

# Thailand's INDC 2030 and Peak CO<sub>2</sub> Scenarios in 2050

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## Abstract

The research team has constructed Thailand's Intended Nationally Determined Contribution (INDC) and peak CO<sub>2</sub> scenarios for use as a basis of discussion on sustainable Thailand. The CO<sub>2</sub> mitigation scenario methodology involves i) development of GHG inventory, ii) quantification of socio-economic activity level in 2020, 2030 and 2050 according to available information from Thailand's officers, and iii) development of GHG mitigation roadmap towards 2050 by using the AIM/Enduse model. Two LCS scenarios were proposed: INDC and peak CO<sub>2</sub> scenarios. The study of Thailand LCS is divided into three sub-periods: short term (pre2020), medium term (post2020) and long term periods (2030-2050). The pre2020 roadmap is intended for the proposed Thailand NAMA roadmap, while the medium term scenario is for INDC and the long term scenario is for the peak CO<sub>2</sub> scenario.

The annual greenhouse gas emissions of Thailand in the base year of 2005 are 183,287 kilo-ton (kt) of CO<sub>2</sub>. In the pre2020 period of 2010-2020, the NAMA roadmap, both domestically supported NAMAs and internationally supported NAMAs will contribute in CO<sub>2</sub> reduction of 20%. In the 2050BAU scenario, the GHG emissions will increase to 840,371 kt-CO<sub>2</sub>. That is 4.6 times higher than the emission in the base year 2005. By adopting the selected appropriate GHG mitigation measures available by 2020, 2030 and 2050, the GHG emissions in the peak scenario can be decreased by approximately 50%. The LCS roadmap include both supply-side and demand-side actions such as increasing the use of carbon capture storage (CCS) in power generation and industries, more utilization of bio-fuels, renewable energy (RE), promoting modal shift in transportation, and increasing energy efficiency (EE) in buildings and industries. In the peak scenario, these CO<sub>2</sub> countermeasures will result in transformational changes in both supply and demand sides.

However, the peak scenario could achieve the 2 degree target and objectives of UNFCCC. Therefore, many rigorous LCS actions for INDC and the peak scenarios are proposed. The peak target will not be achieved if we do not plan the actions and implement them in the early stage. Finally, these LCS actions need transparency in terms of measuring, reporting and verification (MRV) process.