14. TTIP AND ENERGY

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1. Introduction

Despite accounting for a significant share of global trade[1] and the resulting interdependencies from it, energy governance remains largely fragmented and there is no global framework or agreement defining the rules of energy trade. While the GATT/WTO Agreements do not specifically deal with energy trade and the Energy Charter Treaty (Box 14.1) failed to establish an effective agreement on cross-border trade, countries tend to frame energy trade into bilateral cooperation schemes – as energy is considered an area of high strategic relevance, having a strong impact on national security and sovereignty, which can also open the door to protectionism.

Box 14.1 Energy Charter Treaty

The Energy Charter Treaty aims to promote international cooperation in the energy sector. Entering into force in April 1998, the Treaty's provisions focus on four broad areas: 1) the protection of foreign investment, based on the extension of national treatment, or most-favoured nation treatment and protection against key non-commercial risks; 2) non-discriminatory conditions for trade in energy materials, products and energy-related equipment based on WTO rules, and provisions to ensure reliable cross-border energy transit flows through pipelines, grids and other means of transportation; 3) the resolution of disputes between participating states, and – in the case of investment – between investors and host states; and 4) the promotion of energy efficiency.

[1] According to the World Bank the trade value in fuels is about 14.33% of global trade: (http://wits.worldbank.org/CountryProfile/Country/WLD/Year/LTST/Summary).

Members of the Energy Charter Conference, i.e. the ECT's membership base, are from the European Economic Area, EU candidate and Neighbourhood countries, the Russian Federation and other countries from the former Soviet Union as well as Japan, Australia, Mongolia and Afghanistan. The Russian Parliament refused the ratification of the ECT, as the ECT's Transit Protocol would require Russia to apply the principles of freedom of transit and non-discriminatory pricing to its oil and gas pipeline systems. In April 2004, the Russian Duma decided to remove the Transit Protocol from its agenda.

The Treaty remains open for accession by all countries committed to the Charter's principles. In an effort to enlarge its geographical scope, the International Energy Charter initiative has been launched in May 2015 in The Hague.

It is often suggested that the emergence of the US as a new energy superpower as a consequence of the shale revolution and the EU's desire to reduce its energy import dependence on Russia in the wake of deteriorating EU-Russia relations, would not only increase the value of transatlantic energy trade but also deepen EU-US cooperation in this field, and possibly in foreign and security policy. Therefore, perhaps not surprisingly, the EU would like to include a distinct 'energy and raw materials' chapter into the TTIP (European Commission, 2013a; European Commission, 2015).

On the other hand, to date, the US has pursued its 'energy security' or 'oil independence' approach since the mid-1970s. Oil and gas policy has been a result of the US fear of oil dependence, mainly on the Persian Gulf, and later of the fear of similar dependence on imported gas (see, for example, Yergin (2006)). Seen from this perspective, it is not obvious why energy should be included in TTIP. Energy is indeed rather special and faces rather uncommon trade and other barriers, some of which in the past seem to have served rather well the national interest of the US. Such US barriers include an export ban on US crude oil and a licencing regime for Liquefied Natural Gas (LNG) trade for those countries with which the US does not have a free trade agreement. To date US negotiators seem unconvinced of the value of an energy chapter and argue that energy is already sufficiently covered in other chapters of the TTIP. Notably, they hold that once TTIP is concluded, natural gas exports from the US to the EU would be sufficiently facilitated, should there be a market in Europe. This is because under the Natural Gas Act, LNG exports to countries with

which the US has free trade agreements that require "national treatment" for trade in natural gas are automatically considered in the public interest. Applications to export gas to such countries must be approved without modification or delay. However, LNG exports destined to non-FTA countries, with which the US does not have a free trade agreement, are subject to a project-based licencing system. Hence, they need the approval not only of the FERC (for environmental issues) but also of the Department of Energy (to ensure that these exports do not harm 'the public interest') (Chadbourne, 2014; Energy.gov, n.d.).

The primary motivation for the EU to include a chapter on energy into the TTIP seems to be to set a benchmark not only in terms of transparency, non-discrimination and competition rules but also of an open international market for trade of 'environmental goods and services and climate-friendly products and technologies'. At first sight, one might think this is the predictable EU reflex on spreading its rules, often referred to as 'Europeanisation'. This tactical move to make TTIP more palatable inside the EU given the concessions that it might need to make might play a role. But when reading the "Initial EU position paper" (European Commission, 2013a), it is easy to see that the target is not so much the TTIP in itself but other trade agreements that might appear as spin-offs. The EU would like to anchor energy in what might become a template or part of the template for future agreements.

This chapter will analyse how the market dynamics unleashed by the US energy revolutions might shape the transatlantic energy agenda, in particular in TTIP, and what potential economic and political benefits it could yield. The concluding section will identify the future transatlantic energy agenda.

2. The TTIP energy market context

2.1 The US shale revolution

For many years there has been transatlantic trade of coal and oil products. This trade has been stable, i.e. diesel and petrol with a value amounting to around €298 billion between 2004 and 2014.[2] There was no export of crude oil from the US, to a large extent because of the 1975 export ban, although the type of crude which could have been exported, i.e. light sweet, would not have been available in sufficient quantity to do so. With the shale revolution this has changed. In the

[2] Eurostat, International trade, EU trade since 1988 by SITC [DS-018995].

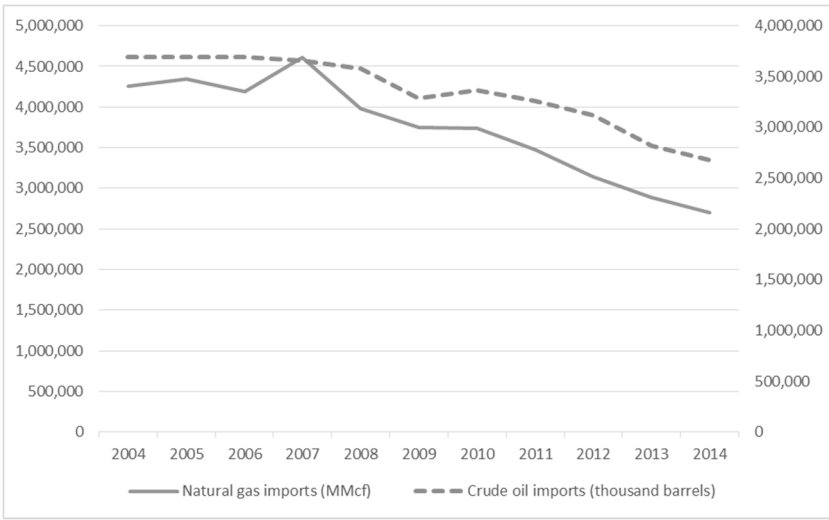
aftermath of the 1973 Arab oil embargo, in December 1975 the US passed the Energy Policy and Energy Conservation Act, a ban on most US oil exports. A few exceptions exist such as crude from Alaska's Cook Inlet and North Slope and heavy oil from certain California fields. Article 605 of NAFTA restricts the US ability to limit its crude oil and petrochemical exports to Canada (and vice versa). While Mexico is not part of Article 605, there are also exceptions for re-exporting foreign oil and for small swaps with Mexico.

Similarly, all US natural gas exports are subject to certain limitations. Those destined to non-FTA countries, with which the US does not have a free trade agreement, are subject to a project-based licencing system and need the approval of both FERC (for environmental issues) and the Department of Energy (to ensure that these exports do not harm 'the public interest').

This situation remained relatively stable as long as the US was facing increasing import dependency for both oil and natural gas. The US shale gas and shale oil revolution has fundamentally reversed this situation. Coupling hydraulic fracturing with horizontal drilling resulted in a tremendous increase in shale gas production in the US. The same techniques have also generated a comparable revolution in oil. As a result, the US became the world's largest natural gas producer in 2012 and the largest oil producer in 2013. As shown in Figure 14.1, both crude oil and natural gas imports into the US declined over the last decade, and this trend is more than likely to continue in the future.

This technological breakthrough in the North American upstream energy, i.e. production, sector over the last decade has affected almost all segments of the energy markets, not only in North America but globally. The sudden abundance of natural gas within North America transformed the continent from a net importer to a one in need of finding export markets. Export markets are seen as potentially constituting a safety valve, in order to release domestic production internationally, thus reducing oversupply and the subsequent severely depressed domestic price. Natural gas is literally 'trapped inside' the region until export licences are granted and LNG export terminals are built.

Figure 14.1 US oil and gas imports (2004-14)

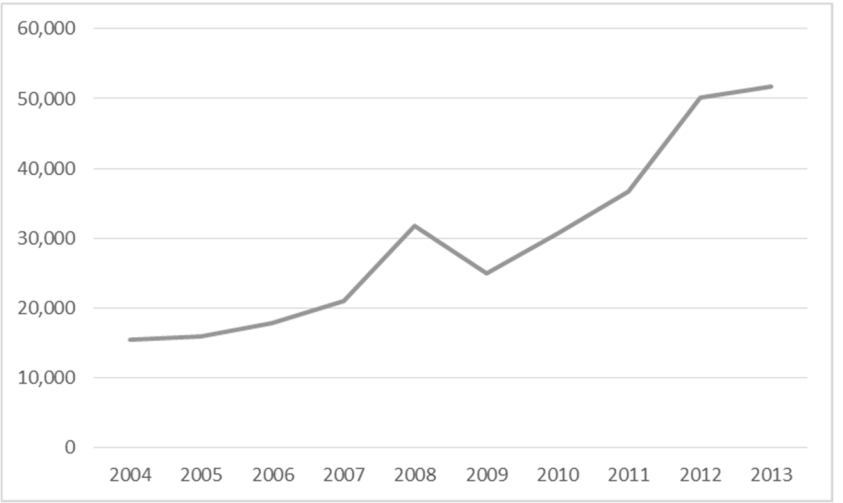


Source: Authors' own configuration based on data from US Energy Information Agency.

With production increasing from 0.6 mb/d in 2008 to 4.7 mb/d in 2014, the situation for shale oil is shaping up in a similar fashion, despite it being more complicated owing to crude quality issues. Crude oil is legally 'trapped' until the long-lasting export ban is lifted. Legislation hindering the free flow of oil, the world's most easily transportable energy source, widens the gap between the US oil prices and other international oil price benchmarks. For instance, in 2014 the spread between Brent and WTI (West Texas Intermediate) reached $12/barrel (Reuters, 2015). Hence, the US refining sector is experiencing high margins and utilisation rates thanks to the cheaper feedstock and whilst European refining is losing ground in a more and more severe way. According to the International Energy Agency (IEA), since 2008 crude processing capacity in the EU has contracted by around 8% with 15 refineries closing and three reducing their output (IEA, 2014). While the recent fall in crude oil prices improved the competitiveness of the European refinery sector, the longer-term outlook remains less optimistic, not least because of tightening regulations in the EU and the rising competitiveness of the US refinery complex ICIS (2015). Moreover, one should note that the US is facing an oversupply of light sweet crude oil (particularly desirable as a feedstock for gasoline refining) as US refineries are more suitable to heavy crude oil (EIA, 2015c).

In addition, coal consumption for electricity generation in the US has fallen significantly as natural gas has become more cost competitive. US coal can freely move out of North America to flood other regions and in particular Europe (see Figure 14.2). This trend is reinforced by the fact that US coal prices dropped to their lowest level in six years in the first quarter of 2015.[3]

Figure 14.2 EU-28 solid fuel imports from the US (thousand tonnes)



Source: Authors' own configuration based on data from Eurostat.

In order to understand the energy politics of TTIP, one must understand the changes in market dynamics in the US. The result of the interplay of technological breakthroughs, regulation and market dynamics has had enormous implications within the US and worldwide (Morse, 2014). For the US and its North American neighbours the shale gas revolution has indisputably been the main energy event of the last decade. Since 2008, it has changed the original shape of natural gas flows within the domestic pipeline system. The system was originally intended to bring gas from the production/import centres of the Gulf of Mexico and Canada into the main consumption areas, especially the north-east. The emergence of the main shale geographic areas – referred to as 'plays' – has somewhat reversed this picture: while Eagle Ford, in Texas, is relatively close to

[3] Central Appalachian coal prices, the benchmark dropped to $52.75/short tonne; see EIA (2015b).

Henry Hub and thus still pushes gas in the same original directions, the Marcellus shale play stretches from Maryland to upstate New York, thus sitting right in the backyard of the big cities of the north-east, which are the main consumption centres. Such is the abundance of gas that reverse flows from Marcellus to the south-east are becoming a reality.

The physical change in flows has brought about a corresponding change in local pricing, and hereof positioning by all players in order to secure transportation capacities in different and previously ancillary pipelines, reverse flows and the like (Hamilton & Santa Maria, 2014). The traditional domestic price differentials, measured in terms of a positive "basis" from the reference Henry Hub, have reduced dramatically[4] and no longer justify transport from Texas, hence effectively becoming negative (EIA, 2013b).

The abundance of gas traded at Henry Hub itself has brought down the price by around four times, i.e. from $11.27/MMBtu[5] in May 2008 to $2.85/MMBtu in May 2015. Many early entrants in domestic shale gas production have been struggling with financing their projects due to this depressed price situation. LNG imports have become virtually non-existent[6] and the low prices are here to stay until LNG export terminals come on stream to work as a safety valve to the system. The first LNG exports from the contiguous US are scheduled for the end of 2015. However, exports might impact domestic gas prices only when they reach a more significant level, but this is not going to happen at least for two or three years.[7]

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[4] Spot prices, in $/MMBtu, on 27 August 2014: Henry Hub 3.99, New York 2.79. NGI Daily Gas Price Index.

[5] Millions of British thermal units.

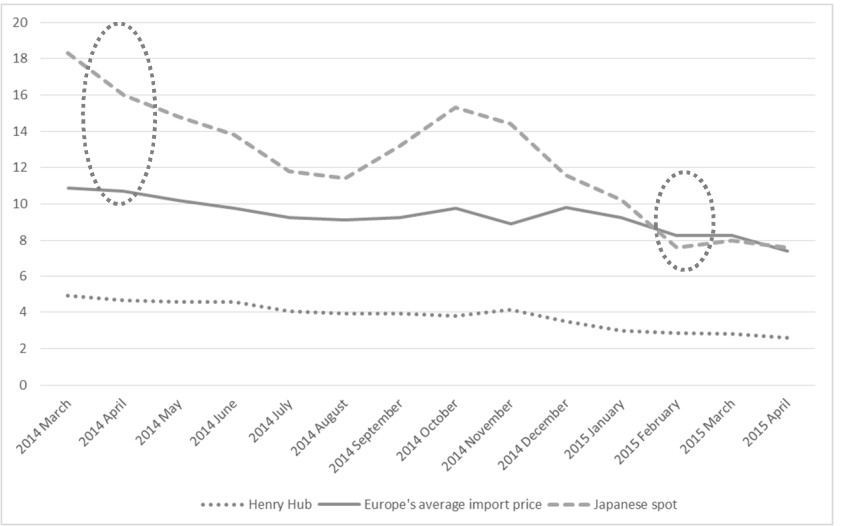
[6] LNG imports into the US are expected to be 0.17 Bcf/d in both 2014 and 2015, a very tiny volume when compared to a domestic consumption expected to average 72.6 Bcf/d during 2014. See EIA (2014), section on "Natural Gas".

[7] "Many of the latecomers frantically snatched up shale leases during the buying spree of 2009-12. But lots of these parcels of land have proved disappointing and now look to have been overpriced. The influx of the supermajors has contributed to another problem, too: a gas glut, exacerbated by inadequate pipeline infrastructure, that has kept US benchmark Henry Hub spot prices largely below $4 per MMBtu since 2011. Companies are being forced to redirect their efforts to areas rich in more profitable crude oil and natural gas liquids (NGLs)." See Economist Intelligence Unit (2013).

Moreover, in recent years the global LNG market has experienced two phases: with European[8] NBP (National Balancing Point) prices typically hovering around the $8-10/MMBtu mark, and US (Henry Hub)[9] prices plunging below $5/MMBtu after the first batches of shale gas production came to market, there has been a period, roughly corresponding with 2013, during which Asian prices above $15/MMBtu would certainly justify US exports to Asia. Note that during that period and up to now, not a single load of LNG landed from the contiguous US in Asia, because the pre-shale gas revolution market did not need export capacity, and building new LNG export terminals takes time.

Several changes in market fundamentals in 2014 have brought Asian prices down and in the first months of 2015 even below those of Europe's average import price) (see Figure 14.3).

Figure 14.3 Regional gas price dynamics: The disappearing 'Asian premium'



Source: Authors' own configuration based on data from Japan's Ministry of Economy, Trade and Industry (METI), World Bank and EIA.

The main reasons behind this are slowing Chinese economic growth and its increasing interest in piped gas, weather conditions in the Pacific-Asian region (cold summer followed by a mild winter),

[8] UK National Balancing Point, i.e. UK import price.

[9] US hub price.

nuclear restarts in South Korea, Japan's drive for energy efficiency to diminish the Fukushima effect, the appearance of new supply sources (start of the PNG LNG[10] export plant in May 2014) and finally the new low-price oil era.

All in all, this means that we are entering uncharted territory in a second phase in which, theoretically at least, a hypothetical US LNG tanker could be better off in Europe than in Asia, especially if liquefied in the Gulf of Mexico or the East Coast, thanks to the lower cost of logistics.

Whatever the views on future fundamentals and therefore on possible LNG flows, it is safe to say that they will swing between one and the other of these two phases. At current technology and logistics levels, US exports to Europe are commercially viable roughly when the NBP-Henry Hub spread is higher than $5/MMBtu. A spread of $7-8/MMBtu would be required to justify exports from the Gulf of Mexico or East Coast to Asia. It is straightforward to observe that if US export terminals had been in operation, in the first phase Asia would have competed with Europe as a destination for LNG, while in the second (current) phase, export volumes would have reached European shores. Hence, flows will be directed by commercial logic, regardless of the TTIP or the Trans-Pacific Partnership (TPP). But these agreements send a strong signal to the main market players and project investors that there is political will to ease LNG flows, if they are commercially viable.

Hence, Europe could secure transatlantic trade. However, in the US this would require US LNG export terminals to be in put place along with legislation providing clarity about the expected or maximum export capacity. For that matter, to allow the EU to fully benefit from the global LNG market, the interconnectivity of Europe's internal gas market would need to be improved and regasification capacity in north-east and south-east Europe increased (see Figure 14.4).

If this happens, the TTIP commitment to market-opening as well as discipline on restrictions such as the lifting of licencing regimes or export bans (in the case of oil) will facilitate the flow of goods and services. This will be facilitated if common rules can be agreed upon. Whether LNG flows towards the EU will become commercially viable is a different matter, and much will depend on whether European gas prices will be able to compete with those proposed by Asian buyers.

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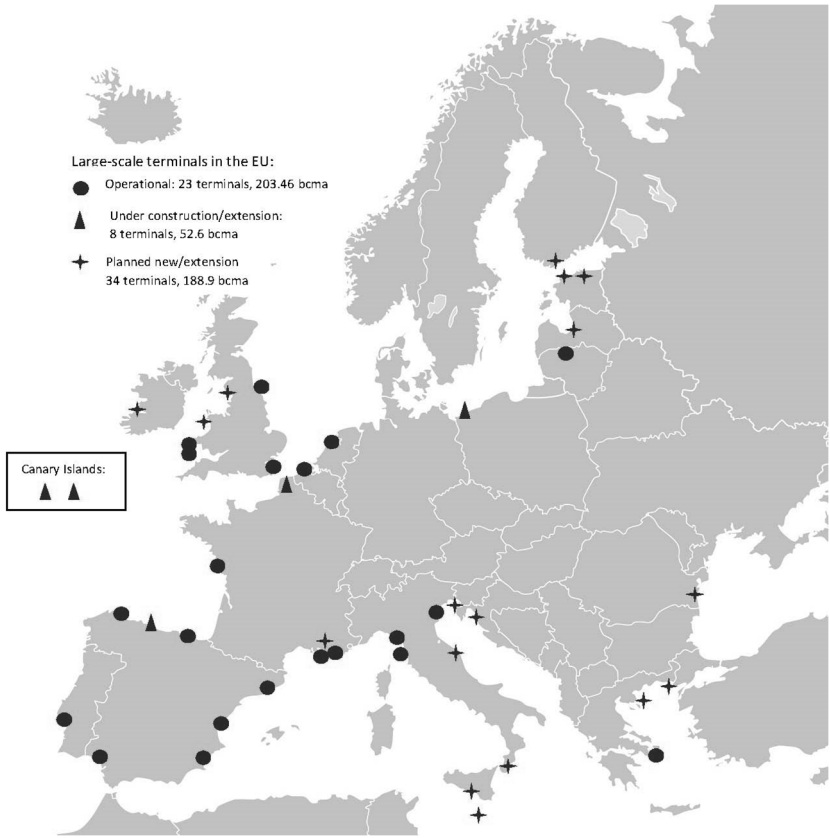
[10] Papua New Guinea LNG plant, with a 6.9 MTPA capacity. The plant started its first LNG shipments in May 2014.

Figure 14.4 Existing, constructed and planned LNG import plants in Europe



Note: bcma = billion cubic metres/annum.
Source: Authors' own configuration based on data from Gas Infrastructure Europe (GIE).

All in all, the picture looks favourable on a systemic level, but with a number of specific unsolved issues related to market dynamics and, most notably, the consolidation of the shale industry over time. The main player, the US government, needs to decide whether to grant export licences and, if so, how many, and whether to let the market decide or to try to control the flows and therefore domestic prices and production levels. This choice will be more political than economic, not because there will not be an economic gain or loss from it, but because such gain or loss will be due to the interplay of too many actors on a systemic level to be foreseen today. In broad terms, opinions in the US are divided between the supporters of the protectionist view, that is,

modulating the newly found reserves so that they, in a protectionist manner, power the domestic economy for the longest possible time; and those who instead argue that maximising US exports would act as a multiplier through the overall economy, hence generating more wealth over time than simply earmarking indigenous reserves for domestic use. It is easy to see how the two camps advocate opposite trade measures: the former supports protectionism, the latter free trade. But the choice cannot ignore the systemic dynamics, including those at the global level.

2.2 The EU's quest for energy diversification

Europe is in a different position than the US. The energy mix is not radically different from that of its transatlantic counterpart, but the forces at play suggest a likely divergence in the foreseeable future. Europe is import dependent and will remain so in the future, even if there is a question of how great this import dependence will be. Rapidly depleting domestic gas reserves and sustained gas demand (highly dependent on the effectiveness of measures taken to phase out coal) suggest that the EU's gas import dependence will further increase in the future, although there is controversy on how much.[11]

Prior to the shale revolution, the shape of Europe's import patterns for natural gas would have looked different to those of North America, which would have increased its reliance primarily on LNG. But the geological and political situation is now such that even if indigenous European shale gas might end up being produced, it is unlikely to trigger a proper revolution of the energy sector as was the case in North America.[12] And if anything, the relationship with its main supplier, Russia, is evolving in a way that suggests diversification out of gas might be in order (Egenhofer, Genoese & Dimitrova, 2014). Currently, the EU produces about 34% of its internal natural gas demand, and it imports the balance from a handful of countries: Russia, Norway, Algeria and (LNG from) Qatar. Most natural gas supply is entrenched in long-term contracts, often indexed to oil. The majority of

[11] For instance, according to BP (2014) the EU will need to import 49% more natural gas by 2035. Similarly, European Commission (2013b) considers that the EU will import by 32 more Mtoe of natural gas by 2030 than it did in 2005. Honoré (2014) also suggests an increase of EU gas imports during this period.

[12] For a comprehensive analysis of the reasons for arguing a different trajectory in European shale gas compared to North America, see Sandrea (2014).

these contracts will be due for renegotiation or renewal within the next 10-15 years, and increased liquidity at the hubs suggests that more and more gas is being traded on a short-term basis.[13]

2.3 Cheap coal

Another aspect of the transatlantic relationship when it comes to energy is the effect of cheap US natural gas on global coal flows. As a consequence of low natural gas prices, the US is experiencing a significant switch from coal to gas in power generation, and a very limited switch from fuel oil to gas in home heating. The diminishing need for coal, heightened by the planned phase-out of older coal plants through performance regulation, has generated an export trend of cheap coal to Asia and Europe.

The share of coal used for electricity generation has been shrinking in the US for the last few years – even if it still accounts for 39% of the country's power mix in 2014. The European Union, however, experienced a sort of 'coal renaissance' between 2010 and 2012 as the share of coal increased in the EU's power mix from 24% to almost 28%, although in 2013 the share of coal started to decrease in Europe (Eurostat data).

Indeed, due to structural design problems and their exacerbation by the world financial crisis and the so-called 'euro crisis', the Emissions Trading System (ETS) as the EU's main climate policy instrument has not been able to drive the phase-out of coal in Europe. The severity of the recession has led to a fall in economic activity and therefore to large emissions reductions. In addition, world coal prices have fallen so that the relative competitiveness of coal has increased. Without introducing a supply mechanism in the EU ETS, such as the proposed Market Stability Reserve, it might take until the mid-2020s at the earliest before a high enough carbon price would re-emerge to make gas more competitive. Many doubt, however, whether the ETS will be a suitable tool for supporting investment signals for low-carbon generation capacity. On top of this, the present coal oversupply in the US makes this fuel even cheaper than it used to be, providing a competitive substitute to gas in power generation.

However, there is a range of other policy measures on both sides influencing the electricity mix, in particular pollutants emissions control policies such as the EU ETS and the EU Industrial Emissions

[13] For a comprehensive analysis, see Stern (2014).

Directive (IED) and the U.S. Clean Power Plan. Inside the EU, other such measures have been initiated by EU member states, such as the withdrawal of the German nuclear programme after the Fukushima accident in March 2011, and the renewables support measures to phase out coal-fired plants in the UK, the Netherlands and possibly in Germany.[14] These EU, US and national regulatory developments influence the power mix and are supplemented by exogenous changes, which markets have experienced as a result of other factors: among these are Asian economic growth, the 2008-09 financial crisis and subsequent economic downturn (which took place at different paces in different parts of the world economy), and resource developments across the globe. All of these elements influence the natural gas market to a great extent.

Nevertheless, the reality in Europe is that coal is still a strategic resource in a number of EU member states for an array of reasons: it was the only source of power for the Polish economy until very recently; it is needed to complete the German power mix after the government's decision to phase out its nuclear power generation; it is defended by trade unions in Spain on employment grounds. Hence, a phase-out will be uneven across member states at best.

3. The opportunities the TTIP could unlock in the long run

Like the other sectors included in TTIP, the potential for improvement in energy trade lies in the area of non-tariff barriers (NTBs), which would lead to immediate mutual benefits. The removal of barriers to LNG exports from the US would benefit the sector, with LNG exports opening an alternative source of supply to develop over time in order to find an alternative to the cheaper, potentially less secure, Russian gas.

The impact of the removal of barriers can be increased further by common rules. For example, harmonising regulation related to the

[14] The UK introduced a carbon price to bolster the existing (too low) EU carbon price and is developing the legislative framework for the implementation of the Emissions Performance Standard for new fossil fuel plants as an annual limit on carbon emissions from new fossil fuel plants equivalent to 450g/kWh. The Netherlands under its national Energy Agreement of 2013, a settlement negotiated by the stakeholders, will phase out the technically least efficient capacity, which typically is coal. The German government is also considering additional regulation to deal with least efficient generation.

limitation of carbon emissions – even if not a realistic proposition at the moment and possibly for the foreseeable future – would create a level playing field that could at least partially create some clarity in a complicated field, which is currently being tackled in very different ways such as cap-and-trade, emissions standards or subsidies. Transatlantic coordination could prove useful in the long run in this respect, especially now that an alignment seems possible on the need for binding carbon reduction commitments, which the US had resisted for a long time. One could imagine the gradual linking of transatlantic cap-and-trade systems (Egenhofer, 2005) building on the experiences of existing systems such as the ETS or the one in California (and which is now gradually linked with the systems of the Canadian provinces of Quebec and Ontario). This would not only send a signal that the transatlantic region is ready to factor a high CO_2 price into its value chains but could also address sensitive issues such as 'carbon leakage' (Gros & Egenhofer, 2011) towards Asia. A high price of carbon in Europe would mean fewer outlets for its outflow of unused coal while a high carbon price in the US would mean a higher price of energy, which is actually going counter to the centrepiece of the shale revolution. Whether this happens will depend on many factors, not least the politics in the two regions, and currently there seems to be little immediate prospect. But the issue will not only not go away but become more important.

3.1 US authorisation of LNG export terminals

Although market projections suggest that American LNG will flow towards Europe and Asia, the current geopolitical situation suggests that non-economic factors might arise, if not dominate and justify some form of eastbound flow towards European LNG regasification terminals. In absence of a TTIP section providing energy cooperation and disciplines, the issue is left with the US regulator having to decide how many export terminals, and therefore how much export capacity, will be available. Moreover, leaving aside LNG could be interpreted by certain market players and project investors as a sign of lacking political will to ease LNG flows.

3.2 Regulatory harmonisation over the longer term

A further range of NTBs is caused by environmental regulations on both shores, especially where regulatory divergence results in certain plant or fuels being allowed in one region and not in the other. In this respect the most relevant area is pollutants emissions, and their indirect

impact on fuels through regulation that implies the phase-out of some types of electricity generation plants. In 2011 the US Environmental Protection Agency (EPA) introduced emissions standards for toxic air pollutants such as mercury, acid gases and sulphur dioxide.

In September 2013 the EPA reintroduced CO_2 performance standards for new power stations and in June 2014 it issued a proposal on the performance standards for existing power plants. In the proposed framework, the EPA would issue guidelines about the appropriate standards, but US states would be responsible for establishing and eventually implementing the performance standards once they have been approved by the EPA. Each state will have individual goals set by the EPA (a state-specific future carbon intensity of covered existing fossil-fuel-fired power plants in that state) and they will be free to choose the means to achieve the interim and then the final goal. All in all, the EPA expects that the Clean Power Plan would reduce nationwide CO_2 emissions from the power sector by around 30% from 2005 levels by 2030 (EPA, 2014).

In the EU, the Industrial Emissions Directive sets out a pathway for the reduction of pollutants emissions, but the carbon emissions are only regulated through the 2007-09 Climate Package, which sets a 20% overall emissions reduction target. Industrial and power sector emissions are regulated by the EU ETS (Ellerman, Convery & de Perthuis, 2010). On 23-24 October 2014 the European Council decided on a new set of targets for 2030 ("2030 Framework for climate and energy policy"), including a 40% greenhouse gas reduction, a minimum 27% renewables and a minimum 27% efficiency target. The EU ETS is also set to be strengthened, as the linear reduction factor of the EU-wide carbon cap will increase from the current 1.74% per year to 2.2% from 2021. In addition, the European Commission is trying to address the oversupply of carbon allowances, which has led to a fall of the allowances to less than €10/tonne of CO_2. One strategy is changing the allocation time path. The other is establishing a supply side mechanism, e.g. the so-called 'Market Stability Reserve' (MSR) to adjust the auctioning volume by 'parking' allowances intended to be auctioned in a reserve and releasing them from the reserve to the market to maintain the total amount of allowances in circulation in a given year within a prescribed band.

Should the US Clean Power Plan go ahead and the EU ETS not quickly manage to effectively address the current glut in emission allowances, an imbalance could be created whereby coal power plants would be forced to shut down faster in the US than in the EU, hence

reinforcing the existing 'coal leakage'. Whether this will be the case or will also depend on member states' policies, such as those in the UK or the Netherlands, which are considering national measures emissions performance standards similar to those of the US, could potentially polarise the coal leakage problem towards some European countries and not others.

Hence, regulatory cooperation between the EU and the US in the elaboration of emissions performance standards could effectively address the issue of coal leakage. On the other hand, the US could ask the EU to put its house in order. If not, the lack of a cap-and-trade carbon emissions system in the US, combined with the lower natural gas prices, will favour a sizeable medium-term switch from coal to gas in power generation, which will not be matched in Europe. Currently, there is no short-term scenario where the ratio between gas and coal prices would change so that gas increases market share in the EU power sector.

4. Bringing it all together

Several changes in the structure of trade across the Atlantic might either benefit or harm various aspects of energy policy on both shores, typically enshrined in the triangular model for energy policy that combines the objectives of security of supply, competitiveness and sustainability.

4.1 Security of supply

North American LNG could serve European interests in starting, or at the very least introducing, diversification away from Russian imports of piped natural gas, not least because of supply security reasons. Whether this is an economically viable proposition depends on both the kind of security premium Europe is willing to pay and relative prices. As pointed out earlier, the 2013 scenario of prices of $18/MMBtu in Asia and $10/MMBtu in Europe would not justify Europe-bound flows (unless locked in long-term agreements); but the current scenario, where these prices are roughly equal and the spread with Henry Hub is around $5/MMBtu would create a strong case for it.[15] The

[15] It should be noted that the reason is not absolute cost, but arbitrage. The estimated cost of liquefaction and transport for US LNG to Europe is around $4/MMBtu, to Asia $5/MMBtu. Spot price differentials of more than $4/MMBtu between Henry Hub and NBP are not infrequent, and in a two-

fundamentals of this market strongly suggest that prices in the next decade will reflect one of these two scenarios, perhaps switching several times between the two. European policy-makers might want to stop looking only to the east and to the south and perhaps turn their eye to the west as well. The politics and transatlantic commitments between authorities will need to be right in order to convince the market to create binding transatlantic ties. LNG imports from the US have the potential of being much more than the odd spot cargo. In the longer run, exports may well reduce the Asia/Europe price disparity.

The other side of the coin is that for North America, shale gas can have the same security value as it would have for Europe – in fact, as has been seen, there is advocacy in favour of protectionism. Moreover, and in this case joined with oil, energy independence for the US means having more options in foreign policy, as dependence eases. This is also true for Europe. Commercial links grow fastest once they are embedded in an agreement such as TTIP. However, one should note that the extent to which such an agreement would facilitate natural gas trade will depend on two aspects. First, it will depend on the exact wording of the agreement, i.e. whether it would be fully inclusive or whether exclusions exist. The second aspect is how the LNG export licensing system will evolve in the US, i.e. the regime of planning permission for the export terminals (issued by the Federal Energy Regulatory Commission). This is not a TTIP issue, however. The value of the aforementioned optionality is increasing the more the geopolitical situation gets complicated around the regions, which have traditionally exported to the EU.

4.2 Competitiveness

America is enjoying low natural gas and electricity prices that are at least in part enabled by the absence of LNG export capacity, while Europe struggles with higher gas prices and uncertainties from some of its traditional external suppliers. The argument for enabling transatlantic trade in natural gas is therefore in some respect similar to the arguments related to crude oil. But this also means that, inside the US, there are vested interests in industry and the energy sector pushing against it. While Russian gas is cheaper than LNG in monetary terms, member states seem to place different values on enhanced

country, NTB-free model that would suffice to justify Europe-bound flows. But as long as the Asian price remains much higher, markets will choose it as preferred destination. See Medlock III (2012).

diversification and having more supply options. Ultimately, the political choice for Europe is what price it is willing to pay for diversification and to increase optionality (such in the case of Poland and Lithuania, which opted for regasification facilities, or the EU's push to establish a Southern Gas Corridor). This political choice may well cause controversy: some member states are keener to diversify energy sources away from Russia than others.

4.3 Sustainability

When it comes to environmental policy, transatlantic cooperation is virtually non-existent despite the huge impact it could have on global climate change policy. Cooperation could range from a common ETS to the regulation of product standards and elaboration of support schemes for renewables subsidies. Each partner has its own environmental policies; carbon emissions reduction, the phasing out of polluting plants, steering the electricity mix, cleaning the transport sector, promoting greener 'infant industries'. Of all these policies, the ones that the TTIP might potentially address would possibly be a common emissions performance standard, carbon tax or trading system.

5. Towards a future agenda: Include other energy commodities

While the debate seems mature for the inclusion of natural gas as part of transatlantic trade talks, other energy commodities and policies would equally benefit from becoming part of the transatlantic trade agenda.

5.1 Oil independence in a single country

Oil is the foremost of these. As has been mentioned before, in the US, the shale oil revolution is expected to follow a very similar pattern as that of gas a few years before, with the main reserves located between Canada, North Dakota and Texas. Gas is dependent on the availability of pipelines for its transport, like water flows from the aqueduct under the streets of a town and finally into the pipes of a household, and this structure defines the volumes that can be shipped and the route options that can be chosen. Oil incurs fewer such issues, as it is ultimately more easily transportable than gas. Yet the debate over the proposed Keystone XL pipeline is a relevant example of how the old pipeline system is called to task: by making more oil transportable via pipeline,

many argue Keystone XL would reduce the need for oil to find alternative and less secure means of transportation, and more specifically limit the scope for railway congestion and accidents involving cargo trains bringing crude and products to market from North Dakota and Canada.

Availability of indigenous shale oil in North America means that the US, which used to be a net importer, is now becoming less and less dependent on external suppliers. However, the export ban on crude oil means all domestically produced crude has to be processed in the US refining system. From a transatlantic perspective, there would be scope for lifting such a ban and opening an eastbound trade route towards Europe. The crude export ban creates a domestic glut, with downward pressure on pricing, which on the one hand represents a disincentive for producers, and on the other hand marks domestic crude for exclusive use as feedstock for domestic refineries, boosting the latter's profitability, thus making American oil products, e.g. in the petrochemical industry, more competitive abroad and reinforcing the US's position as the world largest petroleum product exporter.

For this reason, the US refining industry is resisting this potential change: not only has it reinforced its traditional export route for diesel, but it has also contributed to the inversion of a traditional gasoline import trend from Europe into the US. Losing the competitive advantage in producing gasoline, which somewhat balanced the US supremacy in diesel, Europe remains a net importer of all energy commodities, and is left with a struggling refining industry. Swamped with refined products and having lost its supremacy on the gasoline side, many European majors are now facing increasing pressure to downsize their refining and retail business as a result.

With some small exceptions, the bulk of crude will still have to be processed in the US, whose policy-makers worry that the newly found advantage of increasing self-sufficiency could be threatened if the ban were lifted.[16] But holding that lifting the ban would automatically realign refining margins across the Atlantic is not correct: transportation costs and current contractual structures would still be such that the region where crude is produced would retain a competitive advantage over the relatively resource-scarce region, in this case Europe. But modest trade flows, and therefore realignment in margins, might occur. How this will occur is a crude quality issue and

[16] This reluctance on the US side is also the gist of the most recent debate on inserting an energy chapter in the TTIP. See EUobserver (2014).

uncertainty on crude exports is freezing US refining investment. There will be winners and losers inside the US refining system, given the distorted light/heavy crude differential and depending on whether one is running a complex or simple refinery, which differs by region in the US. This is why the US debate on the ban is difficult.

5.2 Biofuels

Global trade in biofuels has expanded in recent years, the two main commodities traded being ethanol and biodiesel. The US has been the world's largest producer of ethanol since the early 2000s but, being also the largest consumer, it has only become a net exporter in 2011. In 2014 US ethanol exports amounted to around 20 million barrels (EIA, 2015d). Brazil, Jamaica and El Salvador are its main import sources. The US was a net exporter of biodiesel between 2007 and 2012, only to become a net importer in 2013, with imports amounting to 8.152 and 5.059 millions of barrels in 2013 and 2014 respectively (EIA, 2015a).

These trends for both fuels are mainly steered by government policy, in particular subsidies on domestic ethanol production (in the form of tax credits) as well as the price support for sugar production. On the other hand, to some extent the ethanol demand faces a technical ceiling in the amount of ethanol that can be blended with gasoline. The current US biofuel policy is based on the Renewable Fuels Standards. Enacted by the Energy Policy Act in 2005 and expanded by the 2007 *Energy Independence and Security Act (EISA*), the Renewable Fuels Standards requires adding continually increasing volumes of renewable sources into the country's fuel supply – growing from nearly 13 billion gallons in 2011 to 36 billion gallons by 2022 (EIA, 2013a). In addition, the EISA authorised $500 million annually for the 2008-15 fiscal years for the production of advanced biofuels with at least an 80% reduction in life-cycle greenhouse gas emissions relative to current fuels. The use of biofuels is also encouraged through tax benefits. For instance, on 1 January 2012 the US eliminated the $0.54-per-gallon import tariff it used to impose on ethanol imports. The $0.45-per-gallon tax credit to blenders has also been removed.

In the EU, on the other hand, demand for biofuels is growing strongly, due to organic demand growth, as well as to the fact that the 2007-09 Climate and Energy Package includes a 10% renewable target for the transport sector by 2020, and the Fuel Quality Directive implies a 6% reduction in GHG emissions in the sector. The former obviously implies the introduction of liquid biofuels, while the latter is an additional incentive in that direction. According to the National

Renewable Energy Action Plans (NREAPs) submitted to the European Commission, member states intend to collectively exceed the 10% target. The NREAPs also indicated that the 10% target would be met by 8.5% conventional biofuels, 1% second generation biofuels and 1% renewable electricity, most of which would be used in rail. The contribution of hydrogen is expected to be negligible (ePURE, 2014). There is no biofuel target agreed within the 2030 Framework for Climate and Energy Policies (European Commission, 2014a).

Europe does not produce enough biofuels to satisfy demand and therefore large volumes are imported, especially biodiesel. The source of these imports depends mainly on technical requirements for compliance with the fuel quality Directive (see below). Indeed, to qualify for both the renewables energy and fuel quality Directives, biofuels consumed in the EU must comply and demonstrate compliance with strict sustainability criteria. They set rigorous requirements on the minimum level of greenhouse gas emissions savings (provide at least 35% GHG emissions savings compared to fossil fuels, a threshold set to rise to 50% as of 2017, and to 60% as of 2018), appropriate land use (raw material must not be grown on land with high-carbon stocks) as well as monitoring requirements for any potential adverse effect. Moreover, the European Commission is duty-bound to report on food availability, compliance with land-use rights and with international labour conventions. The technical requirements for compliance amount to 'methods of production' and not to 'like products' (the fuels themselves), the basis for trade liberalisation in the WTO ever since GATT was started. They therefore qualify as technical barriers to trade, and for many WTO partners these are very sensitive, if not regarded as quasi-protectionism. The TTIP could address this.

5.3 The EU's fuel quality Directive

A third area for potential barriers to be removed relates to the text of the EU's fuel quality Directive of 2009. In particular, the fuel quality Directive ranks transport fuels by carbon intensity and is intended to put the more carbon intensive at a disadvantage, hence promoting the 'cleaner' ones, in particular by discriminating between the qualities of the source crudes. This implies that fuels produced from Canadian tar sands or US unconventional oil would face entry barriers into the EU's transport fuel market. In practice, however, the text has never been translated into enforceable standards. Furthermore, not having been included in the EU discussions on the renewal of the climate targets to

2030, the scope of the fuel quality Directive expires in 2020, while it is not clear what regime will be in place from 2020 onwards.

A similar argument exists in relation to biofuels trade, but in this case the US and the EU are playing on the same side, using technical standards to discriminate against imports, mainly from Latin America, and thereby indirectly supporting domestic production. However, such technical barriers also limit the possibility of trading between each other, and in particular hamper the potential for US ethanol and biodiesel exports to the EU. Even inside the EU, however, the camps are divided between those who would prefer the fuel quality Directive to effectively become a barrier, hence promoting domestic production of biofuels (a segment which has a lot in common with agriculture, traditionally a protectionist stronghold) as opposed to their penetration into the fuel mix if there is a positive environmental effect. The TTIP could start that debate.

6. Conclusions

There are potential gains in facilitating trade in energy products across the Atlantic, possibly to an even larger extent than there is in sectors currently included in the scope of the TTIP. The benefits can be divided into direct gains and policy gains, and the action required to unlock these benefits relates to NTBs, in line with the nature and hard core of the TTIP itself.

It is fair to say that LNG exports to Europe will depend on regional pricing, which however is in flux right now. Europe would have to want LNG for this pattern to be put in place. Quite the opposite could be said of crude oil flows, as US grades would likely flow to Europe in the event the 1975 export ban were lifted,[17] thus improving EU refining margins and perhaps reducing the new westbound gasoline trend, possibly to the point of restoring the traditional pattern of European exports to the US. New players entering the distressed EU refining industry with different goals than the vertically integrated incumbents might also change the picture in favour of a resurrection of European refining and possibly, in the end, even eroding the US advantage in the diesel segment, and the corresponding trade flows.

[17] To a small extent, they already are: since 2014, some US Gulf Coast producers have been able to sell Eagle Ford light crude for export to European buyers, bypassing it through a splitter and self-classifying it as a product, thus circumventing the ban.

A gradual convergence in regulatory norms and practice would accelerate this trend. For example, successful conclusion of the debate over the fuel quality Directive, with the adoption of European limitations, would also impact this trend. The failure of this piece of legislation, or the more unlikely adoption of something similar in North America, could maintain the status quo. That aside, the fuel quality Directive could represent a piece of a broader process of regulatory harmonisation that has the potential to create mutual advantages; the introduction of a common framework for the limitation of pollutants, including greenhouse gases, could be another one, even if prospects seems remote. The fuel quality Directive is also a double-edged sword in that it works as a protectionist measure against EU imports of biofuels from the US. It seems fair to suggest that the effectiveness of this Directive is sacrificed as a bargaining chip for the EU, in order to achieve the inclusion of energy in the TTIP in the form of an opening for export of oil and gas from the US.

Most of these policy improvements are more grounded in politics than they are in trade: improving transatlantic security and tackling environmental issues together, if not sharing the burden on the competitiveness of the energy sector at large, would be an undisputable improvement. Granted, the US cannot be asked to give up its competitive advantage for the sake of transatlantic cooperation. But the US should not fear removing NTBs in the refining and biofuels sectors, although losers would need to be addressed. On a systemic level, trade in a commodity benefits the factor that is specific to the export sector; it triggers a shift of all other factors towards production that is intensive in that factor; and therefore, it ultimately works to the benefit of the economy which is most abundant in that factor. The US, now rich in hydrocarbons, has no reason to fear for its competitiveness in a free trade Atlantic community.

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