

## **Analyzing Impacts of Fuel Constraints on Freight Transport and Economy of New Zealand: an Input-Output Analysis**

Topic: Energy input-output analysis I

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Our actual society is dependent on enormous amount of energy, which fuels our vehicles, heats and cools our buildings, powers our technology, enhances our agriculture, and makes possible every aspect of our extraordinary way of living. However, in the past few years, there has been convincing evidence of future fuel constraints due to supply limitations. Lately, various governments have admitted the probability of fuel restrictions in the future and others have also forecasted high likelihoods of increases in fossil fuel prices due to scarcity effects. The data suggests that Peak Oil-related shortages are likely to happen soon. There is a 85% probability of 10% shortages by 2015.

There is limited knowledge about the fuel shortages impacts on freight transport. The New Zealand economy is studied and more specifically the freight transport sector is investigated. Scenarios of 5% and 10% of fuel availability reduction are analysed. According to the supply constraint I-O model the most affected sector in relative terms would be the freight transport sector due to its high dependence on fossil fuels. Two main findings can be drawn from a comparative analysis against a business as usual (BAU) scenario using the supply constraint input-output, the standard input-output and the so called supply driven input-output. Firstly, the state of the art of modelling techniques is likely to underestimate total impacts of fuel constraints. This is particularly concerning, giving the long implications of transport policies. Secondly, it was observed that if no actions were taken to mitigate impacts of fuel constraints, the total impacts on the fuel sector, freight transport sector and on the whole economy on middle to long term tend to be significant.