



## **Development of a Regional Decision Support Model for Sustainable Waste Management Towards Low Carbon Eco-City**

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The world is now on the emergency status of combating the climate change. Food crisis, water scarcity, energy deficit are growing along with the number of the worlds' population. Many planners and decision makers in the area of municipal solid waste have a lack of thorough understanding of the complex chains of regional waste management system. Therefore the impact of the decisions on the waste management sectors, especially for the environment quality and the public health, can only be judged at the rudimentary level. The Low Carbon Eco-City, in particular the contribution of waste management sector, is a concept of living in low rate of carbon generation, using fewer natural resources, and encouraging energy recovery and/or waste reduction at source by improving the used material quality (up-cycling).

In this PhD thesis, a decision support model to set up alternatives of most appropriate technologies for sustainable waste management towards a low carbon eco-city on regional basis is developed. The model is constructed mainly based on the cultural requirement and local context of a region and synergize the geographic, environmental and social capital aspects in order to fulfill the need of the respective region and its society. The work is initiated by the hygienic and the greenhouse gas issues as a result of the open dumping practice from the solid waste generated in Indonesia, which mostly organic. As an additionality the work underlines the effort on building the local capacity, empowering the housewife and prioritizing the children education, exploring the economic benefits, while at the same time also improving the environmental quality, the public health and reducing the green house gas emission generation from waste sector; thus towards the low carbon eco-city.

The study of the development model was carried out in Jakarta, the capital city of Indonesia, and in Hamburg, Germany, to present both developing and developed country respectively. The method employed in this study is not solely a new developed model, but also advanced models like STAN and EASEWASTE. The study is valuable for the practical work at the local level, especially in a densely population area or *kampung* settlements.

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The background of the Model Work:

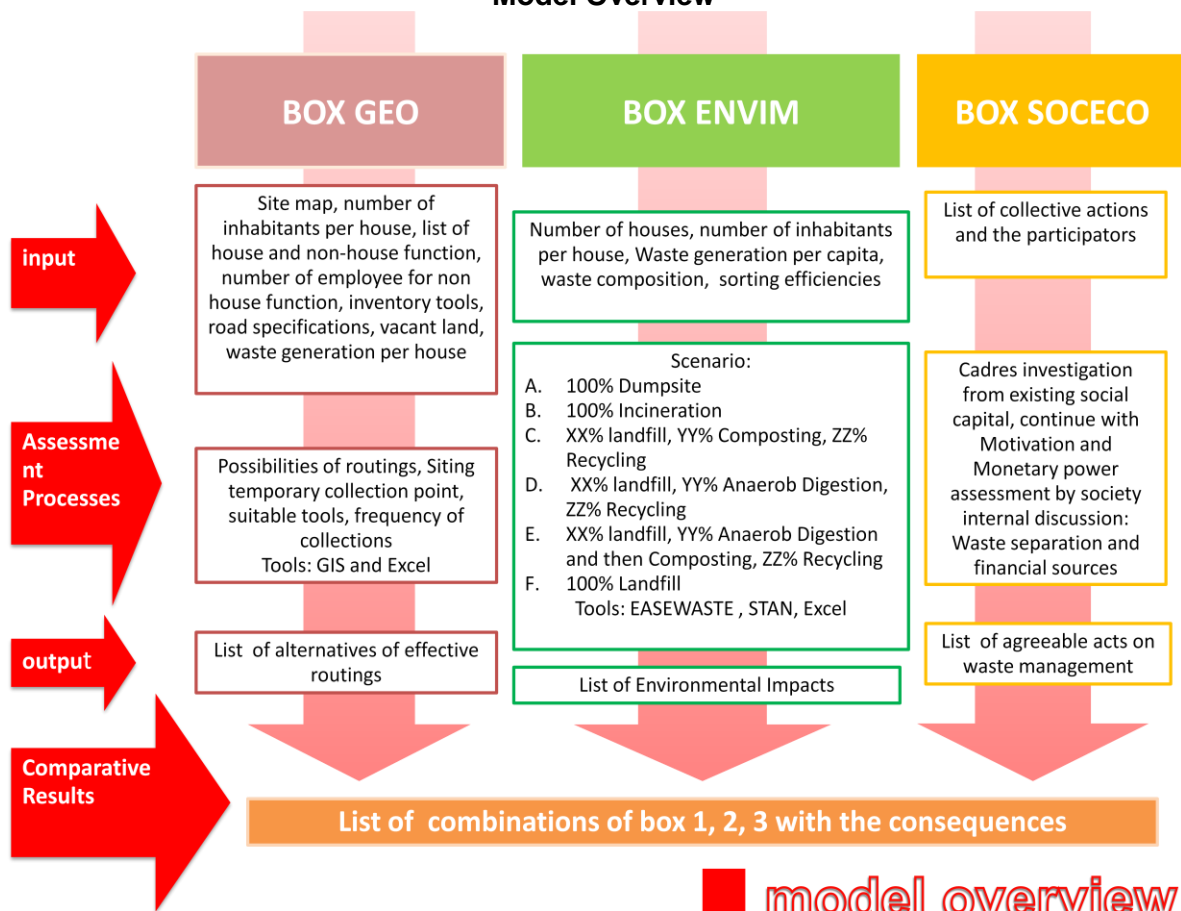
- Lack of thorough understanding of the whole waste management system and its impacts, within the body of decision makers
- Lack of crucial consideration that leads models to difficiencies and constraints to meet cultural requirements and local context
- The need for such models, especially in developing countries where hygiene is crucial issues due to illegal dumpings and the large amount of organic waste

keywords: society acceptance, effectiveness and optimization from the existing waste management system, economics benefit (self-help program)



Figures from one of the research fields, Cikini, Jakarta (Indonesia)

Model Overview



model overview