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Lesson learnt from top-down selection of medium enterprises for green industry pilot project in Surabaya

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Abstract

Green industry is becoming a hot issue all over the world. The basic principles of it are to minimize resources and emissions. Several developed and developing countries have obligated the implementation of green industry. Indonesian government also strives to implement the green industry principles by adding green industrial standards through the Act No. 3/2014. To support the implementation of that Act, Indonesian government through the Ministry of Industry has published the guideline for implementing green industry.

In response to that Act, Surabaya City Government, that has successfully reduced carbon emission by green and clean initiatives in housing, kampong, and open space, tries to select some medium enterprises to implement the green industry principles in their companies. The selected companies will be provided technical assistance to fully implement the green standards, thus become the pilot projects in Surabaya. It is expected that the success of those selected companies will trigger other companies to implement the green principles as well. In Indonesian context, the role of examples is proven in successfully rolling programs. Therefore the selection process of potential medium companies to be the pilot projects becomes the critical step in implementing the program.

This paper will present the processes and the findings of the top-down selection done by Surabaya Council of Trade and Industry together with ITS Team. The top-down selection consists of criteria setting, Analytical Network Process (ANP) modeling, and Technique for Order Preference by Similarity to Idea Solution (TOPSIS) processing. Workshops and industrial visits are also the part of the selection processes. The effectiveness of the top-down approach will be discussed and lesson learnt will be highlighted. Furthermore, better approaches will be proposed. This paper will provide insights and serve as a good reference for other cities that want to implement the same program in the future.

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Keywords: Green industry, top-down, ANP, TOPSIS, lesson-learnt

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1. Introduction

Sustainability was discussed globally by policy makers, industrial practitioners, media, and academics. The relation between society, environment, and economic development are the three pillars of sustainability. Economic sustanaibility can be seen when a company has stable cash flow; environment sustainability can be reached when a company reduces the use of natural resources and also the generated waste; social sustanaibility can be achieved when an organization actively supports the creativity and ability of the future generation [1]. Development of green industry is part of Indonesian government's commitment towards sustainability. It will support the commitment of the government to decrease 50% of green house effect in Indonesia by 2050 referring to the baseline in 2005. This commitment needs a real action including in the industrial sector which becomes one of the contributors for carbon emission. Surabaya city is the only city in Indonesia that tries to reduce city emission through municipal waste management program named Surabaya Green and Clean. The recycle of municipal waste started by the joint program between Surabaya City Government with the Institute for Global Environmental Strategies (IGES) Japan in 2004. In 2007 Surabaya had decreased 4.000 tons of CO_2 emission, followed by 7.000 tons in 2008, and 12.000 tons in 2012. Since then Surabaya had become the role model city for implementing the same method on Makasar, Palembang, Central Jakarta, Balikpapan, and Tarakan [2].

Indonesian government also strives to implement the green industry principles by adding green industrial standards through the Act No. 3/2014. This step can be compared to the similar act in China, which is named the Act of Cleaner Production. Many industries in China adopted that Act thus implementing cleaner production's concepts even though they have no adequate awareness [3].

To ensure the sustainability of the Act's implementation, an appropriate strategy is needed to increase the environmental awareness of companies. By having adequate awareness, it is expected that companies would be able to continuously maintaining even improving the green principles.

In Surabaya, the Council of Trade and Industry wanted to select several companies to participate in the pilot project of green industry. The selected enterprises are expected to be the role models of the green industry implementation in Surabaya. Medium enterprises are choosen because of their ability to invest on technology, managerial, and also waste treatment efforts compared to small enterprises [4]. This research will present the top-down selection approach that has been implemented by the Council to select participants for green industry pilot project.

2. Medium enterprises selection for green industry pilot project

Medium scale enterprises that are listed in the Council's database reach 636 companies. The methodology of the top-down approach to select potential companies among 636 companies includes secondary data collection, selection of potential companies using multi-criteria decision making methods, workshop for the selected companies, filling a set of questionnaire assessing the willingness and the readiness of those selected companies, company visits, and technical assistance to implement the green industry principles.

Secondary data collection yielded list of companies that have legal permit from the government. Among them, the Council of Trade and Industry Surabaya only recommended 372 companies that have complete and good track record and have been considerably cooperative with the Council so far. As the selected companies will be used as a benchmarking for other companies, complete and good track record as well as willingness to cooperate with the Council became first consideration in the selection process.

Furthermore, 372 companies were classified into 11 industrial sectors such as land transportation industry, electronic industry, forestry and farming industry, food industry, maritime industry, metal base industry, beverage industry, machinery industry, basic chemical industry, downstream chemical industry, textile and miscellanous industry [5]. The classification was needed as the Council would like to have a representative of each sector in the pilot project as much as possible. Classified companies then were selected based on several criteria and sub-criteria. The criteria and sub-criteria were derived from the elements of the green industry guidelines and some previous research. The criteria and sub-criteria were discussed and agreed in a Focus Group Discussion (FGD) involving ITS research team and the Council of Trade and Industry before structured and used in the selection process.

As the relationship of criteria and sub-criteria is not one way, instead showing reciprocity, interconnectivity, and