Effects of the Studentification Process on Spaces Around a Campus: Transforming Suburban Areas
Retno Susanti, Sugiono Soetomo, Imam Buchori

Abstract— Shifting of campuses from the city centre to suburbs results in the process of studentification. Consequently, the rural landscape and native community in suburban areas are faced with a massive influx of students with diverse characteristics. Moreover, various investors enter this field to capture the economic opportunities that arise owing to the significant needs of students. Changes in the area surrounding a campus, collectively called studentification, vary depending on the local context. It is crucial to investigate such occurrences in suburban areas, with regard to agrarian communities, since they relate to changes in the character of the region and those in the approach adopted to project infrastructure needs. This study aims to identify the transformations that have taken place during the studentification process at the Tembalang Undip campus over the past 40 years. This transformation is examined based on the perspective of the individuals who see, feel, and experience the changes in the Tembalang area following the process of land acquisition, construction, and operation of the said campus. The process of developing the surrounding area has been observed, recorded, and confirmed via in-depth interviews with informants. This study’s results indicate that the transformation due to the studentification that began with the process of transfer of land ownership in the area, in conjunction with the migration of residents (in and out), economic changes, increased changes in built-up land, changes in the function and condition of buildings, shifting social interactions, and changes in the environmental landscape. In this respect, transformation occurs regarding both the physical and non-physical aspects. The indigenous people who adapt and take up the opportunities presented by studentification still survive and can improve their welfare, whereas people who are unable to adapt are compelled to move outside the area. Studentification shows symptoms of propagating out, as long as there are no physical and/or natural obstacles. Communities that are better prepared in this regard can pursue better opportunities to benefit from studentification.

Index Terms— campus, changing aspects, effects, local people, studentification, suburbs, transformation

1 INTRODUCTION

A university is a place wherein a large number of students are concentrated, which subsequently drives economic power and ultimately causes its surrounding region to undergo various forms of transformation. The aforementioned process is called studentification, a term first coined by Smith in 2002 [1]. Moreover, to this day, much research has been conducted on studentification, a form of gentrification, i.e. a process that occurs when a proportion of the student population becomes significant in an area, thus influencing the surrounding environment and transforming the same [2],[3].

The relationship between the existence of a campus and the development of a city is widely known [4],[5]. A campus, which grows in parallel with the city’s development, is usually located in the city centre [6],[7],[8],[9]. Nevertheless, some campuses develop first and are followed by developments in the surrounding area [10]. Thus, these campuses are in the middle of an area with urban characteristics. In a city with many campuses, its development can lead to the creation of an "education city", wherein several students live. Thus, many houses and/or rooms for rent could be more expensive; living costs are higher; cosmopolitan features are apparent; and numerous jobs are related to student needs and education in general [11].

For a city with such a campus at its centre, it becomes more challenging to expand the area due to the limited land available. Moreover, the existence of a campus in the city centre has the potential to cause urban problems, such as traffic jams and environmental concerns [12].

Studentification is a process that is more responsive to real stimulus and not intended to improve the quality of an area on a long-term basis. Doing so is possible at the beginning of the studentification process, which is considered as improved environmental quality. However, typically, the process of degradation follows, both physical and non-physical [13]. In the specified context, the government arranged for the development of the university and directed suburban areas to avoid environmental issues. The problem that arises subsequently is that the suburbs comprise not only vacant land and plants, but also certain indigenous people have lived there for a long time. Thus, campus development along with the arrival of students, lecturers, administrative staff, and activities will certainly intersect with the local native community.

The university’s mission is to elevate public interest through education. Further, it aims to advance social mobility, develop new technology, contribute to the continuity of culture and creativity, inform the scope of its field, and better prepare citizens to participate in such progress [14]. In old state university campuses in Indonesia, the number of students is increasing in line with the need to improve the quality of education for the younger generation. Based on the record of higher education in Java, in 1949, the University of Gajah Mada (UGM) was established in Yogyakarta, located on the southern side of Java. This campus is a place for young

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people to study, especially in Central Java Province and Yogyakarta Special Region Province. However, students from all across Indonesia come to study here. Of course, its educational capacity is not enough. Thus, receiving an educational seat at the UGM entails fierce competition among students. In 1957, Diponegoro University (Undip) was built at the centre of Semarang to facilitate the young generation in the northern regions of Java, in particular, and Indonesia, in general. The development of various science fields is very rapid, and students demonstrate high interest to continue their education at Undip, thus encouraging the availability of adequate learning facilities, which naturally requires considerable acres of land. In 1978, the development plan for the Undip campus was implemented in the Tembalang region, a suburb of South Eastern Semarang. Since then, the construction and removal of the Undip campus has been carried out in stages and is ongoing at present.

Each year, the Undip campus accepts around 10,000 new students, though the number of active students on campus every day is around 30,000. The main trigger for studentification is the demand for students’ housing, to which investors and the public have responded massively [6],[15]. Consequently, the area around Undip has gained high economic value, thereby resulting in the phenomenon of gentrification [16]. These characteristics can be observed from the increasing number of migrants, both permanent and temporary, who move the indigenous population out of or away from the Tembalang area [17]. The residents still living there have also changed their way of thinking, knowing that their houses and land can be a valuable source of income. Further, several existing homes have transformed their appearances and functions as dwellings and/or businesses [18]. Another impact of the existence of this campus is the development of various sectors, including trade and services, housing, public infrastructure, and transportation [19].

The current study examines studentification that occurs in the area around Diponegoro University’s campus, located in the suburbs of Semarang. Its natural characteristics and agrarian population must deal with the influx of students and migrant residents with various characters. The initially quiet environment has become frenzied by various activities and increased use of transportation. The indigenous people feel stuttered and shocked by the emergence of massive new types of economy. The land value in this region has continued to escalate, encouraging landowners to sell their land. Pieces of land that nurtured rice fields and gardens previously have now turned into buildings. Suburb areas have turned into suburban areas. Facilities that initially only served the local area have now become facilities that serve the city.

This condition raises the following questions: what happened to the surrounding area after Diponegoro University’s campus shifted to the Tembalang region? How does the process of studentification take place? What kind of transformations occur? What happened to the indigenous people in this region? Is there a difference regarding the impact of studentification on areas directly attached to the campus and those not directly attached to the same?

2 Methods

In addition to using the observation method, this research explores the topic at hand from the perspective of the local people who directly see, feel, and experience the studentification process. The reviewed literature forms the basis for an in-depth examination of the aspects pertaining to the transformation. In this respect, Smith stated that studentification gave rise to social, cultural, economic, and physical transformations, which differed in cities and in the universities within them [2]. Ordor et al. added that the process affected the housing and business environment in the region [20]. The aspects presented by Smith and Ordor et al. serve as a guide for researchers to explore the transformation process that began with this campus’ development. As an old and large state university campus in Central Java Province, the movement of Diponegoro University from the centre of Semarang to the suburbs is quite an important event to observe. The span of 40 years, from the process of land acquisition to the current conditions, constitutes a sufficient period to study and explore the transformation that occurred in the Tembalang area. However, the process of campus development and relocation is gradual, not as fast as the transformation in the surrounding area.

The aspects of studentification and transformation that occur are observed, recorded, documented, and converted into maps covering three areas around Diponegoro University’s campus (see Fig. 1). These areas are as follows: Area I covers Tembalang Village that surrounds and is directly attached to the Undip campus. Area II comprises the whole area of Bulusan Village, which is attached to Area I. Area III includes all areas of Kramas Village, which are attached to Area II but not to Area I directly.

Collector and local roads connect these areas, and there are no topographical obstacles. Areas on the northern and eastern sides include those with steep contours and Army’s Land Area, which naturally limit the development of built spaces. On the western and southern sides of the area (which are steep), there is the Trans Java Toll Road, which indirectly slows down the effect of studentification.

![Fig. 1. An observation area surrounds Diponegoro University’s campus in Tembalang. Undip Campus has an area of 135.2 Ha, while Area I (Tembalang Village) is 268, 23 Ha (including Undip campus therein), Area II (Bulusan Village) is 304.07 Ha and Area III (Kramas Village) covers 93](image-url)
Ha.
The next stage, which involves collecting secondary data to complete the observations of the aspects studied, concerns the following: physical aspects include land ownership, shifting of an open space into built space, as well as changes in the shape and function of buildings. Additionally, the social aspects include population migration and community interaction; the latter involves interactions between indigenous people and those between native people and the new people who move to area. On the other hand, the economic aspects include the utilisation of commercial space and people's livelihoods.

Further, the results of these observations and secondary data are described and strengthened by in-depth interviews conducted with six sources, three of which were informants including the village chiefs (in Tembalang, Bulusan, and Kramas) who understood the process of area development administratively. The other three people interviewed include the chairpersons of the Agency for Community Empowerment (in Kelurahan Tembalang, Bulusan, and Kramas) who represented their respective communities in the three villages.

First, as a note to strengthen the reasons for the selection of the aforementioned speakers, the Head of Bulusan Village is a senior employee of the Semarang city government who has participated in the discussed process, from land acquisition to the construction stage of the Undip campus. Second, the Chairperson of the Agency for Community Empowerment in Tembalang Village is the son of one of the indigenous people whose family-owned land was bought by Undip, i.e., people with first-hand experience of the process, from the beginning of the campus' existence to its influence on the development of the current Tembalang region. The primary questions posed to the informants was how was the process of development for the Undip campus and what changes subsequently occurred in the surrounding region.

These in-depth interviews were recorded, transcribed, and coded. Moreover, the results of the interviews were analysed using the software tool NVivo plus 12. Subsequently, the researchers grouped the results of this analysis based on the order of events, causes, and transformations that occurred following the construction of Undip.

3 RESULTS AND DISCUSSION

Since the land acquisition process began in 1979 followed by the construction of the Undip campus in 1982, changes in the surrounding area started to occur. The development of universities in areas that are not yet developed or even inland will have an impact on the income and employment for the local community and its surroundings [21]. At present, Undip's campus area is 135.2 hectares, as a result of the land acquisition and building construction conducted in stages. The land on which the Undip campus is situated was originally part of an agricultural field owned by natives. In the past, this area was famous for producing "durian" as well as "rambutan." In addition to being farmers, the indigenous people also traded the same.

However, due to the change in the ownership of land from the indigenous people to Undip, the former changed their livelihoods, since they no longer owned fields. The campus development process requires much workforce. Thus, besides using the much-experienced workforce, the builders also involved some local people. Nonetheless, owing to their lack of expertise in construction, the residents can only work as labourers with limited income. On the other hand, the arrival of a large number of workers generates needs concerning transportation, shelter, and food. Such needs led to the development of motorbike rental services, private transportation, rental houses, and the emergence of cheap food stalls. Consequently, changes in land use, physical buildings, and new types of livelihoods caused the Tembalang area to lose its rural character slowly.

However, from 1983 to the present, education activities on the old Undip campus were gradually shifted to the new campus in Tembalang. Further, the concentration of large number of students in one place raises new needs and problems. The provision of commercial accommodation, transportation, consumption, and learning support facilities are new needs that emerged in this region, which are met by the community and investors through business activities. The purchase or lease of land from indigenous people to those from outside the area, which are used for commercial activities, change the characteristics of the area. This transformation occurs following what Smith calls studentification [2].

3.1 Land Ownership

The Undip campus serves as a magnet that attracts investment into the Tembalang area, followed by the high demand for land as a location to conduct business. New economic activity has attracted investors to invest their capital in this region. As a result, this situation increased the prices of land and houses drastically. This situation demonstrates that universities play a key role in influencing the transformation and price of urban land [22]. Changes in ownership are based on land sales/purchases or renting. Individuals, the private sector, housing developers, government agencies, campuses, and the Indonesian national army comprise the owners of the observer land.

At first, the indigenous people were willing to sell the land only to the government for campus development. However, the opportunity to perform business in the Tembalang area has made many investors keen to buy or lease land. The success stories of investors making profits from businesses in the area around the campus encourage the indigenous people to do the same. They sell part of their land as initial capital for their businesses. However, the lack of knowledge regarding doing business in a modern way causes them to select low-risk businesses, for instance, providing housing or offering rooms for rent to students [23]. The offer of available land can be a driving force for the massive wave of purchase for the land owned by local communities in the Tembalang area. Transfer of land ownership takes place efficiently and quickly. Thus, the value of land has increased dramatically in line with the increasing demand for land.

For local people who are unable to adapt to a rapidly changing environment, it does not take long for them to consider their options, and they sell their land and move to...
other areas that are quieter and with larger land sizes. Further, the high selling value causes parents to sell their land, after which the capital gained is distributed among their children as inheritance or used to buy lands in wider areas.

Examples of the ease of obtaining economic benefits by means apart from farming, shown by others, affect the perspective of the local young generation in selecting work. They are reluctant to continue the same work, as farmers or planters, with their parents. In the case of elderly parents whose children no longer want to take care of their fields, the choice is to sell off their land. As noted in Area II and Area III, these extensive lands later become housing areas built by developers.

### 3.2 Population Migration

One characteristic of the causes of studentification is the concentration of students in large numbers, which becomes dominant in an area [8],[13],[24],[25]. A demographic change and population restructuring has been noted within the student environment [15]. Moreover, there is a high population density of students and an imbalance with that of the local community [26]. The population changes become dominant at a young age [10]; old residents choose to leave and sell their houses. Thus, owing to such dominance of the population changes [23],[15], the number of native residents is gradually decreasing [15], while the migrant population is becoming denser [27]. A large number of students form a potential market for various types of commodities. To run the commodity business, several people from outside the region have shifted to the Tembalang area as workers.

Based on the pattern of settling, the people living in the Tembalang area are administratively divided into two categories: residents and migrants. Residents are people who live in the region and have a National Identity Card issued by a government office in the Tembalang area as an official identity. On the other hand, the so-called migrants include students and business people who only stay in the area for a while. In 2019, the population in the three research areas was statistically recorded as 18,601 people. However, it was estimated that the number of unregistered migrants reached over 30,000 people.

However, population migration from 2010–18, both to and from, shows a different tendency. In Area I, which is attached to the campus, the trend shows that the population that shifts to the area tends to decrease (ranging from 75 to 146 people per year; the highest number, 485 people, was observed in 2015), while the population moving away from the region increases (53 to 122 people per year). This migration pattern demonstrates that, first, location for residence is no longer widely available. Second, the said area is no longer attractive as a place to live, even though land is still available. Conversely, more and more indigenous people have moved out to other locations. In Area II, which is not directly attached to the campus, the number of people moving to the area tends to decrease (96 to 215 per year), but that of individuals moving out shows a sharp upward trend (10 to 86 people per year). Thus, Area II turned out to be far less attractive for residence than Area I.

In Area III, which is farther away from the campus, a declining trend is noted for people who shift to the region (50 to 136 people per year). However, interestingly, the trend of locals moving out decreases as well (26 to 64 people per year). In the aforementioned area, there are three housing complexes, which indicates that its capacity has been met and not many indigenous people moved out, meaning that not much land was sold.

### 3.3 Economy

Studentification encourages the emergence of aspects such as new urban facilities that did not exist previously in a particular place, along with the emergence of new types of work based on student knowledge, arrival of creative classes, and development of a competitive and diverse economy [6]. Soon, retail outlets emerge, coupled with more and more diverse business opportunities and the creation of services, which meet the needs of a large student population [20].

Another feature of studentification regarding the economic aspect is that economic growth increases, as indicated by the increasing number of businesses that appear around the university environment [27]. For example, the construction of the Undip campus and the arrival of large numbers of students significantly changed the characteristics of the Tembalang area. Moreover, commercial functions for student housing in the area are proliferating, such as boarding houses, for both those who united with houses (HMOs) or specifically student rentals (PBSA: Purpose-Built Student Accommodation), homestays, and lodgings with low prices.

Various business opportunities also arise pertaining to the needs of students, such as consumption (food stalls, restaurants, cafes), daily necessities (laundry kiosks, hair salons, tailors, motorcycle/car repair shops, cell phone counters, photocopies, study guides, shops computers, photo studios, convenience stores, places for massages, gas stations), and other environmental facilities (clinics, post offices, bank offices, doctors' chambers, midwife practices, churches, mosques, boarding schools). These business opportunities target students and their associated business chains as the primary market.

These business activities are far different from the original type of business practiced in the Tembalang region as an area with an agrarian suburban character. Unfortunately, investors and migrants demonstrate speed and agility, thus capturing this opportunity compared to indigenous people. The original inhabitants, who were initially farmers or planters, have turned mainly to business activities related to the existence of the campus, after noting the opportunity for success, in order to gain economic benefits from the development of the region. For example, adults who have cooking skills open a food stall or other culinary business. On the other hand, residents who still have enough land add space to provide rental rooms for students.

However, not all indigenous people are interested in starting and developing a business. Some of the local youth with secondary education choose to work on the Undip campus as administrative, cleaning, and security personnel. Interestingly, during the many job changes, there are still
indigenous people in Area III who actually maintain their fields and still deem it as their primary source of income. They are not interested in changing their jobs.

One can understand that the modern economy, which revolves around the majority of the campus, does not originate from the local community but from capital owners or people from outside the region, who have invested in the Tembalang area. Various food outlets, ranging from small capital ones that use carts to international restaurant franchises, exist in this region. The majority of the owners of residential buildings for students are also not native people. There are 540 PBSA and 210 HMO in Area I, while in Area II, there are 234 PBSA and 78 HMO. In Area III, there are 26 PBSA and 21 HMOs. The closer the location to the campus, the greater number of accommodation facilities are available for students (see Fig. 2); on the other hand, the number of indigenous households close to campus is still more than that of other areas (see Fig.3).

Fig. 2. Map of the distribution of HMO and PBSA in the Tembalang area. The darker colour indicates the increasing number of HMO and PBSA.

Fig. 3. Map of the number of native families who still live in the Tembalang area. The darker colours indicate an increasing number of native families.

This condition means that several indigenous people offer their homes for lodging to students, and there are many PBSA in these locations. Uniquely, these students are allowed to “enter directly into the private area” of the homes of native residents. The indigenous people open themselves to the owners of these spaces, ranging from small trolley carts to international restaurant franchises, exist in this region. The majority of the owners of residential buildings for students are also not native people. There are 540 PBSA and 210 HMO in Area I, while in Area II, there are 234 PBSA and 78 HMO. In Area III, there are 26 PBSA and 21 HMOs. The closer the location to the campus, the greater number of accommodation facilities are available for students (see Fig. 2); on the other hand, the number of indigenous households close to campus is still more than that of other areas (see Fig.3).

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Commercial activities develop in parallel with the development of locations wherein student residences are concentrated [25], [28], [29], [30]. Types of commercial businesses are becoming increasingly diverse. In Area II, there are 33 types of commercial businesses, the most compared to the other two regions.

The extent of each type of business is also different. However, there are precisely 1,415 business units in Area I, far more than that of Area II (727 business units) and Area III (237 business units). In locations closer to the campus, there are a growing number of business units. However, the ease of locating such type of businesses is precisely noted in Area II and Area III, which still have large tracts of land. Economic turnover is swift and occurs in large nominal numbers. The unfortunate thing is that the economic cycle has not returned in the form of direct benefits for the Tembalang region. The majority of investors come from outside the region, so the capital earned is taken out of the area. It can be asserted that the Tembalang area only serves as a platform to obtain economic benefits for investors from outside.

However, owing to the occurrence of studentification, some of the indigenous people who still live in the region believe that the presence of the Undip campus has, directly and indirectly, helped improve their family’s welfare, barring the exposure to certain unfavourable experiences. This is because there are many open opportunities to earn through a variety of businesses. Revenue has become more certain than before, and its nominal value can be better estimated. In one year, a minimum of 10 months is the time required to earn money, whereas the other 2 months’ income decreases because the students take a vacation and/or return to their hometowns during this time. These two months are used to rest, prepare the business, collect or bring in goods for resale, and/or improve the business space to be cleaner and more attractive.

### 3.4 Land Change

Studentification not only effects changes in housing and the economy but also directly influences changes in the landscape around the campus [31], [32], [33], [34], [35]. For areas that previously had much green open spaces, rice fields, and other such fields, campus development and studentification processes have quickly transformed them into a built-up space. Such changes in the landscape entail a change in the culture and livelihoods of people who were previously agrarian in character.

Between 1990 and 2018, the space built in the Tembalang area ranges from 12,765 Ha to 103,209 Ha (see Fig. 4). The change of open space into a vast built-up area was initially
undertaken for the construction of the Undip campus, which was followed by individual housing developments and housing clusters conducted by developers, in addition to the constructions developed for commercial purposes. In Area I and Area II, the built space covers almost the entire land surface. The building density is very high, with an average building coverage of more than 90%.

Acceleration regarding the change of land into a built space occurred since several faculties in Undip were completed. Subsequently, lectures were shifted to the new campus, followed by the influx of students who were increasingly moving to the Tembalang area. Studentification processes take place in tandem with the increasing amount of open spaces changing into built-up land.

Fig. 4. The process of changing open spaces (void, white) into built (solid, black) land in the Tembalang area (Tembalang, Bulusan, and Kramas sub-districts) from 1990 to 2018.

3.5 Physical Buildings

The fundamental characteristics of buildings located in the Tembalang area in 1980-90 were influenced by the community’s local culture, namely typical rural houses, simple, wooden, bamboo, or half brick walls (see Fig. 5). The density of such buildings was also very low; their mass layout was spread out and interspersed with the nearby fields.

However, at present, houses are no longer built with an original form. Many houses of the indigenous people who started HMOs or other businesses resulted in the changing of the buildings’ shapes; the number of floors increased, and the space expanded. Several native-owned lands bought by migrants have been rebuilt and now function as places of business (see Fig. 6). These characteristics clearly show physical transformation owing to the studentification process. There has been a change regarding the facilities offered, the completeness of facilities expected by students [24], the ownership system owing to the pressure of the property market [13], and the physical buildings and surrounding environment, which emphasises the availability of excellent services to offer a decent lifestyle to the students [36]. In the study area, besides the existence of HMO houses with standard facilities, there are more number of exclusive PBSA with more luxurious and complete facilities (see Fig. 7). Such drive to use every piece of land and building to provide economic benefits harms the environment. Studentification encourages neglected building conditions and poor environmental quality due to the oversupply of housing for students. Many properties are owned by investors or people who live in other locations. Thus, their management is left to other parties. The management and maintenance of the environment and such buildings that are not running well, in terms of the building structure, physical and open environment [26], can ultimately cause a decrease in the quality of the surrounding environment and deterioration of the image as a prime service asset [7]. Particularly in several locations in the Tembalang district, conditions have already deteriorated. Land is utilised as much as possible, which causes the layout of the environment to become disorganised, in addition to high building density owing to sporadic and unplanned addition of space.

Fig. 5. The appearance of the original house in the Tembalang area.

Fig. 6. The addition of commercial functions or redesign of the dwelling into a place of business is a common occurrence around the campus.

Fig. 7. Exclusive PBSA with more luxurious and complete facilities.

3.6 Social Change

The indigenous people of the Tembalang area must face a massive influx of students and other migrants. The agrarian character of these indigenous people is affected by the
students who come from all over Indonesia and possess a variety of cultural characters. The indigenous people share close familial roots with one another, with a culture of mutual help and courtesy in dealing with students and foreigners who are strangers to them, are ignorant of each other, lack respect for the local community and have no sense of connection with the region [37],[38]. Moreover, the indigenous people who do not receive an adequate degree of formal education are now dealing with more educated students.

At the beginning of the students' arrival and the development of the regional economy by migrants, there arose jealousy among indigenous communities due to the differences in lifestyles and the ease of spending money [39],[23]. Not all indigenous people hold a positive and open attitude towards changes in the Tembalang region. However, some communities can accept the situation by participating in the adaptation process and opening a business related to the needs of the students and migrants. They also take advantage of such opportunities to earn and improve their family's welfare. However, this occurrence also caused jealousy among other parts of the community who did not open such a business. A manifestation of jealousy is depicted by the people through their unwillingness to participate in cooperation activities or community services. The latter involves activities carried out once a month, usually on Sundays, when residents have free time. They work to clean and/or improve environmental facilities together. Long before several students and migrants came to the region, the bond of brotherhood was strong in this area and community service activities were performed whenever required.

However, ignorance between the students, migrants, and local communities decreases awareness regarding potential criminal events. Since the native and student/migrant residents of the boarding house do not know one another, it offers opportunities to perpetrators of crime to freely take action by pretending to be one of the students/migrants. Most of these occurrences involve theft of goods or motor vehicles belonging to students, or instances of mugging on the road. This situation necessitates security forces to intervene more intensively. On the other hand, the central role of native community leaders is still obeyed and very useful when there is tension between citizens.

3.7 Surrounding Environment

The physical change due to studentification causes a decline in environmental conditions, depending on the local context [2]. Allinson reinforces that physical transformation owing to studentification can cause the environmental quality to deteriorate [9]. The 40-year-long studentification process has drastically changed the characteristics of the Tembalang area. Area I and Area II have developed so rapidly, with high building density as well as pavement material that covers nearly the entire surface of the land. The provision of adequate drainage does not correspond with irregular building layouts and efforts to maximise every inch of land with buildings. This condition causes inundation and flooding during heavy rain. In Area I where the building density is very high, open space is minimal, and the distance between buildings is decreasing over time. Not enough parking space is available for students' motor vehicles, even though some students bring motorbikes and cars. Moreover, their vehicles are, at times, parked on the edge of a narrow road or in any vacant space between buildings, which causes people to scramble for space to dry clothes. Such conditions causes the formation of slums as well as dirty and unhealthy spaces.

Dirty water that stagnates from bathing and washing or rainfall is a source of diseases, for example, dengue fever; this condition is coupled with the increasing amount of piled-up garbage. Area I and Area II produce more waste than Area III, considering the existence of more number of boarding houses and commercial activities in the latter.

Nevertheless, the main roads are of sufficient quality. However, in terms of spatial planning, the areas affected by studentification were not prepared in advance. Thus, it became difficult and expensive to develop the same. A masterplan for the Undip education area already exists, but development directives around Undip have not been prepared. For instance, widening roads now is more difficult because it requires expensive land acquisition. Similarly, addressing issues regarding the anticipation of increased building density, i.e., run-off of rainwater and drainage networks that can capture and drain water effectively has become very important.

Till date, efforts to repair and widen roads are being carried out, in addition to the handling of disaster vulnerabilities. However, a comprehensive solution is sought in this regard to avoid harming the community. This result shows that the process of studentification can have a positive impact, namely improving the quality of local infrastructure.

4 Conclusion

The construction of a university campus with a large number of students (up to 40,000 active students) gave rise to studentification, which in turn affected the transformation of land ownership, economy, land use, building changes, social conditions, and the environment of the suburbs wherein the campus is located. The large concentration of students also raises the need for accommodation, consumption, transportation facilities, and infrastructure, as well as the satisfaction of daily needs.

Changes in land ownership, from indigenous communities to migrants (investors, outside communities, and students), triggered the physical and non-physical transformation that took place in the region. Such a transformation can be positive, as demonstrated by better building quality, smooth surface roads, more and varied job opportunities, better social attitudes, more complete environmental facilities, and increased land values, which means that the value of owners' assets increases.

However, on the negative side, the indigenous people who were unable to adapt to the changes in the Tembalang area choose to move to another place. Higher land values and greater opportunities for economic benefits have led to maximized land use. The building density is very high, which in turn causes the development of slums and vulnerability to
stagnant water.

Not all people are accepting of such transformation. They not only remain in their original dwellings but also retain their jobs and original way of life, even though their surroundings have changed. However, several local people are adaptive. They survived, adapted themselves, participated in the transformation that took place, and enjoyed the increase in welfare from the creation of greater economic opportunities.

In areas attached to the campus, the indigenous people experience the most rapid changes. The people who live in these locations are less quick to adapt to the arrival of economic functions, environmental and social changes, and the coming wave of student accommodations. This character of the village people, who are friendly and easy to accept others, led to the beginning of several HMOs in this area. In a relatively short amount of time, extensive transformation occurs quickly. However, people in Area III, which is relatively far from the campus, have enough time to understand what is happening in the area next to it. The communities in Area III are more critical and do not easily give up land for sale; they prepare themselves to receive better studentification propagation. Thus, HMOs and PBSA in this region are better than in Area I and II; the environment is also better prepared. Some communities still maintain fields but also have other sources of income from the studentification process that occurs. For example, families who have a home still have fertile fields, but the head of the family also owns a motorcycle and car repair shop business in another location, which is not integrated with the house. The workshop serves in meeting the needs of students to repair their vehicles.

Campus development in suburban areas with an agrarian character is very likely to get rid of native communities. In such cases, the role of community leaders is to bridge and ask the community to defend its land, even though it is narrow, and participate in the studentification process by taking economic opportunities, through which they will be able to sustain their lives.

Studentification, along with its impact on the development of an area, must address relevant issues carefully and thoughtfully. In this regard, urban planners are often unaware of the amount of investment coming in, and the rapid development of the area in and around the campus eventually grows out of control. The projected provision of needs for environmental facilities must not only calculate taking into account statistics on the number of people registered but also calculate the number of "shadow" residents whose numbers can be 4–5 times that of the official residents with identity cards. This is because the real needs concerning clean water, electricity, road width, and waste products are very different from the projections calculated based on statistics.

In the regional spatial plan, the campus masterplan would be much better if it is integrated with the regional masterplan, so that the area around the campus is directed, controlled, and integrated with regard to its future developments.

From the perspective of the indigenous people’s survival, they must prepare for and adjust to the changes that occur. Diversification of skills, carefulness in seeking job opportunities, guaranteeing children’s education, and ongoing assistance from the government are urgently needed in this respect. The aim is that these people are not eliminated from their birthplace. Further, they should be able to see the region develop and benefit from the studentification process.

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