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THE FUTURE OF EU-TURKEY RELATIONS:
MAPPING DYNAMICS AND TESTING SCENARIOS

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Energy and Climate Security Priorities and Challenges in the Changing Global Energy Order

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ABSTRACT

Global energy markets are facing an era of extensive change through a radical process of transformation known as the "energy transition", which ranges from the unprecedented growth of renewables and the success of the Paris Agreement to the still unpredictable future of gas and oil prices. Europe and Turkey are heavily influenced by these phenomena, and so are their relations. A more climate-friendly position by Turkey would increase chances for cooperation with the EU – still the de facto global climate leader. A greater role for gas would boost the EU and Turkey's need for diversification, and thus possibly for cooperation. Turkey's significant focus on coal could, however, move the country instead closer to the anti-climate stance opened up by President Donald Trump's exit from the Paris Agreement, thus leading to a conflict scenario with the EU. The energy transition could provide a robust framework for the EU's and Turkey's future energy and climate relations, and one that might possibly be open to a new role for platforms such as the G20. However, its final impact will be a result of the evolution of its individual components, and the choices that the EU and Turkey will make in regard to these.

ÖZET

Küresel enerji piyasaları, yenilenebilir kaynakların yükselişi ve Paris Anlaşması'nın başarısından, petrol ve gaz fiyatlarının tam olarak öngörülemeyen geleceğine kadar, çok kapsamlı değişkenler içeren bir değişim süreci ve "enerji dönüşümü" olarak bilinen radikal bir geçiş dönemi ile karşı karşıya bulunmaktadır. Bu değişim, AB'yi, Türkiye'yi ve ikili ilişkilerini oldukça etkilemektedir. Bu çerçevede, Türkiye'nin daha iklim-dostu bir pozisyon alması, iklim konusunda halen global bir lider olarak görülen AB ile işbirliği seçeneklerini doğuracaktır. Küresel enerji dengelerinde doğal gazın rolünün artması, hem AB'nin ve Türkiye'nin kaynak çeşitlendirme ihtiyaçlarını, hem de bu alanda yeni işbirlikleri ihtimallerini arttıracaktır. Diğer taraftan, Türkiye'nin kömüre odaklanan yaklaşımı ülkeyi, özellikle Donald Trump'ın Paris Anlaşması'ndan çıkması ile gündeme gelen iklim karşıtı duruşa yaklaştırmakta, dolayısıyla da AB'nin tutumu ile uyuşmazlık yaratmaktadır. Enerji dönüşümü, AB ve Türkiye'nin gelecekteki enerji ve iklim ilişkileri için güçlü bir çerçeve oluşturacağı gibi, G20 gibi platformlar için de yeni roller oluşturma potansiyeli taşımaktadır. Yine de, bu dönüşümün nihai etkisi farklı enerji değişkenlerinin gidişatı ile beraber, AB ve Türkiye'nin tercihlerine bağlı olarak şekillenecektir.

CONTENTS

Introduction

EU–Turkey relations are strongly influenced by a series of global phenomena which are profoundly changing the energy and climate sectors: the uncertain role of gas; the fall in cost of renewables; low oil prices; and, above all, the increasing attention paid to climate change. This series of transformations can all be placed under the wider umbrella of the "energy transition" – generally defined as the shift towards a new, global energy mix driven by recent and remarkable technological changes, particularly in the renewable-energy sector. This paper thus aims to discuss the potential impact of the main components of the transition as direct and indirect drivers of EU and Turkey energy and climate relations.

The paper will analyse each component of the energy transition individually because of the impossibility of considering the energy transition as a discrete phenomenon. The changes involved are indeed too heterogeneous, and the definition of the transition itself is variable – for instance, the role of gas could be pivotal for Turkey or Italy, but extremely limited in European countries aiming at a zero-carbon energy mix, such as Denmark.

Nevertheless, understanding the energy transition is fundamental to the analysis of future EU–Turkey relations, primarily for its magnitude: according to the International Energy Agency (IEA), more than half of all new installed capacity in 2015 was in renewables, which grew by 15 percent more than in 2014. Tenders showed prices as low as US$ 30–35 per megawatt hour (MWh) for onshore wind in Morocco, or US$ 49/MWh for solar PV in Peru (IEA, 2016). Being a global renewables leader, this represent a major chance for the EU – but also for Turkey, in the light of its growing energy demand.

The energy transition is also increasing the level of uncertainty in global energy sectors. Despite their current success, the lack of a mature electricity-storage technology still undermines the full deployment of renewables – and thus the desire of emerging countries, such as Turkey, to further invest. Fossil fuels also face a period of unprecedented unpredictability as oil prices remain low. The structural component of this price level is probably greater than was anticipated a few years ago, and its causes are varied – ranging from the inability of OPEC (the Organization of the Petroleum Exporting Countries) to influence the market to the prominent role of the US as the leading global oil producer. These changes are troubling for both the EU and Turkey; as low prices are contributing to the instability of some of their key suppliers (Iraq and Libya, for instance), they are increasing their dependence on other suppliers (mostly Russia).

The role of gas itself is also, as yet, unclear; it could play a key part in the transition, thanks to its possible role in supporting renewables and its relatively low level of emissions. Nevertheless, its success will be determined by its accessibility at the global level, which will be driven by the expansion of the liquefied natural gas (LNG) market in the case of its price converging with that of pipeline gas – two core issues for the EU and Turkey, which are both still heavily reliant on pipeline gas despite owning significant LNG infrastructures.

These new trends are already influencing the role that new and old institutional platforms play in international coordination. The Paris Agreement represents a major novelty and will play a

key role in the transition. Its success could boost the development of renewables and the phase-out of fossil fuels, thus accelerating the transition via a clear political commitment. Yet, the US exit from the Agreement cast a shadow over its future. This uncertainty also influences the growing importance of formerly less-prominent institutions – specifically, the G20 forum of governments and central-bank governors from the world's 20 major economies. Indeed, considering all the difficulties in achieving a worldwide solution to climate change, many have regarded a positive cooperation on the issue at the G20 level as the second-best outcome of the Paris Agreement. Furthermore, the G20 could also become a favourable platform for discussing other energy issues, and could boost international cooperation in the diffusion of new technologies and energy trade..

These processes might have different and numerous effects on the EU and Turkey, contributing to building a path of either collaboration or conflict between the two – with some possibilities for convergence. Indeed, lower prices for renewables and the development of storage technologies will change the cost to the EU of maintaining its climate leadership, while success for the Paris Agreement could positively influence Turkey's currently weak climate policies, leading to a new Intended Nationally Determined Contribution (INDC) being proposed for the country by 2019 and to a rapprochement between EU and Turkish positions. Furthermore, larger and cheaper LNG global supplies will offer both Ankara and Brussels a source of diversification from Russia, thus affecting gas cooperation and the pipeline politics between the EU and Turkey – and, in particular, between the EU member states involved in the relevant projects.

The analysis will be divided into:

1. A definition of the energy transition, to understand the full extent of the phenomenon and its influence on the EU and Turkey.
2. An evaluation of four main drivers in the transition: the fall of renewables cost; the impact of low and variable oil prices; the role of gas and the outline for LNG; the Paris Agreement and the future of climate policies.
3. A discussion of the potential role of the G20 in supporting the transition, as the main alternative to worldwide international platforms (such as, for instance, the Paris Agreement).

1. The energy transition: a definition

A definition of the energy transition is the first, fundamental step in understanding its possible evolution and impact on the EU and Turkey. Indeed, the concept increasingly recurs in the energy and climate-research fields as well as in politics and economics, being often employed in documents such as the 2017 G7 Energy Ministerial Meeting Chair's Summary (G7, April 2017) and the EU Global Strategy (EEAS, 2016). Yet, it still lacks a coherent and complete definition.

Generally speaking, the phrase conveys the shift from one prevalent energy system to another, as happened in the first half of the twentieth century when changing from coal to oil, and even earlier, during the first Industrial Revolution, when the switch was from timber to coal. Currently, the energy transition is widely understood as the change from a fossil-fuel-dominated

energy system to one based on sustainable and low (or zero) emissions, which is also able to mitigate climate change.

Nevertheless, the definition of "energy transition" is not fixed, and often changes on a regional or national basis. In the case of Germany, for example, eliminating nuclear energy is pivotal to the desired outcome; this is not the case for some of the other European countries or for Turkey, which believes in nuclear energy's central role as a low-carbon energy source.

Globally speaking, the modern energy transition should thus be envisaged as a series of connected changes, all leading to the development of a renovated, sustainable and low-emissions energy system. Some of these modifications themselves influence the phenomenon, others are largely to be considered consequences of it. Technological evolution and the drastic recent decrease in the costs of renewables, for instance, are key factors facilitating the energy transition.

As we imagine the energy transition as the product of a new, global energy mix, influenced by economic and technological trends, it is then necessary to consider as part of its evaluation not only renewables and the fight against climate change but also other factors. Among these we can count the impact of growing natural-gas consumption, the risk of "stranded assets" due to the still wide use of coal, or the role of interconnections and the integration of alternative energies – all trends that lie at the core of the current evolution in European and Turkish energy mixes.

Due to its economic potential and its associated uncertainty, the energy transition will, accordingly, strongly affect the EU and Turkey, and their bilateral relations. There are two key variables to be considered here:

1. **How the different factors of the energy transition will generally evolve, and how the energy transition will be perceived on the domestic level by the EU and Turkey.** As an example, a significant evolution in storage technologies could lessen the importance of gas in the energy mix, thus promoting the development of renewables and the resulting energy cooperation between the EU (a global renewables leader) and Turkey. On the contrary, an increased role for gas would boost the need for diversification in both countries, which would then likely either add to the competition in EU–Turkey relations, due to the significant politicization of the resource in question, or boost cooperation as their shared diversification objectives would increase.
2. **How the energy transition will be perceived on the global level.** The success of the Paris Agreement will provide the political leadership to support already existing technological and economic trends, thus stabilizing the development of renewables and other technologies. If, however, the exit of the US leads to a breakdown of the treaty, Turkey will have weaker incentives to boost its already limited climate policy and to support a still uncertain renewables plan – thus weakening cooperation with the EU, which strongly focuses on the sector.

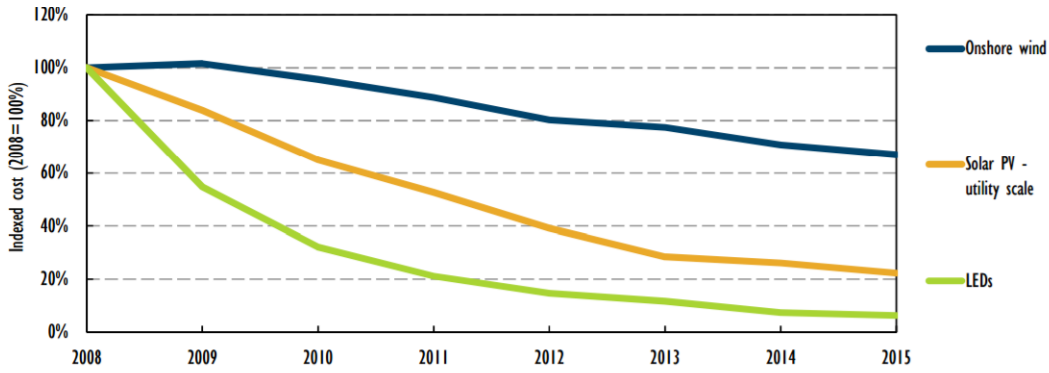
2. Driver: the fall of renewables costs

2.1 The global perspective

2015 marked a record year for renewables, with an extraordinary global capacity growth of 153 gigawatts (GW), divided into onshore wind (63 GW), solar photovoltaics (PV, 49 GW) and other renewables (41 GW). These accounted for more than half the global growth in electricity capacity and overtook coal's cumulative capacity in the world (IEA(b), 2016). According to the International Renewable Energy Agency (IRENA), in 2015 solar PV and wind's additional annual generation "met almost all incremental demand for electricity" (OECD/IEA, 2016). This is also unlikely to remain an isolated case, as an additional 42 percent of renewable-energy capacity by 2021 is forecast by the IEA in its 2016 Medium Term Renewable Market Energy Report.

Such exceptional growth proved that renewables have reached commercial maturity. This achievement has resulted from constant and strong cost reductions in renewable generation, shown by tenders receiving long-term remuneration prices as low as US$ 30/MWh for projects in North and Latin America, the Middle East, and North and sub-Saharan Africa (IEA [b], 2016). In countries such as Peru or Morocco, onshore wind and solar PV have become cheaper than competing coal plants (OECD/IEA, 2016, p. 10), which has led to a decrease in average costs by 35 percent for onshore wind and a remarkable 80 percent for solar PV from 2008 to 2015 (Figure 2.1). This trend is assumed to continue, with a further decrease in renewables costs by 15 percent for onshore wind and 25 percent for utility-scale PV, and then a growth of overall installed capacity of 42 percent (i.e. 825 GW) between 2016 and 2021 (OECD/IEA 2016) – a 29 percent increase compared with 2015 forecasts (IEA, 2015a). This expansion will generate relevant advantages: alongside energy efficiency, renewables are the best option for climate-change mitigation and greatly reducing air pollution; they are labour-intensive and produce energy through local natural and self-replenishing resources, increasing natural capital, jobs and energy security.

Figure 2.1 - Indexed cost of onshore wind, utility-scale PV and LED lighting, 2008–15



Source: IEA (2015a), Medium Term Energy Market Report 2015.

2.2 The impact on the EU and Turkey

This phenomenon influences the EU and Turkey in different ways, considering their diverse involvement in the sector. The EU has been focusing on renewables since their early development, at least from the 20-20-20 package, which set up national binding targets to reach at least a 20 percent share of renewables in the energy mix by 2020. Renewables have been further advanced through successive recent pieces of legislation, such as the 2030 Climate and Energy Policy Framework, adopted in October 2014, and the proposed revision of the renewables directive, included by the Commission in the latest Energy Union Package of winter 2016. In addition to the Union's involvement, extensive national plans for renewables and the technological leadership of some EU countries (first and foremost, Germany) – particularly in solar and wind, but also in more experimental resources such as tidal and wave energy – have brought significant results: the EU generated 27.5 percent of its energy from renewables in 2014, the year in which the whole renewable sector in the Union generated a €144 billion turnover. EU countries currently hold 30 percent of global renewables patents (European Commission, 2017b).

Nonetheless, these results have not been cheap for many European countries; the cost of subsidies, expansion and management of the grid have often been significant, as in the case of Spain, which halted subsidies in 2012 in the wake of its raising deficit. Member states that had a limited or non-existent renewables industries, such as many in Central and Eastern Europe, had to rely mostly on Chinese imports, with little benefits compared to those who could depend on leading national producers, such as Germany with Siemens and SolarWorld. Indeed, the new renewables directive, which is yet to be negotiated with the European Parliament and the European Council, is expected to support falling renewables investments in Europe and the now often unclear national-support schemes.

Full exploitation of the changes in the renewable-energy sector, however, requires a wider shift in the EU's approach. The core challenge is the integration of renewables into an energy market that was designed for fossil fuels, i.e. from a framework that has been built largely on the concept of marginal costs to one suitable for resources that have no marginal costs at all. This shift will require changes in large and critical areas of European energy policy, mostly related to the realization of the still uncompleted European energy market – with the liberalization of centralized national markets (as in the case of France), the development of physical interconnections and an overall increase in intra-European cooperation among the most important priorities.

By contrast, Turkey shows a marked difference between ambitions and what has been achieved thus far; while its current deployment of renewables is far from the European equivalent, its national energy plan for 2015–19 was devised in cooperation with the European Bank for Reconstruction and Development (ERBD), and thus closely followed ambitious European policies in the matter (European Development Bank, 2015). Indeed, the growth of the share of renewable energy in the country's total primary-energy supply has been flat for wind and solar, and declining for biofuels, while hydro has alternated between phases of decrease and increase. The share of production has been small: 5.8 percent for geothermal, wind and solar combined,

compare with almost 30 percent for coal (Colantoni et. al, 2017, pp. 14–15). Such results hardly coincide with Turkey's stated ambitions: the country's national plan aims to install 10 GW of wind by 2019 and a further 3 GW by 2019, with the purpose of reaching 16 and 10GW respectively – and, thus, 30 percent of electricity generated from renewables by 2030. The sector is still hampered by significant unresolved governance problems, from unclear legislation and standards to long, bureaucratic processes; high costs, particularly for licensing fees; and low levels of incentives, as well as by an insufficient development of the grid. (Colantoni et. al, 2017, pp. 37–9).

The expansion of Turkey's renewables potential is also undermined by the intention to implement some of the world's strictest rules for promoting the national production of solar and wind technologies. According to Bloomberg, US$1.3 billion of solar tenders were to be delivered from mid-December 2016, also with the support of the ERBD, with a price ceiling of $80/MWh, but with the obligation to build a solar-panel-manufacturing plant in the country (Bloomberg, 2016). Indeed, the 1GW solar-plant construction contract in the Karapinar region, for which this $1.3 billion is probably destined, was awarded to a South Korean–Turkish joint venture in March 2017, with a guaranteed price of $69/MWh and the obligation to use only domestically sourced material (PV Tech, 2017). While the price remains in the low range of recent renewable tenders, such a major focus on domestic resources will likely raise costs in the future and, mostly, slow down the expansion of the country's renewables-generation capacity.

In addition to these issues, specifically related to their energy markets, the EU and Turkey will also have to face the still unresolved problem of the intermittence of renewables. Even if the deployment of enhanced storage capacity could be the solution for this issue, such measures are not likely to become commercially viable or reproducible on a large scale at least for the next ten years (OECD/IEA, 2014). The solution to this dilemma could lie in massively increasing renewables generation, possibly by pairing intermittent with non-intermittent renewables – a solution that would be expensive but perhaps possible for Europe, but hardly feasible for Turkey considering its still low domestic-production capacity. An expansion in the grid could represent another possibility, yet the EU is still struggling to boost interconnections and Turkey is even less advanced on this front. A closer integration with natural-gas generation is perhaps the most likely alternative, at least for the medium term, but it will conflict with Turkish and European climate targets and increase their already critical external dependence.

Solving intermittence issues will also influence the EU and Turkey from the point of view of the regionalization of production – one of the likely consequences of the expansion of renewables, as national markets are still too fragmented and geographical differences are often too great for a global recipe for renewables (REN21, 2017). This regionalization will probably lead to the creation of energy "clusters", deepening intra-European connections and pushing Turkey towards more electricity trade on the European side to cope with intermittence – in particular, after the successful pairing with the EU grid in 2015 (ENTSOE, 2015).

The role that both the EU and Turkey will play in the expansion of renewables will also be influenced by the direction taken by their respective political leads, particularly regarding the future of the Paris Agreement. This position is mostly clear for the EU but not for Turkey, but it

will significantly influence the cost, speed and size of renewables in each of their energy transitions.

2.3 Renewables: the case for convergence

Globally speaking, the renewables driver appears to lead towards a **convergence** scenario between EU and Turkish energy policies, depending on the future behaviour of key variables.

Despite having a still inadequate renewables plan to fully exploit its resources, Turkey will significantly benefit from low-cost renewables because of its heavy reliance on energy imports, particularly from Russia; its growing energy demand; and the need to lower its energy bill in order to support a GDP growth level that, despite a 11 percent peak in 2010, suffered from major fluctuations, reaching a 2.9 percent low in 2016. Considering its global role in the renewables sector, it is safe to assume that the EU will maintain a high commitment in this field, particularly in the wake of the reform of European legislation on this issue.

Such shared interest in renewables will increase the scope for energy cooperation between the EU and Turkey. Indeed, the latter is largely missing the technology to fully participate in the renewables revolution – in which Turkey, according to its latest energy plan, would like to play an active part rather than simply importing infrastructures. This is technology that member states such as Germany, Italy and Denmark have, and could be willing to share with Turkey as part of ongoing cooperation.

It is true that Turkey can choose other partners in developing its renewables sector. Indeed, the country chose South Korea as its partner for its current, largest renewable project, the Karapinar solar plant. Yet, this has been possible because of the nature of the project – large, but a one-off kind of cooperation. The EU is instead a more suitable partner to lead a full development of a renewable energy system – in other words, to support the transition of the Turkish energy framework. Indeed, the EU possesses fundamental expertise not only in renewables technologies (rather a property of member states and national companies) but also in complementary systems that are fundamental to the deployment of renewables (often developed by European institutions themselves, such as ENTSO-E, the European Network of Transmission System Operators for Electricity). Network codes and technologies for the physical development of interconnections (one of the key elements in addressing the intermittence of renewables); consistent, European-wide research on energy storage; and an ongoing regulatory process aimed at integrating renewables into the energy market are all elements of significant advantage for Europe compared to its competitors in the renewables sector. This fact could ultimately lead to cooperation between the EU and Turkey in the sector, and perhaps even towards a path of convergence. Indeed, if Turkey would aim for a broader renewables plan, and thus a wider involvement with the EU, it would be more convenient for the country to fully acquire the European legislative package, having also increased chances for collaboration in research and development.

Some variables could, however, represent an obstacle to this process. Turkey could fail to produce a coherent renewables plan, either because of lack of political willingness or of the competition from other sources. The country's renewed emphasis on coal is probably the greatest danger here, as it is largely inconsistent with the ambition of significant renewables growth. Unlike gas plants, coal generation has a long start-up time, making it a poor choice to cope with renewables' intermittence. Coal also requires large-scale generation, which does not match the smaller, more disseminated dimension of wind farms or solar plants.

On the global level, there is also a chance that the lack of a fully developed storage solution could lead to a halt in the growth of renewables, and thus limit the cooperation between the EU and Turkey on this issue. Yet, considering the swift technological development in batteries seen over the past five years, and the significant space for renewables deployment in the EU and Turkey even without such a solution being found in the short or medium term, this option is unlikely to materialize.

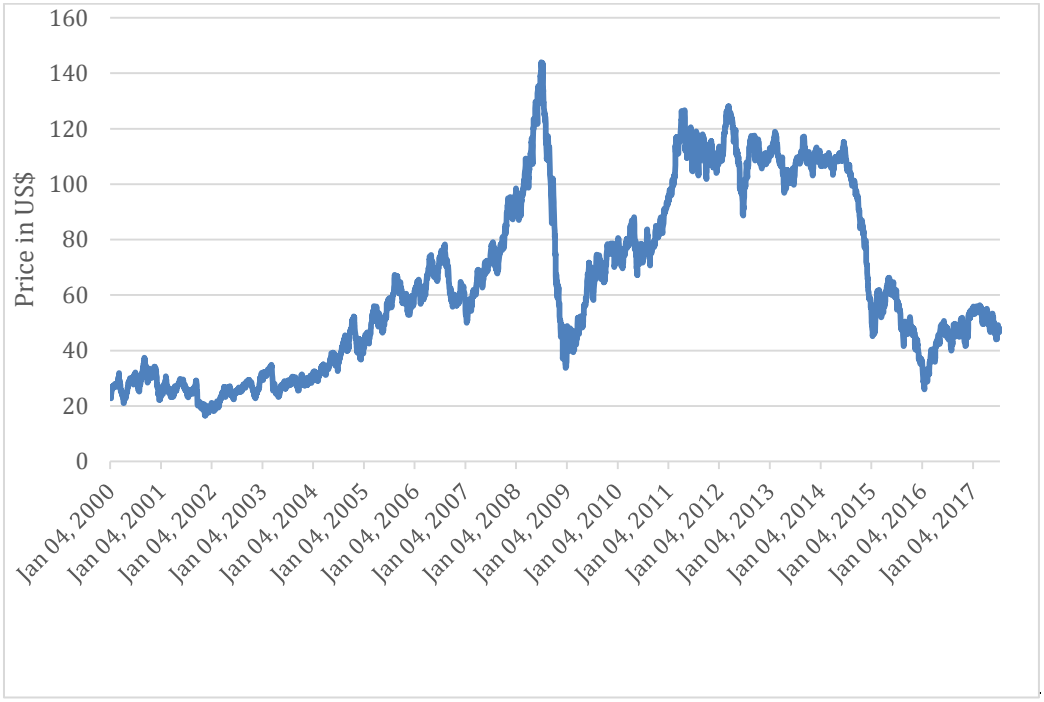
3. Driver: the impact of low and variable oil prices

3.1 The global perspective

When, in June 2014, oil prices were as high as $114 per barrel (dpb),[1] (Figure 3.1) hardly anyone would have expected their subsequent sharp fall, which finally led to a value as low as 27 dpb in January 2016 (a stunning 70 percent decrease). Many contingent elements and historical trends helped to shape expectations that low oil prices were a temporary phenomenon – in particular, the unexpected and significant levels of US shale oil production. As Saudi Arabia and OPEC in general did not cut production in the first period of price decline, in the hope of crushing the newly born US shale-oil market, prices were assumed to be dependent on this temporary clash.

Yet, recovery has been slow and unstable. Changing market conditions and the agreement on an output cut reached between OPEC and non-OPEC producers in November 2016 managed to halt the three-year price fall, settling the oil price between 40 and 50 dpb; however, price volatility has remained high and is still threatened by downward pressure (Oxford Institute for Energy Studies, 2017a).

Figure 3.1 – Daily Brent Crude oil prices, 2000–17



Source: Reuters, 2017.

As it is still unclear what the "equilibrium price" would be (if, indeed, there ever were to be one), the notion that oil prices of at most 90 dpb are a structural condition of the contemporary global economy is receiving increasing support (McKinsey Energy Insights, 2017), as many new factors emerge.

[1] If not specified otherwise, we refer to Brent Crude for oil prices.

The structure of supply has also significantly changed. It is now clear that OPEC has lost its firm grip on global oil markets, because of clashes inside the organization (between Iran and Saudi Arabia, in particular) and because of the dispersion of supply caused by the rise of new suppliers, such as the US and some African countries (among them, Angola and Ghana). The fall in oil prices had also shown the difficulties of finding a balance regarding the "dimension" of supply – i.e. between the opposing risks of over- and undersupply. As oil prices could stay too low for too long a period to promote new investments and thus new production, according to the IEA, demand could overtake offer in 2020, leading to a sharp increase in prices thereafter (IEA, 2017a).

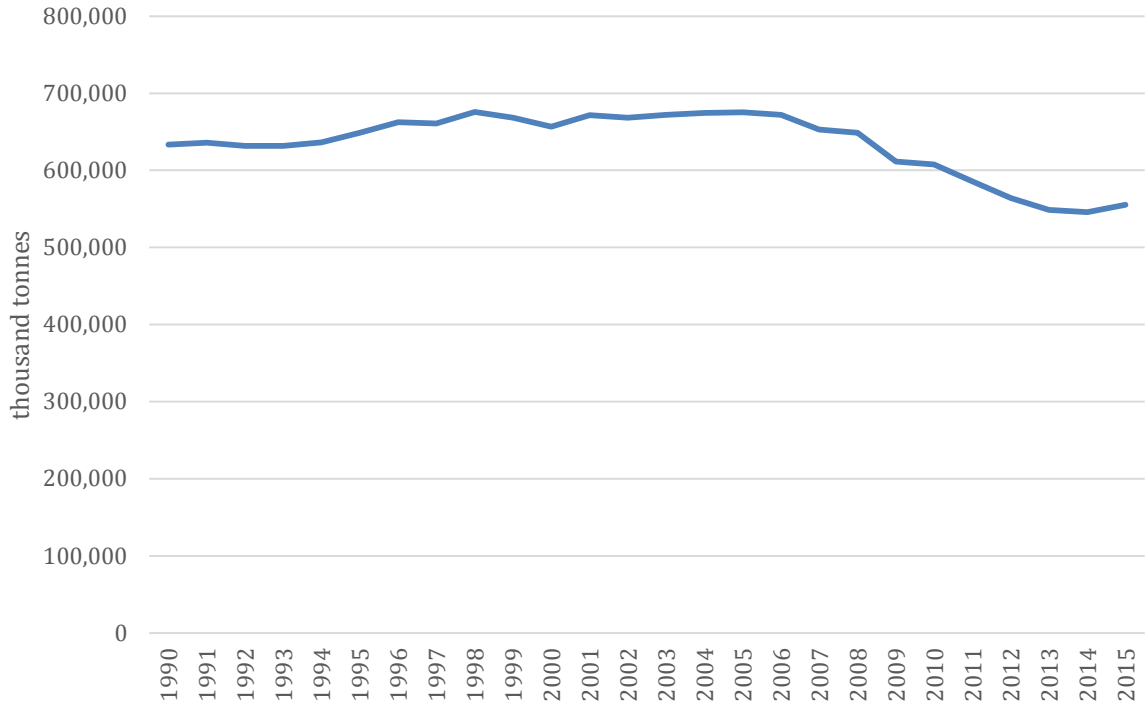
In addition, trends in demand have changed. Nations that were historically oil consumers, such as many European countries, are witnessing a marked decrease in their oil demand because of climate-change commitments, diminished oil intensity and a push to mitigate their supply dependence (McKinsey Energy Insights, 2017). Fast-growing markets, as in the case of Asian countries, experienced a decrease in oil consumption as a result of Gross Domestic Product (GDP) slowdown and also have a wider array of alternatives to satisfy their energy demand, as oil is being gradually phased out of electricity production - including diesel generators in sub-Saharan Africa being challenged by hybrid (mixed renewables mostly) mini-grids - and gas for transport (particularly maritime) has an increasing appeal to investors.

Generally speaking, prices are now greatly influenced by a complex mix of geopolitical outcomes, technological issues, competition from other sources and several other factors, which then result in a strong variability, highly impacting on both oil producers and consumers (Mabro, 2001).

3.2 The impact on the EU and Turkey

Considering the diminished importance of oil for the EU, the impact on the Union of these trends may seem positive, yet the situation is less clear than it appears. Oil consumption has been declining or flat from 2006 (see Figure 3.2), and no major changes are expected in the future, because of the low energy (and oil) intensity of the European industry – the small rise between 2014 and 2015 is considered a temporary change. Paradoxically, renewables have not been displaced by low oil prices, but they have benefitted from them; this outcome has resulted from greater separation in the sectors in which oil and renewables operate; greater solidity in renewables markets; and, particularly, their greater profitability.

Figure 3.2 - European Union oil consumption (thousand tonnes, 1990–2015) (28 countries)



Source: Eurostat, 2016.

The decreasing role of the EU on the global oil stage has, however, resulted in a significant increase in its oil dependence, which reached 89 percent in 2015: a 26-year peak (Eurostat, 2017). EU dependence on external suppliers increased by 12 percent in the period 2000–14 – in particular, regarding Russian oil, which now represents 30 percent of the European import mix (Cambridge Econometrics, 2016) and rising. This situation is largely down to the diminished role of key suppliers, due to geopolitical reasons (as in the case of Libya) and, generally speaking, to a reduced political focus on the issue of oil imports. It is also aggravated by the diversity of member states: while countries such as Italy and France have a large number of suppliers, others, such as the "Visegrad countries" (Poland, Slovakia, the Czech Republic and Hungary) rely heavily on a single supplier (Russia) through pipelines. While these circumstances are similar to those of European gas imports, the significantly less political attention to the issue of oil dependency, the higher variability of current oil prices and the instability of many of its suppliers

represent a threat for Europe. The transport sector, in particular, still relies heavily on oil, consuming around 73 percent of the European total (Eurostat, 2017).

Similarly to the EU, Turkey, too, has increased its oil dependence – but as a consequence of a major increase in consumption, which has taken place mostly since 2012. As domestic production remains extremely low, Turkey now imports more than 89 percent of its oil, a significant portion of it from geopolitically unstable countries (the country imported 45.6 percent of its oil from Iraq in 2015 [MFA, 2016a]). Consumption is also set to climb due to an increasing energy intensity, which rose by 7.1 percent in the decade 2006-2016, compared to a 16.3 percent average decline in the countries forming part of the IEA (IEA, 2016b). Low incentives for energy efficiency and the state of Turkish industry have been largely responsible for this increase. In addition to this vulnerability, derived from domestic consumption, instability in the global oil markets affects Turkey's potential status as an energy hub, which could be achieved through its geographical position close to the world's second largest proven oil reserves (in Saudi Arabia). Indeed, Turkey already has a key role as a transit country, via the Baku–Tbilisi–Ceyhan (BTC) pipeline from Azerbaijan, the Iraqi pipeline, and a significant volume of sea trade via the Turkish straits and the port of Ceyhan. As the EU's dependency is growing, Turkey could truly increase its strategic importance not only for gas but also for oil.

Yet, low oil prices and high variability impact on the economies of many of its suppliers, which are, to varying degrees, *rentier* states – i.e. dependent on oil revenues for the greatest share of their total income, and thus their often precarious domestic stability (Sartori, 2016). Security threats also directly influence their production capacity and their ability to trade oil and gas; as an example, of the two branches of the pipeline connecting Iraq and Turkey, one shut down completely in 2014 following sabotage by Daesh (Energy Information Administration [EIA], 2017a).

Current trends on oil prices could thus directly and indirectly affect the EU and Turkey, while the greatest threat comes from their variability, which is caused mostly by the changing structure of energy markets and the unclear definition of oil's role in the new energy mix that the energy transition will dictate.

3.3 Oil prices: the case for cooperation

The aforementioned oil-price trends will probably result in further **cooperation** between Europe and Turkey on energy and climate-change policies. Two variables currently affect the energy markets. First, the low level of prices is reducing the income of many *rentier* states, further threatening their already precarious stability – and thus their ability to export to the EU and Turkey, such as in the case of Libya and Iraq. Then, price variability is also affecting the future of these countries, as well as the capacity to forecast the future availability and price of oil in general (especially if low oil prices result in undersupply, as described by the IEA and reported above).

Globally speaking, low oil prices can result in reduced availability of the resource because of both decreased investment in exploration and production activities and geopolitical instability; future undersupply could rapidly and unexpectedly increase prices, inflating an energy bill already burdened with the surging need for diversification and high variability. Low oil prices will then probably make the resource less stable and less available, thus paradoxically discouraging its consumption; this is probably why current price trends have not resulted in an increase in European consumption, which instead happened until 2013–14 with the brief resurgence of coal.

The EU and Turkey could therefore attempt to achieve two objectives in order to cope with this situation: reduction of consumption and diversification of supply.

The first will be probably harder for Turkey, whose oil demand, unlike the EU's, is still growing. Yet, if achieved, reduced oil consumption would boost the transition to a "greener" energy mix by further reducing the already limited share of oil in the generation mix, possibly promoting the electrification of transport – still limited also in Europe, but set to boom in the next few years – and even spreading the use of gas for transport – most likely maritime transport, due to the very limited use of the resource for road transport. As already highlighted regarding renewables, electric transport and alternative energies are key sectors for the European industry, and a mutual interest between the EU and Turkey on this will extend the scope of their cooperation.

The need for diversification will also result in both a search for alternatives by the EU and Turkey, and by the need to consolidate precarious situations in this field. The two could then expand their cooperation in order to exploit Central Asian resources, similarly to what is happening with gas and the Southern Corridor, and also having a greater interest in working to stabilize the political situation of troubled partners such as Iraq.

4. Driver: the role of gas and the outlook for LNG

4.1 The global perspective

"The future for natural gas is bright", wrote the IEA in a 2011 report tellingly entitled "Are we entering a golden age of gas?" (IEA, 2011). The prospects were indeed positive as, at the time, the LNG trade was booming, US shale gas was at its peak and the resource was seen as a fundamental substitute for polluting coal and expensive nuclear energy. Yet, something has changed in the meantime: European demand has stalled, Asia's extraordinary gas-consumption growth has diminished and the global commitments on climate targets after Paris cast doubts on the possibility of a central role for the resource in the global energy mix, considering its still considerable share in world carbon dioxide (CO_2) emissions. Six years after the IEA report, gas is a resource at the crossroads – poised between the possibility of a marginal role and a fresh expansion thanks to new prospects in production.

Those early, favourable prospects for gas came from its numerous advantages as they were seen at the time – in particular, in relation to the energy transition. The resource has an almost non-existent sulphur and a low carbon content, roughly half that of lignite ("brown coal") (EIA, 2017),

while new combined gas plants have significant power-conversion efficiencies (almost 25 percent more efficient than coal or nuclear [EIA, 2017b]). Having a very low start-up time (30 minutes, compared with 12 hours for most coal plants [Wärtsilä, 2016]), gas is a positive complement for the intermittence of renewables. As new reserves have been discovered in the eastern Mediterranean, the US and other areas of the world, the availability of gas has also greatly increased in recent years – from 2000 to 2011, global gas reserves grew by 25 percent (EIA, 2017c). Recent, very optimistic IEA forecasts underlined the growing importance of Egypt, Israel and Cyprus, as well as Mozambique and Angola in sub-Saharan Africa, Qatar (which increased its production threefold between 2000 and 2009) and Australia (IEA/OECD 2017). Global production will, however, be driven by the US, which accounts for 40 percent of new production to 2022 – mostly through a 45 percent increase in the production of Marcellus shale (IEA/OECD 2017).

Yet, despite these favourable conditions, obstacles to the further development of gas persist. Competition with other resources is fierce because coal remains cheaper than gas and more widespread as a technology, and renewables – still heavily subsidized – displaced gas rather than coal in Europe. The demand side has also been troubling, due to the levelling-off of European gas consumption after the economic crisis and the decline in Chinese demand, as a consequence of its Gross Domestic Product (GDP) slowdown, and to the unclear role of demand from India and other emerging economies (BP, 2017). Globally speaking, the IEA's latest forecasts are quite weak, with a mere 1.5 percent demand growth per year (as compared to the 2 percent that the agency was expecting in 2015), even if that was still more than historical averages (IEA/OECD 2017).

4.2 The impact on the EU and Turkey

The gas situation in the EU is complicated. On the one hand, natural gas is at the centre of European energy policies, being one of the drivers behind the foundation of the Energy Union itself. This attention has been given at the expense of other sectors – electricity, in particular. In the 2014 Communication on the European Union Energy Strategy, the Commission named 27 projects for gas but only six for electricity (European Commission, 2014). Indeed – due to its heavy dependence on Russian gas, tensions in Ukraine and the consequent danger faced by some member states in particular (such as Bulgaria and Greece) – gas, as a resource, has benefitted from major political focus by the EU, and has been frequently used as a tool in the Union's foreign policy (the Gazprom competition case being but one example). Yet, these concerns led to a significant overestimation of demand: from 2003 to 2015, the EU had to lower its gas-demand projections for each reference scenario that it published, and Commission forecasts have sometimes been even higher than those of European gas lobbies (Jones, Gaventa and Dufour, 2015). Meanwhile, European gas demand has been facing a continued decrease – in 2015, it was 20 percent less than in 2005 (BP, 2016). More positive forecasts – such as those of Platts, expecting a rise in 2016 and 2017 (Platts, 2017) – are challenged by much less optimistic opinions from several analysts, which expect this decline to continue and to be unavoidable

(Oxford Institute for Energy Studies, 2017b). Reduced demand, limited possibilities for growth because of competition with renewables and the low energy intensity of the economy are all elements preventing Europe from consolidating its role as a global actor for gas and boosting its development-core infrastructures, such as the Southern Gas Corridor.

Despite a rapid increase between 2000 and 2014, Turkish gas-demand forecasts are also uncertain. The 81 billion cubic metres (bcm) per year by 2030 that the Turkish national gas company, BOTAŞ, expected in 2012 will, indeed, barely be reached; 60 bcm/year would already be a tough target to hit (Oxford Institute for Energy Studies, 2017c). This situation is down to a mixture of causes, particularly GDP decline due to political instability following the 2016 Turkish coup attempt; lack of diversification and of transparency in the country's highly subsidized gas sector; and, again, competition from other sources (mostly coal and hydro, and possibly nuclear in the future). Turkey, however, clearly needs to diversify; it imports practically all the gas it consumes, the majority of it from Russia. The development of eastern Mediterranean resources could be particularly positive for the country, mostly because of its geographical proximity to them and the increasing demand, which could guarantee the flows required to fully exploit these reserves. Yet, the still unsolved "Cypriot question" and often unclear relations with Egypt threaten the role of Turkey as a partner in the exploitation of eastern Mediterranean gas resources.

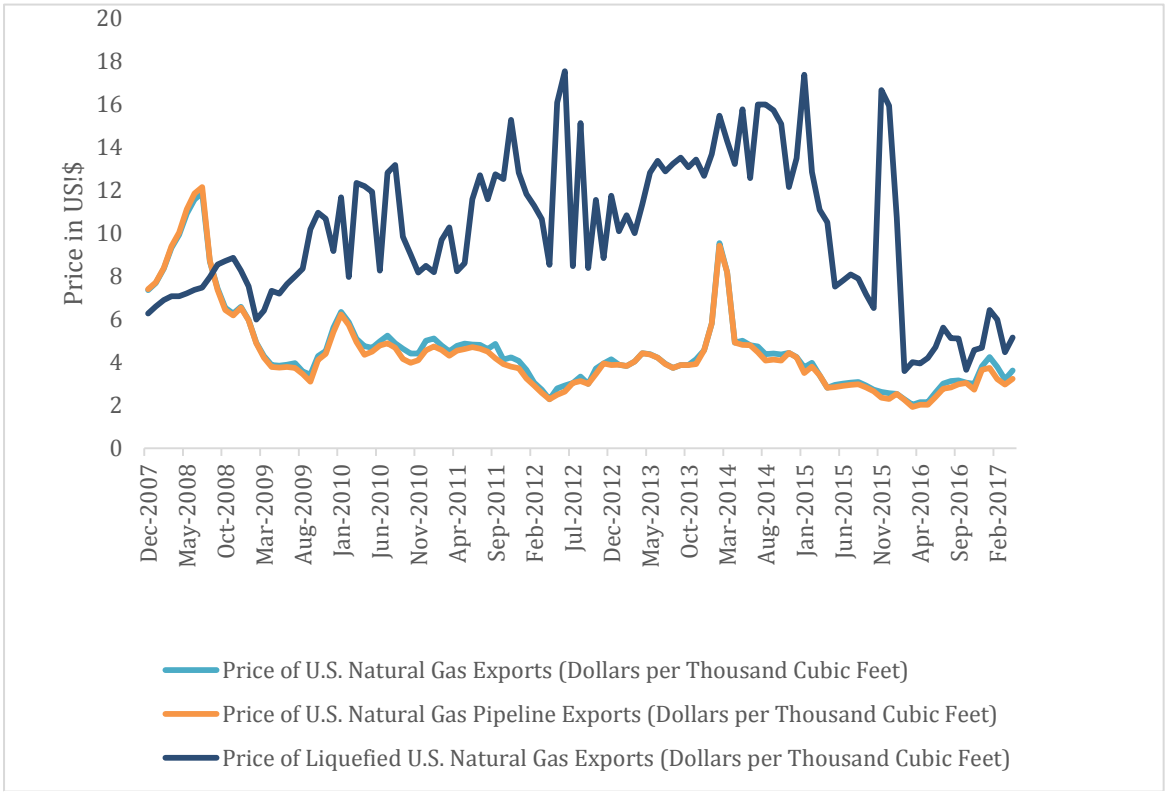
Turkish options for energy-mix diversification are also complicated by the still limited role played by renewables in the country, which instead makes coal the likeliest alternative to gas despite this outcome threatening the achievement of Turkey's climate-change commitments. This situation has not yet been radically altered by the new Turkish energy strategy, presented by Energy Minister Berat Albayrak in April 2016. Indeed, despite an opening towards renewables via a major tender for wind, which will probably be presented before the end of 2017, the strategy appears to be still largely focused on coal – and particularly on the exploitation of national fossil resources (Hurriyet Daily News, 2017).

While the outlook for gas thus remains hard to predict, according to recent forecasts the LNG market will, to a great extent, be the one most likely to set the course for the future of gas markets (IEA, 2016c). Prospects have not hitherto been particularly positive due to competition from Asian – particularly Chinese and, after the 2011 Fukushima accident, Japanese demand – which kept LNG prices significantly higher than those of pipeline gas, and thus made it less appealing to other importers. This situation resulted in a European LNG capacity of only 19 percent in 2015 (GIE, 2016). Lower international competition has raised the prospects for global LNG usage, which the IEA now expects to grow substantially (by 45 percent between 2015 and 2021, for example) (IEA, 2016c). The agency believes that this supply will be destined largely for the EU thanks to its already developed structures and spot markets – and thus to Turkey, which opened its first floating LNG-import terminal in December 2016.

The effect of the growth of LNG will most likely be positive for the EU and for Turkey, since it will provide competition for pipeline gas[2], reducing rigidities both in the supply chain (by eliminating the otherwise unavoidable link between producer and consumer) and in contracts, as LNG is usually supplied via flexible, non-oil-indexed contracts.

However, uncertainty remains high as key producers for the EU and Turkey are threatened by geopolitical instability (as in the case of the 2017 Qatari standoff with Saudi Arabia), and the price difference between LNG and pipeline gas is still remarkable – even in the US (Figure 4).

Figure 4.1: Prices for US LNG and pipeline exports from 2007 to 2017



Source: EIA, 2017.

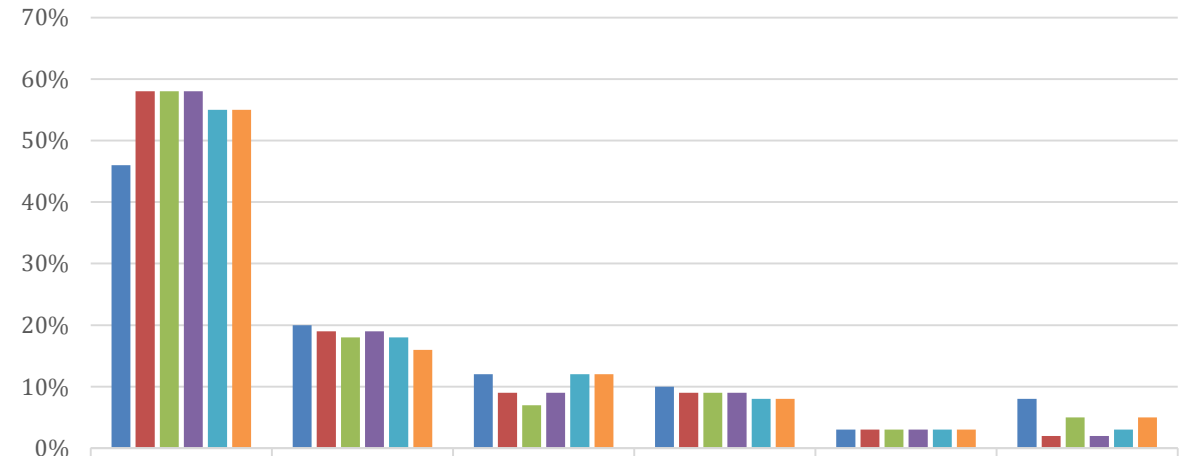
Nevertheless, it appears that an unquestioned "golden age of gas" is unlikely – especially for the EU and Turkey, where undefined global trends are also exacerbated by the security threat posed by the still prominent Russian gas supply (Figure 4.2). Additionally, the role of gas as a "bridge" to a clean energy mix is increasingly questioned, due to the decreasing cost of renewables, the risk of methane leakage and the nonetheless strong impact of its CO_2 emissions. However, this issue could impact differently on the EU and Turkey, considering the likely divergent future of their climate commitments (discussed in Subsection 2.1). More likely, the gas market could expect a further evolution in the next few years along the path traced by LNG (especially for Turkey, if the prices of the resource do indeed decrease), and perhaps the decarbonization of the sector proposed by Lord Stern in order to guarantee the survival of the resource even in a

[2] It is critical to note that LNG's increased competition with the pipeline gas will also be critical for the importance and role of pipelines passing through Turkey into the European markets.

zero-carbon world – a solution particularly appealing for Europe (Oxford Institute for Energy Studies, 2017b).

4.3 The future of gas: chances for convergence and conflict

Figure 4.1 - Turkey's natural-gas imports, 2010–15



	Russia	Iran	Azerbaijan	Algeria	Nigeria	Spot LNG
2010	46%	20%	12%	10%	3%	8%
2011	58%	19%	9%	9%	3%	2%
2012	58%	18%	7%	9%	3%	5%
2013	58%	19%	9%	9%	3%	2%
2014	55%	18%	12%	8%	3%	3%
2015	55%	16%	12%	8%	3%	5%

Source: Turkish Ministry of Energy and Natural Resources, 2017.

The possibility of gas leading towards either cooperation and convergence or conflict is linked to the success that the resource will have in the medium and long term, either going towards the "golden age of gas" originally forecast by the IEA (cooperation and convergence) or to a decrease of its role in the global energy mix (conflict).

An increase in gas consumption as a result of a slowdown in the roll-out of renewables, for instance, or a general decrease in prices will raise the need in both the EU and Turkey for further imports and diversification. As gas increases in importance, this will probably lead to cooperation, due to an increased interest in fruitful collaboration and a less-political use of the resource, which is already key for the two polities. In the case of the TurkStream, for instance, the fluctuating commitment to the infrastructure from the Turkish side was provoked by variable relations with Russia, but ultimately caused by the questionable economic convenience of the pipeline. Other energy projects were indeed continued, despite the tense diplomatic relations between the two countries after the shooting down of a Russian Su-24 fighter over Syria in November 2015.

With a more prominent role for gas, the high potential of energy reserves in the eastern Mediterranean – with an estimated 3.5 trillion cubic metres (122 trillion cubic feet [tcf]) of natural-gas reserves, equivalent to 21 billion barrels of oil (Karagiannis, 2016) – will become even more appealing for the EU and Turkey. They will then have additional reasons to solve the persistent challenges that they both face, particularly in the Mediterranean gas hub – in particular: the Cyprus conflict, the delineation of Exclusive Economic Zones in the eastern Mediterranean, overcoming Israeli–Turkish differences and managing the "spill-over" effects of the recent Arab Spring upheavals. As EU–Turkey collaboration is already highly significant in this context (Yilmaz and Sever, 2016), increased gas consumption could improve cooperation, also boosting the political commitment on key gas infrastructures – especially on the European side, where it is currently diminished by the dubious economic convenience of many of them as a consequence of the low level of European consumption. Considering the numerous LNG infrastructures already functioning in Europe, in particular in the Mediterranean, and the recent opening of the ETKI LNG terminal in Turkey, more freely available, low-cost LNG gas could also further improve cooperation even through intra-Mediterranean trade. Considering the current and future amount of gas trade between the EU and Turkey in such a scenario, and the number of sectors in which they will share interests, a remarkable rise in the role of gas could even lead to convergence. Indeed, the gap between European and extra-European law has often slowed down energy trade in the past – as in the case of the Nord Stream and the OPAL pipeline. Having previously excluded being part of the Energy Community, and thus acquiring the energy component of European laws outside the accession procedure, convergence seems the first option in aligning European and Turkish policies and boosting the gas trade.

A reduced role of gas, on the other hand, will lead to divergence and conflict, particularly if coal covers the share lost by gas. This is a real threat for both the EU and Turkey; there is an increasing emphasis among Turkish policymakers on prioritizing coal in Turkish development plans as a part of the country's diversification strategy in order to utilize local coal reserves (Şahin et al., 2015, p. 25). Turkey's "Strategic Plan for Energy 2015–19" highlights the goal of increasing electricity generation from domestic coal to 60 billion kilowatt hours (kWh) annually compared with 32.9 billion kWh in 2013 (Turkish Ministry of Energy and Natural Resources, 2015, p. 36). Considering the wide-ranging commitments by several EU member state to phase out coal, and its total incompatibility with the EU ambition of global climate leadership, a major Turkish focus on coal would represent a primary factor for conflict.

If, however, gas were to "lose" to renewables, the possible increase in cooperation between the two in the sector, as already described in subsection 2.3, could act as a partial substitute for the lost chances over collaboration in the gas sector.

5. Driver: the Paris Agreement and the destiny of global climate policies

5.1 The global perspective

The Paris Agreement is the first global agreement on climate change since the Kyoto Protocol and, most likely, the first treaty ever with significant chances for success in the field. Despite being globally acclaimed as an astounding achievement, the Paris Agreement is not without flaws, and its future is now overshadowed by the recent declaration by President Trump to take the US out of the treaty. Yet, this decision has hardly shaken its foundations – leading, in fact, to closer relations among several of its signatories (the EU and China in particular) rather than the "domino effect" that the Bush Administration's exit from Kyoto triggered, and which finally led to the failure of that agreement. Yet, it leaves space for negotiation with countries such as Turkey, which have not yet ratified the agreement and can exploit the current uncertainty to obtain a more favourable position in relation to it.

Among the several factors that determined the success of the Paris Agreement, one is most prominent: the treaty followed, rather than preceded, the consolidation of the energy transition, being thus a consequence rather than a cause of the latter. Among the other elements, and as already discussed in the introduction and in Subsection 1.1, between 2014 and 2015 renewables gave further proof of their maturity, thus providing the fundamental economic rationale for the Paris Agreement. Thanks also to a positive diplomatic conjuncture, the combination of all these factors produced a successful, worldwide treaty whose level of ambition many did not expect.

Clearly, the Paris Agreement is not perfect. Its main strength is, at the same time, its principal weakness: it is a political, not an economic, agreement. In other words, the treaty does not go into detail about how the emissions reduction will be achieved, as it is based on voluntary, uncoordinated and uncontrolled national reductions (those proposed in the INDCs). Thus, there is no way to check if the proposed targets by all countries are adequate to achieve the global emissions reduction (and, truly, they will not be) (UNFCCC, 2015). Yet, this structure ultimately led to the signing of the agreement despite international cooperation being at one of its historically lowest points, also granting enough flexibility to cope with eventual steps back from the signatories.

Nevertheless, the problem of delivering the Paris targets remains unsolved, because the majority of countries still do not have the tools to provide the adequate level of emissions reduction and no institution or agency will force them to develop these. The hope was that following the lead of, and exchanging expertise with, countries that had already developed effective measures (such as those in the EU), and thanks to the progression of the energy transition, the revision of the INDCs (the first, expected by 2019) would have progressively aligned national targets to the two-degree temperature-rise objective.

5.2 The impact on the EU and Turkey

The EU–Turkey relationship is one example of a possible, fruitful cooperation in the climate sector; the former could lead the latter in the structuring of an efficient emissions-reduction scheme, promoting mitigation measures and emissions trading as it has already done with China over the last few years. However, even if Trump's decision to exit the agreement has little impact on its functioning – especially since there are no quotas to reassign – it does influence the relative positions of various signatories, and thus the connection between the EU and Turkey in the field.

Without the US, the EU has even more reason to proceed alongside China in the fight against climate change, hoping to potentially displace a rival in key sectors (first and foremost, renewables). The US decision has been both preceded and followed by several, common announcements by the EU and China, which have displayed their intention of moving forward together (the latest being a joint declaration by Commission President Jean-Claude Juncker, Council President Donald Tusk, several EU commissioners, Chinese Premier Li Keqiang and Minister of Foreign Affairs Wang Yi) (European Commission, 2017). As competition for climate leadership has diminished, the EU is also experiencing less pressure to resolve some contradictions in its climate plans, such as the still conspicuous role of coal and European ambitions regarding the development of the gas sector.

Turkey, instead, is holding to a more ambiguous position. The country has signed the Paris Agreement and, in a recent comment over Trump's decision, Turkey's chief negotiator for climate-change talks, Mehmet Emin Birpinar, called for a prosecution of the Paris deal even without the US (Gundomus, 2017). Yet, at the time of the writing, Turkey is still one of the 48 nations that have not ratified the agreement (UNFCCC, Status of Ratification), and many – including Birpinar himself – believe that the treaty is not fair to the country and needs renegotiation before being presented to the Turkish Parliament (Gundomus, 2017). On the occasion of the July 2017 G20 summit, Turkey gave additional proof of its ambiguity: it signed the final declaration, which states that "[t]he leaders of the other G20 members state that the Paris agreement is irreversible" and "we reaffirm our strong commitment to the Paris agreement" (G20 Leaders' Declaration, 2017), but President Recep Tayyip Erdoğan used the event to again underline the need to provide Turkey with financial compensation for its future efforts against climate change if the treaty is to obtain the approval of the Turkish Parliament (Reuters, 2017).

5.3 The destiny of the Paris Agreement: success for cooperation, failure for conflict

It is too early to clearly understand the future of the Paris Agreement after Trump's declaration, and thus the role that the EU and Turkey might play in it. Yet, it is possible to predict two potential outcomes, and their possible influence over cooperation and conflict scenarios.

The first could be that the US actually exits from the agreement and this triggers a domino effect, either leading to the full collapse of the accord or to a net division between countries inside and outside the treaty. This would constitute a similar scenario to what happened with the Kyoto Protocol, and could be caused by a number of factors: a halt in the progression of the energy transition; a short-term success for Trump's pro-coal and protectionist measures; or the will of some countries, Turkey among them, to foster their fossil-fuels sector by exploiting the decreasing popularity of the Paris Agreement. In this case, we can expect the EU to further promote its alliance with China and other pro-Paris countries (various Caribbean states and Canada, for instance), with Turkey probably further pausing ratification or even explicitly siding with the US. As a decreased commitment is to be expected from Turkey and an increased one from the EU, the outcome will be one of **conflict**, also due to decreased cooperation in sectors key for the EU (such as renewables). This is, however, the less likely outcome, considering that even less-committed countries (such as Russia) have not yet followed the US decision, or even supported it.

On the contrary, the second hypothesis is that either the US will exit, but will be followed only by a small minority of signatories, or the US will not exit at all (in reality). It is difficult to define yet quite how and when a US withdrawal will be finalized (considering that the country will not be able to leave the agreement before 2019). Indeed, a good deal of the US population and a significant number of major businesses and local administrations have declared that they will continue the fight against climate change, despite what the federal administration might do.[3] It is therefore possible that the country will officially exit but practically retain virtuous climate-change action. As the US will, in any case, become more isolated in its position, this will probably reinforce EU and Chinese leadership, moving other signatories closer to their side, even those that are currently less convinced. Turkey will then have to face the possibility of either confirming its still unclear climate commitment (possibly with the ratification of the agreement and then with a revision of its inadequate INDC by 2019) or choosing the unpopular option of following the US and losing a significant chance of cooperation with key partners (primarily, the EU) – the second being the less likely option. A successful Paris Agreement will provide the political framework for the energy transition – thus further increasing the role of renewables (increasing **cooperation** and possibly leading **to convergence**, as described in 2.3), probably threatening that of gas (partially leading towards **conflict**, as in 4.3) and furtherly diminishing that of oil (promoting **collaboration**, as in 3.3).

[3] Including Bloomberg, Microsoft, the government of California, 331 mayors of American cities and many others. Volcovici 2017, Medium 2017

6. Driver: the possible new role of the G20

6.1 The global perspective

Thanks to its global remit but smaller size than other political platforms, the G20 can represent a valid support for the energy transition, helping to find a common definition of the process and achieve it on the global level – and also as an alternative or an aide to the Paris Agreement.

The G20 represents "75% of global energy demand, 80% of energy-related CO2 emissions and 80% of the total global primary energy supply" (Li, Melnikova and Tanzler, 2016; IEA, 2016; G20, 2015). The position of the G20 in energy security and the fight against climate change is then critical, in that any progress in these countries regarding emissions reductions would significantly affect global carbon output (Ravanis, 2016).

Although the G20 was designed primarily as a platform for global economic coordination and cooperation, over the years its focus has shifted from economic crisis-management mode towards cooperation on a broader range of issues including energy and climate change (Li, Melnikova and Tanzler, 2016, p. 1) Today, the G20 acknowledges that energy security is "one of the guiding principles for the transformation of our energy system" (G20 Leaders' Declaration, 2017, p. 9) and an inalienable part of the proper functioning of world markets. Indeed, since 2008, energy has been a recurring theme at every G20 summit – albeit with differing emphasis over the years.

While Article 24 of the 2015 Antalya Summit Declaration labels the UNFCCC "the primary international intergovernmental body for negotiating climate change" (G20 Leaders' Communiqué, 2015, p. 6), the G20 has been instrumental in changing the global narrative on the energy-climate nexus, by highlighting low-carbon economies and encouraging the private sector towards "environmentally sustainable and low-polluting investments" (Ravanis, 2016).

The G20's wide range of members is an advantage for effective dialogue among different regional actors, with both established and emerging powers represented on an equal footing. This firstly addresses and overcomes the "representation deficit and strengthen[s] multilateral regional and global approaches" (Van de Graaf and Westphal, 2011, p. 26). It also presents a welcome opportunity for the EU to communicate its policies on energy transition and climate-change targets to partners such as Russia and Turkey on an institutional platform. Through the G20, these actors can build on the Paris Agreement to facilitate global action and to realize the important task of devising strategies for actual implementation of its commitments. However, this diversity brings one notable handicap in that each member has different energy-security concerns, national priorities and interests, making unanimous solutions challenging (Bradshaw, 2010; Van de Graaf and Westphal, 2011, p. 26).

The existence of these diverse interests was expected to create further fragmentation in climate-change-mitigation policies in the aftermath of Trump's decision on the Paris Agreement. Despite fears that Indonesia, Russia, Saudi Arabia or even Turkey (Friedman, 2017) would take the US decision "as an opportunity to weaken support for Paris, none did" (Goldwyn, 2017). On the contrary, the reaction from the other 19 members was that "the Paris Agreement is irreversible"

(G20 Leaders' Declaration, 2017, p. 10). The US position actually strengthened the international climate consensus (Goldwyn, 2017).

6.2 The impact on the EU and Turkey

From the EU perspective, two prominent members of the Union, France and Germany, also recounted their sensitivity regarding climate change in the G20 context. German Chancellor Angela Merkel stated on 8 July 2017 that "[w]e feel committed to what we agreed on and [that it] should be implemented as quickly as possible" (CBS News, 2017), and incoming French President Emmanuel Macron argued that Trump was making "a mistake for the future of the planet" (Meyer, 2017). Taking into account that in the Turkish presidency as well, climate change was labelled "one of the greatest challenges of our time" together with greater emphasis on energy security, the G20 can offer an additional platform for EU–Turkey cooperation on energy and climate change.

Moreover, the G20 Hamburg Climate and Energy Action Plan for Growth's emphasis on natural gas was evaluated as evolutionary with regards to the "'renewables only ideology' reflected in previous multilateral statements on energy and climate" (Goldwyn, 2017). The document states that

> "natural gas can play an important role in the energy transition, moving towards a low greenhouse gas emission energy future, including … providing increased flexibility for the integration of variable renewable energy. A secure supply of natural gas depends on timely investments, diversification of sources, suppliers, and routes. G20 economies will endeavor to improve the functioning, transparency and competitiveness of gas markets, with a strategic view of the gas supply chain, including LNG at the global level. (G20 Hamburg Climate and Energy Action Plan for Growth, 2017, p. 7)"

6.3 A chance to talk: the role of the G20 in the climate and energy dialogue

Increasing emphasis on climate change and energy security in the G20 context signals room for further dialogue and collaboration – especially between the EU, Turkey and Russia – thus representing a chance to increase cooperation between Turkish and European energy policies.

Indeed, the G20 framework can work positively in two ways for the EU and Turkey. First, it could provide a smaller and better-suited platform on core energy and climate topics than the ones that have historically dealt with the topic – some being too small and excluding Turkey (the G7 and G8), and others risking being too big to achieve success (the UNCCC and the Paris Agreement, for example). The possibility of the fragmentation of the parties inside the Paris Agreement due to the US exit, for instance, could be compensated for by strong unity from the majority of G20 countries, as showed by the declarations following the US announcement – and perhaps contributing to the possibility that the country will not actually exit.

In addition, the presence of other countries outside the EU and Turkey will help to mediate positions that would otherwise be irresolvable – as in the aforementioned case of the focus on gas as an alternative to the "renewables-only ideology". For instance, if other countries that currently heavily focus on coal – such as Russia, and perhaps the Trump Administration – were instead to turn towards the phase-out of the resource, this would probably push Turkey towards the abandonment of its current coal plans.

Conclusion

In the age of energy transition, the quest for energy security while mitigating the adverse implications of energy choices for climate change lies at the intersection of the EU's and Turkey's interests. Energy security is defined by the IEA as "the uninterrupted availability of energy sources at an affordable price" (IEA, 2017). The European Union has adopted a more comprehensive approach by integrating environmental issues and sustainability into its definition of energy security:

> Ensuring, for the well-being of its citizens and the proper functioning of the economy, the uninterrupted physical availability of energy products on the market at a price which is affordable for all consumers (private and industrial), while respecting environmental concerns and looking towards sustainable development. (European Commission, 2010)

The EU Green Paper "A 2030 Framework for Climate and Energy Policies" also presents a critical framework linking climate and energy policies (European Commission, 2013). Although entirely eliminating energy dependency is not a realistic goal, reducing it while meeting sustainable-development goals is crucial. Turkey's Strategic Plan 2015–19 stresses that, as the rules of the global energy "game" are changing, reconciling economic growth, energy demand, energy efficiency and environmental harmony is critical (Yıldız, 2015). The report acknowledges the risks associated with Turkey's high energy dependency, and identifies the main themes of its energy strategy as security of energy supply, energy efficiency, good governance, regional and international effectiveness, technological innovation and the improvement of the investment environment (Turkish Ministry of Energy and Natural Resources, 2015). The themes of "Security of Energy Supply" and "Regional and International Effectiveness" are also closely linked to the country's foreign policy.[4] In reconciling domestic energy-security challenges with international environmental goals, addressing climate change constitutes one of the most challenging tests for the binding nature of global agreements and the credibility of international regimes – especially considering the remarkable threats that climate change will pose, and is posing, through, for instance, its impact on food security and extreme climate events.

As certain drivers inside the transition will lead to cooperation and even convergence (renewables) and some possibly to conflict (gas in the medium-to-long term), the final outcome

[4] For a comprehensive analysis of the interaction between Turkey's quest for energy security and its foreign policy implications, see Sever-Mehmetoglu, Duygu and Yilmaz, S. (2016) "Energy Dynamics in Turkish Foreign Policy: Asset or Liability?" *Uluslararasi Iliskiler/ International Relations*, 13 (52): 105-128.

will be determined by the trends that these drivers will follow and by the political willingness of the EU and Turkey to be inside or outside the process, and to what degree. This question is mostly relevant for Turkey, assuming that the EU seeks to maintain its political and technological leadership of the energy transition through its coordinating role inside the Paris Agreement, its primacy on renewables and its constant work on market and financial measures to foster the process.

In the short term, the leading drivers of the phenomenon will probably contribute to the **cooperation** of the Turkish and European parties. Renewables are set to grow, increasing the scope of cooperation between the two – also considering that, at least for the moment, Turkey will hold its commitment to the Paris Agreement. As interconnections and energy storage are, however, still lagging behind, this renewables growth is not expected to displace gas but rather coal – as is already happening in the EU – perhaps slowing Turkey's attempt to promote the national production of solid fuels. In a particularly positive scenario, the current trends can lead to **convergence** if renewables increase their economic convenience and if Turkey puts aside its ambitions on coal. Reaching such a convergent path will depend heavily on where Turkey chooses to spend its political budget – whether on coal or renewables, two highly competing generation options, which have thus far received equal attention in Turkey's energy policies (perhaps with a slight preference for coal). Finally, considering the urgency of the diversification need of both the EU and Turkey, and their current high level of consumption, gas will represent a positive chance for **cooperation** in any case in the short term.

In the medium term, uncertainty will be particularly relevant for the destiny of the energy transition, and thus for the chances for cooperation or conflict. Indeed, it is not clear whether gas will increase or decrease its importance if Turkey's plans for coal were to be realized alongside the EU's target of fully integrating renewables. We can then expect two options. One might be a steady continuation of the transition, and thus further **cooperation** between Turkey and the EU, which can become **convergence** if, in the short term, the two have already increased their collaboration on renewables and if the share of coal in Turkey does not increase. We might instead witness a temporary slowdown of the process, with a partial increase of coal consumption in Turkey and, generally speaking, a stalling in the development of renewables – leading to **conflict** smoothed by increased cooperation in the gas sector. However, considering the current technological expansion and the progressive lowering of barriers to renewables investment, the second option appears to be the less likely.

Indeed, the long term is far more promising for the energy transition because of the assumed diminishment over time of technological, financial and regulatory barriers to renewables. Thus, **cooperation** is likely to be expected thanks to all drivers but gas; if renewables do indeed boom, many member states will seek to reach a zero-carbon energy mix, also aiming at significantly reducing external dependency and substantially diminishing the role of gas in the mix. This cooperation would, however, be dependent on which stage of the transition Turkey had reached at the time, and its political commitment, which, unlike the EU's, is too unclear at the moment to make definite forecasts.

Generally speaking, the scenarios depicted above will probably lead to further cooperation between the EU and Turkey in both the short and the long term. Indeed, the size and economic convenience of the transition, and the global dimension of the process (as in the case of the Paris Agreement) will probably convince Turkey to be involved – and thus to move closer to the European position. Yet, the heterogeneity of the variables involved and the significant amount of uncertainty related to key elements of the transition – gas in particular, but also oil – threaten the chances for steady convergence, which might instead be achieved only for some of the drivers involved (renewables mostly).

References

Babst, Stephanie (2010): "Nato's New Strategic Concept: Inspired by the masses?" *Turkish Policy Quarterly*, Vol.9 No. 1, p.61-66.

Bitoun, Jonathan (2014): *Operational Green: Enhancing NATO's Energy Supply Security*, Research Paper, Research Division. Nato Defense College-Rome. No: 106.

Bloomberg (2016), *Turkey Seeking Renewables Industry With Make-It-Here Rules.* https://www.bloomberg.com/news/articles/2016-11-22/turkey-seeking-renewable-energy-industry-with-make-it-here-rules.

Bradshaw, M. J. (2010): "Global Energy Dilemmas: A Geographical Perspective", *The Geographic Journal*, Vol 176, No. 4, p. 275–290.

CBS News (2017): "Angela Merkel at G-20: "I deplore" U.S. leaving Paris climate accord", 8 July 2012, http://www.cbsnews.com/news/angela-merkel-donald-trump-paris-agreement-i-deplore-this/#

Çelikpala, Mitat (2014): "Enerji Güvenliği: NATO'nun Yeni Tehdit Algısı", *Uluslararası İlişkiler*, Vol. 10, No. 40 (Winter), p. 75-99.

Colantoni, Lorenzo; Korkmaz, Dicle; Sartori, Nicolo; Schröder, Mirja; Sever, S.Duygu; Yilmaz, Suhnaz (2017). *Energy and Climate Strategies, Interests and Priorities of the EU and Turkey*, FEUTURE Online Paper No.2 (March).

Cornell, Phillip (2012): *Regional and International Energy Security Dynamics: Consequences for NATO's Search for an Energy Security Role*. GCSP Geneva Papers — Research Series n° 5, January 2012

Dave Jones, Jonathan Gaventa, Manon Dufour (2015), Europe's Declining Gas Demand https://www.e3g.org/news/media-room/europes-declining-gas-demand

Emmanuel Karagiannis, "Shifting Eastern Mediterranean Alliances", *Middle East Quarterly*, Spring 2016, http://www.meforum.org/meq/pdfs/5877.pdf

European Commission (2007), *An Energy Policy for Europe*, http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=URISERV%3Al27067 .

European Commission (2010), *A strategy for competitive, sustainable and secure energy*, http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2010:0639:FIN:En:PDF

European Commission (2014), *European Energy Security Strategy* SWD(2014) 330 final http://eur-lex.europa.eu/procedure/EN/1042024

European Commission (2017), *Overview of the secondary EU legislation (directives and regulations) that falls under the legislative competence of DG ENER and that is currently in force*, https://ec.europa.eu/energy/sites/ener/files/documents/Overview%20of%20ENER-related%20legislation%20(by%20policy%20areas)%20update%2014.03.2016.pdf

European Commission(a) (2017), https://ec.europa.eu/energy/en/topics/imports-and-secure-supplies/gas-and-oil-supply-routes.

European Commission(b) (2017), *Projects of Common Interest*, https://ec.europa.eu/energy/en/topics/infrastructure/projects-common-interest.

European Commission(c) (2017), *Second Report on the State of the Energy Union* COM(2017) 53 final https://ec.europa.eu/commission/sites/beta-political/files/2nd-report-state-energy-union_en.pdf

European Council (2014) *2030 Climate and Energy Policy Framework*, https://ec.europa.eu/clima/policies/strategies/2030_en.

European Development Bank (2015), *EBRD Supports Turkey's Shift to Renewable Energy." http://www.ebrd.com/news/2015/ebrd-supports-turkeys-shift-to-renewable-energy.html* 16 Feb. 2015

European Parliament (2017): European Parliament resolution of 6 July 2017 on the 2016 Commission Report on Turkey (2016/2308(INI)), http://www.europarl.europa.eu/sides/getDoc.do?pubRef=-//EP//TEXT+TA+P8-TA-2017-0306+0+DOC+XML+V0//EN&language=EN.

European Union (2017): *Countries*, https://europa.eu/european-union/about-eu/countries_en

Eurostat (2017), *Oil and petroleum products - a statistical overview* http://ec.europa.eu/eurostat/statistics-explained/index.php/Oil_and_petroleum_products_-_a_statistical_overview

FoxNews (2017): "First New Coal Mine of Trump Era Opens in Pennsylvania,", 10 July 2017, http://foxnews.com/2017/06/10/new-coal-mine-donald-trump-pennsylvania-fossil-fuels-regulations ;

Friedman, Lisa (2017): "*Trump May Find Some Allies on Climate Change at G-20 Meeting", New York Times*, 5 July 2017, https://www.nytimes.com/2017/07/05/climate/g20-climate-change-paris-accord-trump-merkel-germany.html?_r=0

G20 (2015): *G20 Deployment of Renewable Energy*, Report for the G20 Antalya Leaders' Summit 2015.

G20 Hamburg Climate and Energy Action Plan for Growth (2017), Hamburg, 7/8 July 2017.

G20 Leaders' Communiqué (2015): Antalya Summit, 15-16 November.

G20 Leaders' Declaration (2017): *Shaping an interconnected world*, Hamburg, 7/8 July

Gallis, Paul (2007): *NATO and Energy Security*, CRS Report For Congress, 15 August 2007.

Ganz, Aurora (2014): Energy Security Issues: is Nato becoming a (pivotal) actor? CERI paper, http://www.sciencespo.fr/ceri

Global Relations Forum (2013), *Turkish Energy Strategy in the 21th Century,* Task force report., http://www.gif.org.tr/Images/ReportFiles/1033/16.PDF.

Goldwyn, David L. (2017): "What the G20 Summit Means for Energy and Climate". *Atlantic Council*, 10 July 2017, http://www.atlanticcouncil.org/blogs/new-atlanticist/what-the-g20-summit-means-for-energy-and-climate?tmpl=component&print=1

Grigoriadis, Ioannis N. (2014) "Energy Discoveries in the Eastern Mediterranean: Conflict or Cooperation?", *Middle East Policy Council*, Volume 21, No 3.

Huenteler, John; Tobias S. Schmidt and Norichika Kanie (2012), "Japan's post-Fukushima Challenge. Implications from the German Experience on Renewable Energy Policy." *Energy Policy* Vol.45, p. 6-11.

Hurriyet Daily News (2017), *Ankara launches new national energy policy* http://www.hurriyetdailynews.com/ankara-launches-new-national-energy-policy-.aspx?PageID=238&NID=111712&NewsCatID=348

IEA (2015), Energy, Climate Change and Environment, http://www.iea.org/publications/freepublications/publication/ECCE2016.pdf

IEA (2016): *Co-operation with key international fora: G20*, www.iea.org/topics/engagementworldwide/subtopics/co-operationwithkeyinternationalfora/g20

IEA(b) (2016), *Energy Policies of IEA Countries: Turkey* http://www.iea.org/publications/freepublications/publication/EnergyPoliciesofIEACountriesTurkey.pdf

IEA (2017): *Member Countries*, https://www.iea.org/countries/membercountries/

International Energy Agency-IEA- (2017), *What is Energy Security?*, https://www.iea.org/topics/energysecurity/subtopics/whatisenergysecurity,/

Khamashuridze (2008): "Energy Security and NATO: Any Role for the Alliance?" *Connections*. Vol. 7, No.4, p: 43-58.

Li Lina, Julia Melnikova and Denniz Tanzler (2016): "The Climate-Energy Nexus and the G20: Compatible or Mutually Exclusive?" *Climate Diplomacy*. Legal Notice. Adelphi. December.

Meyer, Robinson (2017): "The Paris Agreement: Already Forgotten?", *The Atlantic*. 7 July 2017, https://www.theatlantic.com/science/archive/2017/07/the-paris-agreement-already-forgotten/532902/

Ministry of Energy and Natural Resources (2017), http://enerji.gov.tr/File/?path=ROOT%2f1%2fDocuments%2fEnerji+ve+Tabii+Kaynaklar+G%C3%B6r%C3%BCn%C3%BCm%C3%BC%2fSayi_10.pdf.

Ministry of Foreign Affairs (2016), "2016 Yılı Başında Dış Politikamız (Our Foreign Policy in the Beginning of 2016)", http://www.mfa.gov.tr.

Monaghan, Andrew (2006): *Energy Security – What Role for NATO?* Research Paper. Academic Research Branch. Nato Defense College-Rome. No: 29.

Monaghan, Andrew (2007): *The Euro-Atlantic Area, Russia and Energy Interdependence*, Research Department, NATO Defense College, paper presented at the NATO School in Oberammergau, Germany, on 20 July 2007. Published in *Energy Security and Security Pol- icy: NATO and the Role of International Security Actors in Achieving Energy Security*, ed. Phillip Cornell (Oberammergau: NATO School, November 2007

Monaghan, Andrew (2009): *NATO and energy security after the Strasbourg-Kehl summit*. Research Division. Nato Defense College. June.

NATO (2010). *Strategic Concept For the Defence and Security of The Members of the North Atlantic Treaty Organisation*.

NATO (2017): *Nato Member Countries*, http://www.nato.int/cps/en/natohq/nato_countries.htm

OECD (2017): *List of OECD Member countries*, http://www.oecd.org/about/membersandpartners/list-oecd-member-countries.htm

Onis, Ziya and Suhnaz Yilmaz (2016), "Turkey and Russia in a Shifting Global Order: Cooperation, Conflict and Asymmetric Interdependence in a Turbulent Region", *Third World Quarterly*, Vol.37, No.1, p.71-95.

OPEC (2017): *Member Countries*, http://www.opec.org/opec_web/en/about_us/25.htm

Ravanis, Eleni (2016): "Climate Change and the G20: Shaping a New Global Narrative", *Global Policy*, G20 Summit, September.

PV Tech (2017), *Hanwha Q CELLS and Kalyon Enerji win 1GW solar tender in Turkey* https://www.pv-tech.org/news/hanwha-q-cells-and-kalyon-enerji-win-1gw-solar-tender-in-turkey

Regulation (EU) (2013) No 347/2013 of the European Parliament and of the Council of 17 April 2013 on guidelines for trans-European energy infrastructure and repealing Decision No 1364/2006/EC and amending Regulations (EC) No 713/2009, (EC) No 714/2009 and (EC) No 715/2009 Text with EEA relevance, http://eur-lex.europa.eu/eli/reg/2013/347/oj.

Reuters (2017), *Iran says new U.S. sanctions violate nuclear deal, vows 'proportional reaction'* http://www.reuters.com/article/us-iran-nuclear-usa-sanctions-idUSKBN1AI2N0

Sahin, Umit, and Levent Kurnaz (2014), *İklim Değişikliği ve Kuraklık*, İstanbul Politikalar Merkezi, October.

Sever, S. Duygu; Ali Tekin and Paul Williams (2011), "Evolution of EU Energy Policy" in *Geo-Politics of the Euro-Asian Energy Nexus: The EU, Russia and Turkey*. Paul Williams and Ali Tekin, United Kingdom: Palgrave Macmillan.

Sever, S. Duygu (2017), "Turkey's Nuclear Energy Policy in the Context of Environment: A Case of Europeanisation?", forthcoming.

The Guardian (2017), "EU to bypass Trump administration after Paris climate agreement pullout", 2 June 2017, https://www.theguardian.com/environment/2017/jun/02/european-leaders-vow-to-keep-fighting-global-warming-despite-us-withdrawal.

Turkish Ministry of Energy and Natural Resources (2015a), *Strategic Plan 2015-2019*, Ankara.

Turkish Ministry of Energy and Natural Resources (2015b), *Dünya ve Ülkemiz Enerji ve Tabii Kaynaklar Görünümü*, No: 10.

Turkish Ministry of Energy and Natural Resources, (2016) "Dunya ve Ulkemiz Enerji ve Tabii Kaynaklar Gorunumu", No.11, p.19.

Umit Şahin et al. (2015), *Komur Raporu: İklim Değişikliği, Ekonomi ve Sağlık Acısından Turkiye'nin Komur Politikaları*, İstanbul Politikalar Merkezi, Kasım.

United Nations Framework Convention of Climate Change (2015b), *Republic of Turkey Intended Nationally Determined Contribution*, 30 September 2015, http://www4.unfccc.int/submissions/INDC/Published%20Documents/Turkey/1/The_INDC_of_TURKEY_v.15.19.30.pdf.

United Nations Framework Convention on Climate Change (2015a), *Adoption of the Paris Agreement, Proposal by the President*, Draft Decision CP.21, December.

Yilmaz, Şuhnaz and Sever-Mehmetoglu, Duygu (2016) "Linking Foreign Policy and Energy Security: An Asset or a Liability for Turkey", *Uluslararası İlişkiler*, Vol. 13, No. 52, p. 105-128.

Yilmaz, Suhnaz (2016), "The Quest for Energy Security and Energy Efficiency for Sustainable Development: Challenges and Opportunities for Turkey," Oxford Round Table, *Forum on Public Policy: A Journal of the Oxford Round Table*.

Yıldız, Taner (2015), "Presentation of the Minister" in Turkish Ministry of Energy and Natural Resources, *Strategic Plan 2015-2019*, Ankara.

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ABOUT FEUTURE

FEUTURE sets out to explore fully different options for further EU-Turkey cooperation in the next decade, including analysis of the challenges and opportunities connected with further integration of Turkey with the EU.

To do so, FEUTURE applies a comprehensive research approach with the following three main objectives:

1. Mapping the dynamics of the EU-Turkey relationship in terms of their underlying historical narratives and thematic key drivers.
2. Testing and substantiating the most likely scenario(s) for the future and assessing the implications (challenges and opportunities) these may have on the EU and Turkey, as well as the neighbourhood and the global scene.
3. Drawing policy recommendations for the EU and Turkey on the basis of a strong evidence-based foundation in the future trajectory of EU-Turkey relations.

FEUTURE is coordinated by Prof. Dr. Wolfgang Wessels, Director of the Centre for Turkey and European Union Studies at the University of Cologne and Dr. Nathalie Tocci, Director of Istituto Affari Internazionali, Rome.

The FEUTURE consortium consists of 15 renowned universities and think tanks from the EU, Turkey and the neighbourhood.

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