EU CLIMATE/ENERGY POLICIES AND ENERGY SUPPLY SECURITY IN A SMALL OPEN ECONOMY

SUPPLY SECURITY ASSESSMENT FOR BELGIUM UP TO 2030

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Overview

In December 2008, the European Union adopted the integrated Climate/Energy package which stepped up the Union's climate and energy policy ambitions to a new level and outlined how the efforts had to be shared among the Member States. In 2009, the Federal Planning Bureau [1] published a paper that underlined the benefits of this EU Climate/Energy package in terms of energy supply security for Belgium, more specifically the positive impacts the twin target –greenhouse gas emissions reduction and development of renewable energy sources– has on Belgian dependence on fossil fuels.

In January 2014, 5 years later, the Commission communicated on a proposal on a 2030 framework for climate and energy policies [2]. This time, the Federal Planning Bureau is preparing a paper that will look into the adoption of this 2030 European strategy by Member State Belgium, and zoom in on its supply security impact by the year 2020 and 2030.

For a country as Belgium, enhancing supply security or reducing fuel imports is of crucial importance given the high and volatile future fossil fuel prices [3], [4] combined with the fact that the Belgian soil does not contain any indigenous fossil fuel resource, the potential of renewable energy sources is relatively limited, no new nuclear power plants can be constructed and an upper limit on the operational lifetime of existing nuclear power plants is determined by law. On top of that, there is an implicit ban on investments in new coal power plants. Therefore, investigating the impact the 2030 European framework could trigger in terms of supply security is of particular importance for a small open economy hosting a comparatively large share of energy intensive industry as Belgium.

Methods

The (European) technico-economic energy model PRIMES is used to evaluate the impact of the 2030 climate and energy framework on energy supply security in Belgium. The PRIMES model is developed and managed by NTUA. It generates long term energy and emissions' projections on the supranational (European) and national (e.g. Belgian) level.

In the context of the Reference scenario 2013 published by the European Commission [3] in December 2013, Member States' figures became available for further analysis. Other quantitative material originates from a project the Belgian Federal Planning Bureau engaged in with NTUA in order to draft the Belgian energy outlook up to 2050 (forthcoming).

Results

In 2010, Belgian energy import dependence stood at 76.8%. Energy imports are dominated by oil and natural gas for which geopolitical stability and diversification issues are fundamental. In this paper, the evolution of net imports of these fossil fuels (together with coal which is mainly used in the iron and steel industry) will be evaluated with respect to reference trends as well as to the reference year (2010). A specific focus will be put on the evolution of natural gas imports. Natural gas is especially strategic for Belgian power production since there is a nuclear phase-out, renewable energy sources are in rather limited supply due to a.o. high population density, alternative land uses and quite unfavourable geographical conditions; on top of that, an implicit ban on investments in new coal power plants can be noted. A specific section will be dedicated to the power production

sector. The impact on net imports will also be expressed in monetary terms (potential savings) with respect to the reference scenario. An allocation of these potential savings in terms of the different fossil fuels will be provided.

While fossil fuel imports are expected to shrink due to climate and renewable policy implementation, biomass imports are assumed to rise triggered by the RES development target. According to the literature, about one half to two thirds of the biomass supply will have to be imported given the modest domestic biomass potential. Taking the uncertainty surrounding the future biomass prices into account, the supplementary cost of importing biomass will be evaluated and weighted against the savings from fossil fuel imports.

The impact on energy dependence and the external energy bill will be assessed and some thoughts on how to contain this dependence (further) will be formulated.

Conclusions

Main outcomes of the installation of the package are the substitution in favour of low carbon resources (i.e. RES) and the decrease in energy demand including the demand for electricity, which not only lead to reduced overall fossil fuel imports relative to the reference scenario, but also water down the trend towards an increased dependency on natural gas imports.

This positive picture, however, characterizes in particular the time frame up to 2020. In the longer term, things might look different with the government's recent decision on nuclear leading to a full phase out of all nuclear power capacity by 2025 that will most likely translate into higher fossil fuel imports from 2025 on despite GHG emission reduction and renewables' policies in the pipeline and the considerable amount of back-up capacity needed in a power system relying more and more on variable energy sources thereby putting more stress on natural gas supply. Nevertheless, even in the longer term, the Climate/Energy package and its potential 2030 successor(s) will play their role of reducing our national dependence on fossil fuel imports via improvements in energy efficiency and further deployment of RES.

References

[1] Devogelaer D. and D. Gusbin (2009), *EU Energy/Climate package and energy supply security in Belgium*, Federal Planning Bureau, WP16-08.

[2] European Commission (2014), *A policy framework for climate and energy in the period from 2020 to 2030*, Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, SWD(2014) 15 final, SWD(2014) 16 final, January.

[3] European Commission (2013), *EU energy, transport and GHG emissions, Trends to 2050, Reference scenario 2013*, December.

[4] International Energy Agency (2013), *World Energy Outlook 2013*, November.