



## European Energy and Environmental Policy -- New Technologies, New Challenges, New Partnerships

The European energy picture offers a mosaic of technical complexities and political dependencies. There is little meaningful or decisive coordination in the European Union (EU) on energy policy – it is left mostly to member states, with some input at the EU level – and only sporadic coordination of energy supply and delivery across the Atlantic area. In the next five to seven years European states are predicted to face energy (and electricity) shortages as demand remains buoyant and supply remains uncertain. The recovering European economy is particularly vulnerable to changes in supply and spikes in pricing. Finding the right energy mix and ensuring security of supply will be vital to Europe’s continued recovery from the economic crisis. There are strong reasons for Europe to try and seek further partners in new regions: the mix of European capital and technology coupled with nations seeking to export should make for mutually beneficial opportunities. As this brief will discuss, there are some barriers to this cooperation.

Current geopolitics put Europe’s energy supplies in a precarious situation, which the EU seeks to improve. Its dependency on Russian gas, for example, has in previous winters allowed the Russian authorities to use the flow of gas to Europe as a political instrument by altering pricing structures mid-season. Russian authorities have also used bilateral deals with individual European countries to enhance its influence in the EU as a whole. Whilst Norway replaced Russia as the main exporter of gas into the EU in the winter of 2012, energy security analysts still worry that the EU has left itself open to Russian influence, via energy sales and foreign direct investment in European energy provision. In a similar way the dependence of many Southern European countries on Iranian oil and gas also made the international efforts to roll back the Iranian nuclear program more difficult than it necessarily needed to be. A combination of EU and US assistance to Southern European countries dependent on Iran ensured that they had continuity of supply from alternative sources.

Moves to diversify the European energy portfolio have found themselves refocused on nuclear energy, renewables, and emergent techniques such as the hydraulic fracturing (‘fracking’) of shale beds to capture trapped oil and gas. Nuclear energy and fracking have proved to be highly controversial in Europe: in the wake of the Fukushima radiation leak in Japan, the public desire for new nuclear power plants is limited. Meanwhile, scientific evidence suggesting that fracking has caused minor earthquakes has given rise to public concern.

There is, however, a clear divide in Europe between those who adhere to German or British schools of thought regarding energy: the British view is focused around nuclear power and fracking, the German view is honed around renewable energies. As this briefing note highlights, while the diversification of energy sources remains sensible, renewables are still a relatively weak alternative to conventional power options. While there is good reason to believe that renewables will reach the level of 15% of supply by 2020, traditional sources (including hydrocarbons) will still account for the remaining 85%.<sup>1</sup> Careful management of the diversification of sources of mineral resource will become more important to European states in the short to medium term.

In addition to diversifying the types of energy being used in the EU, there are also compelling reasons for the EU to tighten its internal cohesion towards energy and diversify its chain of supply. The southern Atlantic area represents a key opportunity for the EU, both because EU production is unlikely to increase and also because continued involvement in the Middle East and South Asia seemed connected with an increasing number of expensive and unpleasant wars. Diversifying the supplier pool to the southern Atlantic has the advantage of reducing the pressure on involvement in the Middle East, and the wars of influence that are being waged there.

A pan-Atlantic energy area or community would also see the connection of the richest and technologically advanced parts of the world, where the high-price of energy coupled with this technical expertise would drive efficiencies and other technological discoveries around energy. Such a community would likely result in closer cooperation across a range of issues, something that would be welcomed in the light of increasing Chinese influence in Canada, Latin America and much of Africa. Paradoxically, it is the countries of Latin America (out of these prospects) who are likely to be the least keen for this closer relationship: partly because of pervasive anti-western sentiment and partly because of the autonomy they think their energy resource buys them.

Within the EU, the key trends are increasing dependence on imported oil and gas and the need to drive greater efficiencies and a more environmentally-friendly energy approach. Running in parallel, the global energy environment is in a period of transition. Demand and consumption is increasing, but technologically advanced and unconventional forms of energy are becoming increasingly present in the market. These technologies are also altering the structure of international markets: for example, while Saudi Arabian oil has been selling at around \$95 a barrel in 2013, the minimum viable selling price for the Saudis is \$50 a barrel. With the increased supply from and within the US of shale oil, the potential exists to suppress the price of Saudi oil, which has stark political and security implications for the Saudi ruling family.<sup>2</sup> In turn this would have the potential to create an oil price shock, making the case for diversification away from oil based economies ever more sensible.

Energy efficient technologies – be they in automobiles or solar panels on domestic roofing – have been slow to take hold in Europe, because of their prohibitive costs and other practical concerns. A medium sized family car in Europe has a fuel tank range of

450miles, when powered by petroleum, whereas its electric equivalent has a range of just 100miles, followed by a 20 hour charge. For solar panels, the cash equivalent price for a roof of panels for a three bed family home is \$24,000 and the electricity generated cannot be used by the house with the panels, the generating company pays the homeowner a set amount per unit of energy generated. The argument in favor of this technology would be easier to make to consumers if the homeowner could use ‘their’ electricity, or if the panels were considerably cheaper. These two examples highlight a broader truth: that the technologies that would control demand in Europe are not going to come online soon, and demand will remain high not only in Europe and North America but across the whole of the developing world.

### The Evolving Trans-Atlantic Energy Context

Bridging the Atlantic is important to EU energy policy. The current focus on the Middle East and Eurasia has bound Europe into several unhelpful political patterns and energy dependencies that it will need to break to secure its energy future. The disconnect between the EU and North America in energy terms looks paradoxical – the US, in particular, is becoming self-sufficient when it comes to gas and could easily export Liquefied Natural Gas (LNG) as a means by which to address some of the influence of Eurasian exporters, for example. The USA should not be seen in isolation, however, but as part of a wider Atlantic energy community. This community is assessed by the German Marshall Fund, that by 2035 the Atlantic basin will account for 20 % of global energy needs, 33 % of refined oil products, 35 % of gas production, 60 % of shale gas reserves and 70 % of the world’s renewable energy.<sup>3</sup> These figures are only partially undermined by the lack of cohesion in delivery of technology into supply and delivery out to the wider world, the ability to adapt supply to fluid demand and so on. Greater alignment across Atlantic partners would help this area deliver on its potential.

Latin America offers the potential for greater security of supply through diversification. This has mostly been thought of as oil based (and there is good evidence for this) but there renewables are under-developed in the region – it is estimated that as much as 64 % of the estimated 200GW of global wind energy exists in the Southern Atlantic area.<sup>4</sup> In terms of traditional export routes, Mexico is a major supplier to the US, but does not export widely elsewhere, and there is an increasing demand for advanced technologies to extract deep-water wells in the Gulf of Mexico, the Brazilian Santos Basin and Venezuelan Orinoco oil belt. The Santos Basin was unveiled in 2006, and represents one of the largest reserves discovered since 1980. Brazil itself is beginning to develop the technologies to exploit deep water reserves and shale oil, and is beginning to rival Mexico in scale. Similarly, the conventional and tar oil reserves of Venezuela are thought to be considerable: the major problems with Venezuelan reserves are the politics of the current Venezuelan government and its anti-western stance.

What characterizes all these ‘new’ potential partners are the technological difficulties involved in exploitation: this should make European investment capital and technological knowledge attractive to these partners. Despite the Macondo Well incident (and one

would assume European reticence to be involved in such projects again) there have been a number of licenses awarded for deep water drilling since, and production levels are once again growing. The deep water wells off the Brazilian coast were unaffected by the Macondo incident, although lessons were said to have been learned.<sup>5</sup>

It is not clear, however, that Europe will be able to tap straight into the new supplies in North and South America. In the case of Brazil, extra supply is likely to be soaked up by increased levels of domestic demand (despite the Brazilian government's laudable efforts to instigate and mainstream energy saving technologies). And whilst the US is enjoying a shale gas boom, there is a strong political desire to retain the gas for domestic use, and thus to fuel domestic economic growth.<sup>6</sup> In some Latin American states, reform of their energy industries and markets are required to allow foreign investment and technologies, as nationalized industries are often tied to strict political guidelines and voting measures: they do not have the flexibility or adaptability of private companies. Similarly, the history of state expropriation of foreign investments has not dissuaded aggressive nations like China and Russia from investing in Venezuelan state oil, for example. Risks are further compounded by the increase in the incidents of piracy against oil tankers, and there is good reason to see some of these operating risk factors converging into coordinated surveillance and security measures between partners.<sup>7</sup>

Changes in the international energy market as a result of the shale gas boom may have negative repercussions for the EU's economic and energy policy. Cheaper gas may well help to stimulate US economic recovery, which will have positive spillover effects for the global economy; there are, however, two possible negative implications. First, cheap energy – natural gas prices are now at their lowest for ten years – has improved the competitiveness of US firms against their European rivals. If the USA exported the gas, it would be as LNG, which is more expensive, and thus it is not clear that the EU would benefit in the same way from this gas product. Second, although shale gas is a possible solution for climate change problems, as it is more environmentally friendly than coal, a market dominated by cheaper gas reduces the competitiveness of renewable sources of energy, which the EU champions. It should also be noted that the wider environmental implications of shale are hotly contested. The relative expense of regular gas (sourced outside of the US) has pushed European energy generators towards coal, and towards building a new generation of nuclear power-stations: again, against the flow of European energy policy. There are good reasons to believe that the European Commission would not attempt to block state aid for new nuclear power stations, despite the public opposition to them.<sup>8</sup> There is a coming crisis in European power generation, however, as coal-generators are phased out, and many of the first generation nuclear power stations come to the end of their operational lives. In the UK this equates to a fifth of the generation capacity being lost by 2020, as demand is projected to continue rising.<sup>9</sup>

## Environment

Moving in step (and often in opposition) with energy policy are environmental concerns. Securing convergence on environmental policy will be almost impossible to achieve, there is simply insufficient common ground across Europe, North America, and Latin America on the key aspects. Whilst jobs and growth are important to all the partners, it is clear that North American partners give growth a stronger preference. Neither the EU nor its member states have been able to persuade the USA to join international climate change projects, including Kyoto. The USA will commit only to a treaty that applies equally to the major emerging countries (a view they share with Canada), including China, Brazil and India. As with the possibility of exporting shale gas, attempts to reduce carbon emissions encounter significant domestic opposition, which does not want to limit or undermine domestic economic growth. Canada has legally withdrawn from the Kyoto process as it was unable to contain its 'greenhouse gas' emissions and had exceeded targets by 23%.

By contrast significant Latin American countries (including Brazil and Venezuela) and European nations have offered support for the sorts of environmental measures supported by the EU, and have argued that the Kyoto Protocols should extend out past 2020. Part of the study for Brazil has been a dramatic reduction in the deforestation that blighted that nation in the 1980s and 90s, but this has begun to be matched by an increase in the use of energy by the emergent Brazilian middle class. Brazil has taken on a European approach to energy reducing technologies, embracing them enthusiastically. As with the EU, however, energy reducing and alternative energy technologies remain expensive and poorly distributed. It will take a number of years before these developments are rolled out sufficiently to make a serious impact on emissions figures. It is in reducing essential demand that these targets are likely to be met.

### A cooperative future?

For its economic security, the EU needs to diversify its energy sources and given the preponderance of resources in North and South America, it is a surprise that the energy link is not better developed. That said, European member states import 14% of their coal from Colombia, which could be expected to rise given that the generation of electricity is currently cheaper via coal than via gas. This switch back to coal is something that could also spur the EU's energy relationship with the US and parts of Southern America. One of the most positive reasons to enhance the energy relationship is the solid linkages between European investment capital, technological know-how, and potential, and the vast resource in Latin America, creating the possibility of increasing the economic prosperity of all those involved by matching investment, technology, demand, and equity.

The economic and practical dangers to the European Union are focused on pressures on the trans-national power grid, which is likely to suffer outages by 2017, and in the political problems with their existing suppliers: namely Russia, North Africa and the Middle East. The EU has an urgent need to further diversify its suppliers: Russia is politically toxic, and the ongoing upheavals in the Middle East make it more likely that

the EU will be exposed to an oil shock. But because the EU (both as a set of federal institutions, and separate states) have pledged themselves to certain environmental standards, the energy mix is not one of ‘the cheapest or most plentiful’, but has to conform to the desire to reduce carbon emissions. Such a view might contribute to compromising the economic recovery, but it represents the view that has the broadest support in Europe. The absence of a truly cohesive approach in Europe does make the issues more difficult to resolve. Similarly, the unwillingness of North America to export shale gas in significant quantities, coupled with difficulties accessing resources from new areas might end up pushing the EU to advance both the UK and German vision for European energy: new nuclear power-stations and a greater emphasis on renewables.

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<sup>1</sup> Joshua Chafin, China to freeze trade probes in solar deal, Financial Times: London, 28 July 2013.

<sup>2</sup> Paul Stevens, The world might be drifting into an oil price shock, Financial Times: London, 25 July 2013.

<sup>3</sup> Paul Isbell, *Energy and the Atlantic: The Shifting Energy Landscape of the Atlantic Basin*, The German Marshall Fund of the United States, Washington D.C., December 2012.

<sup>4</sup> Isbell, *Energy and the Atlantic*, *op cit*.

<sup>5</sup> See BP’s report on the incident

([http://www.bp.com/liveassets/bp\\_internet/globalbp/globalbp\\_uk\\_english/incident\\_response/STAGING/local\\_assets/downloads\\_pdfs/Deepwater\\_Horizon\\_Accident\\_Investigation\\_Report.pdf](http://www.bp.com/liveassets/bp_internet/globalbp/globalbp_uk_english/incident_response/STAGING/local_assets/downloads_pdfs/Deepwater_Horizon_Accident_Investigation_Report.pdf))

September 2010.

<sup>6</sup> Hugh Carnegy, EDF to exit US nuclear power over impact of shale gas, Financial Times: London, 30 July 2013.

<sup>7</sup> John Richardson et al., *The Fractured Ocean: Current Challenges to Maritime Policy in the Wider Atlantic*, The German Marshall Fund of the United States, Washington D.C., December 2012.

<sup>8</sup> Andrea Carta, EU Commission intends state aid for nuclear power, Financial Times, 29 July 2013.

<sup>9</sup> Elizabeth Rigby & Guy Chazon, Energy secretary tries to calm fears over power blackouts, Financial Times: London, 30 June 2013.