Transformation of Built Capital of Transmigrant Communities in Indonesia: Case Studies in Central Sumatra

インドネシアの移住コミュニティにおける建設資産の空間的変遷：中央スマトラの事例研究

ヒチェリ・ラプラス・ヘゼンデ*・落合知帆**・岡崎健二**  
Ricelli Laplace Resende *・Chiho Ochiai**・Kenji Okazaki**

インドネシアの移住プロジェクトは、過密地から過疎地への大規模な住民移転により人口密度の均衡を図り、農地の再整備や天然資源の利用等を推進する目的で行われてきた。本研究では、移住プロジェクトによる建築資産（ビルド・キャピタル）の現状および再定住に際して生じた問題に対処するために移住者が行った環境適応を明らかにすることを目的とした。中央スマトラの2地区を対象に、計211世帯へのアンケート調査と実測調査を実施した結果、Sitiungでは、住宅の質やインフラが比較的整備された居住水準に変化したのに対し、Kumpehは自然環境（洪水）の影響により比較的遅れた居住水準に留まっている事が明らかになった。

Keywords: Built capital, Community capitals, Housing transformation, Resettlement, Transmigration
建設資産、コミュニティ資本、住宅増改築、再定住、トランスマイグレーション

1. Introduction

1-1. Background and Purpose of the Study

For over seventy years since its independence from Dutch colonization (1945), the government has been promoting an internal migration and resettlement project based on agrarian rural reform: capital-intensive development; large-scale migrations; and the intensified commercialization of agriculture. Transmigration focused on moving low-income and landless populations from densely populated areas like Java and Bali Island to less developed areas like Papua, Kalimantan, Sulawesi and Sumatra Island. Indonesian transmigration projects have been sponsored by massive international agencies such as the World Bank and the Asian Development Bank. And Between 1979 and 1984, it resettled almost 2.5 million people, around 535,000 families 1) . This process had huge environmental and social impacts on the people and the land resulting in many controversies. Inaccessibility and isolation of resettlement location or unfertile land; deforestation and conflicts between transmigrants and local people are common critics.

In any resettlement project, one of the most important elements for the good quality and sustainability of new communities is the quality of built capital 2). Built capital of transmigration projects includes residential land, infrastructure and housing. These physical structures influence directly in living conditions, being a key factor for the adaptation process of these communities. For improving living conditions and adapt to resettlement, dwellers usually make transformations in their housing and surroundings, changing the built capital quality by their own efforts. Therefore, this paper explores how built capital and physical transformations made by dwellers plays an important role in communities' adaptation process. The two main objectives of this study are: 1) To understand the current condition of built capital and living conditions in transmigration resettlement projects; 2) To understand physical transformations in built capital made by transmigrants to cope with challenges and adapt to the new environment.

1-2. Data collection and Methodology

By using Community Capital Framework (CCF), being a Capital any type of resource or assets capable of producing additional resources 3), as a base and analyzing the focus in built capital, two transmigrant communities were investigated. The study aims to gain greater understanding of long-term adaptation strategies and physical transformations that those communities performed to adapt to resettlement and improve their living conditions. Built capital was studied through three main indicators: residential land, housing and infrastructure.

The study targeted two transmigration sites in Sumatra Island. Sitiung is the first, located in West-Sumatra province, it is the largest transmigration project undertaken by Indonesian government; and the other is Kumpeh, in Mekar Sari village, Jambi province. Sitiung is a dam-induced displacement transmigration project from 1977 that resettled 3,000 families coming from same village in Wonogiri, Java. Kumpeh date from 1986 and resettled 500 families from different backgrounds, including 194 Javanese families and 306 local transmigrant families, located in a swamp area—it is an oil palm plantation-oriented settlement.

Field surveys were conducted in both sites between July 2015 and November 2017. Analysis drawn from two primary surveys, a questionnaire survey and measurement survey, are complemented by in-depth interviews, quantitative data analyses and field
observations (see Fig.1). In total, 102 households were surveyed in Sitiung and 109 households were surveyed in Kumpeh, in total of 211 households. In addition to field surveys, interviews with governmental representatives from Jakarta transmigration office and local governmental offices in Sumatra, and resettlement's community leaders were conducted.

Surveyed area in both sites targeted area where is located the last remaining original transmigrant house and land (see Fig.2). Measurement data was collected housing materials and size, quality of construction and durability of structure. Changes in residential land were studied, as well as access to infrastructure (access to electricity, water, roads, cooking fuel, sewage and telecommunications). Infrastructure and housing durability were categorized according to Indonesian building construction guidelines and later utilized to calculate living conditions of resettlement. Living conditions are analyzed as a result of housing durability and infrastructure combined, resulting in temporary, semi-permanent or permanent living conditions 4) 5).

2. Resettlement conditions

In Sitiung, under guidelines specified by the government each transmigrant family was promised a house of 36m² in a 2,500 m² residential plot land and 2 hectares of crop land (although residents did not receive the amount of crop land promised by the government, and average land holding is 1.25 hectares). Interviewees highlighted the fact that living conditions were very poor when they resettled. The land condition was very bad due to deforestation and floods, environmental conditions were not favorable and it was hard to grow food. 85% said the main issue when they resettled first was the lack of infrastructure, therefore, efforts by transmigrants to improve their living conditions were crucial to the improvement of resettlement. The government provided one year of assistance (monthly ration of food, seeds and working materials) that later was extended to three years due to hard living conditions in the beginning of resettlement.

Similar to Sitiung, transmigrants in Kumpeh received from the government a wooden house of 36m² in a 2,500 m² residential plot land and 2 hectares crop land. However, the village is located in a swamp area with chronic flooding, many dwellers lost their houses and land in big floods in early 90's and 2000, forcing many of the transmigrants to evacuate or abandon the site. Problems with flood and environmental conditions were already known by the government, this is evidenced by the fact that provided original houses in Kumpeh were stilt in one meter height, different from Sitiung. Added to the floods, resettlement suffered from lack of infrastructure, bad living conditions, and poor soil conditions, despite that, unlike Sitiung, the government only gave 18 months of monthly assistance.

3. Transformations in residential land

In Sitiung, during the first 20 years, 10% of transmigrants of surveyed area gave up in the resettlement and went back to Java or tried a better life somewhere else (selling their land to spontaneous migrants that came later on). Today, 23% of dwellers are spontaneous migrants, and residential land transformations to accommodate them represents 17% of total modifications, including dividing land to sell, renting land and house or opening new land.

In Kumpeh, total of 40% of transmigrants of surveyed area gave up, going back to their original village or somewhere else. This number is greater than in Sitiung mainly due to the flood problem and hard to improve their living conditions and physical environment. Due to large quantity of cheap land available to sell from transmigrants moving out, spontaneous transmigrants moved in to the resettlement, and it was found that they comprise 21% of residents. Residential land transformations to accommodate new migrants represents 30% of total modifications, including dividing land to sell or renting land and house.
4. Transformations in infrastructure

For both sites, drainage system, paved roads, rain water canalization, and access to drinkable water was not provided. After some years, government provided electricity and some institutional infrastructure (like schools and governmental buildings) but the rest of infrastructure related to living conditions of dwellers were made by transmigrants themselves.

Sitiung is a special case where the entire community was resettled together from Wonogiri, therefore, community ties are very strong. As a united community with the same background, and with energy to make improvements in their new home, dwellers started to develop infrastructure by themselves (as part of Gotong Royong/community based activities) instead of waiting for external assistance. One of the first modifications they made was building rainwater collection and canalization along the roads (1979), at the same time improving roads conditions. This was an emergency necessity since they suffered from floods and dwellers said that every time during rainy season the water would enter their houses and caused damage. During these improvements, the community also built common facilities like watching/gathering posts (for community safety), and storage facilities to store common materials for ceremonies like weddings or festivals. Access to water was also very scarce, there was one well only for every five families; therefore building wells for themselves and for their neighbors was a priority during the first years.

Today, 100% of households have access to electricity, 84% has access to piped water, 93% have septic tank and 92% has access to paved roads. Problem with initial floods were mitigated, and 85% of dwellers have access to good infrastructure according to categories explained in the methodology. As a result of improvements made by the dwellers, and installation of infrastructure later by the government, electricity covers the whole area, and more than half of the dwellers have access to gas, septic tank, telecommunications, piped water and paved street.

Like Sitiung, the Kumpeh project lacked sufficient infrastructure and access to electricity, drainage system, paved roads, rain water canalization, and even drinkable water. Infrastructure related to living conditions of dwellers were made by transmigrants themselves individually, and no community-based construction works were conducted. The lack of community based construction in Kumpeh can be related to the fact that many dwellers gave up in the resettlement and dwellers change rather quickly, also, everyone come from different backgrounds and places, making it more difficult to create community ties. After improvements, the village has today more access to piped water (59%) septic tank (74%) and electricity (100%). But only 18% have access to paved roads, mainly due to the flooding problem, this limited the improvements that could be made by dwellers, and today, problem with floods were still not mitigated. 77% of dwellers live with poor infrastructure, meaning access to only oil for fuel, electricity and kitchen, in contrast with maximum infrastructure that includes access to piped water, gas, septic tank, paved roads, telecom, electricity, kitchen, bathroom and W.C. (see Fig.3).

5. Transformation in housing

Key findings about housing transformation in Sitiung showed that house size increased from 36m² to average 130 m² in order to accommodate family needs (see Fig.4), and that the material structure of the houses also changed with time, with most houses now made of confined structure (64%) often confined concrete block, and only 18% of the houses still containing elements of the original wooden structures, while 19% are built

![Fig.3: Infrastructure patterns in 2017](image)

![Fig.4: Example housing transformation in Sitiung](image)
with mixed materials of wood, brick and concrete block. In fact, 82% of the houses are completely reconstructed, and only one original house remains intact. Modifications made during the first two decades were performed by dwellers themselves with help from the community, while in the last two decades dwellers paid construction workers to build their houses, improving the quality of the house and structure.

In Kumpeh, houses increased from 36m² to average 86m² (smaller than in Sitiung) and that dwellers have their houses now made of confined brick (35%), non-confined brick (10%), wooden structure (29%), and mix structure (26%). Due to the flooding problem and the conditions of original transmigrant housing, today, 88% of the houses are completely reconstructed, and only one original house remains intact, while in 11% of houses is still possible to see traces of the original house. Modifications were performed by dwellers themselves with help from neighbors for most cases, only for the last decade (concerning quality brick houses) were built by construction workers, therefore structural quality is not as high as in Sitiung (see houses in Fig.5).

6. Living conditions

After all these transformations, dwellers improved their living conditions compared to initial conditions of resettlement. Based on Indonesian standards and with data analysis made in infrastructure and housing, permanent living conditions means: access to infrastructure category I or II (discussed in previous section) and high durability of the houses (meaning confined structures and built with concrete block or bricks). Temporary living conditions means infrastructure category IV or V with houses made of wood or temporary materials.

In Sitiung, 59% of dwellers are found in permanent-living conditions, in contrast, 83% of dwellers of Kumpeh are still found in temporary-living conditions (although many houses are made with bricks, lack access to infrastructure made conditions fit into worse classification). Therefore, even after 30 years of resettlement, parts of the village are still found almost in the same situation of 1986. Regardless outcomes, dwellers made many efforts to improve their built capital and living conditions, detailed interview surveys revealed that transformations strongly correlate to dwellers ability to cope with challenges in relation to the adaptation process (see Fig.5).

7. Conclusion

Dwellers and communities improved their built capital with time. Transmigrants modified their residential land to accommodate spontaneous migrants and many dwellers gave up in the resettlement in Kumpeh and sold their land. Modifications in infrastructure were mainly made by themselves. Size of the houses increase and materials and conditions improved with time. Possibility to improve built capital was important to determine if dwellers give up on resettlement or stay, but differences in environmental conditions and transformations in built capital influenced outcomes and present living conditions of resettlements. Overall, transmigrants that stayed in the resettlement and could cope with challenges and adapt, are better off than they were in their previous village.

References

4) Republik Indonesia (2002). Tentang pedoman teknis pembangunan rumah sederhana sehat (rs sehat), keputusan menteri perumkiman dan prasarana wilayah (403/KPTS/M/2002).