European Energy Policy and Global Reduction of CO_2 emissions

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Abstract
We will present an analysis of the current EU energy policy to reduce greenhouse gas emissions. Current energy policies often ignore the underlying difficulties of an energy system that is dominated by renewable sources, originating from their inherent intermittency and low energy density. Often huge amounts of energy are produced that cannot be consumed near to where it is generated, resulting in a need for a large storage capacity, and/or for large additional interconnecting power lines to distribute power from regions with excess to those with insufficient power. Furthermore, during periods where there is insufficient direct solar irradiation or wind, a large backup capacity (evidently non-renewable, thus nuclear or fossil) is needed to cover the missing power. Thus an electric power system dominated by renewable sources needs to include backup and/or storage, at a level which at least matches peak consumption.

Such a system should also be efficient in reducing CO_2. The converse of the intended reduction often results from a combination of a dismissal of the use of nuclear power and a merit order that favours the use of energy produced from renewables at zero cost. The net effect is that gas plants, which are efficient and have reduced CO_2 production, are in most cases completely outperformed on the market, and are increasingly replaced by coal fired plants. This can paradoxically result in an increase in the net CO_2 production, contrary to the desired result, despite massive investments in renewable power plants.

An additional point is that it is mainly the electricity sector, which contributes only between 20-30% of total energy consumption, which is considered when planning a transformation into a green system. The result is that the amount of CO_2 that is saved is insignificant and completely overwhelmed by increasing emissions elsewhere in the world. This raises the question whether the current energy plans in Europe are really able to tackle the problem they wish to address.

Unfortunately, the general public is in most cases only very partially informed on such matters. This leads to difficult and very politicised discussions, where the facts are not fully taken into account or are used very selectively. Often protests or actions are then undertaken that are noble in themselves, but are very naïve, because they ignore some of the basic underlying facts that govern the complex process of making an energy transition to a greener system. The authors are of the opinion that there is an urgent need to provide factual data in a neutral way to the general public and to decision makers, so as to arrive at a correct discussion, and a realistic energy policy.

The paper will document these and other questions with data from recent years from various EU countries. Recommendations are then formulated, aimed at rendering the energy discussion and policy in Europe more balanced.