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Strategy Development of Western East Java Industrial Area

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Abstract The aim of this research is to make recommendations on the strategy development of *Eco-Industrial Park* in the western north coast (*Pantura*) of East Java, so that existing industrial area can improve according to the concept of the environmentally and sustainable industrial area. We also explain the strengths and weaknesses of the industrial western north coast area and identify the macro environment (external) factor which may affect the current and future development of the industrial park management in western *Pantura*. This study uses IPA, SWOT and IFAS EFAS analysis. The results concluded as *Selective Maintenance Strategy* using moderate scenario, i.e. make improvements to some non-optimal crucial aspect. The development of the industrial area should be done gradually and focused more on the crucial aspects that have the most support and ready to be developed.

Keywords *Important Performance Analysis*, SWOT, EFAS, IFAS, Selective Maintenance Strategy

1. Introduction

Eco-Industrial Parks (EIPs) is a concept that distributed in many countries as a model of a new industry that provide sustainable dimension – managing industry practices and activities to achieve sustainable development goals. It is mutually beneficial for society, economy and environment which are clearly stated in the definition of EIPs concept [1, 2, 3].

EIP is viewed as the application of industrial ecology in practice. EIP can be defined as a community of manufacturing and businesses service in the environmental and economic performance through collaboration in managing environmental and resource issues. In cooperation, business community looking for a collective benefit that is greater than individual benefits, so that each company will realize unoptimal individual performance [4, 5, 6].

EIP is defined as manufacturing and service businesses community that located together on a common property. Business members are looking for economic performance, social and environmental enhanced through collaboration in managing environmental issues and resources. By working together, the business community's collective profit is greater than individual benefits. The goal of an EIP is to improve the economic performance of the participating companies while minimizing their environmental impact. Components of this approach include green design infrastructure and parks, net production, pollution prevention, energy efficiency and the partnership between the companies. EIP is also beneficial for the local community to ensure positive net impact of development [7, 8, 9].

As the development of the industrial area in the western part of the northern coast (*Pantura*) of East Java cause various problems, e.g. environmental degradation, the claims and conflicts between the industry and the public about the industry related to the welfare gap, environmental pollution potential of liquid, gas/air, solid as a result of industrial activities and technical issues related to the limitations of the raw water resource, the source of energy generation and industrial waste management controls that affect the sustainability of the industry.

In this era of globalization and free market, the industry faced with stiff competition, so that comparative advantage is a past mainstay cannot overcome the free market challenges. Increased efficiency is a key to improve competitiveness against similar products from neighboring countries and other countries to Indonesia and also in export products. Only competitive advantage and a qualified product will be able to thrive and win the competition in a free market [10].

Industrial activity is needed to boost economic growth, but on the other hand, the activity can also be a cause of environmental damage and negatively impact on the

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surrounding community. Since global environmental issues and the concept of sustainable development emerged, the industry is also expected to contribute to the achievement of a harmonious relationship between activity and mutual support in the industry with the surrounding ecosystem. Thus, the birth of environmental friendly concept in industrial estate is one of the industry's responses to global environmental change.

Construction and development of Indonesian industrial estates are generally regulated by government policy through Presidential Decree that followed by Regulation of Industry Ministry and Decree of the Department Head of National Land. Conceptual development of industrial estates in Indonesia is an integrated development process that considers many related aspects. The most important development is the location aspects (selecting the right site that meets specified criteria). This aspect will determine the success of the ideal development, which is encourage an increase in people's income and still protecting the environment.

Western North coast of East Java is a strategic region and has the highest economic growth compared to other regions in Indonesia, not least within the area of East Java. The strategic value makes this area should be developed in a focused, organized and well planned strategic role that maintained regard to environmental aspects. The area has a huge potential to accommodate the development of activities to support regional development and utilization of natural resources, especially the activities of emerging industries in East Java. These conditions implied from the increasing number of land-use change in the northern coastal region which is directed to support industrial activities and opportunities for local government districts to grow industrial activities in regional development policies. The support for the local government policy is to boost the economy of the region concerned as a consequence of the policy of regional autonomy.

The purpose of this study is to formulate appropriate strategies to construct an industrial estate towards the development of *Eco-Industrial Park*, where industry players in an industrial area can jointly improve performance of environment, economy and social by minimizing environmental impacts and also has the ability to produce competitive products advantage in the market.

2. Materials and Methods

This study used a qualitative approach. The method of data collection is field observation and structured interviews. Analysis method used *Importance Performance Analysis* (IPA), *Strength, Weakness, Opportunity, Threats* (SWOT), Internal and External Factors Analysis Summary EFAS IFAS.

2.1. Study Area

Research on EIPs or environmentally sound industry is located in the North Coast region (*Pantura*), East Java. The selection of location was based on consideration of the increasing number of even one of the orientation coast into a new industrial site in East Java. Selected Pantura location includes Gresik, Lamongan and Tuban (Fig. 1).



Figure 1. Orientation of Gresik, Lamongan and Tuban on East Java [11]

2.2. Data Collection

Conducted surveys are field observations and structured interviews. Field survey was conducted in four months (January-April 2013). Respondents of this research are community in an industrial area of north coast and the government as policy maker. Society as a respondent was drawn randomly in three study sites.

Steps in this primary survey are to identify the strengths and weaknesses with input from of the previous analysis, both characteristics and factor analysis. This identification is supported by the analysis of potential problems, detect macro environment (external) which may affect the development of current and future industrial park management in western *Pantura* of East Java. The last step is to formulate strategies that might be implemented with reflect or a combination of strength indicator (S), weaknesses (W), opportunities (O), and threats (T) which has been found in the previous two steps.

2.3. Data Analysis

2.3.1. Importance Performance Analysis (IPA)

Assessment on the level of satisfaction or perception to the condition of the industrial area in western *Pantura,* East Java analyzed with a combination of importance level attributes and perceptions on the quality of the industrial area existence into a two-dimensional form. Parties who provide the assessment are industry and surrounding communities. To facilitate the discussion on the level of satisfaction and interest in the condition of the industrial area in *Pantura*, the IPA analysis performed on industrial zones along the Western *Pantura* East Java lane [12]. The results of the analysis covers four different suggestions based on the size of the interest rate and the quality of services, which then used to establish the strategy on planning, development and management of industrial estates in the north coast region.

The scale used in this study is five levels with a weight rating of the expected rate of interest and perception assessment on the condition of the industrial park is very satisfied/important as rate 5 and if very dissatisfied/ unimportant is 1.

2.3.1. SWOT and EFAS IFAS

We analyzed the determining management strategies of western *Pantura* industrial area by SWOT, EFAS and IFAS analysis. SWOT analysis is an analysis to determine the factors that influence the management of the industry, i.e. Strengths, Weaknesses, Opportunities and Threats. We also inventoried these factors in planning strategy that is used as the basis to determine the corrective measures required in subsequent development [13]. Determination of the development basic concepts based on SWOT analysis by assessing (weighted) using the IFAS - EFAS analysis. The results of assessment are displayed in the form of quadrants that will determine the future development strategy. We assess every aspect of SWOT to weighted from 0,00 to 1,00 – the aspects of each factors (internal/external) are summed to produce a weight of 1. After weighting criteria, rating is given to indicate the level of importance (1=somewhat important, 2 = important, 3 = very important). The weighting value multiplied by the specified rating. The sum of each factor (internal/external) then totaled to know the location of the SWOT quadrant in determining the development strategy.

3. Results and Discussion

Questionnaires to industry players obtained following table 1.

Cartesian diagram (Fig. 2) on the level of satisfaction and industry interests are concentrate in quadrant IV which implied the variables related to the presence and performance of industrial area are crucial, but have a bad service quality. Top priority variables that need to be improved and developed because it's unsatisfactory condition but has a high interest rate are variable of travel time. Otherwise, the questionnaires to the community obtained in the Table 2.

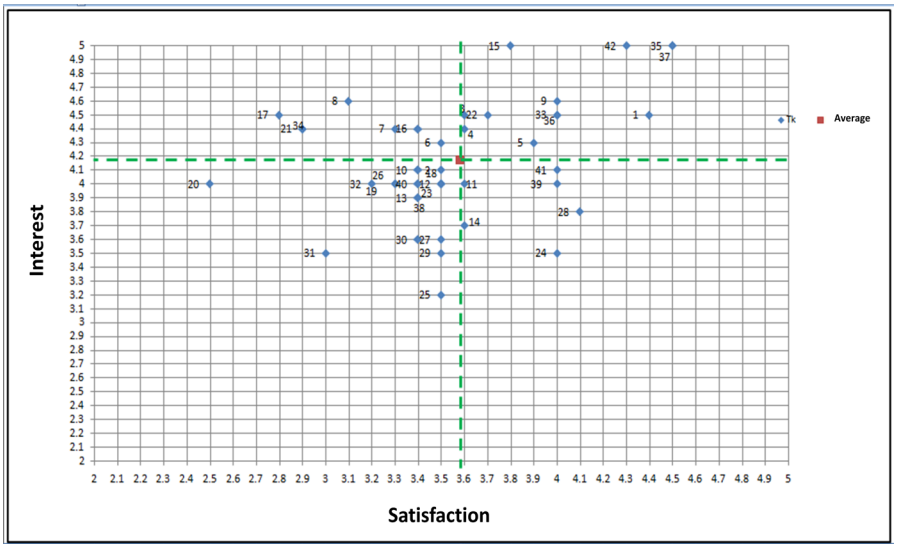


Figure 2. IPA Cartesian Diagram of Industry Actors

Table 1. Satisfaction and Importance Level of Industrial Actors

No	Contention	Satisfaction (X)	Interest (Y)	Suitability (%)
1.	industrial hygiene conditions	4.4	4.5	98
2.	conditions of the industrial area arrangement	3.5	4.1	85
3.	distance of industrial area - settlement	3.6	4.5	80
4.	distance of industrial area - downtown	3.6	4.4	82
5.	network pattern of road (ease of attainment)	3.9	4.3	91
6.	pavement condition	3.5	4.3	81
7.	Road width (dimension)	3.3	4.4	75
8.	completeness of road supporting facilities	3.1	4.6	67
9.	availability of drainage network	4.0	4.6	87
10.	conditions of drainage network	3.4	4.1	83
11.	maintenance of drainage network	3.6	4.0	90
12.	clean water conditions	3.5	4.0	88
13.	availability of clean water network	3.4	3.9	87
14.	services of clean water network	3.6	3.7	97
15.	facilities availability of clean water network	3.8	5.0	76
16.	facilities conditions of clean water network	3.4	4.4	77
17.	trash placement	2.8	4.5	62
18.	waste transportation services	3.5	4.0	88
19.	availability and conditions of landfills	3.3	4.0	83
20.	waste processing	2.5	4.0	63
21.	wastewater treatment in industrial area	2.9	4.4	66
22.	availability of electricity network	3.7	4.5	82
23.	conditions and availability of electricity infrastructure	3.5	4.0	88
24.	conditions and availability of communications networks	4.0	3.5	114
25.	topography/elevation	3.5	3.2	109
26.	availability and condition of transport infrastructure	3.3	4.0	83
27.	appropriateness of carrying capacity of land in industrial area	3.5	3.6	97
28.	conditions and suitability of geological in industrial area	4.1	3.8	108
29.	condition and suitability of land availability	3.5	3.5	100
30.	orientation of site industrial area	3.4	3.6	94
31.	suitability of industrial plots	3.0	3.5	86
32.	availability and condition of green open spaces	3.2	4.0	60
33.	availability and condition of supporting facilities (e.g. canteens, guest houses, places of worship, sports facilities, etc.)	4.0	4.5	89
34.	management capacity of waste water	2.9	4.4	66
35.	labor availability	4.5	5.0	90
36.	availability of commercial facilities	4.0	4.5	89
37.	suitability of safety regulations	4.5	5.0	90
38.	areas and industrial scale of energy utilization	3.5	4.0	88
39.	regional and industrial scale of water resources utilization	4.0	4.0	100
40.	availability and implementation of disaster mitigation and emergency response	3.4	4.0	85
41.	implementation of regional management organizations	4.0	4.1	98
42.	integration with the community	4.3	5	86
	Average	**3.58**	**4.18**	

Table 2. Level of Satisfaction and Social Interests

No.	Contention	Satisfaction (X)	Interest (Y)	Suitability (%)
1.	pavement in industrial areas	3.9	4.1	95
2.	completeness of road supporting facilities	3.9	3.8	103
3.	convenience of transportation	3.0	3.4	88
4.	Security of transport infrastructure	3.1	3.2	97
5.	facilities' condition of transport infrastructure	3.4	3.4	100
6.	clean water conditions	3.4	3.6	94
7.	drainage conditions	3.1	3.8	82
8.	trash placement of local industries	3.2	3.9	82
9.	waste management of local industries	3.1	3.6	86
10.	wastewater management	3.2	3.8	84
11.	availability of electricity infrastructure	3.6	4.0	90
12.	air pollution in industrial areas	2.1	3.8	55
13.	pollutants management in the company	2.4	3.6	67
14.	company's contribution to social corporate	3.0	3.9	77
15.	corporate influence over local employment	3.1	4.5	69
16.	social legitimacy to local natural resources exploitation	2.9	3.8	76
17.	related party agreements on local residents welfare	3.0	3.9	77
18.	company's consultation process on the local community	2.9	3.6	81
19.	Companies' efforts on non-conflict development between local communities	2.5	3.9	64
20.	response and follow-up on public's comments and complaints	2.8	3.8	74
21.	the company's efforts to maintain the public integrity	2.8	3.6	78
22.	development influence of the company to the local public health	3.0	3.5	86
23.	vectors of disease progression with the development of the company	3.0	3.7	81
24.	project's procedures to prevent and overcome accidents	3.1	3.6	86
	Average	**3.06**	**3.74**	

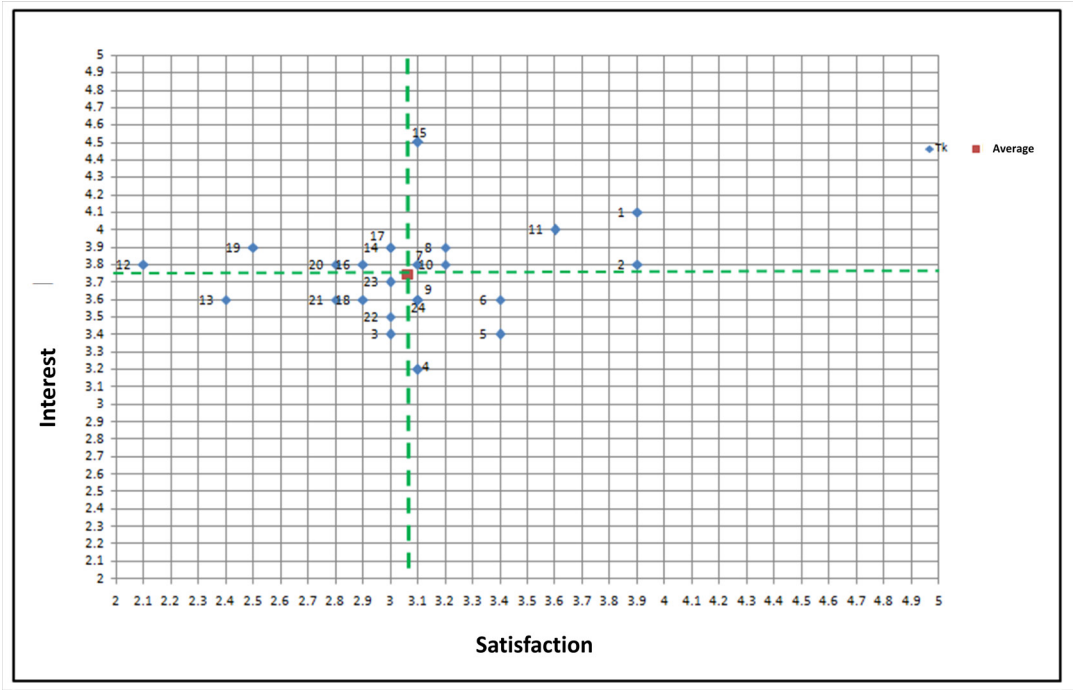


Figure 3. Cartesian Diagram of Public' IPA

Cartesian diagram (Fig. 3) showed that the main priority to be improved and developed due to its unsatisfactory condition yet important is the variable of travel time. Indifferent with IPA results on industry participants, the results on local community concentrate in quadrant IV. Tsang *et al.* [14], Antony *et al.* [15] and Lau *et al.* [16] stated the interests of society

and industry actors' satisfaction should be focused on the quadrant IV showed in IPA matrix. So that community satisfaction and consideration factors of industry actors may equal. IPA was developed as an analytical tool to facilitate setting priorities for improvement and resource allocation. Three factors theory of customer satisfaction shows non-linear and crucial correlation between the performances attributes (satisfaction). However, the theory was to question the results of the application of IPA and managerial recommendations. Managers should be aware of changes to attribute performance (satisfaction) related to significant changes in the attribute [17, 18, 12], typically managers working with limited resources in a competitive environment.

We analyzed the strengths and the opportunities as a positive factor and weaknesses and threats that exist as a negative factor (SWOT). We also describe the correlation between the four aspects of SWOT (Table 4).

Table 3. SWOT Aspect of *Pantura* Industrial Area

Aspects			
Strengths	**Weaknesses**	**Opportunities**	**Threats**
● a national strategic areas ● being in the national strategic road ● mostly flat and gently sloping land ● many specific areas that facilitate management industry ● many specific areas that facilitate the management ● several major ports located in *Pantura* ● next to the sea, facilitate the sea transport ● wide land for development of regional sea port ● Improved inter-district roads due to development of industrial estates ● various industries in the path of *Pantura* ● initial occurrence of home industries ● Availability of raw water resources ● availability of telephone and electricity networks ● availability of economic infrastructure ● Availability of raw and auxiliary materials from local resources ● developed commodity ● Sufficient human resources with competitive wages ● support for government policy in industrial development of *Pantura*, supporting institutions: UPT, UPT Metrology, UPT PSMB, UPT P3ES ● economic structure of East Java is > 51% dominated by domestic sector availability of substantial funds for domestic industry development	● expansion of industrial area on productive land (agriculture & farm) ● few industries are still scattered and inefficient ● Increased air pollution ● absence of waste air filter ● less green space ● Industrial waste water pollution ● No waste water treatment ● Damage to coastal and marine ecosystems ● no waste management plan ● *AMDAL* is not implemented properly ● less job opportunity in small industries ● outsourcing labor recruitment ● Non-smooth transport conditions ● Damage on the road network around industrial area ● Pressure by heavy vehicle passing ● bad pavement quality ● dense of industrial activity surround the *Pantura* ● Lack access to support the development of industrial areas ● low provision of infrastructure ● Difficulty on land acquisition to develop *Pantura* ● Most industry is still labor intensive ● workforce housing industry is still minimal ● Limited facilities and infrastructure of industrial area ● Low access on information technology ● Limited capital and expertise ● Low productivity, efficiency and design of industrial products ● complex and long time permitting process for the industrial area ● undeveloped mindset industry ● Lack cooperation or exchange between enterprises, area management and local policy makers in industrial area ● lack understanding and utilization of industrial technology ● Weak marketing and information of business development ● Unfavorable business climate ● Lack of industry and trade sector partnerships ● Lack of products' supervision and consumer protection ● Lack of synergy between intern policy on industrial development in central, provincial and district/city	● development of some areas as industrial estates ● development of new settlements around the industrial area ● Fisheries development plans in coastal areas ● Potential processing of agricultural and fishery products ● Highways plan of Gresik - Lamongan – Tuban ● Increased use of rail transport for goods ● power plant development ● unemployed residents ● livelihood transition, fishing / farmers into factory workers ● high interest of investors in industry ● increased economic growth ● Increase the sale of raw product ● technology development ● expertise development of surrounding communities ● opportunities to manage waste in a modern large-scale industry by compost and organic fertilizer ● many products that can be used by other companies ● opening of domestic and foreign market opportunities ● Availability of institutions/ experts that enhanced the competitive advantage ● society willingness to develop industrial business	● onset of urbanization and regional disparities ● Disruption of surround industrial activities ● Land acquisition that takes a long process ● low marketability of the surrounding community ● minimal society's knowledge ● spatial incompatibility of industrial location ● problem on surround human health ● polluted water quality ● industries that use import raw and auxiliary materials ● Law enforcement is not strict ● Low economy of surround society ● difficulty of *Pantura* developing ● decrease in land price of surround industry for residential

Table 4. The Matrix of SWOT Analysis on Industrial Area of *Pantura*

SO (Strength – Opportunities)	***WO (Weakness – Opportunities)***
■ The industrial area that located on Pantura road will facilitate the distribution of raw and finished products, especially supported by Gresik - Lamongan – Tuban highway plan ■ The existence of industrial area create employment for local community which tend to change into factory workers/labors, however, we need to provide training to improve their skills, to increase regional economic growth ■ The availability of industrial supporting facilities and utilities will increase the interest of the investors, especially by plans development of facilities and utilities of industries in Pantura ■ The flat and wide physical condition of Pantura will support the development of more organized industrial zones, i.e. bonded industrial area, which also provides integrated facilities and infrastructure, without any negative impact on surround area ■ Pantura has commodity that develop into industrial raw materials such as agriculture and fisheries, to increase productivity of agriculture and fisheries, and save the distribution of raw materials due to the location proximity ■ Development of increasingly advanced technology in industry, one of them in the management of waste that can be reused as a raw material of other industry	■ improvements on the road network around industry to the highway access plan will accelerate the distribution of goods, and also accommodate the access, so that supports the development of industrial zones ■ surround communities in industrial area can be recruited for work in the industry, with more access and not need to mobilize the workers from out of town which could increase the capital cost ■ AMDAL existence and correct implementation will reduce environmental pollution that caused by industrial waste by waste water treatment for each industry, so that investors will invest more and create more advanced industries development ■ industrial area development plan reduce the immersion of workers' illegal settlements surround industry ■ training and understanding of the latest technologies is given to industry actors towards environmental friendly industries and to harness existing institutions and expertise, to make the industry more competitive ■ improving the marketing and business development information related to the more open domestic and foreign market opportunities ■ Reducing the negative impact of industrial waste by develop the large-scale modern waste management to create compost and organic fertilizer.
ST (Strength – Threats)	WT (Weakness – Threats)
■ government policy on the industry development of Pantura adapted to industrial planning in reducing the negative impact including a decrease in land settlement price around the industry ■ many industries have sprung up in Pantura road will increase surround community's economy ■ Correct utilization on the availability of supporting resources to industry's activities will reduce the impact on public health and the quality of the surrounding environment ■ Improving the quality and quantity of local raw materials to compete with imported raw materials	■ Allotment planning of appropriate industrial location according the policy improve surround region's economy ■ Provision of waste water treatment for each industry will reduce the negative impact on the environment, such as public health, water quality, soil, air and marine ecosystems ■ Job recruitment for local communities to improve their economy and skills rate, to make them think creative ■ Improvements of Pantura road network will smooth the transport development of the industry ■ Setting a good and focused industrial area will simplify the activities organization of the industrial area multiplier effect, so it will not interfere the traffic

We then calculated the IFAS (Appendix 1) and EFAS (Appendix 2), to determine the value of X and Y as follows:

X = POTENCY + PROBLEMS
= 0.85 + (-1.435)
= - 0.585

Y = OPPORTUNITIES + THREATS
= 1.41 + (-0.965)
= 0.445

Farther, we can scheme the SWOT analysis on the development strategy of Western *Pantura* in Fig. 4. The role of industrial sector in economic development is essential for the growth of the industrial sector to create jobs and accommodate workforces that increase the income and purchasing ability. The increase in income and purchasing ability indicate that the economy is growing and healthy. Industrial activities also produce the goods and services that needed by the community, generating foreign exchange through exports and conserve foreign exchange by import substitution products. Rapid industrial growth stimulates the development of other sectors, e.g. financial institutions, marketing, trading, advertising and transportation. All services sector will support industrial growth rate that lead to widespread employment opportunities, which in turn increases the income and purchasing ability of local communities. Besides providing a positive impact on the national economy, industrial activity also had negative impacts on environment, e.g. pollution of soil, water and air. The more rapid growth of an industry in a country, it will adversely affect the sustainability of the environment if improperly managed. It is due to the environmental problems that arise from the interaction between human activity and natural resources, or more precisely is the mechanism of supply and demand on environment or the environment offers. Unbalanced interaction and harmony between these two aspects can cause environmental problems. The high demand for environmental resources that is not supported by the availability and supply of environmental resources will lead to excessive exploitation of the environment that could eventually lead to environmental degradation [19,20,21].

Industrial Development Zone in *Pantura* is in quadrant II, space D. So the strategies that need to be used in the development of the area are *Selective Maintenance Strategy* [13]. Object management was developed by the selection of considered crucial things for development of industrial area of Western *Pantura,* East Java. The basis for selection of the

crucial things for development of industrial area of *Pantura* refers to the results of previous IPA analysis. The results of IPA analysis were taken on variables that concentrate in quadrant IV. It implied that the development of *Pantura* Industrial Area need improvement as it is crucial aspect yet has not been optimally performance yet. Jacobsen [22] also recognized *Selective Maintenance Strategy* in the case of industries in Kalundborg, Denmark. Jacobsen concluded that industrial symbiosis is reviewed from the perspective of the company, must be understood both in terms of economic, environmental performance, and more collective approach to sustainable industries.

Development of *Eco-Industrial Park* (EIPs) required partnership between the business community and participation of the surrounding community for more efficient resources utilization (information, materials, water, energy, infrastructure and natural habitat). All those aspects together were used to improve economic and environmental quality, and to improve human resources for business interests and surrounding communities. It is in accordance with the principles of sustainability to minimize the use of energy and raw materials, minimizing garbage/waste, and build a sustainable economy, ecology and social relations [23, 24, 25].

SWOT, EFAS and IFAS analysis shows that the development strategy of *Pantura* industrial management area is using *Selective Maintenance Strategy,* where only crucial things that are considered. Referring to IPA analysis, several aspects deemed crucial to future development/ improvement because high interest factors yet has unoptimal service performance. So the development of industrial area management of western *Pantura* towards Eco - Industrial Park will prior to focus these aspects (Table 5).

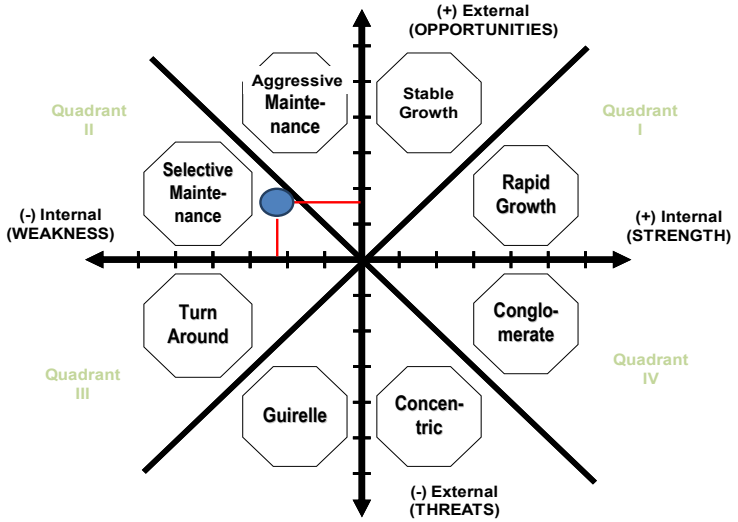


Figure 4. Quadrant of IFAs - EFAS Analysis Strategy on Industrial Area Development of *Pantura*

Table 5. Crucial Aspects that Need Improvement

INDUSTRIAL ACTORS	SOCIETY
● Condition of road pavement	● Air pollution in industrial areas
● Road width (dimension)	● The company's efforts to prevent development conflicts between local communities
● Completed road supporting facilities	
● Waste treatment in industrial area	● Feedback and follow-up on public's comments and complaints
● Capacity management of waste water treatment	● social legitimacy to exploitation of natural resources in local area
● Condition of water network facilities	● contribution to the social corporate
● Waste placement	● Agreement of related parties regarding the welfare of local residents
● Availability and condition of green open spaces	
STRATEGIES	
● Prepare environmental regulatory, infrastructure and taxation for the protection of raw water resources area	
● Expansion of open green space, planting and protection of mangroves around the coast to control industrial waste and expansion of water catchment areas	
● Incentives providing for alternative energy-based of technological innovation process	
● Structuring the industrial area by prioritize the environment protection by participation of community	
● Inter-industries collaboration in regulated use of products	
● Region development and utilization, including the evaluation that involved local communities	
● Strengthening social institutions to improve the awareness of environmental protection, facilitated by companies' CSR activities	
● Establish special institution that manage the distribution and utilization of the economic value of waste generated by other industries in the industrial area of the Western *Pantura*	
● Build waste water treatment plant independently, both in concerned and unified industries	
● Prioritize to hire local labor proportionally to company's needs and skills of existing workforce	

With various possibilities that occur in future, we formulated three groups of scenarios for the development of Western *Pantura*, East Java Industrial Area in a sustainable manner.

1. Optimistic scenario

Improvements on all essential aspects, with the assumptions:

– Internal and international politic situation have stabilized
– Public trust on the government has recovered
– People are ready with the existence of industrial area developments and supporting with both human resources and awareness
– Professional management of industrial area
– complete and integrated infrastructure and supporting facilities are available

2. Moderate scenario

Improvements on some crucial aspects although recovery was not optimal, with the assumptions:

– Internal and international politic situation have begun to stabilize
– Public trust in the government has begun to recover
– Industrial area management began to be addressed
– Provision of infrastructure and supporting facilities have started to be equipped

3. Pessimistic scenario

Withstand the present conditions, so that the development of industrial area works without significant improvement, with the assumptions:

– Internal and international politics and economic conditions have not been stable
– Public trust in the government has not been recovered
– Quality of human resources is still limited
– Investors interest and comer communities has not changed much
– Awareness in managing the industrial area is less developed
– Provision of infrastructure and other facilities are still lacking

Refer to the circumstances of each factor in the three scenarios above that the first scenario is to do a thorough improvement of the crucial aspects to accelerate the development of industrial area of the western *Pantura* towards the *Eco - Industrial Park*. This is certainly with consideration of available cost, effort and time. In other words, if the charge is sufficient, enough supporting efforts is provided, and more leisure time then the first scenario is the most appropriate scenario choice to be implemented as soon as possible to accelerate the development of Industrial Area of Western *Pantura* towards Eco - Industrial Park.

The most realistic is the second scenario: the moderate scenario; where the development of Western *Pantura* Industrial Area by improvements to some crucial aspects but the recovery was unoptimal. With the assumptions if the second scenario is achieved, it means the development of Western *Pantura* (as a whole part of ecosystem) is expected to provide significant benefits in terms of environmental, economic, and social for the present and future generation. Given the costs that required accelerating the progress towards the Eco - Industrial Park Area is still limited and supporting personnel takes a long time, and then the achievement of the first scenario can be done in stages. As in Andreas [26] and Mamoune *et al.* [27] stated the need to follow the rules of sustainable development in daily industrial practice has led to the concept formulation of industrial ecosystem to mimic natural ecosystems. The point of industrial ecology is ecosystem models have become the industry framework for studying the interaction of modern technological society with the environment.

Strategies for the establishment of an industrial ecosystem is a system which optimized the consumption of energy and materials, minimized landfill waste from one process by make it the raw material for another process. Industrial ecosystem concept is based on the flow of material through the life cycle, otherwise known as industrial symbiosis. So if chosen industrial development strategy is the correct target, then the purpose of the Eco - Industrial Park will be achieved, i.e. the established dynamic between environment, economy and social aspects.

4. Good Corporate Governance

If the concept of Eco - Industrial Park was successfully applied in western *Pantura* Industrial Area, the Government must hold the basic principles on elaboration of assessment and stages for manifesting *Good Corporate Governance*. Standard benchmarks in evaluating the success of the application of *Good Corporate Governance* are:

a. Transparency; the company ensure transparency in the decision making process and in expressing material and relevant information about the company.

b. Autonomy; which guarantees a professional company management with no conflict of interest and influence/ pressure from any unrelated party with the legislation and the principles of healthy corporate.

c. Accountability; company ensure clarity of function, implementation and responsibility to create effective corporate management.

d. Responsibility; company ensure conformity management that in line with the laws, regulations and the principles of healthy corporate.

e. Fairness; the company ensure justice and equality in occupy stakeholder rights that arising under laws and regulation.

The corporation will be managed properly if the commitment shared between the owner/stakeholder, commissioner and Directors Board is interpreted as consent or promise which involved parties emotionally compelled liability. The expected commitments are to be healthy and ethical management. Created rules and practices are

consistently leads to the achievement of objectives. Structured corporation must have written rules to realize the commitment on Corporate Governance (*Code of Corporate Governance*), which oriented to improving the value of Shareholders and Stakeholders. Any financial requirement on improvement and development of the Eco - Industrial Park on western *Pantura* Industrial Area should include local government and the private sector. The local governments are East Java Province, Gresik, Lamongan and Tuban, whereas the private sectors are investors in the industry of Western *Pantura,* East Java.

5. Conclusions

Management strategy of industrial development in Western *Pantura,* East Java is using *Selective Maintenance Strategy* where area management of industrial development is selecting the aspects that considered as crucial. Referring to the IPA analysis, several crucial aspects need for further development/improvement because it has high interest factor yet the performance is unoptimal, e.g. pavement condition, road dimensions, completeness of road supporting facilities, waste treatment in the industry area, the capacity of the waste water treatment management, conditions of clean water facilities, garbage placement, availability and condition of open green spaces, air pollution in industrial areas, the company's efforts to prevent development conflicts between local communities, response and follow-up on society's comments and complaints, social legitimacy on exploitation of natural resources in the local area, the companies contribution towards social corporate, and related party agreements regarding the welfare of local residents.

The selected scenario in the Industrial Area development of Western *Pantura,* East Java is the second scenario (moderate) because it is the most realistic choice since there are some problems, such as unoptimal supporting facilities, unprepared institutional systems and so forth. So the development of the industrial area of Western *Pantura,* East Java will be done gradually though not fully optimized yet. The improvement is focused more on the crucial aspects that have the most support and ready to be developed.

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