

Measuring Security of Supply

Semester Thesis:

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Abstract

Initiated by the oil crisis in 1973 and other recent geopolitical conflicts the issue of security of supply, also referred to as energy security, has attracted political and the public attention.

The objective of this work was to review existing literature and to find indicators for measuring security of supply. Security of supply can be defined for many dimensions, and can be applied to different areas and sectors. In this work indicators were grouped into ones concerning power generation technologies and those representing complete energy systems. Finally those indicators were selected, which could be applied to the outputs of the GMM model. The Global Multi-regional MARKAL (GMM) model was developed by the Paul Scherrer Institute (PSI) and the World Energy Council (WEC). The model comprises two different future scenarios, JAZZ and SYMPHONY, for 15 world regions. The indicators were calculated for five time steps from 2010 until 2050 and compared among those regions. Trends and significance of each indicator were evaluated, showing a general increase in security of supply on an energy and resources level due to rising energy diversity and the substitution of oil. Eventually shortcomings of the available data and adequacy of the indicators are discussed.