

# Improvement Concept of Urban Sprawl Based on Sustainability Aspects And People Participations Case Study: Griya Bhayangkara Housing Estate At Sidoarjo Periphery

<sup>1</sup>Darmansjah Tjahja Prakasa,<sup>2</sup>Rika Kisnarini,<sup>3</sup>Happy Ratna Santosa,  
<sup>1</sup>Student of Doktoral Program, Department of Architecture, Institute of Technology Sepuluh Nopember,  
Surabaya, Indonesia  
<sup>2,3</sup>Department of Architecture, Institute of Technology Sepuluh Nopember, Surabaya, Indonesia

## ABSTRACT

Periphery is an area that tends to deteriorate due to sprawl. In reality, the periphery undergoes a change process in order to keep exist and survive against the existing problems. This raises an understanding that a periphery should have a meaning or position as a sustainable city. The method used in this research is naturalistic paradigm, while the case study which is located in Griya Bhayangkara housing estate in Sidoarjo is analyzed qualitatively. Through macro and meso policy study it is found the direction of policy regarding the sustainability aspects in a periphery. From here, analysis of aspects related to sustainability is done in order to generate potentials and problems in the case study. The problems are solved through community participation. Results of this study indicate that the aspect of sustainability will look more specific when this condition is in the suburbs. Case studies are inhabited by urban sprawl phenomenon from big city of Surabaya to Sidoarjo. The characteristic feature of sustainability in case studies is that in majority they are "immigrant" citizens with middle to lower economic levels. The result is that there are differences in the aspect of sustainability because people come from different places. This varied condition affects the value of sustainability concerns and can be solved through community participation.

**Keywords:** Periphery, Sustainability, Urban Sprawl

Date of Submission: 25-11-2017



Date of acceptance: 22-12-2017

## I. INTRODUCTION

The growth of a city is closely related to population growth and urbanization process. The growing population and urbanization makes inhabitants more difficult to live in the city center. The urban community with a certain background from the traditional to modern lifestyle will affect the changes in urban formation (Tallo, et.al, 2014). At certain times the city growth (Burgess, 2008) is intensive (inner city compaction) to be less effective which ultimately leads to extensive urban growth (development out of town). This situation triggered the emergence of accelerated development of the city towards the periphery. The city grew broader and seemed always unbounded. The suburbs (Winarso, et.al, 2015) are defined as a transition zone that located on the outskirts of the city limits. This transition zone has non-rigid and spreading boundaries, and displays the diversity of dynamic land uses. The transition zone has a mix of rural and urban characteristics. The periphery or peri-urban areas generally move away from the metropolitan core. Urban becomes a term because it is characterized by the transformation of the socio-economic structure of much countryside into more urban activities. Uneven development in suburban areas has the potential to create social conflict between communities. Suburban areas are usually not dense and are called rural towns (Adell, 1999).

The periphery is positioned on the condition of the worsening region due to sprawl. The fact shows that the position of the periphery changes from time to time in order to exist and survive against the existing problems. This is in accordance with opinion of (Rosi, 1984) that mentions: the future city is a place where some fragment will once be broken and subsequently reshaped (recomposed). This raises the understanding that the periphery can have a meaning or position as a sustainable city.

The concept of sustainable development is described by the report of the Bruntland commission of 1987: "Development that meets the needs of the present without compromising the ability of future generations to meet their own needs." Initially there were only three pillars (Environment, Economy, and Social), later in Habitat III it is added by Cultural Pillar. These pillars will be studied in the case study of Griya Bhayangkara housing estate,

Masangan Kulon Village, Sidoarjo. This location is specifically selected in this study because it is located in the suburbs of Surabaya-Sidoarjo regency. Other considerations is because the location has the suitability of sprawl characteristics. This case will be tested and proved by four aspects of sustainability.

Through the above mentioned research questions can be described as follows:

1. What are the conditions of the four aspects of sustainability that undergo in the urban sprawl outskirts, especially in the case study (Griya Bhayangkara Masangan Kulon Village, Sidoarjo regency)?
2. Which community based participation can solve the problems in the case study?

This research aims to:

1. Analyze the condition of the four aspects of sustainability in the urban sprawl outskirts, especially in the case study of Griya Bhayangkara housing, Masangan Kulon village, Sidoarjo regency.
2. Find solutions that can solve sustainability problems in case studies through community-based participation. In case of contribution, this research can be used as a model of problem solving on the aspect of sustainability in the urban sprawl, especially in the case study of Griya Bhayangkara housing, Masangan Kulon Village, Sidoarjo regency based on community participation.

## **II. LITERATURE SURVEY**

### **Definition of Urban Sprawl**

The definition of urban Sprawl according to Slaev and Nikivorof (2013) is an unplanned condition of urban development in the form of physical expansion processes and inefficient conditions covering urban to rural areas characterized by:

- Low density of new developments, patchwork, scattered forms, and discontinuities.
- Mixed use of mixed land, public services and trade.
- Not sufficiently covered by public transport services.

Another feature of the urban Sprawl that becomes an important key is the city's development process produces inefficient conditions in its formers. Some researchers point to the difference between urban growth and sprawl (Cheshire, 2009, Davis and Schaub 2005, Brueckner, 2000).

### **Urban Sprawl Factor**

The main factors causing urban sprawl (Chin, 2002) are:

1. Population growth is a strong factor for increasing demand for housing. That's because of the lack of housing supply in the city center, resulting in high housing construction on the outskirts, where more land is available. (Chin, 2002).
2. Residential Preferences which is the consensus of researchers indicates that housing preferences are the main factors that causes urban Sprawl. Housing options in the countryside are driven by higher income levels, increased personal mobility and improvements in transport. Audirac et.al. (1990) have concluded that "having an ideal home for a single family, a strong desire for privacy, and a rural atmosphere, are the main reasons why choosing suburban and local exurban". (Audirac et al., 1990: 473) have also observed that "The historical growth of cities has been driven by the increasing urban population. It is rooted in the desire to realize a new lifestyle in a suburban environment. "This conclusion has been supported by many consumer preference surveys (Krisjane and Berzins 2012, Hirt 2007, Audirac et al., 1990).
3. The role of the market as a housing demand is related to population growth. Brueckner (2000), Audirac et al., (1990) analyzed urban Sprawls caused by consumer demand and other market-related factors. Market reasons are factors that make Urban Sprawl deserve special consideration.

### **Urban Periphery**

Adell (1999) defines that peri-urban areas are adjacent to urban growth, and are characterized by a strong influence on urban activity, as well as easy access to markets and urban features. The relationship between urban and suburban areas is a functional one, marked by the flow of commuting from city to suburbs and vice versa (Caruso, 2005). Urban-periphery is seen to have different characteristics between in developed countries (north) and those in developing countries (South) (Woltjer, 2014). In developing countries, with the absence of mature planning regulations, the region is under pressure in its development, and usually changes from its previous activities as a rural, to be mixed with urban activities in its land use. Suburban areas are also defined as areas between rural and urban suburbs. Mixed development in suburban areas can create degradation problems especially the environment, namely lack of infrastructure, and prone to social conflict (Nkwae, 2006). The study of suburban areas is largely focused on the implications for planning and management (Hudalah et al, 2007; Messenger & Hudalah, 2014), and see the front faces between urban and rural activities (Allen, 2006, Mattingly, 1999, Simon, McGregor, & Thompson, 2006).

### **Understanding Sustainable Development**

Sustainable development is a comprehensive paradigm of the United Nations. The concept of sustainable development is described by the report of the Brundtland commission in 1987 as "Development that meets the needs of the present without compromising the ability of future generations to meet their own needs." Sustainability is a paradigm for thinking about the future through balanced environmental, social and economic aspects in the pursuit of development and improved quality of life.

### **Cultural Aspects of Sustainable Development, UNESCO**

Previously, the idea of sustainable development used parameters of economic, environment and social, in which, largely ignored matters that relating to cultural issues. A change in strategy has been undertaken by UNESCO. Cultural diversity in this case is given as a central place and not a side in some discussions. This is why in 2001 UNESCO developed and adopted the Universal Declaration on Cultural Diversity, which states that: "Cultural diversity is to humankind as important as biodiversity to nature. In this case cultural diversity should become a common heritage of mankind that must be acknowledged and affirmed for advantages of present and future generations".

### **Five Indicators of Sustainable Environment (Morelli, 201:5-6)**

- a. Societal needs, including public service facilities and raw material needs.
- b. Preservation of biodiversity, including selection of raw materials that safeguard natural resources and energy efficiency.
- c. Regenerative capacity, including keeping natural resources for longer use and protecting non-renewable natural resources.
- d. Reuse and recycle in order to optimize reusing and recycling to reduce and minimize waste.
- e. Limiting the use of non-renewable resources and waste generation by keeping away waste from effective and adequate ecosystem and transport system.

### **Indicators of Sustainable Economy (Basiago, 1999:149)**

- a. Growth is the economic growth of society that can be seen from the increase in income of community.
- b. Development is the economic development that exists in the area.
- c. Productivities are products that exist in the area.
- d. Trickle down, is the financial benefit that derived from big business, investors and entrepreneurs that able to stimulate the economic growth of small communities.

### **Indicators of Sustainable Social (Basiago, 1999:149)**

- a. Equity is the aspect of justice that exists in the society.
- b. Empowerment is the empowerment that exists in the society.
- c. Accessibility is easy access for the community.
- d. Participation is the level of community participation in the region.
- e. Sharing is the situation of mutual sharing among communities.
- f. Cultural identity is the cultural identity of society in the region.
- g. Institutional stability is the level of institutional stability in the society.

### **Indicators of Cultural Sustainability (Duxbury, et.al, 2007:7)**

- a. The culture of sustainability in this context is a culture of sustainability that refers to people who change behavior and adapt to a sustainable lifestyle.
- b. Globalization. Culture needs to be protected from globalization and market forces, as many people fear that individuals will lose their cultural identity, traditions and language.
- c. Heritage conservation in this case is reserving the cultural heritage of both tangible and intangible, among others by Revitalizing and reusing the cultural heritage buildings as a part of people's lives.
- d. Sense of place. Initiatives in increasing the sense of place are generally by recognizing the importance and symbols of inheritance, and accepting the role of art / artifact in raising the society.
- e. Indigenous knowledge and traditional practices is related to the practice of tradition, by celebrating old traditions and passing cultural values to future generations.
- f. Community cultural development is the development of a community culture that encourages local cultural activists and citizens to play an active role in the community decision-making, and attracting people who may not engaged together involved in the constructive social activities.
- g. Arts, education and youth. Art is seen as a tool of development and communication tools in the community and schools, as it can improve the effectiveness of teaching, research, policy, and action on culture of sustainability and development.

- h. Sustainable design is an eco-friendly designs that use recycled materials which are planned by the community to guarantee the sustainability.
- i. Planning. There is a need to show how culture can be integrated into existing community development and development plans.
- j. Cultural policy and local government. Multidisciplinary nature of sustainable development requires that policies for sustainability integrate cultures and other policy areas.

#### **Definition of Community Participation**

Community participation according to Adi (2007:27) is the participation of the community in the process of identifying the problems and potentials that exist in the community, the selection and decision-making on alternative solutions to address the problems, the implementation of problem-solving efforts, and the involvement of the community in the process of evaluating the changes.

#### **Phase of Community Participation (Cohen and Uphoff quoted by Soetomo, 2008:12)**

- a. Participation in the decision-making process.
- b. Participation in implementation.
- c. Participation in the taking of benefits.
- d. Participation in evaluation.

#### **Form of Community Participation (Chapin in Alaxander, 2002:43)**

- a. Fund participation
- b. Participation of the mind
- c. Participation in the decision-making process.
- d. Representative participation.

Literature on urban sprawl in the periphery is used as the location context is analyzed in terms of sustainability. Furthermore, four pillars of sustainability are used to analyze sustainability in selected cases. Four sustainability pillar indicators are used as a more detailed explanation to find potential and problem in case study. Solutions to problems are solved with community participation. The solutions undertaken by the community are detailed in the phase, forms and activities of community participation.

### **III. RESEARCH METHODS**

#### **Paradigms and Strategies (Groat and Wang, 2013)**

Paradigm of this study is naturalistic and the strategy on certain case study is applied qualitatively. This research describes the phenomena that exist currently or underway in the past, that related to the aspect of sustainability. Tactics in this research is divided into Data Acquisition Technique and Data Analysis. According Kriyantono (2009), primary data acquisition techniques is done through interviews with community leaders on case studies regarding potential and sustainability issues as well as field observations. While the technique of obtaining secondary data, is through archiving the documents including government policy, concerning aspect of sustainability that exist in case study.

This research uses descriptive data analysis which describes the data collected in the form of words, images including numbers. The analysis in this research is divided into four parts:

1. Macro scale analysis that contains the policy of sustainability of the National level. It includes national regulatory policies covering the Laws, Government Regulations and Ministerial Regulations along with government programs in the form of centrally funded work activities.
2. Meso scale analysis that contains the sustainability policy of the district/region level. It includes Regional Regulation concerning spatial policy of case study area in Sukodono District. The regional policy is the RTRW of Sidoarjo region.
3. Micro scale analysis contains case study analysis that related to the condition of the four aspects of sustainability covering environmental, economic, social and cultural aspects. This analysis includes the existing situation concerning the potential and sustainability issues in the case study.
4. Community Participation is the further analysis about community participation that is made in order to address the potential and problems of sustainability aspects. Community participation is the solution based on the phases, forms, and activities.

### **IV. RESULT**

#### **National Policy Analysis (Macro scale)**

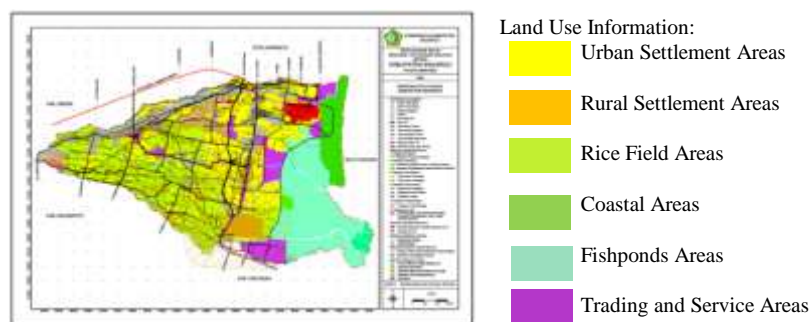
National level policies in the form of legislation related to sustainable settlements include: Law of the Republic of Indonesia Number 23/1997 on Environmental Management; Law of the Republic of Indonesia Number 28/2002 concerning Building; Act of the Republic of Indonesia Number 7/2004 on Water Resources; Law of the

Republic of Indonesia Number 18/2008 on Waste Management; Law of the Republic of Indonesia Number 32/2009 regarding Environment; Law of the Republic of Indonesia Number 26/2007 on Spatial Planning; and Law of the Republic of Indonesia Number 1/2011 on Housing and Settlement Area.

Another national policy under the Act is the Government Regulation, among others: Government Regulation of the Republic of Indonesia Number 16/2005 concerning Development of Water Supply System; Government Regulation Number 36/2005 on Regulation of the Implementation; Law Number 28/2002 concerning Building Structure; Regulation of the Government of the Republic of Indonesia Number 65/2005 regarding Guidance of Minimum Service Standards; Government Regulation Number 42/2008 concerning Management of Natural Resources; Government Regulation Number 34/2009 about Management of Urban Areas; Government Regulation Number 57/2009 regarding Management of Population Development; and Regulation of Indonesian Government Number 64/2016 about Low-Income Housing Development.

### **Policy Analysis of Sidoarjo Region (Meso scale)**

Policies in the form of regulation at the regional level in Sidoarjo Region are: Regional Regulation of Sidoarjo Number 10/2014 about Provision, Delivery and Utilization of Infrastructure, Facilities and Utility in Housing and Settlement Area, Industrial Area and Trade/Service area; Regulation of Sidoarjo Region Number 35/2015 about the Guidelines of Real Issuance of Regulations; Regulation of Sidoarjo Region Number 16/2017 on Procedures for the Delivery of Infrastructure, Facilities, and Utilities of Housing to Local Government; Regional Regulation of Sidoarjo Region Number 6/2009 about Spatial Planning of Sidoarjo 2009-2029. For more details it can be seen in figure 1:



**Figure 1** Spatial Plan of Sidoarjo Region, (Source: Region of Spatial Plan Sidoarjo 2009-2029)

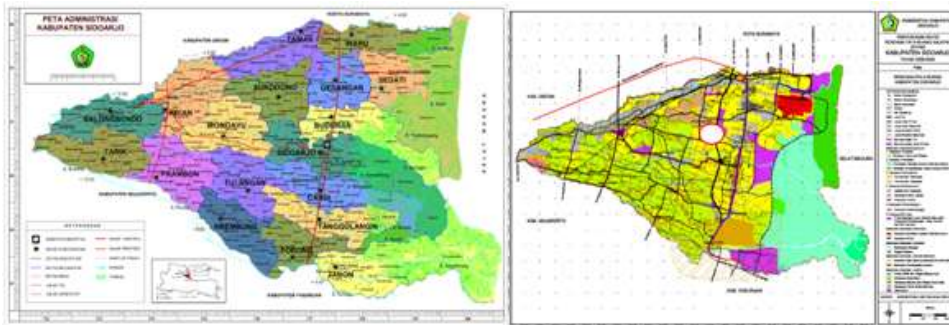
Mixed-use Sukodono area, with housing composition of 20% (consisting of 60% built and 40% open space), industry 30% (70% built and 30% open space), 20% Trade and Service (60% built and 40% Open space), and 10% Warehousing (70% built and 30% open space), 20% for sport field and Green Open Space (public space). Industries allowed to be developed in this region are only industries that support agro-agricultural industries. In Jabon, mixed-use area is dominated by industrial area, while mixed-use area of Sidoarjo is for Agro fishery industry, and Sukodono is for Agro agriculture industry. Sidoarjo New Town Area is a Strategic Area directed at the District Sukodono. The development of New Town Sidoarjo is aimed at developing the western Sidoarjo. The use of land in detail is included in Detail of Urban Spatial Plan of New Town Sidoarjo.

### **Sustainability Analysis in Case Study (Micro scale)**

Case Study Analysis as Urban Periphery in Urban Sprawl

In the further growth of the city, the growth of Surabaya City has penetrated in the sub-districts that are not directly adjacent to the administrative area of Surabaya. The second-tier sub-districts are Sukodono, Gedangan, and Sedati sub-districts. These three sub-districts are in accordance with the so-called urban sprawl. The suitability of the characteristics of urban sprawl is, among others, with the spreading urban growth that spreading across agricultural land. There is a firm segregation between urban and rural communities that has the potential for social conflict. For more details it can be seen in figure 2 and 3:





**Figure 2**

Map of the administrative area of Sidoarjo Region  
(Source: Region of Spatial Plan Sidoarjo 2009-2029)

**Figure 3**

Griya Bhayangkara Housing Estate Location  
(Source: Region of Spatial Plan Sidoarjo 2009-2029)

This housing estate is administratively consists of two neighborhood namely neighborhood-08 and neighborhood-09. Neighborhood-8 is populated by 320 households or about 1,280 people and neighborhood-09 has 873 households or about 3,492 people. The total population in both neighborhoods is 4,772 people. This number is quite large as a housing estate. In neighborhood-08 there are nine household groups and in neighborhood-09 there are 17 household groups so total in this estate is 26 household groups. The position of neighborhood-08 is on the north side along with the first stage of estate construction. In stage one, citizens are dominated by the police profession. Neighborhood-09 spread to the western and southern parts with mixed profession residents. The housing estate was originally of 21 m<sup>2</sup> building type with an area of 72-108 m<sup>2</sup> of land. During development the building was changed and renovated by its inhabitants.



**Figure 4:** Griya Bhayangkara Housing Estate Map (Source: Google maps, 2017)

### Analysis on Environmental Aspects

Environmental aspect analysis is based on indicators according to Morelli, (2011). The core of housing residents consists of middle to lower, so the need of facilities is not too high. Facilities and infrastructure already exist, but not yet in good condition. This is evidenced by the many hindered of public facilities such as parks and fields that are not functioned properly. While the awareness of the citizens about the use of facilities and the use of materials in case of reuse and recycle appears instantaneously (only because there is a competition). Flood problems and lack of housing and environmental health requirements always arise due to lack of awareness of inhabitants regarding the importance of greenery (reforestation), the smooth flow of water channels, and the setting of road surface height. For details of environmental indicators, potentials, and problems can be seen in Figure 5 and Table 4.1.



**Figure 5** Conditions of existing problem on education facilities, health, open space, buildings, roads, floods and garbage. (Source: survey by the writer, 2017)

**Table 4.1.** Environmental Aspect Analysis

No	Environmental Indicators	Potentials	Problems
1	Societal needs	<ul style="list-style-type: none"> <li>- There are already two elementary schools.</li> <li>- Availability of business facilities.</li> <li>- Availability of four sports-and recreation areas</li> <li>- Sufficient electricity and water supply</li> </ul>	<ul style="list-style-type: none"> <li>- Less than two Kindergarten (based on DPU standard).</li> <li>- Not yet available maternity hospital.</li> <li>- Unattended sports field.</li> <li>- The front dump drain does not properly function.</li> <li>- Septic-tank design is not standardized.</li> </ul>
2	Preservation of biodiversity	<ul style="list-style-type: none"> <li>- Availability of cheap and affordable housing community.</li> </ul>	<ul style="list-style-type: none"> <li>- Building area 90% of land area so that open space is low in site.</li> <li>- Light and air ineffectively enter the space.</li> <li>- Changes in design and construction of buildings without permission.</li> </ul>
3	Regenerative capacity	None	<ul style="list-style-type: none"> <li>- The curb garden is lost due to the widening of neighborhood road.</li> <li>- Road elevation is not integrated among residents so that water penetrates/enters into the building lot.</li> <li>- The presence of river water that is higher than the housing area resulting in flooding.</li> </ul>
4	Reuse and recycle	<ul style="list-style-type: none"> <li>- There is already a trash can in front of the house.</li> <li>- The presence of fertilizer resulting from the burning of leaf garbage.</li> </ul>	<ul style="list-style-type: none"> <li>- Garbage decay due to delays of waste removal.</li> <li>- Outbreaks of diseases caused by waste disposal into empty/vacant lots.</li> <li>- The amount of plastic waste which is thrown indiscriminately in the field.</li> <li>- The cessation of organic waste composter cycle program.</li> </ul>
5	Constraints of non-renewable resources and waste generation	None	<ul style="list-style-type: none"> <li>- Lack of public transportation.</li> <li>- Congestion because of many private vehicles.</li> </ul>

**Analysis on Economic Aspects**

Analysis of sustainable economic aspects is divided based on indicators according to Basiago (1999). This housing estate is in principle built for the middle to lower class with the type of building 21 m<sup>2</sup>. This has consequences on the economic. This condition is seen in the livelihood of citizens who tend to be employees in companies in big cities such as Surabaya. To increase family income, some residents rely on small business by making home-based enterprise such as stalls, shops, haircuts, workshops, and so on which is placed in front of their house. Details of environmental indicators, potentials and problems can be seen in Figure 6 and Table 4.2.



**Figure 6** Existing conditions on trade facility problems and garden function in the residential area. (Source: survey by the writer, 2017)

**Table 4.2.** Analysis of Economic Aspects

No	Economic Indicators	Potentials	Problems
1	Growth	- Increase of public purchasing power seen from ability to renovate the house and buy a car.	None
2	Development	- Ability to open business/trade independently in front of the house.	- Mixed residential function with trade. - The emergence of illegal trading buildings in green open spaces.
3	Productivity	None	- Housing does not have a typical local product.
4	Trickle down	- Existence of workshop for industrial filter and sound system that can accommodate local workforce.	- Lack of large companies from outside that can accommodate local workforce.

### Analysis of Social Aspects

Analysis of sustainable social aspects is based on Basiago indicator (1999). The social aspect of sustainability is influenced by the basic character of the housing residents as immigrants. Although they come from different regions either from the city or from their village, they have similarity that they reside there only temporarily and more on the needs for work in which, most of them reside in big cities like Surabaya and Sidoarjo. Even though they live in the village, their lives are more characterized by urban lifestyles. This impacts their attitude in communication and interaction among citizens which is more practical urban, although the influence of rural communality pattern is strong enough in their social life. Details of environmental indicators, potentials, and problems can be seen in Figure 7 and Table 4.3.



**Figure 7** The existing condition of the boundary of the houses between the immigrant population and the indigenous population.

(Source: survey by the writer, 2017)

**Table 4.3.** Analysis of Social Aspects

No	Social Indicator	Potentials	Problems
1	Equity	- The service to the community and facilities is quite good.	None
2	Empowerment	- Seen in sports and art activities.	None
3	Accessibility	- Relations between communities are well established.	None
4	Participation	- There is good participation such as consecration work in managing the environment.	None
5	Sharing	- Mutual sharing to citizens who cannot afforded by family welfare fostering .	None
6	Cultural identity	None	- There is a gap between immigrant and indigenous population.
7	Institutional stability	- There is institutionalization of a permanent society.	-

### Analysis of Cultural Aspects

According to Duxbury, et.al (2007: 7) there are ten keys in "cultural" discussions related to sustainable development. The culture associated with the aspect of sustainability in housing is more determined on the traditions of citizens as immigrants. Residents are migrants and non-residents of the village. This led to the encounter of various traditions and cultures in one place. Adaptation of citizens with different traditions /cultures is addressed by respecting each of these traditions that coexist without interrupting each other. Integration of



other traditions/cultures is the meeting of immigrant residents with the original villagers. This is addressed by both people with mutual respect by participating in the ritual activities of their respective traditions. In this case the participation of migrant residents are claimed to be more active in the activities of village tradition although only the leaders of the community attended. Details of environmental indicators, potentials, and problems can be seen in Figure 8 and Table 4.4.



**Figure 8** The existence of tradition differences between migrants and indigenous population.  
(Source: survey by the writer, 2017)

**Table 4.4.** Analysis of Cultural Aspects

No	Cultural Indicators	Potentials	Problems
1	Cultural policy and local government	None	- Flattery of tradition between immigrants and indigenous people.
2	Globalization	- Local traditions become quite dominant coloring the society - Performance of Javanese comedy, Javanese puppet, and clean village.	None
3	Heritage conservation	- The immigrant community brought their original tradition.	- Due to the many meetings of some traditions, then the intersection between traditions often occurs.
4	Sense of place	None	- Lack of "sense of place", of the immigrants.
5	Indigenous knowledge and traditional practices	None	- Remembering as a newcomer, the stories and warnings of local traditions become non-existent.
6	Community cultural development	None	- Residents of the housing estate passively only as guests in the event of tradition in the native village.
7	Arts, education and youth	- Art and education attractions are on the anniversary of independence-day.	- Art and education attraction only once a year.
8	Sustainable design	None	- In designing and building their houses people do not use experts, so the quality of the building cannot be guaranteed.
9	Planning	- There is a simple plan that accommodates the interests of the community.	None
10	Cultural policy and local government	- Integration between traditions from their home region eventually make compromises between them.	None

### **Community Participation in Solving Sustainability Issues**

#### **Community Participation in Environmental Aspects**

Of the five types of problems based on environmental indicators, the stages of community participation patterns are applied. The first pattern is problem solving that have no physical form, which is resolved in the form of participation of thought and or fund contribution in the meeting of citizens, and it is implemented by creating program and work of devotion. The second pattern is problem solving that have physical form, which is resolved through community meetings and creation of program, part of which is also implemented through devotion work. The third pattern is problem solving of higher level scope, which is resolved by participation of representatives of figures who bring the aspirations to a higher level. Details of the phase, form, and activities of the participation can be seen in table 4.5.

**Table 4.5.** Community Participation in Environmental Aspects

No	Environmental Indicators	Problems	Phase of Community Participation	Form of Community Participation	Activities
1	Societal needs	<ul style="list-style-type: none"> <li>- Less than two Kindergartens (based on DPU standard).</li> <li>- Maternity hospital is not yet available.</li> <li>- Unattended sport field</li>   <li>- The front dump drain does not flow well.</li> <li>- Septic-tank design does not meet the standard</li> </ul>	<ul style="list-style-type: none"> <li>- Decision making</li> <li>- Decision making</li> <li>- Implementation and benefit</li> <li>- Implementation and benefit</li> <li>- Implementation and benefits</li> </ul>	<ul style="list-style-type: none"> <li>- Representative</li> <li>- Representative</li> <li>- Thoughts and money</li> <li>- Thoughts and money</li> <li>- Fund.</li> </ul>	<ul style="list-style-type: none"> <li>- Meeting of citizens</li> <li>- Meeting of citizens</li> <li>- Meeting of citizens and consecrated work</li> <li>- Meeting of citizens and consecrated work</li> <li>- Improvement action</li> </ul>
2	Preservation of biodiversity	<ul style="list-style-type: none"> <li>- Building area 90% of land area so that open space in low site.</li> <li>- Light and air are ineffectively entering the space.</li> <li>- Changes in design and construction of buildings without permission.</li> </ul>	<ul style="list-style-type: none"> <li>- Evaluation</li> <li>- Evaluation and implementation</li> <li>- Evaluation and implementation</li> </ul>	<ul style="list-style-type: none"> <li>- Mind</li> <li>- Mind</li> <li>- Mind</li> </ul>	<ul style="list-style-type: none"> <li>- Meeting of citizens</li> <li>- Meeting of citizens and repair</li> <li>- Meeting of citizens and repair</li> </ul>
3	Regenerative capacity	<ul style="list-style-type: none"> <li>- The curb garden is lost due to widening of the neighborhood road.</li> <li>- Road elevation is not integrated between residents so that water penetrates into the building lot.</li> <li>- The presence of river water that is higher than the housing area resulting in flooding.</li> </ul>	<ul style="list-style-type: none"> <li>- Evaluation and implementation</li> <li>- Evaluation and benefits</li> <li>- Evaluation and benefits</li> </ul>	<ul style="list-style-type: none"> <li>- Mind</li> <li>- Decision-making process</li> <li>- Decision-making process</li> </ul>	<ul style="list-style-type: none"> <li>- Meeting of citizens and repair</li> <li>- Meeting of citizens and consecrated work</li> <li>- Meeting of citizens and consecrated work</li> </ul>
4	Reuse and recycle	<ul style="list-style-type: none"> <li>- Garbage decay due to late garbage collection.</li> <li>- Outbreaks of diseases due to garbage disposal to empty land</li> <li>- The amount of plastic waste which is thrown in the field indiscriminately.</li> <li>- Cessation of organic waste composter cycle program.</li> </ul>	<ul style="list-style-type: none"> <li>- Evaluation</li> <li>- Evaluation and implementation</li> <li>- Evaluation and implementation</li> <li>- Evaluation and implementation</li> </ul>	<ul style="list-style-type: none"> <li>- Decision-making process</li> <li>- Mind</li> <li>- Decision-making process</li> <li>- Decision-making process</li> </ul>	<ul style="list-style-type: none"> <li>- Meeting of citizens</li> <li>- Meeting of citizens and consecrated work</li> <li>- Meeting of citizens and consecrated work</li> <li>- Meeting of citizens and programming</li> </ul>
5	Constraints of non-renewable resources and waste generation	<ul style="list-style-type: none"> <li>- Lack of public transportation.</li> <li>- Congestion because of uses of many private vehicles.</li> </ul>	<ul style="list-style-type: none"> <li>- Decision Making</li> <li>- Evaluation and implementation</li> </ul>	<ul style="list-style-type: none"> <li>- Representative</li> <li>- Mind</li> </ul>	<ul style="list-style-type: none"> <li>- Meeting of citizens</li> <li>- Meeting of citizens and programming</li> </ul>

**Community Participation in Economic Aspects**

Of the four indicators of economic aspects there are only three that have problems. The four stages of completion can be applied to all. On the economic aspect of this issue quite a lot of funds are needed, so participation in the form of money is difficult. The forms of participation are all made using the decision-making process and implemented in citizen meetings, the making of program and part of which are by devotional work. Details of the phase, the form, and activities of the participation can be seen in table 4.6.

**Table 4.6.** Community Participation in Economic Aspects

No	Economic Indicators	Problems	Phase of Community Participation	Form of Community Participation	Activities
1	Growth	None	None	None	None
2	Development	- Mixed of occupancy function with trade. - The emergence of wild trading buildings in the green open spaces.	- Decision making and evaluation - Decision-making, implementation and evaluation	- Decision-making process - Decision-making process	- Meeting of citizens and programming - Meetings of citizens, Workers devotion and programming
3	Productivity	- Housing does not have a typical local product.	- Decision making and implementation	- Decision-making process	- Meeting of citizens and programming
4	Trickle down	- Lack of effort that holds local power.	- Implementation, benefits and evaluation	- Decision-making process	- Meeting of citizens and programming

### Community Participation in Social Aspects

Of the seven indicators of social aspects there is only one problem that possible to be solved by participation. Considering the problem that needs to be resolved at a higher level than the form of thought contribution, representative participation needs to be done. Participation stage is done by making decision of implementation and evaluation through community meeting forum, and program making. Details of the phase, the form and activities of the participation can be seen in table 4.7.

**Table 4.7.** Community Participation in Social Aspects

No	Social Indicators	Problems	Phase of Community Participation	Form of Community Participation	Activities
1	Equity	None	None	None	None
2	Empowerment	None	None	None	None
3	Accessibility	None	None	None	None
4	Participation	None	None	None	None
5	Sharing	None	None	None	None
6	Cultural identity	- There is a gap between immigrant and indigenous population.	- Decision-making, implementation and evaluation	- Mind - Representative	- Meeting of citizens and programming
7	Institutional stability	None	None	None	None

### Community Participation in Cultural Aspects

Of the ten indicators of cultural aspects, there are only eight issues can be solved by participation. Given the sensitive issues of various traditions, only the implementation stage, the benefits, and evaluations can be made and only through community meetings and programming that able to find a solution. Details of the phase, the form, and activities of the participation can be seen in Table 4.8.

**Table 4.8.** Community Participation in Cultural Aspects

No	Cultural Indicators	Problems	Phase of Community Participation	Form of Community Participation	Activities
1	Cultural policy and local government	- Interstitial traditions between immigrants and indigenous people.	- Implementation and evaluation	- Mind - Decision-making process	- Meeting of citizens and programming
2	Globalization	None	None	None	None
3	Heritage conservation	- Due to the many meetings of some traditions, then the intersection between traditions often occurs.	- Implementation and evaluation	- Mind - Decision-making process	- Meeting of citizens and programming
4	Sense of place	- Lack of "sense of place", given the dominance is immigrants.	- Implementation and evaluation	- Mind - Decision-making process	- Meeting of citizens and programming
5	Indigenous knowledge and traditional practices	- Residents of the housing passively only as guests in the event of tradition in the native village.	- Implementation and evaluation	- Mind - Decision-making process	- Meeting of citizens and programming
No	Cultural	Problems	Phase of	Form of	Activities

	<b>Indicators</b>		<b>Community Participation</b>	<b>Community Participation</b>	
6	Community cultural development	- Remembering as a newcomer, the stories and warnings of local traditions become non-existent.	- Implementation and evaluation	- Mind - Decision-making process	- Meeting of citizens and programming
7	Arts, education, and youth	- Art and education attraction only once a year.	- Implementation and evaluation	- Mind - Decision-making process	- Meeting of citizens and programming
8	Sustainable design	- In designing and building their houses people do not use experts, so the quality of the building is not guaranteed.	- Evaluation and benefits	- Mind - Decision-making process	- Meeting of citizens
9	Planning	None	None	None	None
10	Cultural policy and local government	None	None	None	None

## V. CONCLUSION

Environmental aspects of sustainability are based on the fact that this housing is for the middle to lower class. Facilities and infrastructure in this housing is not complete and not very good. This is evidenced by the communal facility of a park that is not well-maintained. Awareness of citizens about the use and use of materials in the reuse and recycle is not routinely implemented. Flood problems, lack of home and environmental health requirements always arise due to lack of public awareness about the importance of reforestation, channel maintenance and high road regulation.

Economic aspect is based on the fact that this housing is utilized for people with middle to lower economic level. This condition is seen in the type of employment of most citizens that tend to be employees. Some residents still rely on small businesses such as stalls, shops, haircuts, workshops. The problem is that these businesses are in the wrong place, like the front room of the residence and the garden.

Social aspect is influenced by the basic character of the housing residents as immigrants. Immigrants living in these homes tend to be temporary. Their lives are more characterized by the urban lifestyle, even though they live in the village.

Cultural aspect in the housing estate is more determined by the tradition of citizens as immigrants. This led to the encounter of various traditions and cultures in one place. Adaptation of people with different traditions is addressed with respect. They live side by side without interrupting each other. Problems occur as the tradition of housing estate is different from that of the original villagers. This is addressed by both communities through mutual respect on participating in the ritual activities of their respective traditions. The role of housing residents is required to be more active in the activities of the village tradition although only represented by the community of housing figure.

Of the five types of environmental aspect indicators, the four stages of community participation can be used in solving the problem. The four stages are the stage of decision-making, implementation and utilization and evaluation. There are two patterns of problems in this aspect of the environment. The first problem pattern is solving problems that have no physical form. This pattern is solved by the form of participation of thought donations through community meetings, programming activities and consecrated work. The second problem pattern is the existing problem of its physical form. This pattern is solved through community meetings, activity programs and consecrated work. Furthermore, for problems with higher scope is solved through representatives who bring citizen aspirations to a higher level.

Of the four indicators of economic aspects there are only three that have problems. The three indicators are development, productivity and trickle down. The four stages of completion can be applied all such as decision making, evaluation, implementation and benefits. Given the economic level of the housing community is medium to low income, so participation in the form of funds is difficult. Form of participation is done by using the decision-making process and implemented in meetings of citizens, making program activities and devotional work.

Of the seven indicators of social aspects there is only one problem on “cultural identity” indicator. These problems need to be resolved at a higher level than the form of participation of thought and representative done.



Participation stage is done by decision making, implementation and evaluation through citizen meeting forum, and making activity program.

Of the ten indicators of cultural aspects, there are only two indicators that do not have problems. The two indicators are planning and cultural policy - local government. The problems in this cultural aspect are very sensitive because they are related to various traditions. Community participation to solve this problem is through implementation, benefit and evaluation. Activities are undertaken through community meetings and work programming.

## REFERENCES

- [1]. Adell, G. (1999), Theories and models of the peri-urban interface: A changing conceptual landscape. London: Development Planning Unit, University College London.
- [2]. Adi, Isbandi Rukminto (2007), Perencanaan Partisipatoris Berbasis Aset Komunitas: dari Pemikiran Menuju Penerapan, Depok: FISIP IU Press.
- [3]. Alaxander, Abe (2002), Perencanaan Daerah Partisipatif, Solo: Pondok.
- [4]. Allen, A. (2006), Understanding environmental change in the context of rural-urban interaction. In D. McGregor, D. Simon, & D. Thomson (Eds.), The peri-urban interface. approaches to sustainable natural and human resource use. USA: Earth scan.
- [5]. Audirac, I., Shermeyen, A.H. and Smith, M.T. (1990), Ideal Urban Form and Visions of the Good Life – Florida’s Growth Management Dilema, Journal of the American Planning Association, 56, 4, pp. 470-482.
- [6]. Basiago, AD (1999), Economic, social, and environmental sustainability in development theory and urban planning practice, The Environmentalist 19, 145-161, Kluwer Academic Publishers, Boston. Manufactured in the Netherlands.
- [7]. Breuckner, J. K. (2000), Urban Sprawl – Diagnoses and Remedies, International Regional Science Review 23, 2: 160–171.
- [8]. Burgess W. E. (2008), The Growth of the City: An Introduction to a Research Project, Urban Ecology 24:16-26.
- [9]. Caruso, G. (2005), Integrating urban economics and cellular automata to model periurbanisation (Universit\_e Catholique de Louvain dissertation).
- [10]. Chin, N. (2002), Unearthing the roots of urban Sprawl: a critical analysis of form, function and methodology. Paper 47, Centre for Advanced Spatial Analysis, University College, London.
- [11]. Cheshire, P. (2009), Urban Land Markets and Policy Failures. In: Geyer, H.S. (ed), International handbook of urban policy, vol. II: issues in the developed world. Cheltenham, UK: Edward Elgar.
- [12]. Duxbury, Nancy; Gillette, Eileen; Pepper, Kaija (2007), Creative City News : Special Edition 4, John McLachlan–Gliss Media.
- [13]. Groat, Linda and Wang, David (2013), Architectural Research Methods, Published by John Wiley & Sons, Inc., Hoboken, New Jersey, Published simultaneously in Canada.
- [14]. Hirt, S. (2007), Suburbanizing Sofia: characteristics of post-socialist peri-urban change, Urban Geography, 28(8), pp. 755-780.
- [15]. Hudalah, D., Winarso, H., & Woltjer, J. (2007), Peri-urbanisation in east Asia: a new challenge for planning? International Development Planning Review, 29, 503e519.
- [16]. Krisjane, Z. and Berzins, M., (2012), Postsocialist Urban Trends: New Patterns and Motivations for the Migration in the Suburban Areas of Riga, Latvia, Urban Studies, 49(2) 289–306.
- [17]. Kriyantono, Rachmat (2009), Teknik Praktis Riset Komunikasi. Jakarta: Prenada Media,
- [18]. Leisch, H. (2002), Gated communities in Indonesia. Cities, 19, 341e350.
- [19]. Mattingly, M. (1999). Institutional structures and processes for environmental planning and management of the peri-urban interface.
- [20]. McGee, T. G. (1989), Urbanisasi or kotadesasi? Evolving patterns of urbanization in Asia. Urbanization in Asia: Spatial Dimensions and Policy Issues, 108.
- [21]. Morelli, John (2011), Environmental Sustainability: A Definition for Environmental Professionals, Journal of Environmental Sustainability: Vol. 1: Iss. 1, Article 2.
- [22]. Nkwae, B. (2006), Conceptual framework for modelling and analysing periurban land problems in Southern Africa (Ph.D. dissertation). University of New Brunswick.
- [23]. Rossi A. (1984), The Architecture of the city, MIT Press, New York.
- [24]. Simon, D., McGregor, D., & Thompson, D. (2006), Contemporary perspectives on the peri-urban zones of cities in developing countries. In D. McGregor, D. Simon, & D. Thompson (Eds.), The peri-urban interface: Approaches to sustainable natural and human resource use. Sterling: Earthscan.
- [25]. Slaev, Aleksandar D. and Nikiforov, Ivan (2013), Factor of Urban Sprawl in Bulgaria, Spatium International review, No. 29, July 2013, pp. 22-29.
- [26]. Soetomo. (2008). Strategi-Strategi Pembangunan Masyarakat, Yogyakarta: Pustaka Pelajar.
- [27]. Stan A. (2009), Landscape of urban peripheries: landscape revitalization of peripheral urban areas [in Romanian], Ed. Univ. Ion Mincu, Bucharest.
- [28]. Stan A, (2013), Morphological Patterns of Urban Sprawl Territories, Urbanism. Arhitectură. Construcții Vol. 4 / Nr. 4 / 2013.
- [29]. Tallo, Amandus Jong, Pratiwi, Yulia, dan Astutik, Indri, (2014), Identifikasi Pola Morfologi Kota (Studi Kasus : Sebagian Kecamatan Klojen, Di Kota Malang), Jurnal Perencanaan Wilayah dan Kota, vol. 25, no. 3, hlm. 213-227, Desember 2014.
- [30]. Webster, D. (2002), On the Edge: Shaping the future of peri-urban east Asia. Stanford: Asia/Pacific Research Center, Stanford University.
- [31]. Winarso, Haryo. Delik Hudalah, Tommy Firman (2015), Peri-Urban Transformation In The Jakarta Metropolitan Area, International Journal scopus, Yoris Adi Mæreta, Associate Editor DOAJ.
- [32]. Woltjer, J. (2014), A global review on peri-urban development and planning. Jurnal Perencanaan Wilayah dan Kota, 25(1), 1e16.
- [33]. (2016), Kebijakan Pemerintah Penuntasan Permukiman Kumuh 2015-2019, Direktur Pengembangan Kawasan Permukiman Ditjen Cipta Karya – Kementerian Pekerjaan Umum dan Perumahan Rakyat.
- [34]. (2009), Rencana Tata Ruang Wilayah Kabupaten Sidoarjo Tahun 2009 – 2029, Peraturan Daerah Kabupaten Sidoarjo Nomor 6 Tahun 2009.

INTERNET:

- [35]. <https://fitriwardhono.wordpress.com/2012/04/14/pembangunan-kota-berkelanjutan/>  
[36]. [http://portal.unesco.org/en/ev.phpURL\\_ID=5496&URL\\_DO=DO\\_TOPIC&URL\\_SECTION=201.html](http://portal.unesco.org/en/ev.phpURL_ID=5496&URL_DO=DO_TOPIC&URL_SECTION=201.html)  
[37]. [http://portal.unesco.org/en/ev.phpURL\\_ID=3994&URL\\_DO=DO\\_TOPIC&URL\\_SECTION=201.html](http://portal.unesco.org/en/ev.phpURL_ID=3994&URL_DO=DO_TOPIC&URL_SECTION=201.html)

Darmansjah Tjahja Prakasa. "Improvement Concept of Urban Sprawl Based on Sustainability Aspects And People Participations Case Study: Griya Bhayangkara Housing Estate At Sidoarjo Periphery." *The International Journal of Engineering and Science (IJES)*, vol. 06, no. 12, 2017, pp. 52-65.