

## THE ARRANGEMENT OF ECO-SETTLEMENT AROUND PUSPA AGRO AND INDUSTRY IN TAMAN SUBDISTRICT SIDOARJO

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### ABSTRACT

*The presence of national trade center and industry in an area could provoke urbanization. As it is known that the problem of urbanization always leads to an increased demand of housing. Similarly, the development of Puspa Agro (Agrobis Trade Center) and industry in Taman Sub-District, Sidoarjo. If the surrounding settlements grow out of control, the region will eventually face problems like the growth of marginal areas. Besides the agricultural sector could also be threatened because of diminishing land area. The purpose of this study is to determine the extent of settlement's development in Desa Sadang and Jemundo before and after the development of Puspa Agro and industry. Then, we look for the proper arrangement's concepts of eco-settlement to be applied at the sites. Method used in this study is qualitative descriptive with naturalistic paradigm. This is to obtain factual and accurate description of the changes in settlement's condition before and after the development of Puspa Agro and industry. Primary data was collected by interview, observation, and physical measurement. The result of this study shows that the settlement's development is still in the standard of housing and settlements. Also discovered the right concept of eco-settlement's arrangement to be applied around the trade center and industry.*

**Keywords:** *eco-settlement, industry, Puspa Agro*

### ABSTRAK

*Hadirnya pusat perdagangan nasional dan industri di sebuah kawasan dapat menimbulkan urbanisasi. Seperti yang telah diketahui bahwa urbanisasi selalu mendorong pada bertambahnya permintaan atas perumahan. Sama halnya, pengembangan Puspa Agro (pusat perdagangan agrobisnis) dan industri di Taman, pinggiran Kabupaten Sidoarjo, jika permukiman sekitar tumbuh tidak terkontrol, kawasan akan menghadapi masalah-masalah seperti pertumbuhan kawasan marjinal. Selain itu sektor pertanian dapat terancam karena berkurangnya lahan. Tujuan dari studi ini adalah untuk menentukan bertambahnya perkembangan*

*permukiman di Desa Sadang dan Jemundo sebelum dan sesudah pengembangan Puspa Agro dan industri. Kemudian, melihat konsep penataan yang sesuai terhadap permukiman ramah lingkungan untuk diterapkan di daerah studi. Metode yang digunakan dalam penelitian ini adalah kualitatif deskriptif dengan paradigma naturalistik. Hal ini untuk mendapatkan deskripsi yang akurat dan faktual dari perubahan-perubahan pada kondisi permukiman sebelum dan sesudah pengembangan Puspa Agro dan industri. Data primer dikumpulkan dengan interview, pengamatan dan pengukuran secara Fisik. Hasil dari penelitian ini menunjukkan bahwa perkembangan permukiman masih di dalam standar perumahan dan permukiman. Juga ditemukan konsep yang tepat dari penataan permukiman ramah lingkungan untuk diaplikasikan di pusat perdagangan dan industri.*

**Kata kunci:** *permukiman ramah lingkungan, industri, Puspa Agro*

## **INTRODUCTION**

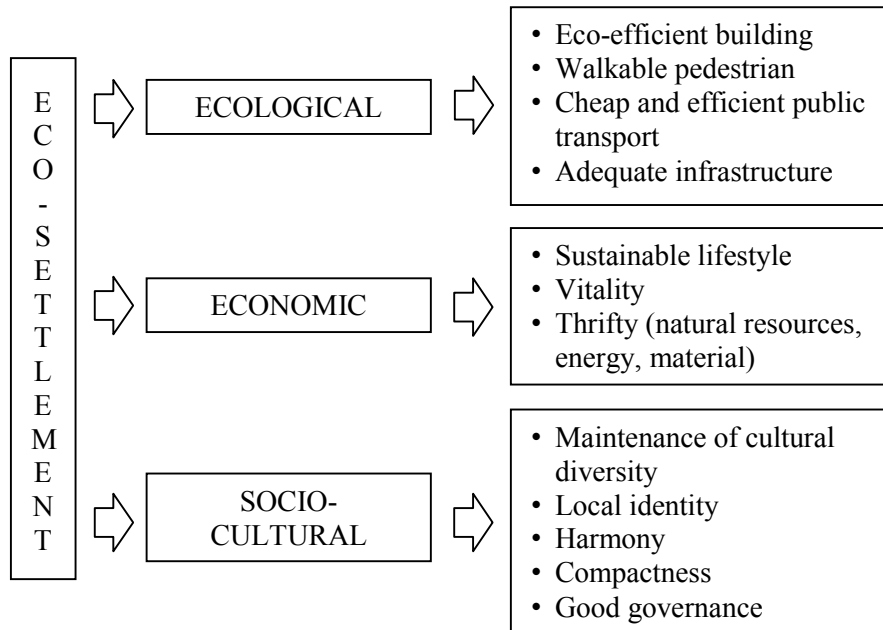
Sidoarjo is one of East Java's regencies, which is directly adjacent to Surabaya. This causes Sidoarjo become a buffer zone of Surabaya, especially Taman Subdistrict. In RTRW Kabupaten Sidoarjo 2009-2029, Taman Subdistrict has primary function as settlement, industry and trade. Industry is the most influential sector and it increase the population growth rate. Because urbanization is a consequence of industrialization.

Desa Sadang and Jemundo are part of Taman Subdistrict that have special attraction. Both are not only affected by industry but also by the presence of Puspa Agro, which officially opened in 2010. Their location is also strategic because it is passed by secondary arterial road.

Some conditions above gave impact on the surrounding environment, both positive and negative. So it takes a settlement arrangement in Desa Sadang and Jemundo to address it. Concept used is eco-settlement that emphasizes on three pillars of settlement: ecological, economic, and socio-cultural (Register & Peaks,1997 in UNEP,2010). This study specifically learn about the development of the settlement related to the development of new trade center and industry.

### **Eco-Settlement**

The term eco-settlement is refer to eco-cities, towns and villages. In this sense eco-settlement is the process of making home socially, ecologically and economically sustainable (UNEP,2010). Eco-settlement is also a process of adaptation to changing circumstances, without diminishing life quality and life supporting capability. The elements of eco-settlement can be seen in Figure 1.

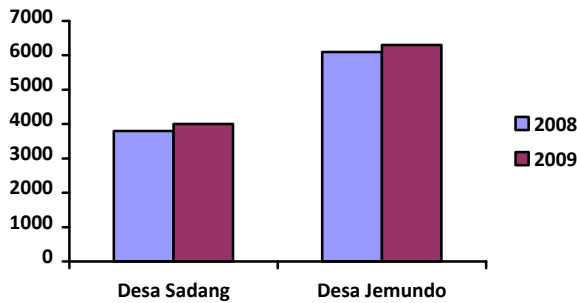


**Figure 1.** The Elements of Eco-Settlement  
 Source: author's summary from UNEP, 2010

## RESULTS AND DISCUSSION

### Settlement's Condition before Puspa Agro (2008)

Puspa Agro previously was named PIA (Pasar Induk Agrobis). Its construction had been halted because of a problem. But eventually continued and opened officially in 2010. The most noticeable difference from 2008 to now is the number of inhabitants and trade facilities. The difference of Desa Sadang's population in 2008 and 2012 is 295 persons, while in Desa Jemundo is 266 persons (Figure 2). Trade facilities were more visible in terms of quality and quantity in Desa Jemundo. It showed that many parties saw the opportunity from the increasing height of Desa Sadang and Jemundo. In 2008 there were only two supermarkets in Desa Sadang and Jemundo. Stalls and shops were not as many as today. In addition, most people still used minibus and bike as cheap and efficient transportation.



**Figure 2.** Comparison Chart of Total Population in 2008 and 2012  
 Source: monograph data of Desa Sadang and Jemundo

### Settlement’s Condition before Industry (1970’s-1990’s)

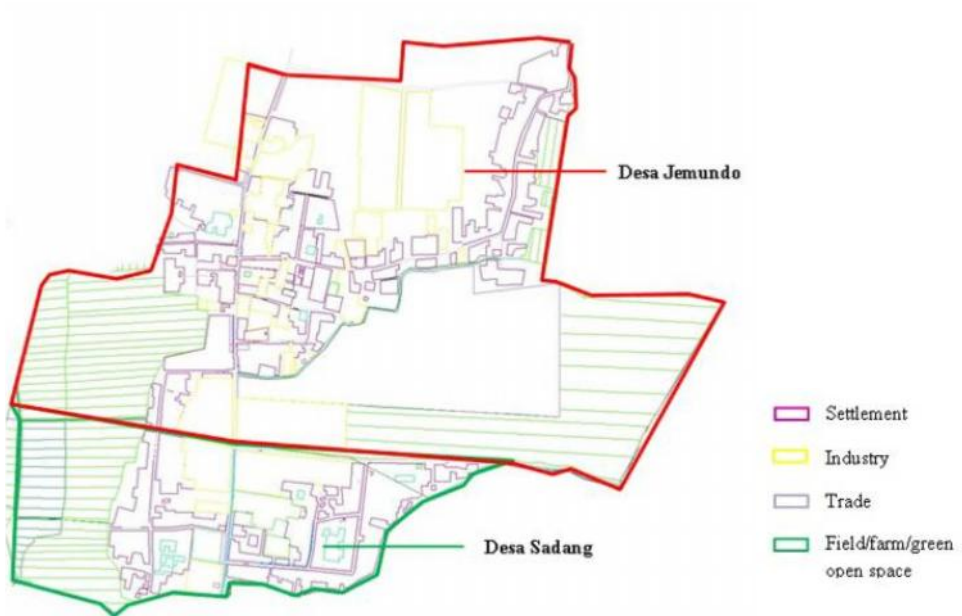
Industry entered Desa Jemundo since 1975 (battery’s factory). In Desa Sadang there was industry in 1987. Then followed by other industries from large to household’s scale. Their location was spread. Large industries usually located on the side of roadway, (easier access). While the medium to household’s scale industries usually located over into the alley.

Many industries started to enter in 1990’s. Before it, the natural resources such as water and air were in pristine condition. Building density was low and every inhabitant’s field was very wide. The price of land, house, and rent was much cheaper than today. In 1986-1987 there was paved alley in Desa Sadang. Electricity entered around 1987. Education facilities have been around since 1974 in Desa Sadang and 1980 in Desa Jemundo. The government system (RT/RW) begun since 1983.

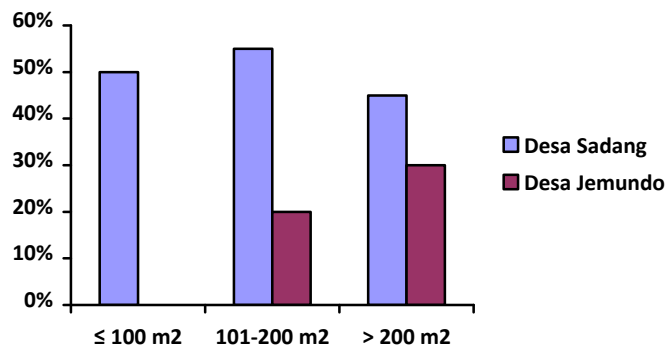
### Settlement’s Condition after Industry and Puspa Agro (2012)

The settlement’s pattern in Desa Sadang and Jemundo is following the road. Landuse mapping in Desa Sadang and Jemundo is displayed in Figure 3. Based on the theory of Jacob (1970) in Zahnd (1999), trade factor become the most important criteria in changing rural to urban settlements.

There are many houses that have front yard, especially the houses which is located in the alley. 54% of Desa Sadang’s population has between 101-200 m<sup>2</sup> land area and 46% has greater than 200m<sup>2</sup>. Unlike Desa Sadang, 50% of population in Desa Jemundo has ≤100m<sup>2</sup> land area. 20% has between 101-200 m<sup>2</sup> and 30% has greater than 200m<sup>2</sup> (Figure 4).



**Figure 3.** Landuse Mapping of Desa Sadang dan Jemundo 2012  
Source: author



**Figure 4.** Percentage of Land Area (House and Yard)  
Owned by Desa Sadang and Jemundo's Inhabitants  
Source: author

To analyze the settlement's condition in Desa Sadang and Jemundo, theory advanced by Wakely, et al (1976) in Surtiani (2006) was used and combined with eco-settlement's elements. There are several indicators that affect housing's value:

1. Building's condition

Building's condition in both Desa is 70% good. These areas were never exposed to disaster that could damage the building. When rainy season flooding happens

severe enough on the Sawunggaling roadway. In the alley, the water quickly receded and did not get into the house. Since almost houses have floor covering.

**Table 1.** Material used for building

No.	Building's part	Material dominance	Other materials
1.	Wall	Brick	Bamboo (sesek)/plywood
2.	Floor	Ceramic	Plastering/cement
3.	Roof	Roof tile	Asbestos/zync

Source: survey, September 2012

Houses, government buildings, trade facilities, and schools are well-maintained. Most of inhabitant's house has been renovated. But there are also less preserved houses, because its function is mixed between residence and workplace (Figure 5). Boarding house's quality in Desa Sadang and Jemundo is getting better and the price is quite affordable. For boarding house with lower quality the rent is much cheaper.



**Figure 5.** The Condition of House that is Also Used to Collect Used Items

Source: survey, September 2012

Another building's problem is lack of natural ventilation and lighting (Table 2). The building is still can not be called eco-efficient building. The use of fan is inevitable. It is not only caused by the hot weather, but also due to the house's condition that is attached to each other both side and rear. So natural ventilation and lighting only come from the front of houses. Related to lighting issue, there

are people who use glass tile to cover some parts of the roof so that natural light can enter from the top of houses.

**Table 2.** The Using of Artificial Light and Ventilation in Afternoon

No.	Use	User in Desa Sadang	User in Desa Jemundo
1.	Fan	60%	70%
2.	Light and fan	16%	40%

Source: survey, September 2012

2. Availability of water supply, good drainage system, adequate waste disposal  
Water supply that used to meet the daily needs comes from Prigen water (for drinking and cooking) and well. The water's well quality is not good. So it can only be used for washing and bathing. The drainage system (gutter) is already available in front of houses (Figure 6). Some gutters are given filter waste so the conditions are clean.



**Figure 6.** Drainage System in Desa Sadang

Source: survey, September 2012

But currently when it comes to heavy rains flooding start into Desa, although it is also fast receding. This is due to dense settlements, reducing rainfall catchment areas. In addition more people made a fence to limit their houses and yards. So the rainwater cannot enter the yard and have to pass through the farther path to the river. Another problem is the lack of waste disposal especially in Desa

Sadang. In addition, people have opinion as long as they have a yard it is better to burn waste there. There is no initiative to process waste into something more useful.

3. Easy access to trade and health facilities, availability of schools and is easily reached by public transport. The main activities function of Desa Sadang and Jemundo are trade and service. Trading facilities location spread along the roadway and in the residential alley. In Desa Sadang there are 47 stores, 40 stalls, 1 supermarket, and 1 bank. While in Desa Jemundo there are one central market (Puspa Agro), 100 shops, 40 stalls, 30 street vendors, 4 supermarkets, and 3 banks.

The number of education facilities in Desa Sadang is less. Also there are people who think that the school quality is less good. Access to the trade, health and education facilities is easy as the infrastructure is in good condition. Currently, the main roadway is in the process of widening. So far, indeed this roadway is inadequate, also there is no walkable pedestrian. Public transportation that can be used to reach these facilities are minibus, ojek, and pedicab. Today most people have private vehicle, thus the user of public transport is decrease.

4. Availability of public facilities like place of worship and recreation  
According to the survey, the number of worship's place in both Desa already meet minimum service standard (1 unit per 2500 people). In Desa Sadang there are two mosques and 6 mushola for 3972 people. In Desa Jemundo there are 5 mosque and 9 mushola for 6439 people. Recreational facilities become less important factor for residents. Puspa Agro is the existing recreational facility. It become gathering's place for children, teens, and families to have fun and exercise. But only on Saturday nights and Monday nights Puspa Agro is really crowded.
5. Population's density is not too high  
The population's density in Desa Sadang is 47.27 people/Ha. It is higher than Desa Jemundo 32.86 people/Ha. This is due to population growth in Desa Sadang is higher, in terms of birth and population's movement. In addition, Desa Sadang has smaller land area than Desa Jemundo.
6. Safety and health guaranteed  
Level of safety and health in Desa Sadang and Jemundo is good. Unless there are some RT that still have security-related issues, but it just minority.

## CONCLUSIONS



The development of Puspa Agro in Desa Jemundo is not bring much impact to settlements and social life around. Its presence does create jobs, but only a few inhabitants of Desa Sadang and Jemundo who worked there. Another positive impact is it can be used as recreation facility. The negative impact is now flood happens in the surrounding area though not so severe. This is because the rainwater catchment area is reduced.

Industrial presence in both *desa* gave more impact (positive and negative):

1. Provide vast employment opportunities, especially for indigenous people.
2. Provide an opportunity to open a business like roomrent, rented house, stores and stalls.
3. The area is growing and able to compete with the surrounding.
4. Increasing the price of land, houses, and boarding house.
5. Water pollution.
6. Air pollution.
7. Increasing population density.

### **The Concept of Eco-Settlement in Desa Sadang and Jemundo**

Infrastructure that must be completed and corrected:

1. Build safe and comfortable pedestrian way.
2. Adding education facilities in Desa Sadang.
3. Not complicated drainage system so the rainwater can drain quickly (especially for Desa Jemundo).
4. Creating an affordable clean water and adequate for all.
5. The proper disposal of waste, including landfill.
6. Design buildings that are energy efficient, enough ventilation and lighting.
7. Reuse the waste water
8. Recycling plastic waste into something more valuable.

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