European Renewable Ethanol: Securing Europe's Energy

"The world's energy system is at a crossroads. Current global trends in energy supply and consumption are patently unsustainable - environmentally, economically, socially. But that can - and must - be altered; there's still time to change the road we're on. It is not an exaggeration to claim that the future of human prosperity depends on how successfully we tackle the two central energy challenges facing us today: securing the supply of reliable and affordable energy; and effecting a rapid transformation to a low-carbon, efficient and environmentally benign system of energy supply. What is needed is nothing short of an energy revolution."[1]

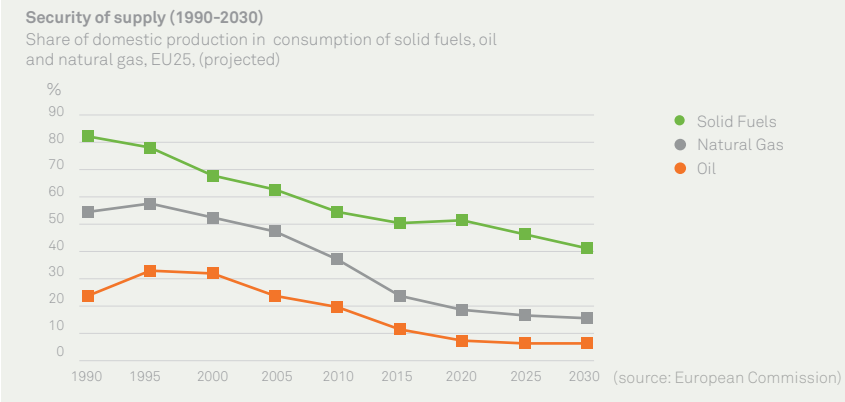
It is clear that the global economy runs on fossil fuels and the European Union is no exception. This addiction to fossil resources creates not only environmental problems – which are widely discussed in the EU – but also concerns over energy security. While being explicitly mentioned as one major reason for the EU's Renewable Energy Policy the latter issue has so far been largely overlooked in public debates. Unlike in the EU, energy security concerns have always been a major policy driver for the 2 biggest ethanol-producing countries Brazil and the USA. Oil price shocks triggered both their successful domestic ethanol programmes. Growing dependency on imports and a looming peak oil scenario are serious issues that should **rebalance the discussion about biofuels**.

Peak oil

Although many estimates and theories exist regarding when exactly we will reach a peak in oil production, it is widely acknowledged that oil supplies will inevitably peak one day– simply because they are finite in nature. Even the International Energy Agency – a rather conservative energy watchdog – in its 2008's World Energy Outlook depicts a scenario where production at current oil fields peaks before 2010.[2] More costly, risky and environmentally damaging extraction methods will be increasingly deployed to tap into non-conventional oil reserves such as tar sands, oil shale or deep-sea oil fields. Decreases in oil production, compounded by rising demand for oil has only one inevitable outcome: **increasing oil prices**.[3]

Growing import dependency

The EU is heavily dependent on imports: in 2007 the EU imported over 53% of all its energy needs. Regarding oil, the picture is even worse with over 82% of EU demand being fulfilled by imports. 23 of the 27 EU member states were over 90% dependent on oil. Over 70% of the crude oil imports come from 5 countries: Russia (33%), Norway (15%), Libya (10%), Saudi Arabia (7%) and Iran (6%). Total crude oil imports increased by 4% between 2000 and 2007. Particularly **vulnerable to supply problems** is the transport sector: crude oil fuels 98% of the EU's transport.[4]



[1] IEA World Energy Outlook 2008, p. 37.
[2] IEA World Energy Outlook 2008, p. 250.
[3] Bundeswehr Transformation Centre, Peak Oil – Sicherheitspolitische Implikationen knapper Ressourcen (German), p. 86.
[4] Eurostat pocketbooks, Energy, transport and environment indicators, 2009 edition, p. 18, 22, 32, 33, 48.

Ethanol alleviates this threat to energy security in many ways:

Ethanol: Renewable, infinite and readily available

Ethanol can be produced from a wide range of different feedstock such as cereals, sugar beet, sugar cane, lingo-cellulosic material, organic waste and agricultural residues. Ethanol is therefore a genuinely renewable, infinite energy source that can be produced domestically from a variety of diverse feedstocks. Due to far-reaching reforms of the Common Market Organisation for sugar about 1 million hectares of arable land has already been freed in the EU in 2010.[5] Additionally, the EU traditionally is a net exporter of wheat[6] and at least 7 million hectares idle land are readily available to be brought back into production.[7] Therefore, there is considerable scope to increase the availability of sustainably grown raw material in the EU for ethanol production. Additionally, new technological developments continue to broaden the possible feedstock base, which strengthens EU production potential even further.

Ethanol increases energy independence

The EU is well placed for efficient, high GHG saving, domestic ethanol production. In 2007 ethanol accounted for 0.8% of final energy consumption in the gasoline stream.[8] Projections for 2020 foresee ethanol fuel consumption in the EU as being between 18 and 28 billion litres thereby fulfilling up to 4% of the EU's land transport energy demand.[9]

More ethanol = cheaper fossil fuel

One important element of energy security is the access to energy at affordable prices. Since prices are a function of supply and demand, prices for fossil energy sources are bound to increase due to depleting reserves and increased demand. Another reason why crude oil will become more expensive over time is that the share of non-conventional fossil energy is growing, and this is more costly to exploit. Producing more supply logically keeps prices in equilibrium. By adding volume to the supply side, ethanol has a balancing effect on fuel prices. According to the European Commission a 14% share of biofuels in the EU would lead to a reduction of 3% in the price of fossil oil.[10] With growing production volume this effect will be maximised. Oil commodity analyst, Merrill Lynch, claim that fuel prices in the USA would be 15% higher without global ethanol production.

Ethanol diversifies energy sources & countries of origin of energy imports

It is clearly evident after looking at the reality of global fossil energy supplies that only a couple of countries are in the lucky position to possess natural resources. Those countries that are less fortunate need to satisfy their needs through imports. Ethanol feedstock in contrast can be grown in a much wider range of regions. This does not only enhance the energy independence of ethanol producing countries but also allows for a greater diversification of countries of origin for those who need to import energy.

Ethanol greatly enhances the EU's energy security by:

- Using renewable, infinite and readily available energy supply from biomass.
- Increasing the EU's energy independence through domestic produce.
- Adding volume to the fuel market which keeps prices at an affordable level.
- Diversifying energy sources and countries of origin for energy imports.

[5] Calculations by Südzucker AG, based on a decline of sugar beet production of 6 million tones per year.
[6] DG AGRI, The 2009 Agricultural year: http://ec.europa.eu/agriculture/agrista/2009/table_en/D01-3-4131.pdf.
[7] ADAS: The availability of Idle Cropland, publication forthcoming in the Journal of Land Use Science.
[8] Eurostat pocketbooks: Energy, transport and environment indicators, 2009 edition, p. 48.
[9] Based on Renewable Energy Association study, Sustainably achieving the RED 10% Energy Mandate for transport, peer reviewed by the Imperial College and ePURE estimates. The volume depends strongly on how the diesel/petrol ratio will be by then.
[10] SEC (2006) 1712, p.15, 16.

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