

TIMES-NZ: An Integrated Energy Systems Assessment Tool for New Zealand Preliminary Insights on Decarbonisation

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Friday, 16 August 2019
10:00 am to 12:00 noon
ESI Conference Room
29 Heng Mui Keng Terrace
Block A, #10-01, Singapore 119620

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Abstract

The Energy Centre of the University of Auckland has recently become host institution of a new energy systems modelling tool developed for New Zealand at the Paul Scherrer Institute (PSI) in Switzerland within a collaboration with BusinessNZ Energy Council (BEC). This model is based on the TIMES (The Integrated Markal-EFOM System) platform: a technology rich, bottom-up model generator, which uses linear-programming to produce a least-cost energy system, optimized according to a number of user constraints, over medium to long-term time horizons. The TIMES-NZ model is developed in modules to include a detailed characterisation of the main energy demand sectors of the economy: residential, services, industry, agriculture and transport. The supply side is characterised in terms of energy resources, transformation and fuel refining, including techno-economic data for all processes involved.

This tool goes beyond existing energy and climate change tools used in New Zealand as it includes all supply-side energy sources and all forms of end-use energy, rather than just focusing on, for example, the electricity sector. This is crucial for modelling decarbonisation of the New Zealand energy sector, as transitions are bound to occur across sectors, with indirect impacts within the energy sector as a whole. My talk will give a background to the development and techno-economic scope of TIMES-NZ and preliminary insights on decarbonisation pathways for New Zealand's energy sector, with focus on carbon dynamics between the electricity and transportation sectors, and how this relates to New Zealand's current low-emissions targets. I will finish with future research perspectives and the directions we aim to investigate with TIMES-NZ.

About the Speaker

Dr Kiti Suomalainen studied engineering physics at Chalmers University of Technology and received her master's degree with a specialisation in industrial ecology in 2006. She gained her PhD within the MIT Portugal programme Sustainable Energy Systems in Lisbon in 2011. Dr Suomalainen worked as a Research Fellow at the Joint Research Centre - Institute for Energy and Transport between 2011 and 2013, before joining the Energy Centre in May 2013.