Thailand's Low Carbon Land Transportation – The AIM/Enduse Modeling

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INTRODUCTION

The Thai land transport sector accounts for 60% of the oil consumed by energy sectors and also contributes significantly to the CO_2 emissions in Thailand.

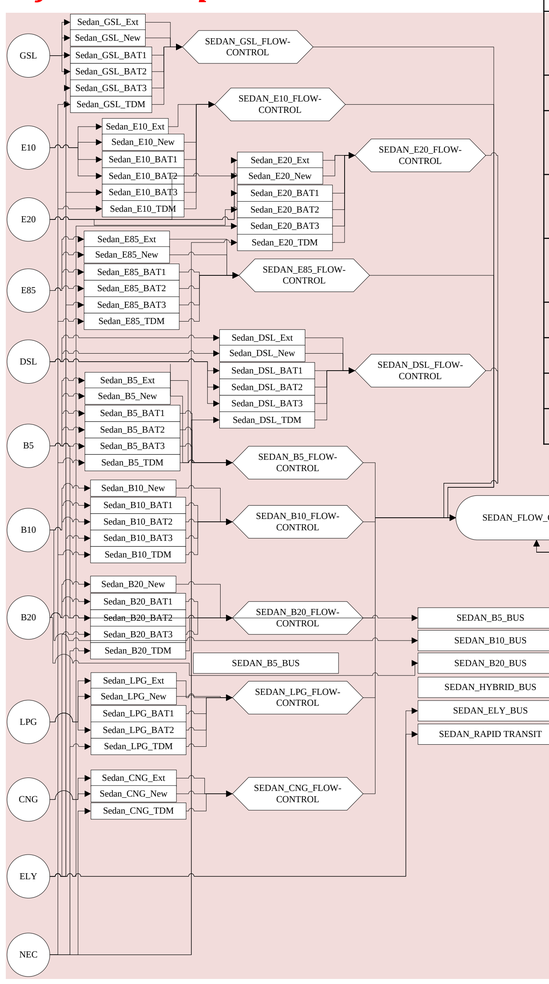
OBJECTIVES

The land transport sector of Thailand has been modeled along the divisions of passenger transport and freight transport.

The CO_2 emissions from the transport sector have been assessed for designed LCS scenarios, along with mitigation driver scenarios, such as Emission Reduction Target (ERT) and Emission Tax (ET).

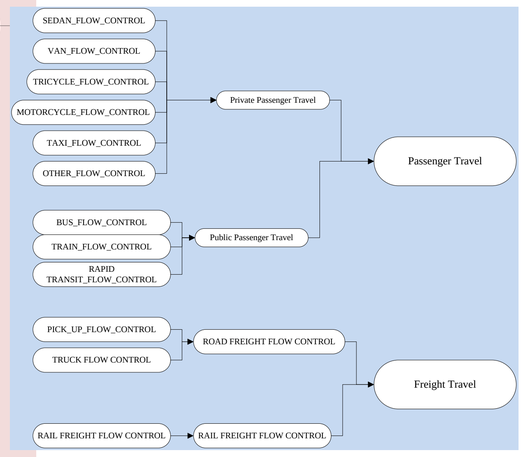
METHODOLOGY

The modeling flow diagram of the transport model



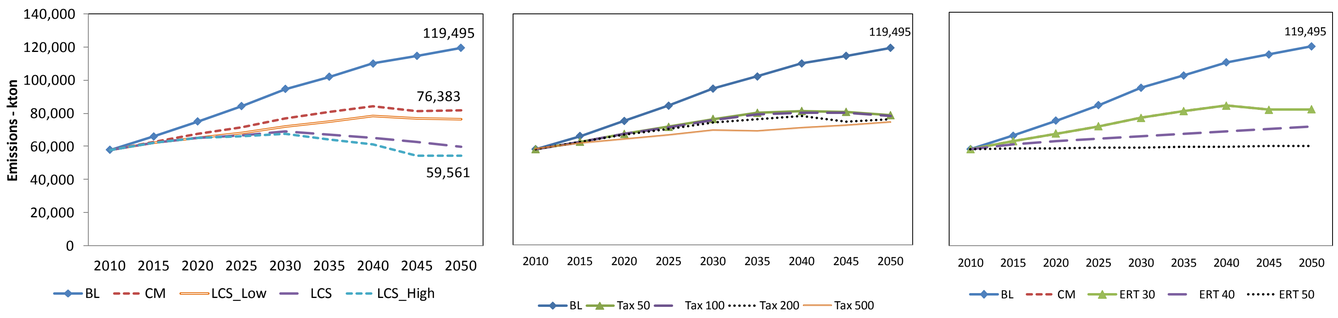
Scenario	*Description*
BAU	Business as usual scenario
CM	Includes counter-measures (CMs), free choice
LCS_Low	Low mitigation actions of LCS
LCS	Ambitious, yet realistic mitigation action levels
LCS_High	Inspirational mitigation action levels
ERT30	Emission reduction target of 30%, compared to BAU, in 2050
ERT40	Emission reduction target of 40%, compared to BAU, in 2050
ERT50	Emission reduction target of 50%, compared to BAU, in 2050
ET50	Emission tax of 50 USD/t-CO_2
ET100	Emission tax of 100 USD/t-CO_2
ET200	Emission tax of 200 USD/t-CO_2
ET500	Emission tax of 1000 USD/t-CO_2

Scenario description

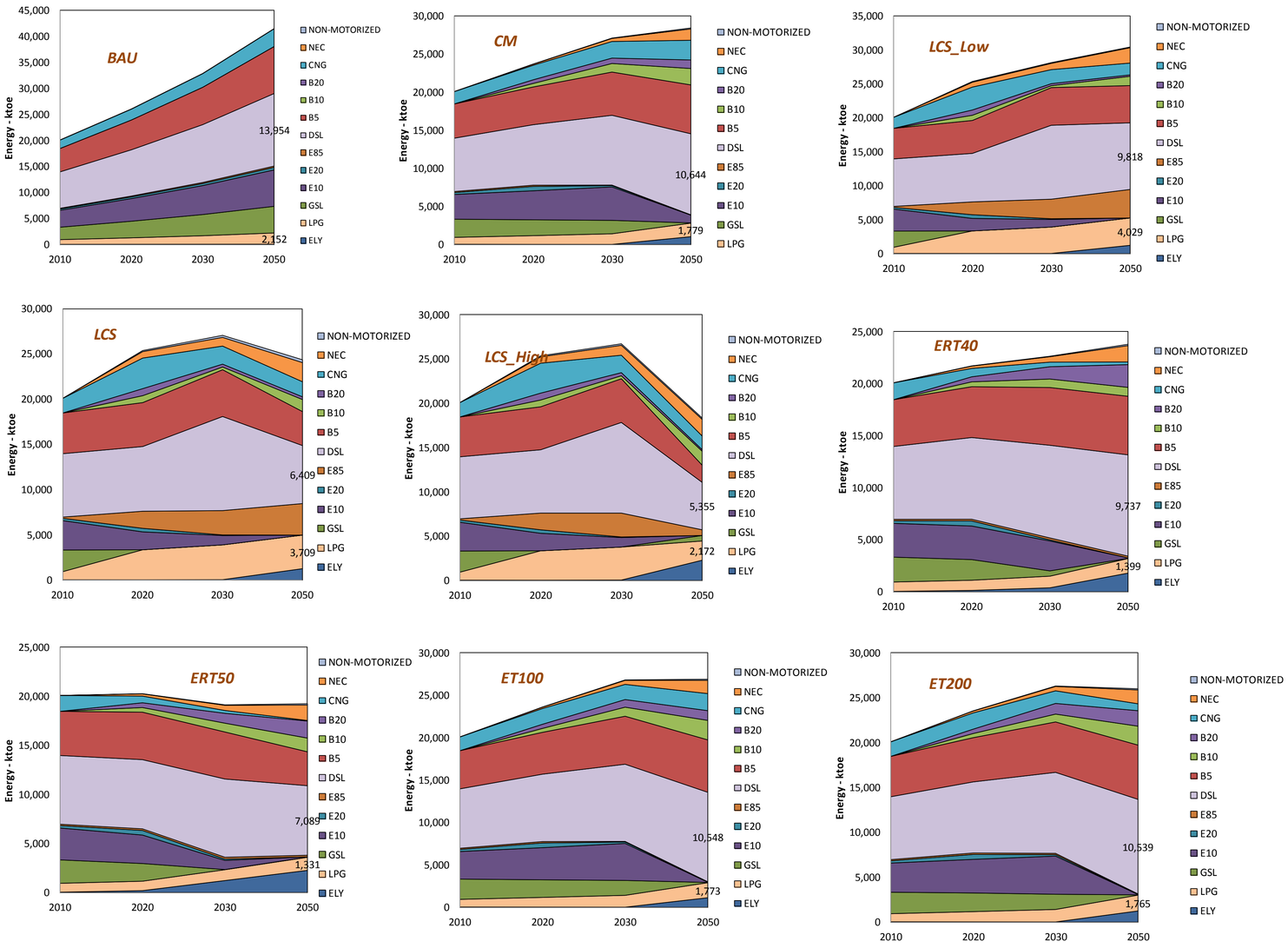


RESULTS

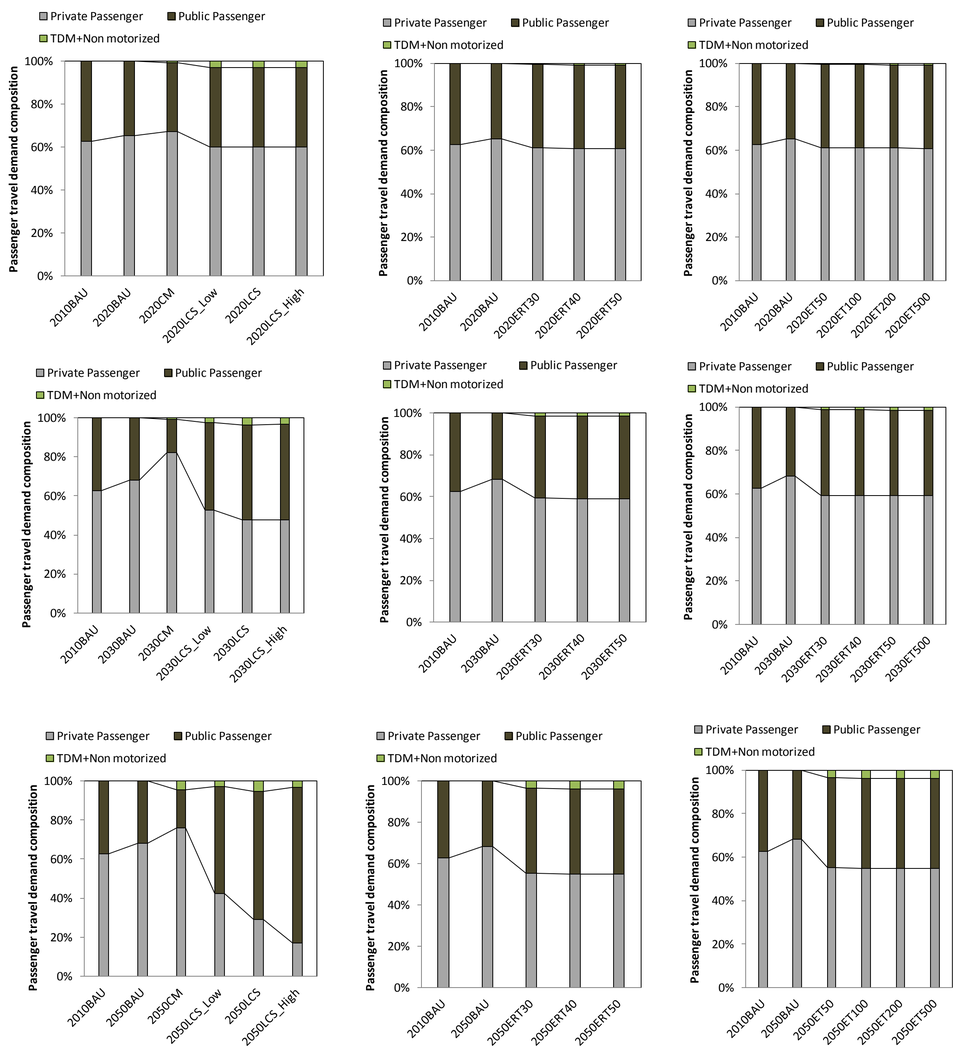
CO_2 emissions of the scenarios across the modeling period



Fuel mix of the scenarios



Passenger travel demand composition



CONCLUSION

The mitigation potential of LCS scenarios is approx. 50%, in 2050, when compared to the BAU and the make-up of the transport system also changes drastically, from private centric to more public centric travel becoming popular.

The highest cumulative reduction of 1,344 Mt-CO_2 is given by ERT50 scenario, followed by LCS_High scenario with a cumulative reduction of 1,228 Mt-CO_2. Yet, the interesting point of analyses is the trend of CO_2 emissions, which in the LCS_High scenario shows a peak around the 2030s and then shows decline.

The ET and ERT scenarios show mitigation of CO_2, but they don't show a drastic change in the make-up of the transportation system of Thailand. They also show an increasing energy consumption and emission trend, where as in the designed LCS scenarios, there is visible decoupling between travel demand and CO_2 emissions, which leads to a more sustainable transportation system, in the long term planning horizon.

Transportation sector of Sri Lanka - a preliminary analysis

The Sri Lankan road transport sector is characterized by a dominant share of public passenger transport modes. In that respect it is different to that of the Thai transport sector. Yet, with burgeoning economic development and more vehicles being on the road, sustainability and energy consumption along with CO_2 emissions will become a problem.