

Khon Kaen Province: On the Way to Low Carbon Society

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The purpose of this study is to develop Khon Kaen's low carbon society (LCS) based on the participation of Khon Kaen's communities. We estimated the emission and removal of greenhouse gas (GHG) in the base year 2005 and projected to the target years 2030 and 2050, covering 4 main activities; 1) energy consumption, 2) waste management, 3) agriculture, and 4) land use, land use change, and forestry.

Energy consumption activities included industrial sector, passenger transport sector, freight transport sector, commercial sector, and residential sector. The GHG emissions in these activities are estimated and projected using Extended Snapshot Tool (ExSS)-energy module based on the socio-economic information. Waste management activities were considered only from 31 municipalities in Khon Kaen because of data limitation for outside municipality areas. GHG emissions estimation and projection are calculated using Extended Snapshot Tool (ExSS)-waste module based on the waste generation rate, the waste management method, and the demographic information. Agricultural activities include enteric fermentation, manure management, rice cultivation, open burning, and agricultural soil. The estimation of GHG emissions from agricultural activities was performed based on 2006 IPCC guidelines. The emission projection was conducted using the relationship between economic and agricultural production factors. For land use, land use change, and forestry activities, this study focuses on the amount of GHG emissions and removal which occurs in the forest land and crop land (perennial crop). This study estimated only the amount of CO₂ removal from the forest land remains forest land and the crop land remains crop land. CO₂ removal projection was performed based on the current land use and Khon Kaen's land use planning.

The mitigation options for Khon Kaen's LCS were developed based on Khon Kaen's development plans, consolidated with the outputs from the 'Khon Kaen Low Carbon Society Workshop' held on 18 June 2013. The findings from the workshop showed that Khon Kaen has been doing many LCS related activities, which can be grouped into 4 main strategies of the National Municipal League of Thailand including: STG1.Green City Strategies, STG2.Clean City Strategies, STG3.City of Energy Care Strategies, and STG4.Living Sustainable City Strategies. The obtained results are summarized in Figure 1.

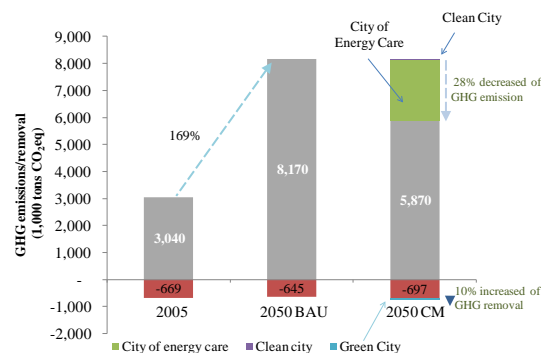


Figure 1. GHG emissions reduction using Khon Kaen's LCS scenarios