak during the economic crisis in 1997-1998 triggered by the high exchange rate of the dollar against the rupiah (Lenggono, 2011). The boom in turn led to a massive wave of migration to the Mahakam Delta.

The Bugis who migrated to Tani Baru are now mostly engaged in the fishery sector. After several years in the village, the Bugis finally reaped the rewards of their increased level of welfare. The Bugis migrants began to earn a considerable income from the fisheries and trade sectors, which improved their welfare. Informants generally expressed that they experienced satisfaction after migrating to Tani Baru.

3.5 The relationship between migration to livelihoods and landscape changes in the Mahakam Delta

The dynamics of Bugis migration to the Mahakam Delta, particularly in Tani Baru, have had a significant impact on livelihoods and changes in these rural landscapes. Delving into the livelihood trajectories reveals the flow of activities related to livelihood sources of Bugis migrants in Tani Baru. By doing so, we were able to describe the strategies of

Bugis migrant households seeking sources of income based on the migrant life histories we collected. These are summarized in Table 3.

Table 3. Changes in Livelihoods of Bugis Migrants in Tani Baru Village

Early Livelihood (1920-1985)	Livelihoods during the Shrimp Boom (1986-2000)	Livelihood at the time of Research (2023-2024)
<ul style="list-style-type: none"> • Farmer/gardener • Fisherman • Collectors of capture fisheries products 	<ul style="list-style-type: none"> • Farmers • Farmers • <i>Punggawa</i>, Large collectors of capture fisheries and pond products 	<ul style="list-style-type: none"> • Fishermen, Farmers • Fishermen, Farmers • Fishery collectors, fishermen, farmers

[Source: Primary data processed, 2024]

The first settlements in Tani Baru dates back to 1920 and were inhabited by Bugis Wajo migrants who had settled in nearby Pemangkar village since the mid-19th century (Bourgeois et al., 2002; Sidik, 2010; Lenggono, 2011). The livelihoods of these pioneer migrants were largely based on capture fisheries, and a small part of the mangrove area was converted to agriculture or coconut groves. Furthermore, during the rebel conflicts following National Independence in South Sulawesi (1950-1965), Bugis migrants came to the Mahakam Delta to escape the economic and military turmoil caused the DI/TII rebellion. Following advice given by relatives about other locations where forest areas could be converted into profitable agricultural land migrants were initially oriented towards the agricultural sector and capture fishing, similar to earlier migrants already in the village. This early wave of migration had little impact on the ecology of the Mahakam Delta.

Livelihoods and environment changes in the 1970s changed due to the arrival of international companies that began to operate in the Mahakam Delta region. These consisted of export fishing industries (the so-called cold storage companies) and oil and gas mining operations. The cold storage companies stimulated a rapid increase in fisheries production and widespread operation of trawl fishing vessels. The 1980 Presidential Decree banning trawl nets became a momentum for the local farmers to shift to aquaculture. The success of the pond business in Tani Baru at that time accelerated the expansion of pond areas by clearing remaining mangrove forest. This was facilitated by the *punggawa* or *puang haji* who provided the credit and loans to enter into these industries. Here we can see how international companies activated and intensified capitalist relations of production, from production mainly for their own consumption to production as a commodity sold almost exclusively for international markets. The new livelihoods also deepened capitalist relations among local people now dependent on credit to jump-start their commodity production, with some taking up the role of creditors and the rest (most migrant farmers and fishers) became lenders and workers. The state policy of banning the trawl became a double-edged sword. On the one hand it reduced significant devastation to fishing grounds, but on the other hand, it stimulated mangrove forest clearing throughout the Mahakam Delta.

The the 1990s the pond economy reached its peak during the regional economic crisis in 1997-1998, with pond construction beginning to use excavators in place of manual labor. The boom once again triggered a massive in-migration to the Mahakam Delta, many of whom hoped to get jobs as pond workers, providing more labor for aquaculture expansion. As a result, the conversion of mangrove forests for pond activities once again expanded. It was significant that few mangroves stand remained, and the remaining ones were adjacent to recently cleared agricultural lands being converted into ponds. Once again, the global dynamics had notable effects on the Mahakam Delta, with a financial crisis accelerating yet again mangrove forest clearing

as well as the loss of agricultural land and livelihoods. By this time, the whole village depended on aquaculture driven by global commodity chains.

Such intense ecological pressure has caused a rapid degradation of the previously dense and extensive mangrove forest stands. It was reported that in 1986, as many as 288 hectares of the Mahakam Delta mangrove forest were converted into ponds. Then in 1998 it became 18,300 hectares and in 2001 the area of converted mangrove land was estimated to have reached 85,000 hectares (Sidik, 2010). Aquaculture activities have significantly influenced changes in the rural landscape of the Mahakam Delta region.

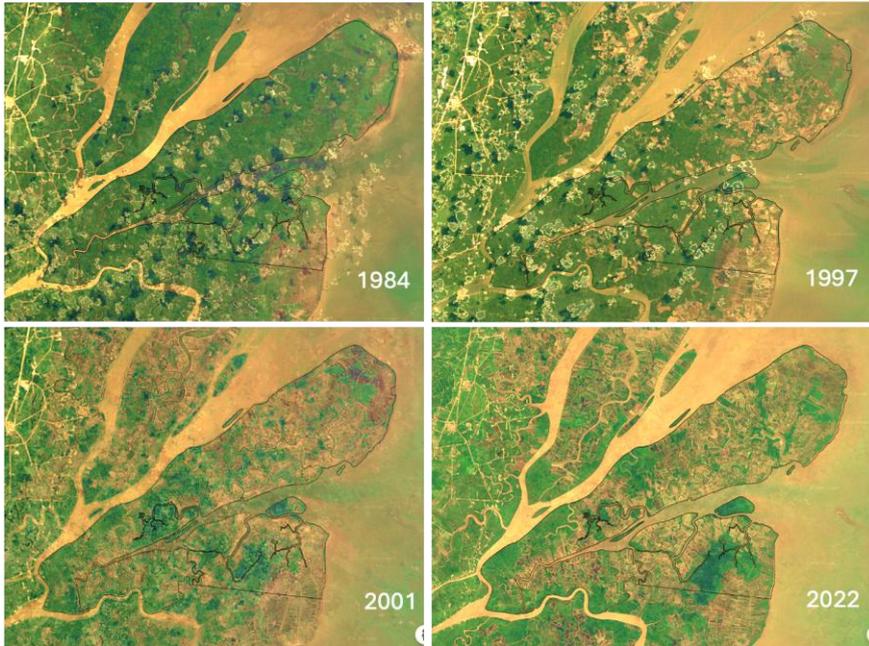


Figure 6. Illustration of Mangrove Forest Degradation in Tani Baru Village in 1984, 1997, 2001, 2022 [Source: by Google Earth]

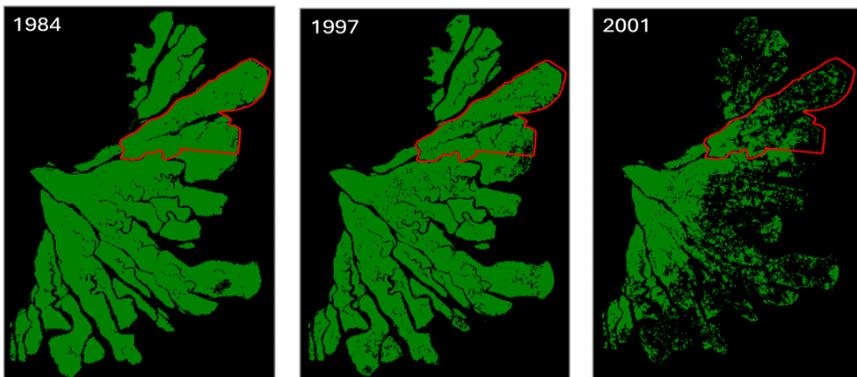


Figure 7. Illustration of Mangrove Forest Degradation in Tani Baru Village in 1984, 1997, 2001 [Source: Munajat Saputra, 2024]

The high rate of mangrove deforestation and the operation of oil and gas mining in this village have implications for ecological problems, such as damage to soil texture and structure, erosion, abrasion, sedimentation, and water pollution and decreased biodiversity. The degradation of mangrove ecosystems has led to a decrease in pond productivity, the emergence of various diseases that attack shrimp, the difficulty of obtaining natural shrimp hatchlings, coastal abrasion, and widespread sedimentation. Deterioration of delta conditions made it difficult to obtain fresh shrimp supplies, resulting in production failures. The production decline led many to abandoned ponds, which have been left unmanaged, and their owners have chosen to return to fishing or migrate out of the village. Thus, some inactive ponds began to grow mangroves naturally. Ironically, the political ecology of the Mahakam Delta led to overexploitation and a livelihood collapse has stimulated the beginning of ecological recovery, dynamics of which will benefit from future studies.

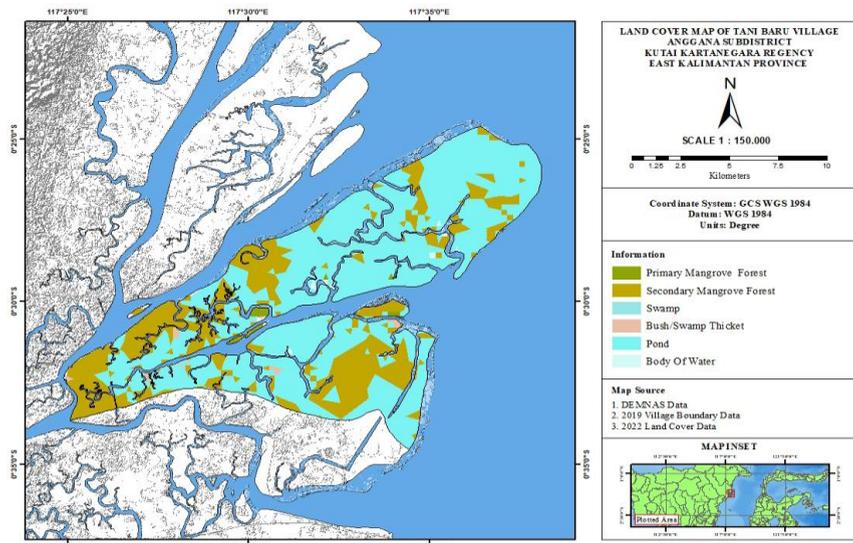


Figure 8. Land cover of Tani Baru Village in 2022

4. CONCLUSION

This study contextualized the internal migration patterns in Indonesia, especially with direct empirical engagement on the migration dynamics of ethnic Bugis (South Sulawesi) to the Mahakam Delta region (East Kalimantan). The paper also connects migration to livelihoods and landscape changes in migration destination areas.

Bugis migration in Tani Baru took place in both forced and voluntary manners. Forced migration occurs for security and economic reasons, namely, to escape the chaos of colonial periods and post independence eras around the DI/TII rebellion. This resulted in the lack of employment opportunities and access to arable land. From the 1970s to the 2000s, the arrival of export fishery companies, the operation of oil and gas mining in the Mahakam Delta, and the development of aquaculture activities in the village led to a wave of voluntary migration to Tani Baru. This wave of migration was carried out not only by the Bugis migrants from South Sulawesi but also involved Bugis migrants who had settled in Samarinda, Bontang and other areas around the Mahakam Delta. This migration was attractive due to the geographical conditions and natural potential of Tani Baru, an isolated village relatively safe from armed conflict (war and

rebellion), and with abundant natural products, especially in the fishery sector. These waves of migrants later become necessary labor for the expansion of the global commodity chains with the arrival of international companies. It also initiated widespread mangrove forest clearing across the Mahakam Delta. Accelerated by the state policy (trawl banning) and global financial crisis in the late 1990s, the aquaculture intensified and stimulated a significant change in livelihood trajectories and environmental makeup of the Mahakam Delta.

Aquaculture activities have significantly influenced landscape change in the village. The high rate of mangrove deforestation and the operation of oil and gas companies in the village have implications for environmental problems, such as damage to soil texture and structure, erosion, abrasion, sedimentation, and water pollution and decreased biodiversity. The degradation of mangrove ecosystems has led to a decrease in pond productivity, the emergence of various diseases that attack shrimp, the difficulty of obtaining natural shrimp hatchlings, coastal abrasion, and widespread sedimentation. The accumulation of these issues resulted in a production collapse, forcing the business to leave the village. This situation started in the early 2000s, causing many areas of abandoned ponds, which were not managed properly, and pushed the local people to return to fishing or try to seek their fortune by migrating out of the village. As a result, some inactive ponds began to grow mangroves naturally. Ironically, the political ecology dynamics of the Mahakam Delta that led to its overexploitation and livelihood collapse stimulated the beginnings of ecological recovery, namely a dynamic of which will benefit from future studies.

Research has shown a variety of approaches to explore internal migration that seek to examine the relationship between migration and livelihoods and landscape change in migration destinations. However, this research is limited to a study of ethnic Bugis migration and their livelihoods in migration destinations. Further research is needed to examine the dynamics of livelihood relations between destination and origin areas of the migrants.

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