

## The EU's great challenge: combining energy security with effective climate policy

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The European Union's strong role in climate politics has brought a great support to the development and the use of renewable energy sources inside the union. The EU's 20-20-20 goals, which include 20 % reduction of CO<sub>2</sub> gasses and increasing the share of renewables to 20 % by 2020, is a clear sign of this. However, the failures in climate negotiations and the economic issues taking priority, the whole issue of climate change has lost recently quite a bit of its political and public steam. At the same time, the question of energy security has become a major issue: the instability of the energy producing regions such as the Middle East; the competition of the energy resources with emerging economies such as China and India; the fragmented internal political field; and the ever uncertain relations with Russia. The EU's plans to reduce greenhouse gas emissions while securing the energy supply and access for growing population is clearly not without challenges.

The EU is dependent on external sources of energy, which makes it vulnerable to availability and price fluctuations. To fight these problems or not, EU's energy strategy has been shifting towards a greater use of natural gas. The Union is a major importer of natural gas and its most important supplier by far is Russia with its whopping 36 % share of the gas imports (Congressional Research Service, 2013). Europe's dependence on Russia as a supplier is even likely to grow in the future as its own domestic gas production continues to decline. The situation has granted Russia a great power tool in the form of energy exports. This has resulted in some tension in the past with several EU states, as seen in the 2006 and 2009 gas crises. However, as dependent as the EU is about Russia's energy supply, so is Russia of the European customers. This has formed an interesting interdependent relationship where both parties need each other.

The EU is not the only region that is looking into increasing the role of natural gas. Thanks to the new technology (allowing the use of shale gas) and the discovery of new massive gas sites, the whole world seems to be in a natural gas craze. For example according to some predictions, with the recent shale gas discoveries, the United States could become the global leader of gas (and oil) production and change its role in the global energy trade (Reischl, 2013). In addition, after the Fukushima incident, many countries have been looking for alternatives for nuclear power and gas might look like an attractive option.

However, switching to natural gas is a double edged sword. Even though it is the cleanest of the fossil fuels, it is still, a fossil fuel. Many experts have questioned the impacts of the great move to natural gas to the climate change. Even though natural gas produces just half as much carbon dioxide compared to coal, it will still keep warming up the atmosphere and by using it, we will just delay the inevitable. There have also been worries that the investments in renewables will suffer due to the cheap gas prices. This is especially challenging situation for the EU which has been trying to lead the climate negotiations by example.

But perhaps there is a way for the EU to combine the energy security with a climate policy that supports the use of renewables. By increasing the amount of renewables, the EU will become more self-reliant in energy supply. However, that is of course easier said than done. Even though the growth in solar and wind power has been enormous last years, they face their own technical difficulties (such as infrastructure challenges) and thus cannot be expected to completely replace other energy sources any time soon. At the same time, while natural gas is an important fuel, it cannot be seen as the solution to meeting the world's energy needs. Rather, its role must be to act as a bridge fuel as we transition to a low-carbon economy based on clean renewables. Natural gas and renewable energy could act as complementary power supply options.

There are two main reasons for this relationship to work. First, renewables such as wind and solar are intermittent energy sources and require backup plants that can quickly ramp on and off to support them. Those type of "peaker" plants usually run on natural gas. The second reason is less well understood and I will attempt to explain it next. An example state has an x amount of baseload power that comes from nuclear and coal. This baseload power has not been designed to be ramped up and down in a quick manner. In addition to the baseload, the state has peaker plants, which usually work on natural gas, as mentioned above. These peaker plants can be turned on and off quickly, depending on the national energy demand. Then finally we have the renewables. When the energy production of solar (or wind) power increases during the day time, the combined energy generation can exceed the national demand. To prevent any energy losses, peaker plants can be turned off and the solar energy can replace them. Now if the amount of renewables is increased and their energy generation will start to top even the baseload, the state can start retiring the nuclear and coal power. However, this creates a situation where there is a need for more natural gas backup plants. Thus, we can say that gas and renewables have a mutually beneficial relationship. (Roberts, 2013)

Eventually, the EU will have to move away from the natural gas to be truly energy independent and carbon dioxide emission free. Keeping this mind, this "golden age" of natural gas should be only used as a stepping stone to more sustainable future as we are waiting for the renewable technologies to take over.

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