RESPONSIBLE TOURISM TO CLIMATE CHANGE: A SYSTEM APPROACH FOR ALTERNATIVE SUSTAINABLE TRANSPORT

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INTRODUCTION

This main idea is a showcase in urban tourism by promoting responsible mobility in a new emerging tourism destination in Thailand namely Koh Pha-ngan (Pha-ngan island). Koh Pha-Ngan is located in the southern part of the Gulf of Thailand, in Suratthani province. As like other tourism destinations in Thailand, motorized oriented mode of transport has dominated tourism mobility to respond to mass tourism growth. Pha-ngan island's topography is very supportive of climate friendly and environmentally friendly transport modes for both daily use and tourism activities. System thinking and system dynamics will be used to asses possible policy options for climate friendly tourism in the destination.

FUNDAMENTAL OF THE PROBLEM

System Dynamics Approach is applied for behaviour overtime analyses and modelling. The identification of needed data and information collections, primarily survey and reviews of literatures are conducted. Comparison of system behaviours and reference modes for an understanding of what influence system behaviours through behavioural analysis of modelling processes are using for the system approach and modelling. Transforming data from clausal loop diagram (CLD) and collecting data into a simulation model has done by simulation and modelling steps. The Final step is policy alternatives recommended as the results of system modelling.

The study is focusing on how the cause and effect of tourism to the environment and climate change. Transportation causes around 75% of the CO_2 emissions generated by tourism, with aviation representing the bulk part of it (40%). Although tourism transport has a relatively small share in current global emissions, there is a need to develop effective mitigation measures, considering its projected dynamic growth. In the mitigation efforts technological development is still a key tool, but it is unable to solve the problem of climate change on its own. Therefore, for effective mitigation in the transport sector there is a need to implement a mix of measures, including technological improvements, regulatory and market based measures, as well as behaviour changes. In any market-based measures the position of developing countries should be considered carefully to ensure that poverty reduction objectives are not jeopardized which might imply increasing flights to deliver tourism exports.[5] Since transportation is the main part that contributes CO_2 in the tourism business and it is the most complicated part in this sector, and its impact are vastly. Transport modes in the destination are used as a key indicator for a modal shift for the sustainable mobility

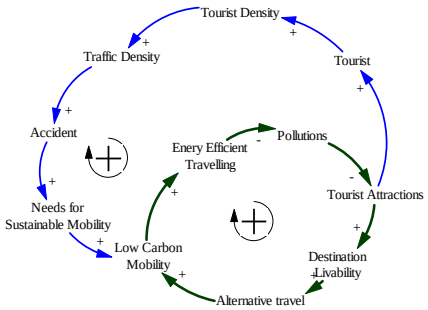


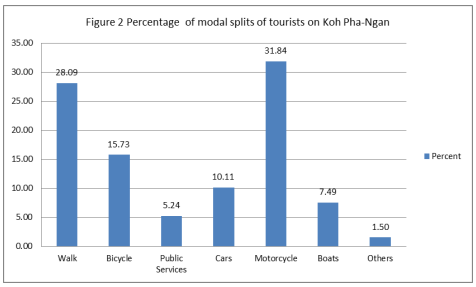
Figure 1 causal loop diagram about the sustainability tourist destination Source: Author, 2019

in tourism destinations.

Figure 1 is a causal loop diagram that represents the number of tourists cause more accidents and consume more energy consumption. These are the reasons that can cause air pollution and leads to a decline in tourist attractions. The increasing number of tourists makes traffic high density, especially in the group of tourists traveling by car and motorcycle users in areas. Low carbon travel is one way to make tourist attractions can be attractive.

RESULTS AND DISCUSSION

The survey result in Figure 2 shows that motorcycle is the highest mode of transport which used for commuting in Pha-Ngan. Walking and cycling are more popular modes for tourists while they were staying on this island, higher than travelled by cars. Modal splits are key points which influence tourist's decision for choosing their travel. Total of trips done by using low carbon modal splits from walking, cycling and public services which are local buses, tuk- tuk is 49 %.



Source: Project survey complied by Author, 2018-2019

Transforming CLD to System Dynamics Model stimulates assumption behaviour of the system. In the stimulated year, 2018-2019 will be the turning point of the tourism industry in this business as usual behaviour. Sustainable travel is decided to be an alternative option copes with energy efficiency and pollutions. Boosting a better environmentally friendly tourist destination needs to improve transportation systems in the area.

CONCLUSION

Car and motorcycle users change their mobility behaviour to low carbon styles by walking and using bicycles that will reduce the CO_2 emission from transport. The systems thinking will show how changing behaviour can impact on the effects of climate change can be achieved by promoting non-motorized mode. For example, encouraging more walking and cycling in tourist destinations, the number of car users or the people who use motorise mode will decrease. Energy consumption will be reduced accordingly. Tourism policy- making for the whole country can be applied by using results from this study.

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