

Industrial Relocation Effort to Minimize Environmental Pollution: Case study of Ngagel Industrial Area

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A. PREFACE

Surabaya is one of the oldest city in Indonesia. The evidence of historical heritages shows that the existence of Surabaya has been started since 13th century, before the colonization era. The colonization era in Surabaya started since Dutch landed in Surabaya at the early of 15th century. Dutch built Kalimas River fortress in this period and it fostered Surabaya became a center of East Indies Commerce in North part of Java. Commercial area grew in the downstream of Kalimas River, and then followed by the growing of residential area to the upstream.

There were various kinds of ethnics live in the area such as: Dutch, China, and Arabic. Development of Surabaya in the earlier era city was linier the North – South side by side with Kalimas River. The development of Surabaya in the North side spurred by Tanjung Perak Seaport in the middle of 15th century and followed by the development to the South using the river transport line that connecting the South and the North part of the city.

Surabaya has a very strategic position as a regional development center in East Indonesia. Surabaya development is an integrated part of national development and it can not be separated from the development of surrounding regions. In East Java Province, Surabaya has important role in industry, trade, maritime and education activities. Local trades in Surabaya serve more than 4 million inhabitants and serve the demand of regional and national for goods and services. For such reason development in Surabaya must be integrated, useful and productive. Strategy to improve and to develop of city potency and utilization of recourses must be applied to make Surabaya be able to compete in the global market.

Surabaya area is about \pm 32,636 hectares. Urban infrastructures namely: seaport, container terminal, international airport, bus and railway station, are available to serve the need of the city. Human resources and strategic location are the supporting factors for the development of Surabaya.

The development of Surabaya makes the city becomes dynamic. Urban development in Surabaya makes the city change dynamically in many aspects. The dynamic city development is the need of the people to improve their life. The problem is to control the development of the city so that it can be useful for society. The development of Surabaya provides improvement of urban activities, among others: industry, houses and services. Improvement of such activities in the city center can cause environment pollution. This phenomenon has been identified and be analyzed, so, as result, the industry activities have to move on to fringe area.

B. GENERAL FIGURES OF SURABAYA

1 Geography

Surabaya is located between 7° 12'–7° 21' South Latitude and between 112°36'–112° East Longitude. Surabaya is also situated 0–50 meters above sea level. Meanwhile in the seashore is situated 1–3 meters above sea level. Most part of Surabaya city have 0–10 meters above sea level (80, 70%) spreading in the North, East, South and city center. Other region have 10–20 meters above sea level which situated in the west part of Surabaya. Surabaya situated in the South of Madura Strait which also as border to the East. To the South of the city is Sidoarjo, and to West is Gresik.

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2 Population and Economy

Surabaya as the second biggest city in Indonesia is a home for 2.626.904 inhabitants. Growth population is about 0.50% per annum, measured on the constant number of population census in 2000. The citizen consists of various ethnics and cultures which have variety in politic, economy, social and culture. The people is distributed in different density every sub district. Therefore, it is a challenge for local government to distribute the activity concentrations to the whole part of the city, so the people to be able to spread out evenly.

Economic growth in Surabaya, reflected from the value of gross regional domestic product (GRDP), indicates positive value of 1% in 1999, then, it was 3% in 2000 and 4% in 2001 respectively. According to an economic projection to the year 2005, economic growth of Surabaya in 2003 will be predicted about 4%.

The economic development of Surabaya is close related to the role of investment. Such investment provides a need to have an efficient mechanism supporting the growth of new investments, either derived from domestic investment or foreign investment in Surabaya. Eventually it is expected that such mechanism and condition can support in raising competitive power in business in order to meet market need both domestic and overseas.

3 Industrial Development History

There are two important things that support development of industry in Surabaya; first, in the colonialism era, awareness of Governor General Daendels that Dutch defense in Surabaya must be supported by several workshops, so, the defense equipment can be repaired or even produced them whenever possible.

Second, opening the remote areas of Surabaya which are actually fertile and produce export commodity needs transport and management. The areas must also be supported by workshops to repair the transport infrastructures and equipment and also to manage them.

Following up the Deandels' ideas, a steel company was established in 1808 called "Construction Winkel" (construction workshop). The strategic industries in Surabaya were being developed, and in 1823 a Dutch businessman established another construction workshop called "NV Nederlandsch Indische Industrie", and in 1841 another workshop was established called "De Phoenix".

Up to 1900es another workshops was established, that usually worked on the field of making kettle and machine for sugar cane factory. Basically the workshop located in the area of Red Bridge (downstream of Kalimas River). Besides workshop industries, there were also medium and small industry, for example: saw milling company established in Grudo by Zandhuis and Co in 1862. Wine and alcoholic refinery established in Surabaya by Firma Levert. The first ice factory established in 1866 by GH.Kunemen.

From the above data it can be seen that in the middle of 19th century, Surabaya grew as an industrial city. Industrial zone was not planned but it grew based on the need. Such a condition made Red Bridge area become in a mess. After 1916 Surabaya municipality government (Gemeente) decided and appointed NGAGEL Area (upstream of Kalimas River) became an industrial zone. Many factories previously were situated in around Red Bridge relocated to this new area. NGAGEL area was chosen as it is located at the river side of Kalimas River. In the middle 1930es NGAGEL area was full. And as the result of it the other factories established in many part of city.

C. INDUSTRIAL DEVELOPMENT

1. Spatial Planning

Development of a city should be able to provide a harmony to all development aspects. In order to do it, a city must have a spatial planning. Spatial planning arranged by preparing and analyze perspective condition expected of area in the future with the need of people and environment. Urban spatial planning must be integrated with the concept of balance among human being, infrastructures, environment, and the surrounding where people live. Approximately 35% of the total area of 32.600 hectares is urban area consisting of residential, commercial, industrial, public facilities, road and railway and military and 35% of total land area is rural land use such as agricultural, salt field, forest, river and uncultivated/unused. Land use excluding fishpond/salt field and river, which can be developed for urban land use, occupies approximately 79% of total land area.

In doing business or establishing a factory, besides the advantages of the products, the preservation on the environment must also be considered. The industrial area which is closely located to the residential area causes apprehension that can disturb the environment due to pollution caused by the industries.

2. Industrial Relocation

The essence of development is a process of utilization of the existing natural resources to produce goods or services for the people either in the form of finishing product or raw material. The utilization of natural resources creates many kinds of activities in business and industries. The activities have positive and negative effects, and if they are not managed in a good way they can disturb the environment. It is often happens that utilization of natural resources does not consider the principles of environmental preservation, so, it can cause effects to the environment.

Generally people will be the first victim of the effects. For such reason people must be protected from effects caused by the pollution. Industrial activities must give much attention to environmental protection by choose appropriate location and carry out environmental pollution prevention. Considering the environmental concern, Surabaya is trying to relocate the factories that are no longer unsuitable in the existing/previous location.

D. CASES: NGAGEL AREA

NGAGEL industrial complex has developed since 1916, with the total area of 15 hectares. During this period, many factories were established supported by transport facilities connecting the activities in the southern of the city to the seaport in the northern area. The city development pattern from the Northern to the Southern in Surabaya continued up to 1960. In the early 1970 the area of northern and western started to develop, along the corridor of Kalimas River. As the area was developing to be an industrial area, the surrounding area also was becoming residential and commercial area. Gradually, the commercial activities also increasing very rapidly in this area. NGAGEL as an industrial area was creating environmental problems particularly to its adjacent residential areas. Having this condition, city government prepared a new industrial area.

In the year of 1978, Surabaya finished a master plan for Surabaya called "Master Plan 2000". Based on such plan, NGAGEL area which is used to be an industrial area is converted to be commercial areas. The new industrial area was decided at RUNGKUT located in East Surabaya, and at TANDES a new industrial area located in the West Surabaya. The new industrial areas, RUNGKUT and TANDES are designated for "less pollution industry", heavy pollution industry is no longer permitted in Surabaya. Industrial relocation from the city center to the fringe area can minimize environmental pollution in the city center. RUNGKUT industrial estate equipped by a centralized waste treatment system in which every factory in the estate area uses sewer system to discharge to the waste plant.

The city government takes an approach to relocate the factories from NGAGEL area by not allowing extension of permits for industrial purposes since the area has been planned for commercial area. The factory owners can convert their properties, which used to be factory, become commercial buildings such as office, hotel, department stores or other commercial activities. Therefore, the factories will be relocate on a voluntary basis by the factory owners.

The Industrial relocation planned to finish in 2013, for that reason, Surabaya city Government are promoting the relocation program to raise the quality of Surabaya city environment. It is expected that industrial relocation will minimize environmental pollution caused by industrial activities. Up to 2002, many factories have moved from NGAGEL to the new industry area. At the present time the activities in NGAGEL dominated by the activities of for commerce such as apartment, mall, office, shopping center and hotel etc.

An interesting case that can be learned from NGAGEL relocation process is about cultural building heritage. Surabaya has many old buildings built in the colonization era including in NGAGEL area. Function of the buildings has been chanced from factory to shopping mall or other function. However, many of the building owners keep the shape and the architecture style. An example is *Bir Bintang* factory. *Bir Bintang* is the most famous beer in Indonesia and produced by factory located in NGAGEL area. The *Bir Bintang* factory has been relocated to the new industrial area, but the buildings still represent colonized

architecture. At the present time even though the factories become commercial buildings, but the shape and architecture is still the same as the condition in the past time.

E. REMARKS

When implementing industrial relocation such as in NGAGEL Area, it needs to note that development program will not be successful without support and participation of the people, thus it is important to raise the role and participation of the people, especially the factory owners and the people who live around the previous industrial area and the new ones.

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