Market Uptake of Solar Thermal Electricity through Cooperation

Geopolitical Context for CSP in Europe

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MUSTEC
Market Uptake of Solar Thermal Electricity

ABOUT THE PROJECT

In the light of the EU 2030 Climate and Energy framework, ***MUSTEC- Market uptake of Solar Thermal Electricity through Cooperation*** aims to explore and propose concrete solutions to overcome the various factors that hinder the ***deployment*** of concentrated solar power ***(CSP)*** projects in Southern Europe capable of supplying renewable electricity on demand to Central and Northern European countries. To do so, the project will analyse the ***drivers and barriers*** to CSP deployment and renewable energy (RE) cooperation in Europe, identify future CSP ***cooperation opportunities*** and will propose a set of concrete ***measures*** to ***unlock the existing potential***. To achieve these objectives, MUSTEC will build on the experience and knowledge generated around the cooperation mechanisms and CSP industry developments building on concrete CSP ***case studies***. Thereby we will consider the present and future European energy market design and policies as well as the value of CSP at electricity markets and related economic and environmental benefits. In this respect, MUSTEC combines a dedicated, comprehensive and multi-disciplinary analysis of past, present and future CSP cooperation opportunities with a constant ***engagement*** and ***consultation*** with ***policy makers*** and ***market participants***. This will be achieved through an intense and continuous ***stakeholder dialogue*** and by establishing a tailor-made ***knowledge sharing network***.

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INTRODUCTION

Does the current European geopolitical energy landscape foster or hamper renewable energies' cooperation and exchanges? Which geopolitical or strategic role may renewables play? Are renewables (and CSP) included in governments' energy security strategies? Can geopolitical externalities be a driver for renewable's exchanges and cooperation mechanisms? How is CSP affected? Is there a geopolitical/strategic role for CSP? If so, to what extent is such a role integrated in the current European geopolitical energy landscape? Are there any elements in the literature to construct an appealing geopolitical narrative for intra-EU CSP deployment and exchanges? The deliverable tries to address these questions along the following four steps.

Section 1 deals with the current energy geopolitical landscape in the European Union (EU), especially countries eventually involved in CSP cooperation mechanisms. It focuses on two producers (Italy and Spain), a transit country (France) and Germany as importer country. Then, section 2 reviews the rapidly growing academic and think tank literature devoted to the geopolitics of renewable energies and the energy transition. The aim is to review whether there are conceptual or applied pieces of research that can be useful in assessing the geopolitical role of RES in general and, ideally, CSP in particular.

Section 3 presents the interviews with experts and policy-makers on the geopolitics of renewables and CSP, while section 4 presents the results obtained from public opinion polls regarding electricity interconnections as a proxy for renewable electricity exchanges and cooperation[1]. Section 5 concludes summarising the discussion, emphasising the most relevant results on the geopolitical drivers for CSP and offering some tentative avenues for future research, intended to guide a more specific country and CSP focused deliverable, D.9.2 in work package 9.

To do so, the deliverable explores the literature in the fields of Geopolitics, International Relations (IR), International Political Economy (IPE) and Energy Studies. It does not aim to provide a comprehensive statistical analysis or to cover all the related literature. Rather, it tries to explore the main traits of the current European geopolitical energy landscape and the applications from the literature to build a narrative on the geopolitical externalities of renewables and, in particular, CSP.

[1] Real Instituto Elcano funded the survey and is independent from the funding received for the completion of D 6.4.

1 GEOPOLITICAL CONTEXT

Geopolitics has been defined as "the analysis of the interaction between, on the one hand, geographical settings and perspectives and, on the other, political processes" Cohen (2015: 16). In this regard, at a macro level, the current global geopolitical context is characterised by the comeback of great-power competition and a relative decline of the so-called liberal order. Such a landscape is also prone for mid- and regional powers to test the limits of a seemingly eroding global/multilateral governance system[2]. So, geopolitical competition is expected to intensify both globally and regionally. It is interesting to note, for the purposes of this deliverable, that some revisionist powers (ie. Russia), and several regional powers (ie. Saudi Arabia) are also playing revisionism in climate geopolitics.

For the EU, the current European geopolitical landscape includes challenges in its Eastern and Southern neighbourhoods, from Russian revisionism to instability and open conflicts in the Mediterranean[3]. Some of these threats are now being perceived even inside European Member States to undermine democracy, the EU and NATO, in what has been termed the geopolitics of populism (Biscop, 2019: 139). There is the sense that a geopolitical transition towards power politics and hard power is happening, somehow reversing the efforts to advance global governance through normative and (civilian) soft power. Even the EU has recognised this in its recent Global Strategy, based upon "principled pragmatism" rather than "normative power" or "external governance"[4].

In principle, such a depiction would seem favourable to narratives exploring the geopolitical externalities of deploying renewables and accelerating the energy transition. If there is a consensus that a more strategically oriented and competitive energy landscape is developing abroad, renewable cooperation within the EU should be straightforward. If only because the dominant EU's energy policy pathway points to drastic reductions in European fossil fuels' imports. While there may be political limits to a EU-only inward renewable strategy, policy consistency with EU's renewable and climate-related targets imply managing its geopolitical and foreign policy implications.

[2] The international relations' think tank and practitioners recent literature on both issues is almost endless. See for instance Ikenberry (2011), Nye (2016), Kagan (2017), Niblett (2017) and Powell (2017).

[3] Adopting some of the socio-technical transition literature concepts, the "energy geographies" literature refers to geopolitical energy landscapes as geo-political and geo-economic assessments of "dynamic entities constituted by complex local, national and transnational flows of technology, funding and ideology" (Calvert, 2015; Power et al., 2016: 12). In this deliverable, the concept is broadened to include external and /or global governance patterns and failures (Escribano and Valdés, 2017).

[4] European External Action Service (2016). On the EUGS' pragmatist turn see for instance Biscop (2016), Youngs (2017), Dijkstra (2016) and Juncos (2017).

Achieving the energy transition entails a severe geopolitical shift for the wider EU neighbourhood and the EU itself. By 2050 Algeria, Azerbaijan, Egypt, Iran, Libya or Russia should not be exporting as much oil or gas to the EU. There should be fewer oil or gas transiting pipelines (and reduced transit fees) through Belarus, Georgia, Turkey or Ukraine. Oil and gas geopolitics would have to shift from managing scarce resources and huge rents to deal with idle reserves and infrastructures (Van de Graaf, 2018).

However, the geopolitical transition induced by de-carbonisation does not happen in a vacuum. Member States' external action is shaped by geographical and historical elements. Even if the energy transition radically transforms their geopolitical context (ie. reducing energy dependence from Russian or Algerian gas), foreign policy preferences are expected to show path-dependency. Russia and Algeria will continue to be of strategic importance to Germany and Spain, and both for Italy, regardless of low gas import levels (or perhaps precisely because of it).

In fact, as discussed later, there are few signs that the strategic/geopolitics policy community is taking the energy transition seriously enough. The foreign policy debate regarding energy continues to be almost completely oil and (especially) gas centred. The remaining of this section succinctly presents the on-going European conversation on energy geopolitics with a focus on the gas regime in France, Germany, Italy and Spain.

1.1 European energy geopolitics in a nutshell

European energy geopolitics mainly consists on managing (asymmetric) gas interdependency with suppliers and transit countries in the EU's neighbourhood. Sure, there are geopolitical challenges beyond, from making the Iranian nuclear deal work and appease Middle East tensions to contributing to an orderly transition in Venezuela. But a quick visit to French, German, Italian and Spanish international relations (IR) think tanks (or more European oriented think tanks like Bruegel or CEPS) immediately shows where their preferences lie: gas imports from Russia and the wider Mediterranean (from the Caspian to North Africa)[5].

The focus on gas (only 20% of EU imports in energy products in 2018) is due to its rigid transport system and regional pricing, which implies higher strategic stakes: high sensitivity and vulnerability[6]. By contrast, crude oil (70% of EU energy imports) is less geopolitically sensitive for being a fungible commodity easily available in a global market based on benchmark prices. Gas is also relevant for our purposes insofar it directly competes with renewables in electricity generation (oil also competes with renewables in mobility, although to a limited extent at present).

[5] The think tank literature is reviewed here as a bridge between scholars and practitioners signaling public policy relevance.

[6] According to Keohane and Nye (1977), sensitivity refers to the short-term costs of a particular event, while vulnerability refers to its strategic effects over the long run.

Energy imports statistics clearly show the relevance of Russia and the Mediterranean. A few figures recently released by Eurostat suffice to make the point. Figure 1 shows the main EU's gas suppliers. Russia increased its share to 40,6% of EU's gas imports, followed by Norway (38,8%), Algeria (10,7%) and Qatar (4,9%). With the only exception of Norway, these suppliers present different challenges in intensity and kind, but Russia is by far the priority. EU's relations with Russia are afflicted by a mix of strategic competition, energy (inter)dependence and the EU's inability to Europeanise its Russian policy.

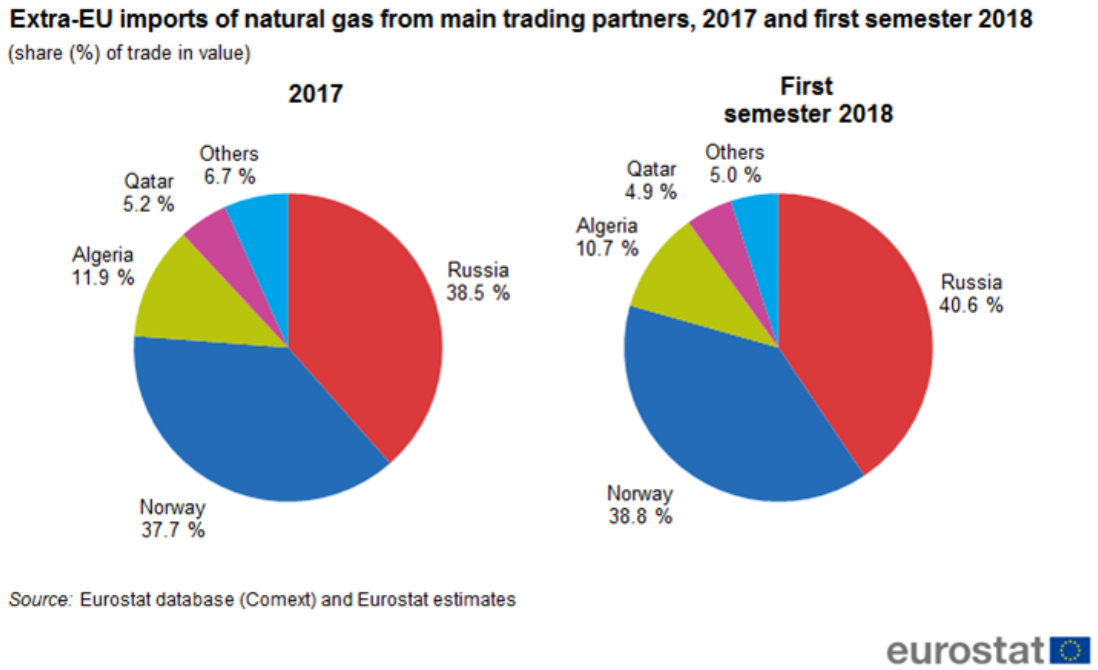

Figure 1: Extra- EU imports of gas natural from main trading partners, 2017 and first semester 2018

Source: Eurostat:

https://ec.europa.eu/eurostat/statistics-explained/images/6/68/Extra-EU_imports_of_natural_gas_from_main_trading_partners%2C_2017_and_first_semester_2018_%28share_%28%25%29_of_trade_in_value%29.png

In spite of the EU's explicit goal of diversifying away from Russian gas, the fact is that EU's imports of Russian gas are at record volumes. Moreover, after decreasing in value since 2013, the recovery of oil prices to which Russian gas contracts are more or less indexed has also increased its value in 2017 and the first semester of 2018 (Table 1). This increase is expected to continue whenever the Nord Stream 2 pipeline starts shipping additional gas. Political tensions with Russia will continue in Europe (Ukraine, Baltic countries, Poland) and abroad (Syria, Venezuela, and eventually Iran). So, increased gas dependence and strategic competition with Russia is expected to continue to dominate EU's energy geopolitics.

Table 1: EU's gas pipeline imports from Russia, 2012-first semester 2018 (bill. €, mill. tonnes)

	2012	2013	2014	2015	2016	2017	2018 1S
EUR billion	34,1	36,0	30,0	26,3	20,8	23,8	14,2
Mill. Tonnes	77,7	84,3	79,9	82,1	89,7	92,6	50,7

Source: Eurostat:

https://ec.europa.eu/eurostat/statistics-explained/index.php/EU_imports_of_energy_products_-_recent_developments#Main_suppliers_of_natural_gas_and_petroleum_oils_to_the_EU

Data also show clear geographical specialisation import patterns among Member States[7]. Focusing on the four chosen Member States, Table 2 shows that Germany imported more than half of its gas from Russia, while the remaining half was imported from Norway and the Netherlands, all of it through pipelines. By contrast, almost 46% of Spanish gas imports came from Algeria, followed by LNG from the Americas (15,9%), Nigeria (14,2%) and Qatar (11,3%). Only 11,2% of Spanish gas imports were European and no Russian gas was imported (only in 2018 Spain started to sign modest LNG contracts with Russian companies).

Table 2: French, German, Italian and Spanish gas imports, 2017 (% of volume)

To / From	Americas	Europe	Russia	North Africa	Nigeria	Qatar
France	0,6	51,9	26,0	9,3	7,4	4,6
Germany	-	48,5	51,2	-	-	-
Italy	0,8	14,4	35,9	37,7	-	10,9
Spain	15,9	11,2	-	45,8	14,2	11,3

Source: BP Statistical Review of World Energy 2018. Note: The Americas include North, Central and South America.

France and Italy are in a more balanced position. Like Germany, half of French gas came from Europe, 26% from Russia and the remaining LNG mainly from Algeria, Nigeria and Qatar. Italy imported almost 36% of its gas from Russia and a similar share from North Africa (37,7%), followed by European (14,4%) and Qatari (10,9%) LNG imports. Gas import statistics reveal two countries

[7] For a detailed analysis and geopolitical clustering of EU's Member States external energy preferences see Marín et al. (2012).

(France and Germany), with a European import profile; Germany, Italy and France with a Russian import profile; Italy and Spain importing significant volumes from North Africa but little from Europe; and Spain importing significant volumes from the Americas but nothing from Russia.

1.2 The geopolitical dominance of the gas regime

These gas interdependence patterns have set the existing European energy geopolitical landscape: under the "energy geographies" approach, the gas regime dominates European energy geopolitics[8]: German and Italian strategic alliances with Russia; and Spanish and Italian strategic alliances with Algeria (and Libya and Egypt in the Italian case). This perception was confirmed during the interviews with German, Italian and Spanish think tankers and policy strategists (see section 3 below).

A quick visit to International Relations (IR) think tanks' webs would also show a marked preference for Russia in Germany, Russia and the Mediterranean in Italy, and North Africa in Spain[9]. Far from being an energy anomaly (and perhaps because of energy itself), balancing preferences between the Eastern and the Southern neighbourhood has been one of the clearer obstacles to the Europeanisation of EU's external action; and, more specifically, of achieving a consistent external package for the Energy Union (Escribano, 2017b).

Novelties in the EU's geopolitical energy landscape continue to be focused on gas and their impact on geopolitical balances: the new Nord Stream 2 and East Med gas pipelines, and US and Russian LNG. The different Member States' approaches reflect narrow national interests and strategic competition. The clearest example is competing for becoming a gas hub, either in Northern Europe (Germany) or the Mediterranean (Italy and Spain). This is relevant for our purposes, because electricity hub competition risks substituting gas hub competition in a decarbonised energy future.

Nord Stream 2 is a case in point. While it reinforces German energy security and its strategic positioning as a gas hub, it risks weakening intra-EU solidarity and the containment of Russia in the Eastern neighbourhood by increasing imports of Russian gas. The US involvement threating the imposition of sanctions to Nord Stream 2 has added further geopolitical complexity to the issue. Mediterranean Member States like Italy and Spain would like the EU to look more towards North Africa and the Eastern Mediterranean as a long-term strategy to diversify away from Russia.

[8] In contrast with a "landscape", a "regime" is made up of the institutions (both formal and informal) and infrastructures required for a particular function (Power et al., 2016), like natural gas from exploration to electricity generation. The concept is similarly used in the neoliberal and neorealist International Political Economy literature, which considers international regimes (WTO, IMF, climate agreements) the building blocks of global governance. There are however "niche" international regimes issued of "contested multilateralism" (multilateral governance schemes that challenge established regimes), like IRENA or EITI (Escribano, 2015 and 2017a).

[9] SWP in Germany, IAI in Italy, and Elcano in Spain.

At the same time, Italy and Spain are competing to become the EU's Mediterranean gas hub (as is almost every Mediterranean Member State, from Malta to Cyprus). The best-positioned countries seem to be Italy and Spain. Italy aims at a pipeline gas hub, based upon gas pipelines from North Africa, Russian, The Caspian and the Eastern Mediterranean. Spain's positioning relies in its extensive fleet of LNG plants and diversified supply (including the Americas) and two pipelines from Algeria (an LNG *plus* hub). The proposal of building a new, 7 billion € and 2.000 km EU-funded gas offshore pipeline from Israeli and Cypriot (disputed) territorial waters to Italy via Greece would improve the Italian positioning. However, Spain is opposing it on the grounds that it would somehow distort a fair (cooperative) competition between European gas hubs. Furthermore, it is argued that it will increase geopolitical tensions in an already sensitive area, which have already seen serious episodes of Turkish and Israeli gunboat diplomacy.

It might be questioned whether the Energy Union external focus on the gas regime is not path-dependency and lock-in at their worst. The EU is undergoing an energy transition with geopolitical externalities that have to be assessed and addressed. They can be both positive (ie. reducing gas imports, Russian leverage or Mediterranean vulnerabilities) and negative externalities (ie. increased socio-economic instability in neighbouring oil and gas producing countries). Both require adapting the current strands of European strategic thinking to the new political geographies of a low-carbon energy landscape.

However, geopolitics is not merely about hard facts and territoriality, like gas import statistics and infrastructures. It is also "a matter of perception, of framing developments on regional and global energy markets in a wider context" (Casier, 2015: 159). This is why the current geopolitical European energy landscape is important, insofar the energy transition could proceed while geopolitical perceptions remain anchored in obsolete framings path-dependent on the gas regime. Following the Thomas theorem, these perceptions continue to be real in their (policy) consequences.

Geopolitical strategic thinking on European energy does not seem to match the emerging challenges and remains focused on (long term) fading issue-areas, like managing the interdependencies that characterise the gas regime. This does not mean that strategists should completely shift their attention to the geopolitical impacts of renewables and decarbonisation and abandon gas geopolitics. Rather, that they must include both the renewable and gas regimes in their framing of the European geopolitical energy landscape.

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2 LITERATURE REVIEW

This section explores some of the existing academic literature on the geopolitics of renewables, aiming to identify their geopolitical externalities, especially when potentially applicable to CSP. The goal is to assess which elements can be used to construct a new geopolitical narrative for the renewable regime, and to what extent could CSP be integrated in the framing of the European geopolitical energy landscape. As we shall see in section 3, there are few signs that government's policy strategists are integrating the geopolitical implications of the energy transition into their analysis. By contrast, the academic literature on this issue has been flourishing over the last years, inducing a more timid increase in IR think tank and professional, policy-oriented literature.

In fact, a comprehensive review of all the related literature on geopolitics and renewables (not to mention the geopolitics and climate change) would go well beyond the purposes of this deliverable[10]. On the contrary, a restrictive approach limiting the literature review to the geopolitics of intra-EU CSP would be a very short one: no academic article has been found on the internal EU geopolitics (or just politics) of CSP exchanges and cooperation mechanisms. We opt for limiting the review to pieces of research that can be useful in devising how to incorporate renewables' positive geopolitical externalities (and in particular CSP) to the EU's policy conversation.

The section presents some of the drivers highlighted by both scholars and energy security strategies by which renewables impact energy geopolitics. Their contributions are far from constituting a sound theoretical corpus, but rather consist of applications from the sub-disciplines of Energy Studies, IR and IPE insufficient to allow for a systematic analysis. But the contributions from different strands of the literature offer several elements helping to build a relatively consistent geopolitical approach to renewable energies, capable to outline its main strategic implications.

The remainder of the section is structured as follows. Sub-section 2.1 explores the more general literature, while 2.2 focuses on renewable and electricity exchanges and interconnections. Sub-section 2.3 tries to show that renewables not only improve energy security by reducing energy dependence, but are also (and more importantly) a useful tool in promoting integration and cooperation, as well as projecting soft power, both within the EU and abroad. Section 2.4 reviews both the think tank literature and energy security strategies to assess whether it has incorporated renewable geopolitics into the policy-oriented IR community.

[10] For a good introduction, see the volume edited by Scholten (2018) containing several essays on the different aspects and applications on the geopolitics of renewables.

2.1 The geopolitics of renewables: a general view beyond dependency narrative

Within the academic literature, a distinction can be made between empirical research trying to test the relationship between renewables and energy security, and more conceptual works that hypothesise the energy security implications of de-carbonisation (from conceptual experiments to considering the problems associated with potential conflicts over renewables or other resources related to renewable technologies).

As with the general energy security literature, most of the empirical (econometric) research that analyses the energy security-renewables nexus tend to focus exclusively on the energy dependence variable. And, more specifically, whether extreme energy dependency fosters renewables' deployment. Some analyses found that energy dependency levels do have a positive effect on the penetration of renewables (Marques et al., 2010). Others either refute the hypothesis or their findings are not statistically significant (Marques and Fuinhas, 2011; Popp et al., 2011; Aguirre and Ibikunle, 2014). Yet other studies reveal that, while energy dependence is an important driver for the deployment of renewables, it is diversification by sources and origins that yields the greater benefits in terms of energy security by reducing vulnerability (Valdés et al., 2016).

The last study is relevant for the purposes of this deliverable. Its strategic consequence seems to be the development of independent, closed and autarchic renewable energy regimes, renouncing to the positive geopolitical externalities of renewable cooperation and interdependence. When every country wants to develop autarchic renewables regimes, renewable cooperation appears almost impossible. This renewable version of the energy independence narrative leads to "renewable mercantilism", with countries trying to strategically minimise imports and maximise exports. Such a model is hardly compatible with regional integration or cooperation schemes, especially within an Energy Union.

On the conceptual front, the energy security literature insists in the fact that energy dependence is not the only relevant variable. According to Cherp and Jewell (2011) three energy security approaches coexist: sovereignty, robustness and resilience, and renewable energies can contribute to improving energy security in all of them. A more novel approach highlights the goal of human security and warns on the potential impact of renewables' deployment in emerging and developing countries, especially when mega-projects are concerned (Green et al., 2015).

A different perspective distinguishes between primary risks (of geopolitical or technical nature, like a war or technical failure) and secondary risks (supply disruptions or damages as a consequence of primary risks), and the degree of exposure to that risk (ie. price volatility or choke points). In the case of renewables, mitigation elements seem to appear at each one the risk chain. For instance, decentralised facilities and higher grid intensity tend to reduce vulnerability to technical failures or attacks, while centralised facilities tend to be similarly vulnerable (primary

risks or robustness). Secondly, with the exception of hydroelectricity, renewable energies are safer from the perspective of accidents, sabotage or natural disasters (secondary risks). Finally, they are less exposed to risk because they are zero marginal costs technologies, and are not affected by price volatility (although they are vulnerable to other inputs such as critical minerals). Perhaps more importantly, renewables are uncorrelated with the prices of other energy sources, further reducing risk from a choice perspective de Llano-Paz et al., 2016; Escribano et al., 2013; Muñoz et al., 2015).

A rapidly growing literature deals with renewables' new dependencies and vulnerabilities (Hache, 2016 and 2018): critical minerals, suppliers, infrastructures and value chains, including technology, and the governance dimension of renewable resources, among others. However, the critical minerals' supply chain literature is highly technology-specific, and no paper has been found dealing with the geopolitical specificities of the CSP technology or value chain[11].

Nevertheless, the experience with the 2008 rare earth crisis with China illustrates the limits of strategic behaviour regarding critical minerals: when China restricted exports there were claims that the renewable regime was undergoing its first supply disruption and that rare earths were being instrumentalised as an energy weapon against the US and Japan, much in the way oil and gas have been used over the last decades. But China reversed course due to consumer's pressure, showing that its capacity to use rare earths as a geopolitical tool is limited and unlikely to threat international security (Wilson, 2017).

Regarding renewable technology dependencies, while other geo-economic aspects, like strategic technological competition, receive some attention (mainly regarding China), there is no evidence yet on particular supply risks (Criqui, 2016). Nevertheless, there is room for a geopolitical analysis of renewable technologies patents. According to Bonnet et al. (2018) the relative specializations in four renewable technologies has remained relatively stable between for the US, Germany, France, the United Kingdom and Spain, but since the mid-2000s the geographical distribution of wind power and PV patent rights is shifting towards Asia, especially China, South Korea and Taiwan. Nevertheless, this kind of competition is more related with geo-economics than with hard security threats or supply disruption risks.

This seems to be an area for future research: whether the CSP technology and value chain poses a significant risk, and how it compares with an eventual improvement in the overall risk profile. The case studies for other value chains have tended to show that while criticality is difficult to assess, there might be some vulnerabilities involved (Hache et al., 2019). Regarding other new vulnerabilities of renewable electricity exchanges, for instance to terrorist attacks to infrastructures like interconnectors or transmission lines, it seems to be just as low for electricity

[11] There is an extensive techno-economic literature on the renewables' value chain (whose review goes beyond the purpose of this deliverable), but very few papers deal with their (geo)political implications, and none of them with an intra-EU perspective nor with CSP.

as it is for gas (Lacher and Kumetat, 2011); or at least the differences were not enough to present a dilemma between CSP electricity trade and supply security in the Desertec project framework (Lilliestam, 2014).

A different geopolitical nexus is established between renewable resources and renewable rent-seeking from extractive elites, introducing two new strategic dimensions of renewable energies whether renewables could be less conflict-prone than hydrocarbons or other mineral resources; and to what extent renewable rent-seeking strategies similar to those afflicting hydrocarbon or mineral producers can arise. While these aspects do not apply to the EU case, they are relevant because they explore geopolitical risks arising from alternatives like importing renewables from Southern Mediterranean neighbours.

With the exception of major hydroelectric projects and competition over land, renewables are supposed to be less prone both to conflict and to the emergence of a renewable resource curse (Overland, 2019). Renewable income is generated by exploiting flows and not stocks, generation is spread and energy density is low. If a PV farm is stopped in order to press a consumer, the producer is losing income and delaying the recovery of its investment; a CSP plant could do it only for some hours. This reduces the geopolitical incentives and leverage to generate conflicts, either between States or at a domestic level (Eisgruber, 2013; Manson, 2015).

In this regard, it seems that the key lies in the institutional design: in the absence of independent regulatory agencies, transparent competition frameworks or an independent judiciary system, the outcome could be a low-intensity renewable rent-seeking in which the elites extract a disproportionate part of their income[12]. In any case, with the exception of hydroelectricity, the magnitude of such income is much lower than the rents involved with hydrocarbons, so the problem seems to be more one of social (and energy) justice than a fundamental threat to political systems (Escribano et al., 2013; Overland, 2019).

[12] For instance, in North Africa the investment framework was identified as the most relevant driver to attract foreign investment (Papapostolou et al., 2016). Electricity policy legacies and practices in the region are difficult to change and de-risking mechanisms are needed for CSP to succeed (Carafa et al., 2016). De-risking mechanisms are equally needed for CSP to overcome political and institutional barriers in Sub Saharan Africa (Labordena et al., 2017).

2.2 The geopolitics of renewable exchanges and interconnections

The technical and geographical peculiarities of renewable energies determine not only the structure of the electricity markets, but more importantly for our purposes also the trading partners: neighbours with which there are sufficient electricity interconnections. So, to a certain extent (the degree of market integration) the geopolitics of renewables is linked to electricity exchanges, interconnections and lines. In this regard, path-dependency tends to set continuity from pipeline politics to grid politics, in spite of the different geopolitical implications of renewables and gas, on the one hand; and pipelines and grids, on the other.

For instance, Spanish and Italian energy strategists consider achieving electricity (and gas) interconnections with the European market a first order priority. However, the literature tends to approach the issue from the political perspective of promoting the acceptance of transmission lines, rather than a geo-economic or strategic competition (Ciupuliga and Cuppen, 2013). Political factors have also been found relevant in renewable energy and electricity cooperation between Norway and Germany (Gullberg et al., 2014). Similar concerns have been raised regarding the need for a strong cooperation across countries to overcome NordPool's regulatory and planning uncertainties (Tenggrena et al., 2016).

Research on the difficulties to build new electricity interconnections in Europe has found that technical and financial obstacles are not the primary barriers to grid expansion, but rather inadequate regulatory frameworks that require substantial policy change (Battaglini et al., 2012). For the North Sea Offshore Grid Initiative, preferences and perceptions mismatches regarding whether it constitutes a trading platform rather than an enabler for offshore wind could hamper its political viability (Flynn, 2016).

The obstacles to build electricity interconnections between Germany and Poland show that the process of integrating their markets involves political economic trade-offs; and that to properly capture the international dimension of such dilemmas, researchers have to take into account the different country's perspectives on energy security, the role the interconnector plays in their energy policies, their mutual perceptions and the foreign policy and trade context of the interconnector (Puka and Szuleki, 2014). Moreover, electricity cooperation is thought to be a decisive factor in the future geoeconomic balance between Poland and Germany (Sattich, 2016).

However, the bulk of the geopolitical/IR/International Political Economy (IPE) literature on renewables focuses on non-European regions. The energy security dimension gains weight when renewable electricity imports are to be originated in countries with higher geopolitical risks. Out of Europe, an interesting case study is the electricity dimension of the Arab-Israeli conflict, which shows that the impact of electricity interconnections on conflicts is ambiguous, and depends upon bilateral political relations: geopolitical considerations dominated over economic considerations

when they offered peace dividends; when the conflict intensified, cross-border grid connection proposals were reconsidered (Fischhendler et al., 2016).

Euro-mediterranean renewable electricity exchanges is another issue that has received attention from scholars. Given the economic benefits in terms of cost efficiency, energy development, reducing negative externalities, and economic, industrial and employment spillovers, why no European renewable electricity imports from Mediterranean neighbours are taking place at all? Over the last few years, a growing and diverse literature has emerged to complement the economic and techno-economic paradigms in the Mediterranean, including geopolitics as an explanatory variable without conclusive results (Lilliestam et al., 2016).

In recent years numerous electricity interconnections have been proposed between the northern and southern shores of the Mediterranean, although at present the only transcontinental interconnections in the Mediterranean are those between Greece and Bulgaria with Turkey; and those between Spain and Morocco, which allows for the full synchronisation of the Moroccan, Algerian and Tunisian electricity systems with the European system. Moroccan-Spanish renewable and electricity cooperation is one of the few cases that have received attention from the geopolitical literature (Escribano, 2018). Nevertheless, geopolitical drivers (like others) can be considered either a risk or an opportunity depending on ideology and technological developments, nuancing the usefulness of cost-benefit analysis (Beneking et al., 2016).

But perhaps the most referenced project in the geopolitically related literature is Desertec, closely followed by its alter ego, the Mediterranean Solar Plan. Geopolitics itself have been said to play a prominent role in the failure of both, due to the wave of political instability and conflict that unleashed in the Middle East and North Africa in the aftermath of the 2011 Arab Spring. The idea of exporting solar electricity from the Sahara is not new. Back in the 1940s Mackinder (1943), founding father of geopolitics, identified a “barrier region” extending from the Sahara through Central Asia, which might someday provide solar energy as a substitute for fossil fuels.

Desertec succeeded in getting EU support mainly due to German political pressure, but several European companies from different countries were involved. However, the project failed and the consortium broke up in 2014. The Mediterranean Solar Plan included cooperation with Desertec, but in 2013, and faced with open Spanish opposition, the Master Plan prepared by the Secretariat of the UpM failed to be passed by the Energy Ministers and the project was abandoned (Vantaggiato, 2015).

Both failed for several reasons, but a key shared shortcoming was the adoption of a misleading geopolitical narrative, eroding their appeal on both sides of the Mediterranean. They were presented merely as replacing oil and gas imports with renewable electricity imports and pipelines and tankers with HVDC lines (Escribano, 2017c). Instead of presenting the project as a development driver for its Mediterranean neighbourhood, the narrative was about offering European companies new businesses and exporting renewable energy resources to Europe.

Furthermore, while Europe did not really need that electricity, Mediterranean neighbours were striving to cope with rapidly growing electricity demand (Escribano and San Martín, 2012).

Opposition also came from Spain, which felt the project was detrimental to its interest because the country would not be able to export its surplus of renewables due to the insufficiency of the interconnections with France. Spain has been for long frustrated by the EU's inability to unlock the Pyrenees electricity bottleneck. So, European renewable imports from Morocco became somehow the victim of an intra-EU geo-economic struggle between France and Spain (Carafa and Escribano, 2017). Furthermore, Spanish producers did not want to have to absorb new renewables from Northern Africa, especially in the middle of an economic crisis and when renewable support fatigue was widespread after a painful remodelling of the domestic support systems.

Other renewable mega-projects, like Gobitec, intended to export solar energy from the Gobi desert to China, Japan and South Korea, are afflicted by similar political and energy security challenges that explain the failure of Desertec (Cooper and Sovacool, 2013); and similar energy security concerns have been raised regarding hydroelectricity exports in Sub-Saharan Africa (Green et al., 2015; FOI, 2016). An analysis of the primary risks of exporting solar electricity from Australia to Indonesia points to the regulation and governance dimension, but also to underdeveloped bilateral relations (Ralph and Hancock, 2019).

Contrary to Iberian disappointments with French interconnections (in spite of relative, costly and lengthy improvements over the last few years) and euro-mediterranean failures, cooperative renewable projects in Northern Europe have managed to progress thanks to clearer and more realistic narratives, like the North Seas Countries' Offshore Grid initiative (NSCOGI)[13]. So, within the Energy Union, grid communities in Northern Europe coexist with electricity islands in the South.

2.3 The renewal of geopolitics: soft power in grid communities

As shown in the previous sub-section, most studies on the geopolitics of renewables have focused on a narrow, albeit important, concept of energy security: energy dependence as measured by physical flows, even if renewables contribute more to energy security through the diversification of the suppliers and technologies' portfolios. The problem with the securitisation of renewable energies is that it tends to see renewable imports as 'bad' for energy security because they increase energy dependence, while renewable exports (if any) are 'good' almost by definition[14].

[13] Established in 2010 and composed of Germany, Belgium, Denmark, France, Ireland, Luxembourg, Netherlands, Sweden and the United Kingdom. Its explicitly declared mission is to develop an offshore grid to maximise the use of renewables and to comply with the EU's goals.

[14] We adopt here the concept of securitisation as an extreme form of politisation (Buzan et al., 1998).

Securitisation of renewable exchanges and/or "renewable mercantilism" seems hardly compatible with regional or bilateral cooperation schemes for renewable electricity exchanges.

Furthermore, recurring to the energy dependence discourse to promote renewables could even be counterproductive, especially when security issues permeate policy preferences[15]. Given that the energy dependence narrative values renewable energies only to the extent they reduce energy imports, this aspect goes beyond the problem of countries having diverging energy security strategies (Puka and Szulecki, *op. cit*.). For instance, as will be seen in sub-section 2.4, the EU's, Italian, Spanish and Moroccan energy security strategies are based on fostering domestic renewable resources with the aim to reduce energy dependence[16]. How can the EU credibly foster cross-border electricity interconnections and bilateral renewable exchanges? What kind of positive geopolitical externalities could re-balance the perceived trade-off between energy security and renewable electricity exchanges?

The previous concerns highlight the problem of building "grid communities", a concept put forward by Scholten and Bosman (2016), and somehow inspired by Deutsch's "security communities" that have become mainstream in international security studies. According to their premises, countries have to take a strategic decision: opting for a national model based upon distributed generation; or to supply part of its energy demand with renewable electricity imports, leading to a centralised continental network with sufficient interconnection capacity, a liquid market, suitable regulation and geopolitical stability.

A continental scenario implies greater strategic influence for those countries able to make the most of their geographical advantages to control the grid, taking on management, transport, balance, storage and/or surplus generation capacity. That is, a shift from geopolitics based on controlling resources to geopolitics based on grid management and balancing, as exemplified by Norway's strategic repositioning from gas supplier to capacity companion of the European Union's energy transition (Gullberg, 2013; Gurzu, 2016). The strategic significance of storage in grid communities is perhaps one of the most relevant geopolitical drivers for CSP.

Grid communities offer a framework for devising more positive geopolitical externalities of renewables beyond the obsession to reduce energy dependence. While technological breakthroughs in storage and grids could allow for strategic behaviour, the strongest argument in

[15] This is for instance the case reported in Israel with the efforts to securitise solar energy in the Negev desert (Fischhendler, 2014).

[16] European Energy Security Strategy, COM (2014) 330 to end, Brussels, 28.5.2014; Royaume du Maroc, Ministère de l'Energie, l'Eau et l'Environement (2009): Stratégie Énergétique National Horizon 2030; Presidencia del Gobierno del Reino de España, Departamento de Seguridad Nacional (2015): Estrategia de Seguridad Energética Nacional; Ministero dello Sviluppo Economico and Ministero dell Ambiente (2017): Italy's National Energy Strategy 2017. Note that the latter, while containing external action considerations was not developed by any Foreign Affairs or National Defense agency (Angelone, 2018).

favour of grid communities is that the reputational cost for those who indulge in opportunistic behaviour is extremely high, including the possibility of being expelled or side-lined from the club. Renewable-powered grid communities imply a greater regionalisation of energy flows because of the geographical imperatives of renewables and electricity grids.

In this sense, they have the classical geopolitical implication of constituting a horizontal power shift towards new national and market actors (producers of renewables, countries with grid and/or storage capacity, *prosumers*, renewable industry); and, as a consequence, new geographies of energy security. The spatial features of renewables suggest a greater geographical depth that would delight geopolitical analysts endorsing the revenge of geography (Kaplan, 2009). However, it would be wrong to interpret this exclusively as the revenge of geography in the energy domain. Like other global issues, energy geopolitics is also subjected to vertical power shifts from material resources (reserves, production, investment, infrastructures, market size) towards a soft energy power based on ideational drivers such as sustainable development, the good governance of energy resources, energy justice or the fight against climate change and energy poverty.

These post-material drivers constitute 'ideational geopolitics' able to transform power balances. Soft power understood as regulatory power certainly has hard-edge consequences (Goldthau and Sitter, 2015). This deliverable applies the term 'soft power' in Nye's (2004) sense: the influence that is exerted by example, proposing energy models that appeal to other countries because of their contribution to global or regional public goods while constituting economically and socially attractive energy pathways. In a similar vein, it has been argued that promoting decarbonization and renewables to achieve a European new climate economy would enhance the EU's power base and role in future climate geopolitics (Oberthur, 2016).

In short, the geopolitics of renewables seems to be both more geostrategic and more ideational, focused on the management of interdependence through grid communities and projecting an appealing sustainable energy landscape. In this framework, electricity interconnections become a tool of strategic projection and offer new positive geopolitical externalities to counter securitisation and renewable mercantilism and the continuation of the dependency narrative.

For the purposes of the MUSTEC project, the soft power attached to renewables constitutes an opportunity for a more attractive narrative highlighting the geopolitical externalities of intra-EU renewable exchanges. In fact, fighting against climate change and deploying renewable capacities are an integral part of the EU's foreign and energy policy discourse (Escribano, 2019). This is especially evident when considering European public opinions on these issues, as will be shown in section 4.

2.4 Think tank literature and energy security strategies

Before trying to assess to what extent scholars' increasing attention to the complex nexus between geopolitics and renewable energies has permeated the policy-making community (think tanks and governmental agencies related to energy geopolitics), this sub-section briefly reviews its own literature: think tank papers, reports and comments, as well as official strategies dealing with energy vulnerabilities. As argued in a previous section, the think tank literature represents a bridge between scholars and practitioners, allowing to estimate to what extent a particular issue-area has entered the policy debate.

The first point to highlight is that, while the IR think tank and professional literature, which usually acts as a bridge between scholars and policy-makers continues to focus on oil and gas, the growing academic literature on the geopolitics of renewables seems to be gradually filtering down to the policy process. Think tank contributions are more heterogeneous in kind (from long reports to short comments), but tend to follow the paths explored by some of the academic papers reviewed above (which they refer to generously).

Long reports tend to approach the geopolitics of renewables in a systematic manner, distinguishing between the different drivers and identifying and assessing new dependencies and vulnerabilities. A good example is O'Sullivan et al. (2017), a joint Center for Global Energy Policy, Belfer Center and Norwegian Institute for International Affairs working paper. The paper concentrates on mechanisms through which renewables may have geopolitical impact, like critical materials supply chains, technology and finance, new "Resource Curse", grids, micro-grids and super-grids, off-grid solutions, cyber risks, reduced oil and gas demand, impacts on fossil producers, avoided climate change and access to sustainable energy.

Other papers warn on the impact of decarbonisation on oil producing countries, urging them to improve their resilience to the energy transition and requiring the aligning of international development assistance (Bradley et al., 2018). A recent report by IRENA relies less on the academic literature, but echoes its conclusions, from (more limited) new dependencies and vulnerabilities to new (brighter) opportunities, including job creation and engaging China. Recently, IRENA's Director General stated that "renewable energy is defence policy of the future", linking renewables with security further. With this in mind, it is easy to understand that an especially prolific area is that of critical minerals, an issue on which there are several think tank papers and briefs[17].

One of the first efforts to assess the geopolitical implications of climate change and the integration of renewable energies in the EU was a report from The Hague Centre for Strategic Studies (Sweijs et al., 2014). While the report focuses on climate change, there is a chapter on the impact of the

[17] For the shake of brevity, this deliverable does not review this growing literature, which tends to have a mainly national approach. One exception is Moss et al. (2013) for the European Joint Research Center.

European renewable energy transition on domestic stability. It includes an assessment on which Member States are most vulnerable to the energy transition, as well as its short and long-term political implications. However, the report is still framed in the oil and gas, dependency narrative, valuing renewables as a way to get rid of fossil dependencies and vulnerabilities[18].

Besides working and policy papers, the think tank literature also includes shorter pieces, like chapters in dedicated documents, policy briefs, comments and, increasingly, blog posts. Their goal is to reach a wider audience to further diffuse the new strands of strategic thinking. Some contributions include chapters trying to apply the academic literature to the design of comprehensive energy security strategies that integrate the geopolitical implications of renewables (Escribano, 2017d). Other papers try to offer a comprehensive perspective on the issue to be integrated by policy-makers (ie. the 2020 German EU Presidency - Goldthau et al., 2018); to shed light on the relevance of a particular issue (renewable and electricity cooperation between Morocco and Spain – Escribano, 2016a and b); or to assess the geopolitics of energy innovation (Sartori, 2016).

This deliverable does not intend to recompile all these pieces, but rather to signal that their mere existence implies that the geopolitics of renewables has somehow been able to diffuse beyond the academic literature and start to be gradually mainstreamed by the think tank community, which is now integrating it into their analysis. While it is still a relatively fringe issue, it is now appearing in the energy geopolitical agenda and it is expected to permeate future energy security strategies. By contrast, no IR think tank contribution on CSP geopolitical attributes was found in the literature review.

A review of EU and some Member States' energy security strategies tend to demonstrate that renewables, not to mention CSP, are not integrated in a consistent manner. The only exception is framing renewables within the dependency narrative, both as a way to reduce energy imports and a source of new strategic minerals or technologies' criticality. Furthermore, they are incorporated in a reductionist and one-dimensional way: renewables energies are also clean of geostrategic risks (and opportunities) because they reduce energy dependence. This simplification does not allow for a strategic reflection on their geopolitical impacts, and can turn out to be counterproductive.

For instance, the energy independence narrative can take unsustainable pathways inconsistent with existing EU's energy policies, such as developing nuclear or unconventional hydrocarbons. From a policy consistency perspective, as seen above, renewables' mercantilism and securitisation hamper cooperation and achieving economies of scale, while missing the geopolitical externalities of renewables and grid communities.

[18] For instance, when concluding that "an effective exit of the EU from world energy markets would help to bring prices down and therefore, make oil and gas a less coveted prize thus decreasing the chances of conflict over such resources". Note both the (in)dependency and external conflict-decreasing narratives.

The 2016 European Energy Security Strategy regards renewable energies mainly as an instrument for reducing energy dependence, stressing the savings in energy imports. In the chapter on recommendations, the Commission's Communication clearly opts for the deployment of renewables, including the need to find common support mechanisms, with no other strategic reflection than the discourse concerning the reduction of energy dependence. Only at the end of the Communication does the Commission announce that "it will promote the development and trade of renewable energy technologies in bilateral and multilateral negotiations", without any further considerations for action.

The importance of interconnections is also mentioned, especially for exporting electricity from renewable sources, and even in an implicit way seems to refer to the possibility of importing electricity as a back-up channel, but the way to do this remains far from clear. Renewables are also valued for mitigating climate change, which most security strategies considers as affecting national security, although they rarely explain how. These are common features in several Member States' energy strategies[19]. In parallel, as happens with the think tank literature, there are a vast number of strategies related to strategic minerals, and the EU itself lists essential raw materials[20].

To summarise the discussion so far, it might be concluded, first, that the geopolitical implications of the energy transition have only recently (but relatively quickly) emerged in the geopolitics, IR and/or IPE academic literature, which continues to be dominated by the oil and gas related literature. Second, that scholarly research on the issue has prompted the interest of think tankers, which have helped to introduce renewables into the energy geopolitics conversation (admittedly in an incipient manner and mostly as a fringe issue). Third, that only a fraction of the implications explored by the above mentioned literature, and perhaps not the most cooperative (renewables as energy independence and new dependencies), has permeated official energy security strategies. The latter tend to ignore the opportunities of renewable interdependence and cooperation, missing its consistency with the Energy Union internal dimension, and frame renewables under the same geopolitical narratives as oil and gas.

Finally, regarding CSP and with a view on D.9.2, the literature review shows that it is almost absent from both the academic and the policy-oriented geopolitical landscape. Admittedly, several papers were devoted to Desertec and some of its criticalities, before and after its failure. Some others address institutional and political de-risking, which are not truly applicable to intra-EU cooperation. But no paper highlights its geopolitical externalities, like storage capacities potentially contributing to articulate grid communities, and geographic and technology portfolio diversification. The literature review suggests two avenues for future research: deepening our

[19] See footnote 13.

[20] See for instance: European Commission Communication on the revision of the list of the raw materials the EU regards as essential, and the application of the raw materials initiative, COM(2014) 297 final, Brussels, 26.5.2014. Several Member States have their own lists and related initiatives or strategies to secure critical minerals' value chains.

understanding of technological and critical minerals value chain vulnerabilities for CSP; and developing the geopolitical externalities of storage capabilities in grid communities.

3 INTERVIEWS

This section summarises the results of interviews conducted with German, Italian and Spanish experts, mostly analysts, policy planners and policy-makers dealing with energy geopolitics in IR think tanks and governments. The section seeks to understand the external energy policy preferences across the different case studies, the role of renewable energy in the countries' external energy policy preferences, countries' views on cooperation mechanisms and the role of CSP both in the countries' external energy policy preferences and in future cooperation endeavours.

The interviews do not deal exclusively with CSP (these would have been really short interviews, as will be seen below), rather framing the issue of CSP and renewables geopolitics within the broader energy geopolitics context. The energy geopolitical landscape tends to differ across the EU Member States that are used as case studies in MUSTEC. As shown in section 1, Germany and Italy have developed a special relationship with Russia, while France has a particular geopolitical situation due to nuclear energy. Spain imports no Russian gas and its main supplier is Algeria, also a priority gas supplier for Italy. Their energy relations and foreign policies tend to be linked, resulting in different priorities and path-dependencies.

These differences are hypothesized to give rise to divergent preferences in their energy policies (domestic and external) that may influence European renewable cooperation patterns. From a political perspective, it could also influence the capacity of the Commission to enforce the cross-border measures to achieve the 2030 EU's renewable target (32%). This is why the questionnaire starts with some general questions on external energy policy (see Annex 1).

Elite/expert interviews (Dexter, 1970; Gläser and Laudel, 2010) were conducted between October 2018 and March 2019. Although face to face interviews were the preferred interview mode, researchers had to resort to phone interviews where face to face interviews could not be conducted due to the limited availability of experts. The interviewee selection process was based on the researchers' literature review process and prior knowledge of key research and policy-making institutions currently working on energy geopolitics across case studies.

As is usually the case with elite interviews, the goal was not to obtain answers from a representative sample of the population on cooperation mechanisms (an issue that will be indirectly addressed in section 4 through the analysis of the polling exercise conducted with citizens in France, Germany and Spain). Rather, elite interviews were conducted with a selected group of individuals that were considered well informed and influential in the energy and geopolitics landscape. The purpose of this exercise was to explore the novel and complex issue of CSP geopolitics for which there is limited academic research and even less political and policy engagement, at present. The remainder of this section presents each of the open questions as they were formulated during the elite interview followed by the answers and analysis.

Question 1 was: "What are the general external energy policy preferences of your country?"

As expected, Member States' analysts share the general energy goals set by EU's policies. The conversation is framed by the energy security, competitiveness and sustainability narrative, which is fully shared among analysts and policy planners[21]. In principle, there is consensus that the three pillars go together, and Member States' representatives perceive their countries' position as balanced among the three objectives. However, for some interviewees the balance is biased towards the dimensions of security of supply and economic security. While there is a clear support to the Paris Agreement and EU's support of sustainability, officials and planners tend to highlight energy dependence as the main geopolitical driver of their external energy policies.

For instance, a Spanish defence analyst lamented that environmental concerns are not considered strategic and continue to be subordinated to hard threats. Spanish analysts highlighted diversification, not only geographical, but also technological, in order to improve the resilience of energy systems. A significant emphasis was put on technological competition and geopolitics (technologies, patents, industries) and avoiding "absolute dependencies" from countries and/or technologies. By contrast, Spanish diplomats tended to rank sustainability and fight against climate change higher in their policy agenda, even making the fight against climate change a reputational issue. This shows that perceptions are filtered according to different prisms. Some think tank analysts expressed their concerns regarding the weight of incumbents in the gas market and how they are able to impose a dominant narrative based upon the notion of energy security as access to secure gas. That has had the unfortunate effect of overshadowing other priorities that are more important, like decarbonizing our future.

An Italian analyst explained his government obsession with "energy security as securing gas" because of high Italian energy dependency ratios and the absence of nuclear energy, linking it to economic security through industrial competitiveness. And concluded that "if you want cheap gas, you want Russian gas". Diversification is a tool to reduce risk, but not necessarily when the chosen alternative corridors are also plagued with geopolitical risks. Regarding gas, one key political economy reason explaining incumbents' opposition is that all Europe would have an oversupply of fossil generation capacity if really moving towards a high penetration of renewables.

A German expert, by contrast, said that for Germany energy security was not such a concern because of its privileged relations with Russia, exemplified by Nord Stream 2. While the promotion of *Energiewende* abroad might be closed to renewable soft power (ie. supporting IRENA), German analysts also highlighted the mismatch between German "policies" and "actions": promoting renewables while continue to burn coal and recurring to secure Russian gas as the main energy security strategy (rather than diversification). However, the *Energiewende* narrative is perceived as having relatively higher influence in Germany. Another German think tanker emphasized the

[21] Note that interviews in Italy were conducted after the 2018 general elections but before the new government took office.

goal of reducing emissions; she also highlighted the complex politics of phasing out coal and managing regional impacts. Nevertheless, the biggest difference concerning geopolitics lies in the perception that Germany does not have an energy security problem thanks to Russian gas.

A relevant result was the dispersion of answers and policy preferences not only by country, but perhaps more significantly, by policy approach. Analysts dealing with hard security seem to be more biased to focus on barriers like new dependencies and vulnerabilities, while diplomats and think tank analysts tend to highlight opportunities for economic diplomacy and a vague notion of soft renewable (and climate) power.

Question 2 was: "To what extent are your countries' external energy policy preferences aligned with EU's policies? Are there any significant divergences?"

While recognizing some specificities, in general interviewees tended to see their countries' energy policies reasonably aligned with EU's. European energy policies are seen as the established model and the reference framework, and are valued as a common endeavour. Diplomats and think tank analysts were especially pro-European and valued relatively more the soft power attributes of renewables. Natural gas was linked to renewables and the energy transition by some interviewees, who saw gas as a complement to renewables. This led to the wider issue of gas infrastructures (pipelines) and imports, but also to the geographical preferences of different countries. While the general principles were widely shared, geographical preferences' divergence immediately arose.

German experts recognized the German focus on Russia, and that this means a huge divergence with EU external energy policy. An interviewee pointed to German renewable cooperation in North Africa, like the KfW support to the Noor CSP project in Morocco. While she did not perceive it as a priority, renewable cooperation in the Southern neighbourhood has (second rank) strategic foreign policy implications. Italian interviewees map their country's gas preferences towards Russia, the Caspian, the Eastern Mediterranean and North Africa. Interestingly enough, Italian preferences have shifted from North Africa to the Eastern Mediterranean. Italy also seems to align with the more benevolent German approach towards Russia. In Spain, analyst's attention is focused on Algeria and the geopolitics of LNG suppliers like Qatar or Nigeria, while LNG from the Americas is seen as a low risk source that improves Spanish gas import's risk profile.

As expected, the interviewees tended to focus in related pipeline politics: Germans on Nord Stream 2, Spaniards in Algerian pipelines, and Italians on the East Med pipeline proposal and the Southern gas corridor. German experts recognize Germany being increasingly isolated regarding Nord Stream 2, and that this issue has become a major intra-EU conflict for the country. However, Nord Stream 2 is the foundation of the German strategy of becoming a (gas) bridge between the Eastern Neighbourhood and the rest of the EU.

An analyst at the Spanish Defence Ministry highlighted that Spain has a very peculiar position due to its geography, being a peripheral European country focused on diversifying from Algeria

through LNG. Spanish analysts tend to see a partial convergence with Italy regarding Algeria, but little overlapping of preferences elsewhere. For instance, Eastern Mediterranean gas pipeline politics tend to be perceived in Spain as a source of geopolitical instability rather than an opportunity for regional cooperation. There are also concerns about lock-ins regarding new gas import infrastructures and the promotion of a non-economically viable new pipeline that will not be able to outcompete Russian gas (according to some German expert assessment). At the same time, Spanish experts expressed their concerns for electricity interconnections with France at the same level than gas interconnections (Midcat pipeline).

Regarding the divergence in geographical preferences among Member States, an Italian diplomat warned that it would be needed "to somehow reconcile the interest of Northern states, central states and Southern states", adding that the three approaches should be developed together. However, he showed concern that Nord Stream 2 would make gas more expensive for Southern Member States and more convenient for Northern Member States. An interviewee warned that the new Italian government would be even closer to Russia, also in energy matters.

Another Italian expert used Nord Stream 2 as an example of "not a failure but a difficulty" EU policies found in coordinating Member States' preferences: Germany was "kind of eluding" the rules, weakening European policy. Spanish analysts showed similar concerns in spite of Spain not importing significant volumes of Russian gas (yet). One German expert mentioned that in the shift from baseload to flexible energy supply systems, regional integration has to take place. For this integration to succeed, she mentioned the need for regulatory harmonization, highlighting that countries have been reluctant to engage in this harmonisation effort so far.

This kind of geo-economic gas competition between Member States is illustrative of the intra-EU energy geopolitics and extends to electricity exchanges. Italian analysts explained that in Italy electricity imports are perceived as a weakness. In Spain, the inability to export electricity to France due to the lack of interconnections is seen also as a weakness.

After the general questions, the questionnaire enters into the geopolitics of renewables. Question 3 was: "What role do renewable energies play within your country's external and energy security strategies?"

There was a wide consensus among analysts in that the energy transition entails a geopolitical transition, too. However, there was the sense that this idea of the twin energy-geopolitical transition is not integrated in national strategic thinking and that the public debate was focused on more immediate concerns. Some interviewees recur to path-dependency, explaining that policy planning is in the hands of people that have been doing it for decades. It is difficult for them to recognize the strategic implications of the energy transition, shifting focus from familiar issues like gas geopolitics to the complexities of grid communities or the geopolitical externalities of storage capacity. Others cite again the political economy argument of a geopolitical landscape dominated by big gas players.

According to interviews, the narrative of "renewables as reduced energy dependence" has been integrated by Spain and to a lesser extent by Germany (due to lower energy supply perceived risks), but not by Italy. A German expert said renewables "play a role but not that much". In her view, achieving de-carbonization targets is a bigger concern than any strategic consideration. On the opposite, another Italian expert thinks that they do play a very important role for several reasons: insolation levels, involvement in projects of wind and solar, the Italian renewable strategy, and high energy dependence ratios. Italian analysts highlighted the role of ENEL in supporting the energy transition in Africa. But this is thought of more as an industrial policy than as a human security initiative, and is not expected to have any energy security implications for Italy. Africa was also mentioned regarding the geopolitics of raw materials and energy poverty. Projects for exporting electricity to North Africa seemed more appealing to Italian players than exporting it towards Germany.

In Spain, renewables are perceived as a source of both geographical and technological diversification, and should be an integral part of a comprehensive technological strategy, investing more in R&D and preserving technological comparative advantages. A Spanish analyst also highlighted the possibilities that renewables offer for Spain's strategic projection in its neighborhood and Latin America, but missed a consistent approach in Spanish external action. For instance, he saw the Spanish Energy Security Strategy as highly defensive and reactive, with little room for new patterns of cooperation. Both Spanish and Italian analysts tended to think of renewables' geopolitics as an extra-EU domain, dealing with PV or CSP exports from North Africa, much like oil and gas, business-as-usual pipeline politics (as explained in a previous section). In fact, geopolitics was generally perceived as something to be dealt with externally (with external policies like securing resources and corridors) rather than internally (with internal policies deploying European renewable resources and electricity corridors.

So, the role of renewables lies within the energy dependence narrative, whether reducing dependence relative to gas or awareness regarding technological dependencies. Interestingly, within the EU context there can be some geo-economic competition for technologies, engineering and services, but critical dependencies tend to be perceived a shared EU challenge rather than an intra-EU strategic competition. By contrast, there is no structured strategic thinking regarding the geopolitical externalities of grid communities in an Energy Union or on its renewable soft power. The closer analyst get to that is a broad consensus on the need to develop electricity interconnections, but the rationale is more interconnections "as we want for gas" than any specific geopolitical attribute for interconnections in a future electrified energy system.

Questions 4.a to 4.d deal with renewable cooperation mechanisms such as statistical transfers, joint projects and joint support mechanisms. Question 4.a was: "What is the relevance assigned by your country to EU's renewable cooperation mechanisms?"

There is a consensus among analysts on the need for deploying renewable cooperation mechanism in the medium term in order to comply with renewable EU targets. One caveat voiced by one German expert from the think tank community was that the current wave of nationalism could hinder increased cooperation in any area, in particular in a sector as critical as energy. On the whole, there is a consensus among analysts on the need of deploying renewable cooperation mechanism in the medium term in order to comply with renewable EU targets (while some were not aware of them, they were interested in knowing more).

Perhaps with the exception of some Spanish defence and security analysts, cooperation mechanisms are not perceived as an opportunity within Europe. By contrast, while recognizing their limited knowledge on cooperation mechanisms, Spanish diplomats were very much in favour of it. A shared trait between Spanish and Italian analysts is the significance assigned to extra-EU electricity and renewable exchanges with North Africa, with Algeria and Morocco mentioned as potential partners. Spaniards are more concerned about the perception that the lack of interconnections with France is hampering Spanish renewable exports and an efficient integration of renewables in the Energy Union. When speaking about geopolitics, attention turns to the neighbourhood; when speaking geo-economics, analysts tend to have a more comprehensive picture including both the EU and its vicinity.

So, the geopolitical relevance seems to be perceived as relatively low (some used the term "residual"), even if some analysts complain they should be promoted. In general, the degree of knowledge on the details of EU's renewables' cooperation and exchange mechanisms among the geopolitics and IR community seems to be quite low. To some extent there is a vicious cycle: renewable geopolitics are not perceived as a relevant policy issue, so analysts do not pay attention to its specificities, being unable to understand the extent to which they represent a paradigm shift. The policy community seems much more comfortable when dealing with oil and gas geopolitics, in part because the technicalities of renewables and electricity exchanges are new to them, and more complex.

To the question 4.b "How likely is your country to participate in cooperation mechanisms?" All interviewees see it very likely, showing a clear propensity to cooperation (in spite of the few mechanisms agreed so far or lack of knowledge in some cases).

When asked (4.c) "which are the key advantages and disadvantages of the above-mentioned cooperation mechanisms?" answers diverge more. Diplomats recur to the general principles of the EU's energy policy trinity plus cooperation and integration, but nevertheless all the interviewees identify the lack of physical electricity interconnections as the main barrier, rather than regulatory hurdles or "renewable mercantilism". While think tank analysts tend to agree that such a strategic behaviour permeates governments' policies and may hamper cooperation, diplomats and other officials see the tension between competition and cooperation as a natural one among Member States. A German expert said that the key advantage would be flexibility to cope with renewables'

fluctuations while another highlighted "interconnectivity", coming close to the grid community narrative.

Also on the barriers to cooperation mechanisms, one Italian expert did mention that statistical transfers could be burdensome in terms of data collection requirements. She also expressed concerns about the rigor of the data and she mentioned that sharing data might be a politically sensitive issue. In addition, cooperation mechanisms seem to be perceived in Germany by one of the experts interviewed as a hard political sell: 'in Germany, there is a national project of the energy transition, and we want to go 100% renewable. Convincing voters that we are instead going to allow others to build that capacity and use that to offset what we ourselves are not doing might be politically difficult', meaning that cooperation mechanisms can be seen as offsets and cheating Germany's way out of increasing renewable energy uptake.

Some analysts tended to see cooperation and exchange mechanisms as ambivalent: on the one hand, they create new interdependencies and cooperation patterns (something similar to a grid community); at the same time these new interdependencies may generate new external action obligations and security risks that have to be anticipated and managed; prices can go lower (or not), but volatility may increase. Nevertheless, intra-EU cooperation is preferred to extra-EU on the grounds of risk assessments, but technological and industrial competition will continue to be detrimental to cooperation. Some analysts had more expectations on the private sector developing such cooperation, while being skeptical on the real will of governments. Several interviewees did not see strategic considerations as a driver for such mechanisms.

Regarding question 4.d on "which (geo)political drivers and barriers of renewable cooperation mechanisms would you like to highlight?", the lack of interconnections arise again. Some analysts also emphasized industrial (utilities) interests, insisting on the political economy dynamic of incumbents preventing renewables technologies from eroding the gas regime. One German expert for instance raised the issue of energy incumbents and their potential losses in their market share affecting specific municipalities as a reason for politicians to seek to maintain the *status quo* (hence limiting cooperation). Another German think tanker saw cooperation as good in itself, especially when concerning long-term projects that tend to stabilise cooperation patterns. She also highlighted the benefits for the EU of promoting jobs, industries, economic growth and new opportunities to Mediterranean Member States afflicted by the austerity measures imposed during the financial crisis. In her view there could be a fruitful policy coupling of the renewable-water strategic nexus in both the Southern and Northern shores of the Mediterranean. She also emphasised attracting the private sector through de-risking tools rather than relying on public investments.

Others also warned on the securitization of renewable electricity imports along the dependency narrative. Technological competition was seen as a barrier, but also the lack of a strategic and comprehensive view of the geopolitical implications of a fully decarbonized and mostly electrified energy system. By contrast, a German expert said that the main driver in his country continues to

be climate policy. In Germany, barriers were identified internally due to lack of North-South lines, more than external threats.

The significance of a technology geopolitical shift was repeatedly emphasized with the argument that, while renewable resources are widely available, technologies are not. For Spanish analysts, the combination of geographic and technology specialization makes countries like Spain and Italy being more interested in CSP than France, for instance. Piecemeal approaches and the lack of a holistic view make it difficult to allocate complementary roles to different technologies.

Questions 5 and 6 point to the EU's role: "What role do you believe the EU *currently plays* in fostering renewable cooperation mechanisms?"; and "what role do you believe the EU *should have* in fostering renewable cooperation mechanisms?"

Answers converge in that it is increasingly difficult today to separate European from Member States' energy policies. Europeanisation is perceived both as almost unavoidable and the main driver for renewables' cooperation and exchanges. Interviewees recognize the EU merits in providing a set of guiding principles, targets and norms and regulations to achieve them. Experts tend to see Europeanisation as a lengthy but positive sum process of bargaining between uploading Member States' energy preferences and downloading EU's energy policies and institutions. In this bargaining process the EU is perceived as the actor that can counter, to a certain extent, industrial interests.

However, interviewees tend to share the view that the EU should be more pro-active in promoting renewable exchanges, especially in financing connecting infrastructures, like interconnectors and electricity lines. As expected, Spanish analysts highlighted the lack of electricity interconnections and the limitations to renewable cooperation it entails. Spanish diplomats recognized the efforts made by the Commission, but complained about the "reticence" from other Member States to implement effective measures (ie. interconnection infrastructure).

Nevertheless, think tank analysts highlighted the fact that the process is far from completed, and that a significant fraction of energy policy, especially regarding energy security, continues in the hands of Member States. All answers reveal a shared understanding on the limits of the Europeanisation process, being aware of Member States' resistance to loose sovereignty in such a sensitive issue. At the same time, interviewees perceive it as the only way forward if renewables are to be efficiently integrated into the European energy landscape. Some analysts see the EU role as facilitating and enabling an appealing framework to induce private sector developments, and are cautious against the politisation of EU-backed infrastructures.

Most interviewees found the specific questions on the geopolitics of CSP deployment and cooperation mechanisms difficult to answer, due to their lack of knowledge about this technology and its potential geopolitical externalities. For them, that was the end of the interview, to which they also added some insightful final remarks that have also been included in this section. Given that the more general topic of the geopolitics of renewables (and the technicalities of renewables'

cooperation and exchange mechanisms) were identified as relevant issues that were overshadowed by gas geopolitics, it is not surprising to see that the geopolitics of CSP has almost gone unnoticed.

Questions 7 and 8 were: "what role does CSP currently play/could play in the future within your country's external and energy security strategies?"

A brief summary of several answers to these two questions would be: "none" (or "residual") and "no idea". Italian think tankers' assessment was it to be a fringe issue now, but they saw potential in extra-EU CSP projects in North Africa. However they remembered that initially, Italy opposed to it on the grounds of over-capacity, and that Italian preferences point to exporting rather than importing electricity to North Africa. So, no particular geopolitical role today or in the future for intra-EU CSP exchanges beyond industrial promotion abroad. A German expert insisted on the "development cooperation" approach of the German government in Morocco, missing that narrative within the EU.

Spanish analysts also remembered Spain's Opposition to the Mediterranean Solar Plan for the geo-economic reasons presented in a previous section. One of them feared that the window of opportunity of projecting Spain as a transit country for renewable electricity exports to and from North Africa (a concept also close to the benefits of grid communities), which would help Spain to achieve interconnections with Europe, could have expired. His concern was that new technologies, like hydrogen or storage, could erode CSP's geopolitical advantages.

Questions 9 and 10 refer to country policy preferences regarding CSP deployment and CSP cooperation mechanisms, respectively.

An Italian analyst perceived CSP as an "immature technology" that needs some form of support for early deployment. He also stated that if local players could make the case for CSP and its strategic storage function, there could be payments for flexibility and preferential financing mechanisms. More specifically, technological advances in storage capacity (beyond daily storage) were mentioned by one of the Italian interviewees as a driver of future interest in CSP. Another wondered why the CSP technology did not generate great enthusiasm in Italy compared to PV, doubting that the CSP industry could foster such a move.

In Germany on the other hand, the interest in CSP is mentioned with reference to its future industrial policy. That is, if Germany can manufacture and export complex parts, CSP will become more attractive in terms of energy policy. The lack of a well organised lobby supporting CSP in Germany was additionally mentioned as a barrier for CSP deployment and CSP cooperation. Spanish analysts refer to technological and industrial drivers, but no geopolitical considerations regarding security of supply other than diversification and reducing imports.

Finally, policy planners complain on the lack of information on CSP geopolitical virtues, as well as resistances to integrate "niche" technologies in strategic analysis. For country preferences

regarding CSP cooperation mechanisms, the short answer in most cases was "none". Spanish diplomats were aware of CSP mainly because of economic diplomacy reasons, while they were not familiar with EU renewable cooperation mechanisms. In general, diplomats tended to see both cooperation mechanisms and CSP, more than renewables (wind and PV), an issue for the Energy Ministry. CSP is perceived by the IR and geopolitics community as highly technical, immature, high cost, with no evident strategic externalities (compared to future batteries, for instance), and in general at the lower end of low politics.

Questions 11 and 12 were intended to identify CSP cooperation propensity: "How likely is your country to participate in CSP cooperation mechanisms? And geographical preferences for cooperation: "Which Member State(s) do you think your country would prefer to participate with?"

As for question 4.b, all the interviewees find very likely that their countries will participate in CSP cooperation mechanisms in the future, in spite of its benefits not being clearly established at present. Some Italian and Spanish analysts used the expression of being "followers" if the push comes from abroad (ie. the EU). However, no leadership on the issue was exerted in Brussels from Member States. There is also the usual claim that a comprehensive strategic view on such a "novel" issue is still lacking. Interestingly enough, Italy seemed more interested in a Southern European alliance with Portugal, Spain, France and perhaps Greece; as well as the Balkans and the Southern shore of the Mediterranean. CSP cooperation and exports to Germany were considered a second rank priority. A Spanish diplomat and a German analyst nuanced that the economics should be viable: if so, both countries will actively support it.

In Spain, propensity to cooperate with any Member State was higher, with France and Germany (for different reasons) ranking high; however, more pragmatic approaches emphasized cooperation with Portugal and Morocco. Some Spanish analysts also expressed interest in cooperating in renewables with middle Northern EU countries (the Netherlands and Nordic countries). Storage capacities were seen as a relevant factor in searching for partners. One German expert said that his country has not any particular country preference. For another German expert from the think tank community, future cooperation mechanisms would be easier to undertake with countries 'that are having the same social debates as Germany' regarding energy i.e. countries in the north (Sweden, Denmark or Norway) versus Eastern European countries.

Question 13 asks: "Which (geo)political drivers and barriers for CSP cooperation mechanisms would you like to highlight?"

The answers provided to this question on geopolitical drivers and barriers to CSP cooperation were very similar to responses provided to the question on general renewable cooperation mechanisms. Hence, the main drivers of CSP cooperation include: reducing energy dependence, diversification of sources, comparative advantages like insolation levels, economic/industrial

considerations and potentially providing stability to the EU electricity system. Most interviewees stated their CSP expertise was limited, but also mentioned that it is difficult to assess a technology in isolation, without it being integrated in the general energy landscape.

Nevertheless, storage capabilities and flexibility were considered valuable strategic assets by all the interviewees (but not all of them mentioned it immediately, but rather after being questioned on storage). Technological innovation, technology diversification, industrial development (having a consolidated industrial base) and the renewables-water nexus were also mentioned as CSP strategic drivers. Issues like CSP's role in grid communities (storage, interconnections, integration) or projecting CSP cooperation within the Energy Union and abroad as a soft power tool were also vaguely evoked.

Questions 14 and 15: Which role has the European Commission *played* in fostering CSP cooperation mechanisms? And which role it *should play* in fostering CSP cooperation mechanisms?

To the first question, few interviewees were familiar enough with CSP or cooperation mechanisms to answer. But most have some ideas on what the Commission should do, basically recurring to the EU budget and regulatory power: regional funds, state regulation, investment in CSP technology, EU budget, strengthening enforcement capacity, pilot projects and break country divides, research and innovation. A German expert highlighted the need to put more "brain", and not only financing and regulations, meaning having a more comprehensive strategic view on CSP's potential and opportunities.

The final question (16) was: "Given all the above topics we have discussed, is there anything you would like to add that we have not touched upon today?"

Some experts suggested that protecting technological knowledge and preventing cyber-attacks will be more important in the future than protecting physical infrastructures. Going 100% renewables will require re-evaluating and redefining critical infrastructures. Diplomats tended to highlight the promotion of renewable technologies abroad as an increasingly important component of economic diplomacy, appreciated the soft power of renewables and seemed happy to have one more renewable technology like CSP in their portfolio. Spanish diplomats also emphasised foreign policy concerns, global and regional: contributing to global public goods along the 2030 Agenda; and promoting sustainability, both environmental and social, in neighbouring countries (a similar driver was mentioned by an Italian diplomat) and Latin America.

On the whole, the interviews tend to confirm the hypothesis that, while renewables have hesitantly entered the European geopolitical landscape (notwithstanding the deficits in understanding their geopolitical consequences), CSP has not. Experts were aware of the increasing importance of renewables in geopolitics, but few were familiar with the specifics of EU's renewable cooperation and exchange mechanisms. However, experts confirmed Europeanisation as the way forward, appreciated the role of the EU and demanded more initiatives from the Commission. They also showed interest on the issue and recognized that the immediate urgencies

of fossil geopolitics overshadowed the long-term strategic implications of renewables and, especially, CSP. But contrary to other renewable technologies, most analysts are still considering CSP an “immature” and “niche” technology pre-destined to “fringe” geopolitics.

4 POLLS

The fourth section of this report explores citizens' understanding and views of interconnections. It also seeks to analyse citizens' knowledge and views about a fully-integrated EU-wide energy market. The rationale behind this analysis is that both interconnections and an integrated EU-wide power market are necessary enablers of renewable exchanges and renewable cooperation more broadly (Batel, Devine-Wright and Tangeland, 2013; Caldés *et al*, 2019; Ciupuliga and Cuppen, 2013; Del Río, Caldés and Kiefer, 2018). Additionally, recent literature on the acceptance of cross-border electricity interconnections as a driver of EU's low carbon transition highlights public acceptance as a key factor in the timely and cost-effective implementation of interconnection projects (Vasilakos and Sikow-Magny, 2018). A survey of 3,000 citizens across France, Germany and Spain provides the empirical data to analyse citizens' views of interconnections and of EU's goal of having an integrated power market.

Previous sections in this report have discussed how external energy policy preferences differ significantly among MUSTEC-studied countries depending on their energy dependence from Russia, each country's current energy mix, the availability of renewable resources, the country's competitiveness and industrial development potential of renewable industries, among other. These differences in energy policy preferences can have a bearing on cooperation patterns that may limit EU's capacity to meet its energy and climate goals.

When designing the questionnaire, it was hypothesised that citizens' views regarding interconnections could also differ across France, Spain and Germany, as do external energy policy preferences. These divergences could in turn affect the political feasibility of interconnections and hence renewable cooperation in the EU. The results of the survey are thought to be useful for policy-makers in designing awareness raising, engagement and communication strategies for interconnection projects, and renewable cooperation mechanisms more broadly.

The analysis of public acceptance of interconnections complements expert views on external energy policy preferences discussed in previous sections of this document. It also complements stakeholder analyses of drivers and barriers to cooperation mechanisms, which traditionally leaves out citizens' views. The results of stakeholder analyses completed in MUSTEC's work package 4 are discussed in Del Río, Caldés and Kiefer (2018).

The remainder of this section is structured as follows: subsection 4.1 will briefly present the motivations for accepting (or rejecting) cross-border electricity interconnections in the EU according to the literature. Subsection 4.2 will discuss the survey design, the key sections in the questionnaire and the specific energy-related questions. Section 4.3 presents the energy-related results from the survey. Subsection 4.4. will discuss the key results from the survey and will offer some policy recommendations.

4.1 Public acceptance of cross-border electricity interconnections

Recent literature on the drivers of energy infrastructure projects such as interconnections indicates increasing awareness by policy-makers regarding the relevance of social acceptance in order to develop low carbon infrastructure in the EU (Caldés *et al*, 2019; Del Río, Caldés and Kiefer, 2018; Oltra *et al*, 2017; Vasilakos and Sikow-Magny, 2018). The literature on public acceptance of interconnections is limited to date (Komendatova and Battaglini, 2016), although related literature on social acceptance of renewable technologies is more abundant (Ciupuiga and Cuppen, 2013). The work and analysis undertaken in section 4 of the present document seeks to contribute to the existing literature by empirically analysing current citizen knowledge about interconnections, their perceived advantages and disadvantages, citizens' views about an integrated EU power market and about who should pay for electricity interconnections. It also seeks to actively complement stakeholder analyses of drivers and barriers to RES cooperation (Del Río, Caldés and Kiefer, 2018; Devine- Wright *et al*, 2010; Cotton and Devine-Wright, 2011).

Ciupuliga and Cuppen (2013) for instance classify social acceptance of transmission lines according to three different dimensions that differ in the agents involved and in the topics discussed. The first dimension is *socio-political* and entails asking the general public, key stakeholders and policy-makers about general acceptance of technologies and policies. This is the dimension in which we focus, through data obtained in a survey of the general population in France, Germany and Spain. The second dimension analyses *community acceptance* of local projects and involves local stakeholders and developers. The final dimension refers to *market acceptance* of the project by investors, developers and consumers.

Some of the benefits of greater interconnections that are expressed by citizens according to the literature include: environmental benefits, greater capacity to integrate renewables, improvements in security of supply and increase competition among suppliers, thus potentially reducing energy prices (Cohen, Reichl and Schmidthaler, 2014). Further renewable penetration in Europe could also reinforce EU's leadership position in global renewable energy technology markets.

Among public concerns regarding interconnections, especially for the population directly affected by the infrastructures, the literature cites perceived health impacts of electromagnetic fields, visual disamenity, opposition to the traditional energy model based on large power plants built in remote locations (vis-à-vis distributed energy models that require less large-scale grid capacity), and environmental impacts, e.g. where transmission lines are built in 'unspoilt' or protected areas (Ciupuliga and Cuppen, 2013; Wüstenhagen *et al*, 2007). Citizens that are close to interconnections have also expressed concern about losses in property values and losses in economic activities such as tourism (Cohen, Reichl and Schmidthaler, 2014). In addition to these concerns, there is both a lack of recognition of the importance of physical infrastructure (i.e.

interconnections), and a lack of perceived benefits of an integrated electricity market. Related to the lack of perceived benefits of interconnections our survey sought to unveil perceived advantages and disadvantages of interconnections, as it is hypothesized that information on the benefits of cooperation can be a driving factor of enhanced renewable energy cooperation (Vasilakos and Sikow-Magny, 2018).

The above-mentioned public concerns are known to potentially result in stalling, delaying and changing key project features such as whether interconnections can be built overhead or have to be built underground, with significant cost premiums to projects (Vasilakos and Sikow-Magny, 2018). EU's goal as regards the development of Projects of Common Interest (PCIs) such as interconnections is for the approval procedures to be completed in 5 years, a timeframe that can last much longer. For instance, the construction of Italy's Matera–Santa Sofia transmission line took 20 years to develop due to public acceptance issues (Ciupuliga and Cuppen, 2013).

In order to overcome political[22] and social obstacles to electricity interconnections, the literature recognizes a myriad of driving factors. These include: the need for early engagement of potentially affected communities; high-level political support for these infrastructures which is subject to political economy considerations (Puka and Szulecki, 2014); appointing regional coordinators as 'honest brokers' in cross-border negotiations to highlight the relevance of such projects; adequate disclosure of who will pay for infrastructures; the provision of information regarding the benefits of interconnections (e.g. creating for instance a European platform for exchanging project information in *liaison* with TSOs); and, the need for compensatory payments (or compensatory projects) in the areas affected by renewable energy infrastructure (Vasilakos and Sikow-Magny, 2018).

4.2 Survey

The two main objectives of the energy-related section of the survey were to understand socio-political acceptance of infrastructures and policies (Ciupuliga and Cuppen, 2013) i.e. acceptance of interconnections and an integrated EU power market. In order to achieve these goals a questionnaire was designed to elicit citizens' knowledge, views and preferences for interconnections and of an integrated power market that can enable renewable cooperation across Europe. An on-line panel survey was administered to 3,000 residents in France, Germany and Spain between February 2018 and June 2018. Respondents were aged over 18. The sampling method entailed regional stratification in the case of France, stratification according to autonomous communities in Spain and according to Länder in Germany. Given the sampling frame limitations and funding constraints to develop simple random sampling, quota sampling by age and gender was used to ensure that interviewees' characteristics resembled those of the population. The sampling size was 1,000 interviewees for each of the countries studied. The sampling error for global country data, assuming simple random sampling and a 95.5% confidence

[22] For an overview of political obstacles to electricity interconnections see section 2.2.

interval, was +/-3.2%. Fieldwork and tabulation of results were undertaken by Tonula, a market research company (https://www.toluna-group.com/about-toluna-group/about).

Mail, telephone and in-person surveys (Arrow, *et al,* 1993; Mitchell and Carson, 1989) have been used more frequently in the past, compared to on-line panels (Lindhjem and Navrud, 2010). However, the emergence of email questionnaires in the 80's and web surveys in the 90's broadened the options of survey administration modes. On-line citizen panels[23] have experienced exponential growth in recent years (Menegaki *et al*, 2016). Some of the key advantages of on-line panels include the speed of implementation of these surveys and the speed of access to (and analysis of) the data. On-line panel surveys also allow to present respondents with visual aids that cannot be shown in telephone surveys and can be programmed to allow for sophisticated skipping patterns (van Ryzin, 2008). They are significantly cheaper compared to telephone or in-person interviews, which was an important consideration given the fact that the initial ToR for this deliverable did not include the analysis of citizens' views neither regarding interconnections nor regarding EU's goal of achieving a fully-integrated power market. In fact, Real Instituto Elcano funded the survey and is independent from the funding received for the completion of D 6.4.

Concerns about on-line panels include the potential for coverage bias, especially in jurisdictions with low Internet penetration. Household Internet penetration is 86.4% in Spain (INE, 2018), 89% in France and 94% in Germany (Eurostats, 2018). Concerns regarding coverage bias have to be considered, especially for technology-oriented questions and for older respondents, but the high household Internet penetration rate across the three countries studied could reduce said concern (Keeter *et al,* 2015). Additional concerns regarding on-line panels are related to non-probability sampling and self-selection bias of panel participants that can be 'professional survey-takers' and which can be motivated primarily by financial incentives that can be provided by market research companies (Van Ryzin, 2008). Further concerns include the continued participation of on-line panel respondents over time. However, as the survey was, *a priori*, intended to be a one-off event, attrition (i.e. panel drop out) is not considered to be a significant concern for our data collection efforts. Another source of bias is due to the fact that people who participate regularly in on-line panels might be more aware of the issues being discussed in a survey than the general population, especially if they have responded to a related survey previously. Frequent on-line panellists are also believed to potentially develop response strategies that may not represent those of the general population. Despite the above-mentioned concerns on-line panel surveys can, if designed carefully and if the recruitment process is robust, produce similar results to those of other survey methods (Keeler *et al*, 2015; Van Ryzin, 2008).

[23] Van Ryzin (2008: 237) defines on-line research panels as 'essentially managed e-mail lists of volunteers who have signed up to receive e-mail invitations to participate in Web surveys and other forms of on-line research'.

The survey was designed to unveil citizen opinions regarding various issues related to the EU, with a specific section on interconnections and an integrated energy market. The questionnaire is reproduced in full in annex 7.3. The structure of the questionnaire, the key topics and the energy-related questions are included in box 1. below.

Box 1. Questionnaire sections, topics and key energy-related questions

Section 1. Introductory questions.

Topics discussed: interviewees were asked about their perceptions regarding the current political situation, their knowledge about the EU, their feelings as regards belonging to the EU and their trust in EU institutions.

Section 2. Citizens' views of EU, the relationship between their country and the EU.

Topics discussed: belonging to the Euro, devolution of EU power, achievements of the EU, disadvantages of belonging to the EU and policy priorities (including foreign policy).

Section 3. Views on globalisation and its effects

Topics discussed: respondents were asked about their views on globalisation, trade, immigration, defence, and respondents' country foreign policy alignment with that of the EU.

Section 4. Views on energy

Topics discussed: interviewees were asked about their familiarity with (and knowledge of) interconnections, advantages and disadvantages of interconnections, their familiarity with the EU's goal of achieving a fully integrated energy market, its advantages and disadvantages. The question of who should pay for interconnections was also included in this section. The wording of these questions in this section of the questionnaire was as follows:

1. Have you ever heard about energy interconnections among countries?

For respondents who had heard about interconnections there were three follow up questions:

- Do you remember what interconnections are?

- Do interconnections have any advantages?

- Do interconnections have any disadvantages?

2. The EU is supporting the development of an integrated European energy market in which all member states would be connected through their power networks. Did you know about this or is it the first time you hear about it? The follow up questions were:

- Do you think this European energy market has any advantages?

- Do you think this European energy market has any disadvantages?

3. Do you think that your country (France, Spain o Germany) will reach the minimum interconnection level recommended by the EU (10% of national installed capacity)?

- Who should pay for interconnections?

Section 5. Socioeconomic questions

Finally, respondents were asked about their educational attainment level, their occupation, the size of the town or city where they lived and their political views. For further information on the rest of the questions see annex 7.3

4.3 Survey results

This subsection presents the main results of the energy section of the questionnaire. The first set of questions was related to interconnections (see box 1 above). Respondents showed limited familiarity with interconnections across France, Germany and Spain. As figure 2 below shows, under 39% of respondents in France, just over 47% of respondents in Spain and over 42% of respondents in Germany said they had heard about interconnections before.

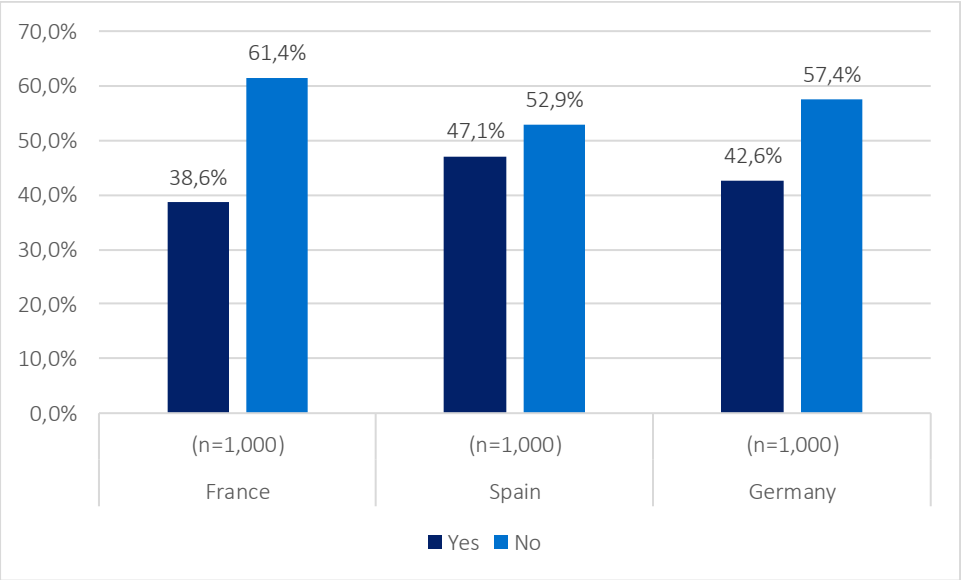


Figure 2: Familiarity with interconnections

Source: Real Instituto Elcano (2018a; 2018b)

Among respondents who were familiar with interconnections, under 61% of interviewees in France, under 53% in Germany and 64.5% in Spain could provide some description of what these interconnections are (see figure 3 below). The level of detail and accuracy in describing interconnections varies significantly across respondents. Whereas some respondents were vague or inaccurate others provided a detailed definition of interconnections that was close to that of

the EU: 'cables that allow electricity produced by (one member state's) power plants to be transported across its borders to neighbouring countries' (EC, undated). Note however that the quality of these verbatim responses is not reflected in the data (see annex 7.4 for a full transcription of responses).

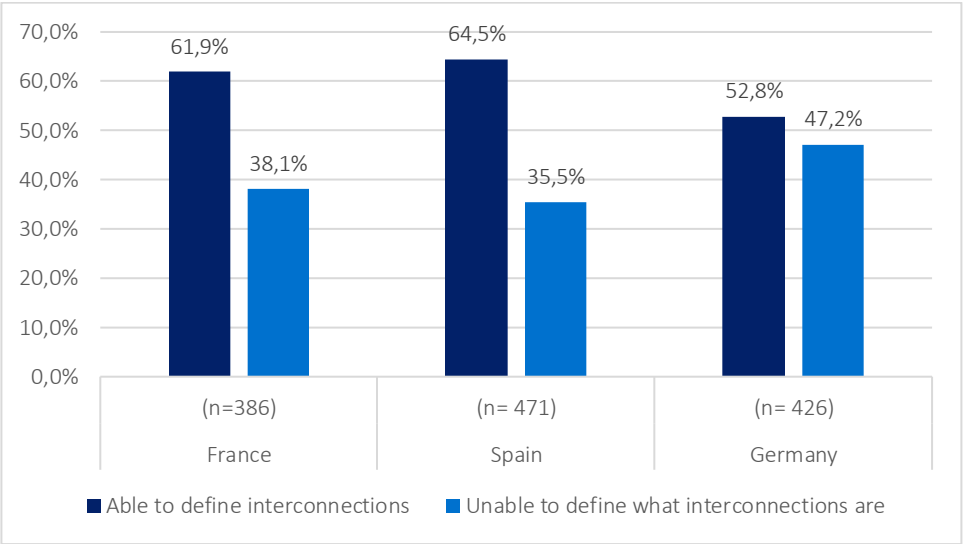


Figure 3: Knowledge about interconnections

Source: Real Instituto Elcano (2018a; 2018b)

As regards the advantages and disadvantages of interconnections it should be noted that multiple answers could be given by respondents and hence percentage figures will not add up to 100%. It is noteworthy that over 50% of responses in France, just under 50% of responses in Spain and approximately 45% of responses in Germany confirmed the previously discussed lack of knowledge regarding advantages of interconnections by stating that they did not know about particular advantages of interconnections; or affirming that interconnections had advantages, without specifying what these were.

For respondents who did identify specific advantages of interconnections (see figure 4 below), balancing power surpluses and deficits was the key advantage of interconnections, with around 20% of responses across the three countries. Lower prices as an advantage of interconnections was more frequently cited in Germany, compared to France and Spain. Environmental benefits as an advantage of interconnections was most frequently cited in Spain vs. France and Germany. Economic benefits of interconnections are mentioned by German respondents more, compared to French or Spanish respondents. Note that the numerical data for France is highlighted in order to provide a reference point while avoiding information overload in the graph.

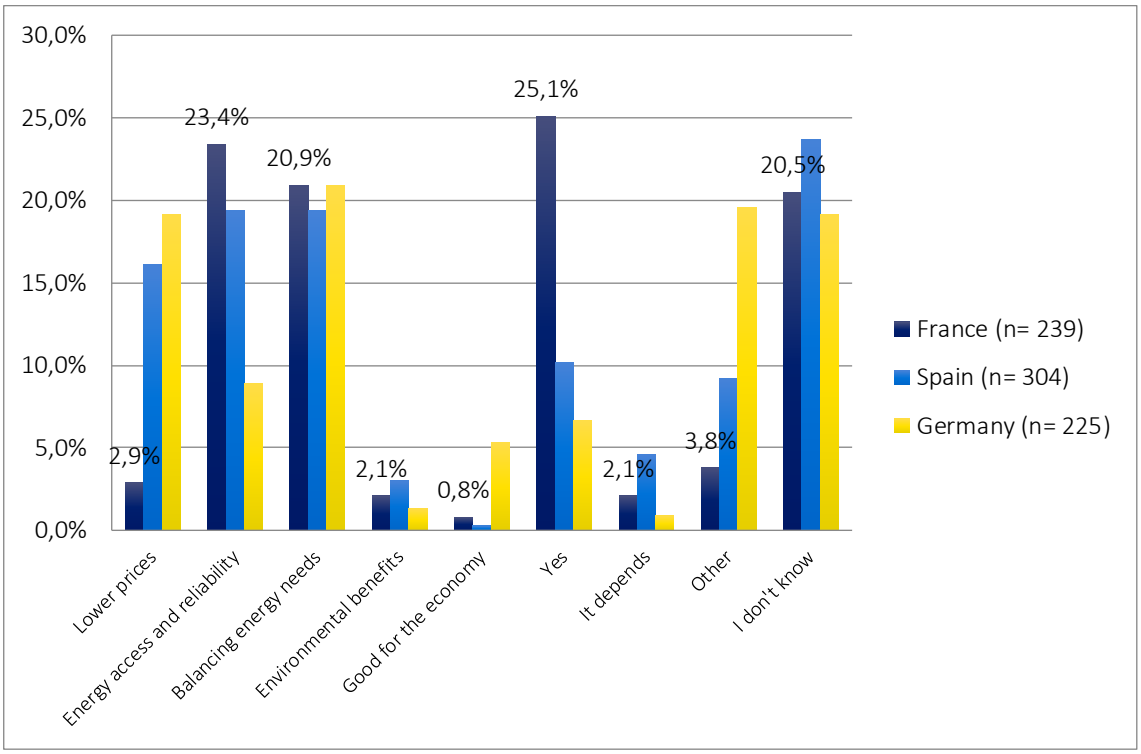


Figure 4: Advantages of interconnections (multiple answers)

Source: Real Instituto Elcano (2018a; 2018b)

The following question on the disadvantages of interconnections had a very high percentage of 'don't know' responses, revealing once more the limited information about interconnections. Higher energy prices, especially in Spain (18.8% of responses), were cited as the key perceived disadvantage of interconnections. Over 11% of responses in France alluded to increased energy dependence as a key disadvantage of interconnections. The number of responses related to energy dependence in Germany and in Spain were lower than in France, but differences are small. Environmental damages of interconnections were also cited more in France compared to Spain and Germany. Overall the number of responses that highlighted environmental damages of interconnections is small across the three countries. For further information see figure 5 below.

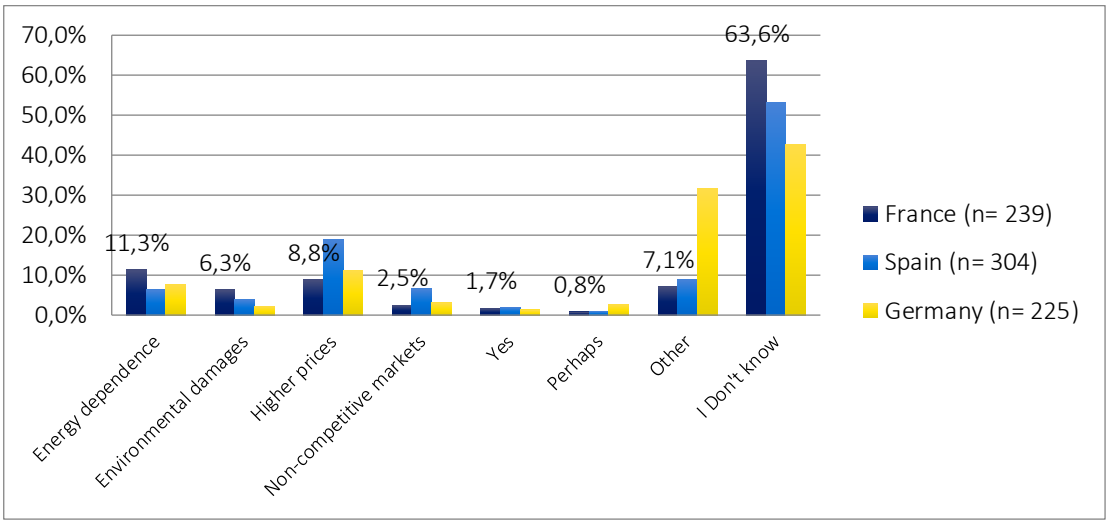


Figure 5: Disadvantages of interconnections (multiple answers)

Source: Real Instituto Elcano (2018a; 2018b)

The next question asked about prior knowledge of respondents about EU's broader goal of creating an integrated energy market (see figure 6 below). The majority of respondents were unfamiliar with the EU's broader goal of creating a fully-integrated energy market. This is so across the three countries surveyed. Prior knowledge was marginally higher in Germany as 34.2% of respondents said they had heard about this EU goal before the survey, compared to 30.1% in France and 26.4% in Spain. Additionally, knowledge about the EU's integrated energy market was lower than knowledge about interconnections (over 8% lower in France and Germany and over 20% lower in Spain when compared with data provided in figure 2 above).

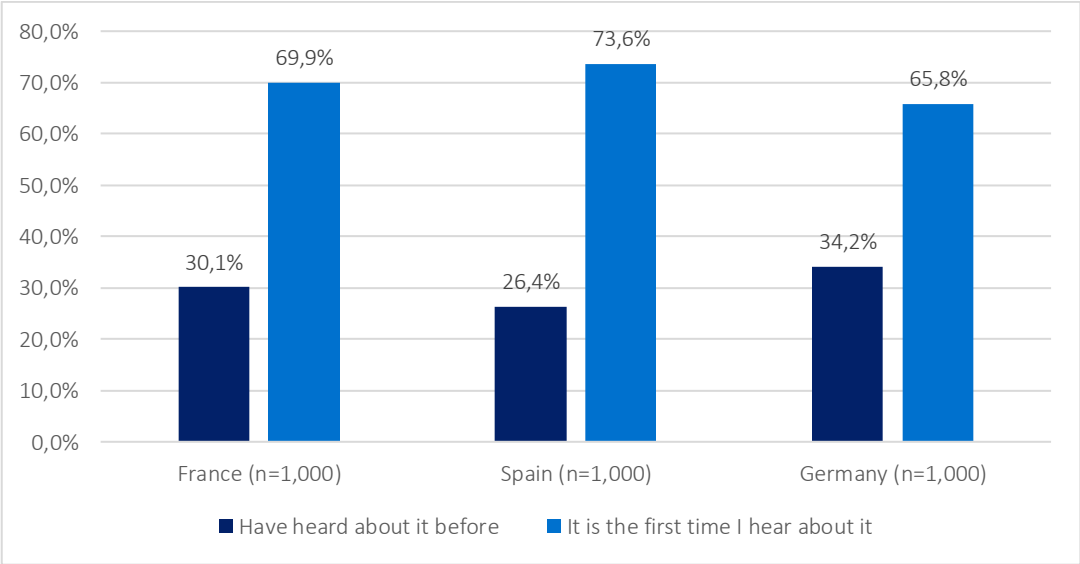


Figure 6: Familiarity with EU's goal of creating an integrated EU energy market

Source: Real Instituto Elcano (2018a; 2018b)

When asked about the advantages of an integrated EU energy market the majority of interviewees (over 76% in France, 66% in Germany and just over 61% in Spain) responded that they didn't know of any advantage. Of those who were able to describe the advantages of an integrated power market, just over 15% of responses in Spain, under 10% in Germany and 3.3% in France pointed to lower energy prices as the key advantage of an integrated energy market. Balancing energy needs was quoted as an advantage of integrated energy markets in 6.2% of French responses, 4.8% of German responses and 3.3% of Spanish answers. Energy access and reliability was cited as an advantage of EU's integrated energy market in 4.5% of German responses, 3.5% of Spanish answers and 2% of French responses. Environmental benefits were cited in just 1.8% of Spanish responses, 1.6% of French answers and just over 1% of German responses (see figure 7 below).

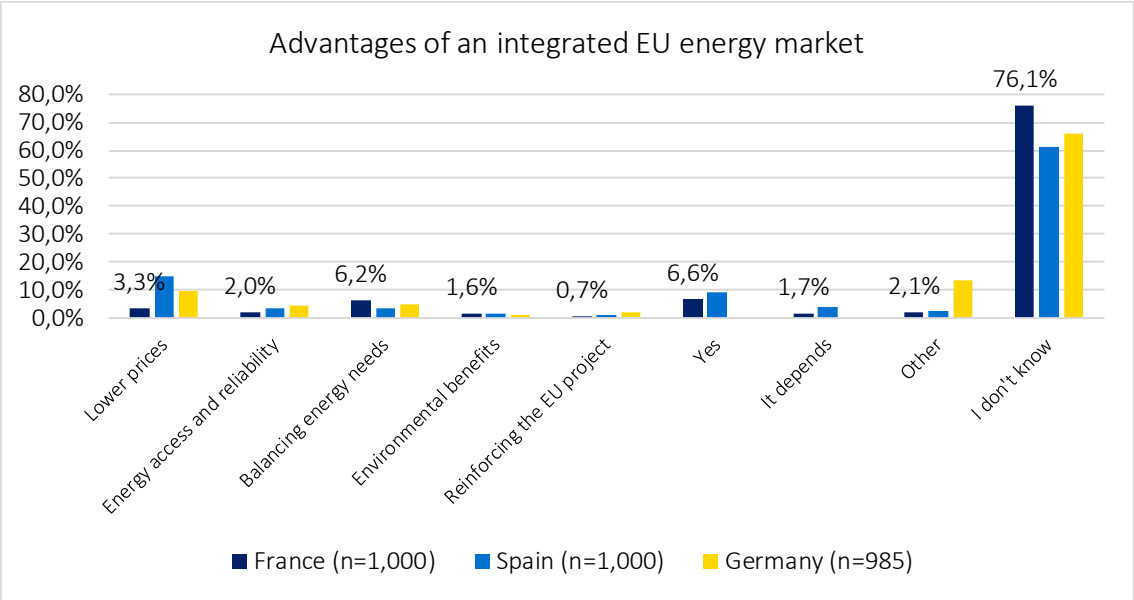


Figure 7: Advantages of an integrated EU energy market

Source: Real Instituto Elcano (2018a; 2018b)

Regarding the disadvantages of an integrated power market, figure 8 below shows once more that most people state they do not know any disadvantages. Approximately 82% of interviewees in France, 79% in Spain and 72% in Germany said they didn't know about any disadvantages of a fully-integrated power market across the EU. Higher prices were mentioned in over 7% of responses in Spain and just under 7% in Germany versus 3.4% in France. Just under 5% of responses in Germany, 3.8% in France and 2.3% in Spain indicated environmental damages as a disadvantage of integrated power markets.

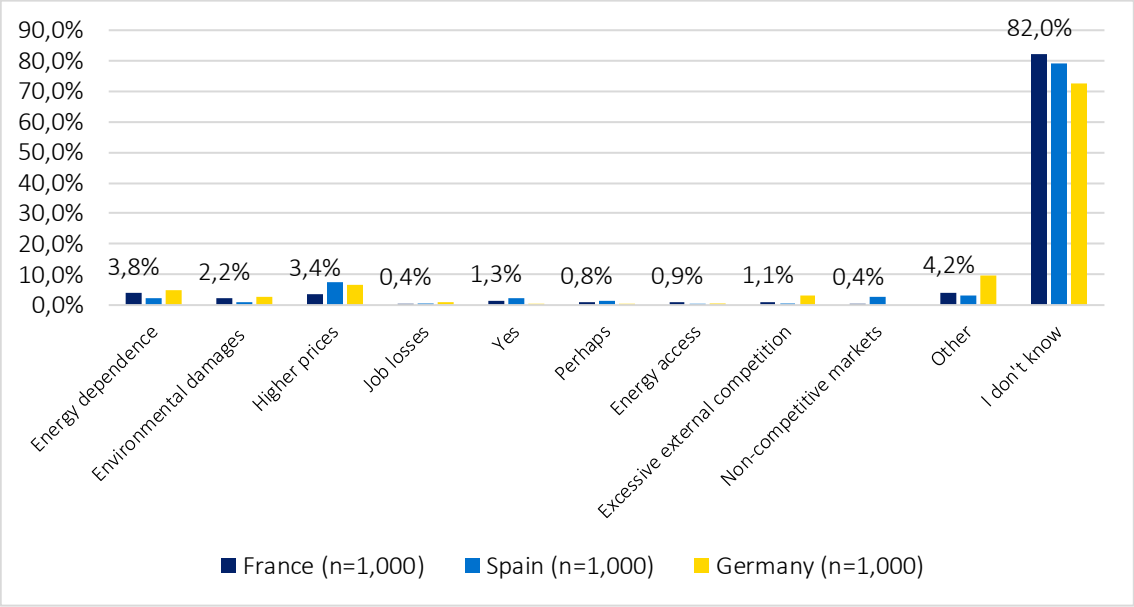


Figure 8: Disadvantages of an EU integrated energy market

Source: Real Instituto Elcano (2018a; 2018b)

As to whether respondents' countries would meet the EU agreed 2020 target of achieving 10% interconnection capacity, figure 9 below shows that a high percentage of respondents did not know. Over 53% of French respondents, almost 48% of Spanish interviewees and just over 37% of German respondents stated they did not know whether their country could reach the EU interconnection target. Over 26% of respondents in France, almost 42% in Germany and under 28% in Spain thought their country would meet EU's 2020 interconnection goal. Under 21% of interviewees in France, 24.5% in Spain and 21% in Germany thought their country would not meet the EU's interconnection target.

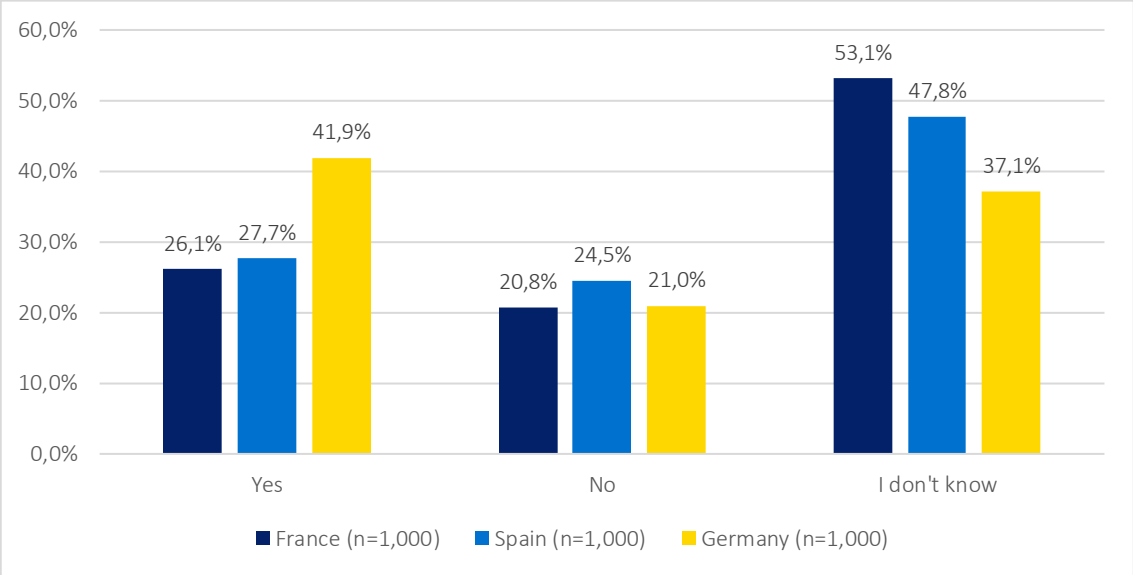


Figure 9: Belief that respondent's country would meet EU's 10% interconnection target by 2020

Source: Real Instituto Elcano (2018a; 2018b)

If we compare respondents' beliefs regarding their country's capacity to achieve a 10% interconnection level with actual interconnection levels in 2011, and with expected interconnection levels for 2020 (REE, 2017), we can again observe a general lack of knowledge by the majority of respondents on this issue. That being said, it is less so in the case of Germany were 41% of respondents correctly stated their country would meet EU's interconnection goals by 2020. See figure 10 below.

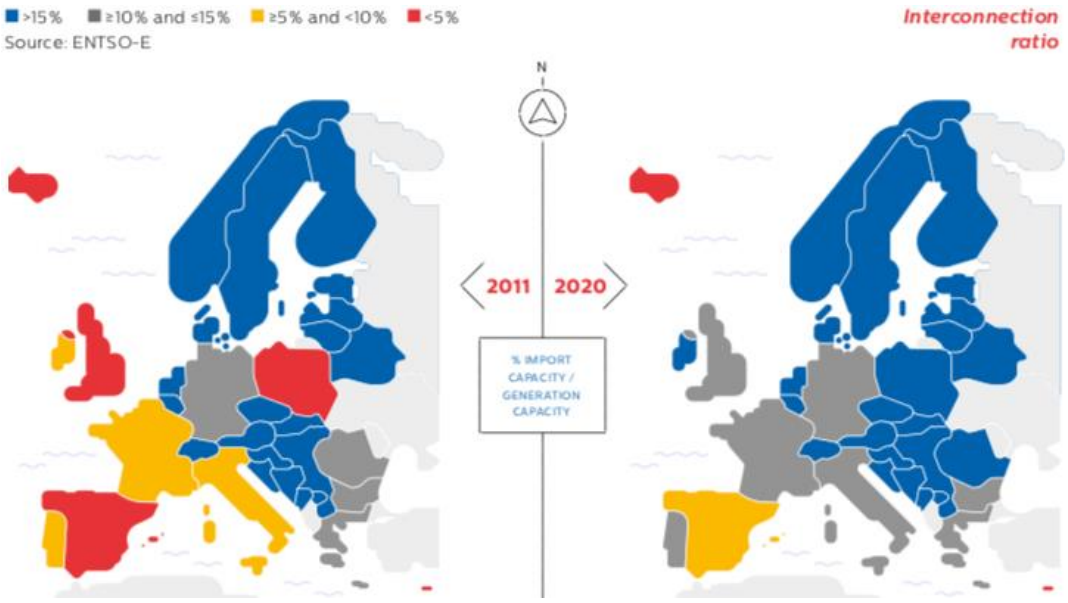


Figure 10: Interconnection ratio

Source: REE (2017: 5)

When asked about who should pay for interconnections (see figure 11 below) respondents were allowed to provide two responses so, as with previous multiple answer questions, percentages do not add up to 100%. In Spain 54,8% of responses indicated the EU should fund interconnections vs. 52.5% in France and 38,6% in Germany. In Spain 54.2% of responses, 44.4% in Germany and 33.3% in France indicated power companies should fund electricity interconnections. Connected countries as infrastructure funders was mentioned in 52.5% of responses in Germany, 44.1% in France and 31% in Spain. Interviewees across Germany, France and Spain were not keen to fund interconnections directly, with only 4% of responses in Germany stating consumers should pay, 3% in France and only 1.3% in Spain.

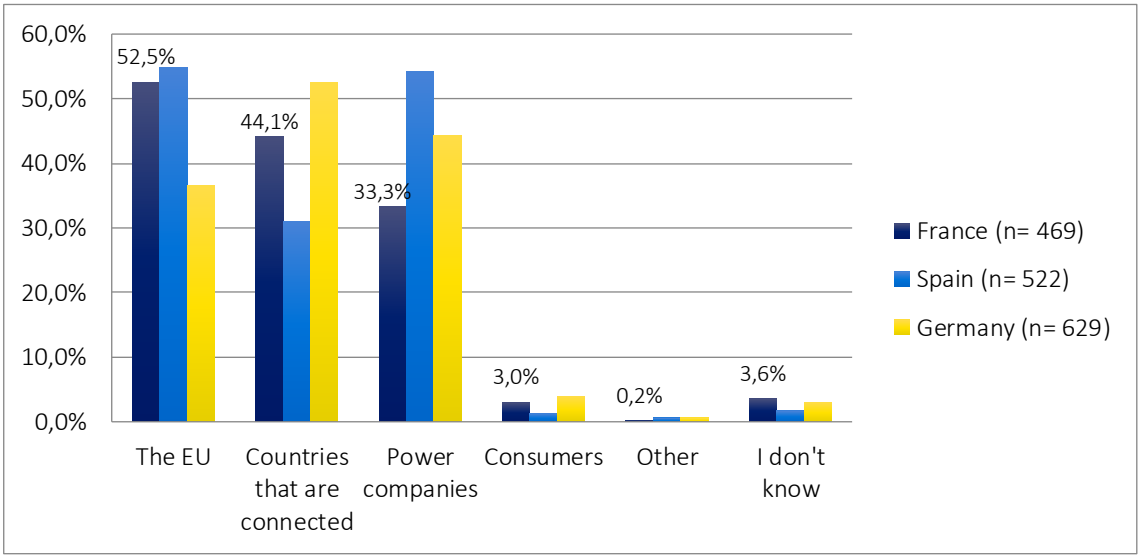


Figure 11: Who should pay for interconnections (2 answers max.)

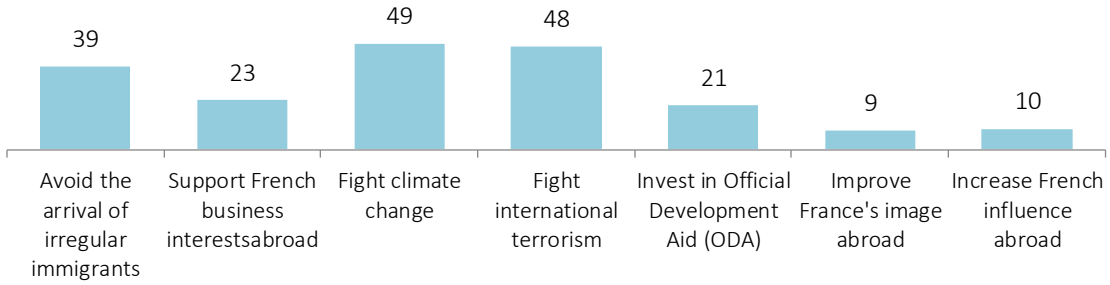
Source: Real Instituto Elcano (2018a; 2018b)

4.4 Discussion

The results from the survey highlight the limited knowledge of the general population in France, Germany and Spain regarding interconnections and the EU goal of achieving an integrated power market. Advantages and disadvantages of interconnections cited by survey respondents have been previously identified in the literature, although the number of interviewees providing information regarding advantages and disadvantages is small. Key advantages of interconnections and of an integrated power markets according to survey respondents are: balancing energy needs and ensuring security of supply (i.e. having accessible, reliable and affordable electricity).

Environmental benefits were not one of the most often quoted issues either of interconnections or of an integrated power market. This limited attention paid to environmental impacts could change in the future as information and awareness is raised, the impacts of climate change are more visible and more stringent regulation is enacted. An additional reason for future increased attention to environmental benefits is that fighting climate change is the top foreign policy

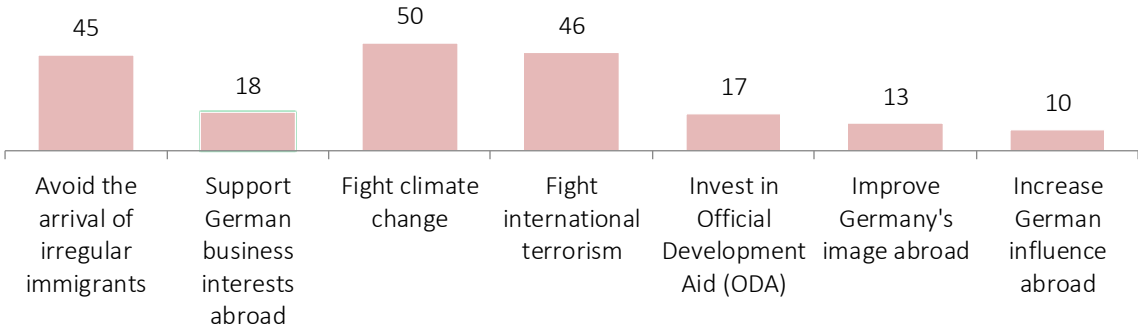
priorities across France, Germany and Spain in 2018 according to the latest barometers (Real Instituto Elcano 2018c; Real Instituto Elcano 2018d). See figures 12, 13 and 14 below.



(*) Index = (First priority *1) + (Second priority * 0,66) + (Third priority * 0,33)

Figure 12: Foreign policy goals France (weighted index)*

Source: Real Instituto Elcano (2018d: 77)



(*) Index = (First priority *1) + (Second priority * 0,66) + (Third priority * 0,33)

Figure 13: Foreign policy priorities Germany

Source: Real Instituto Elcano (2018d: 75)

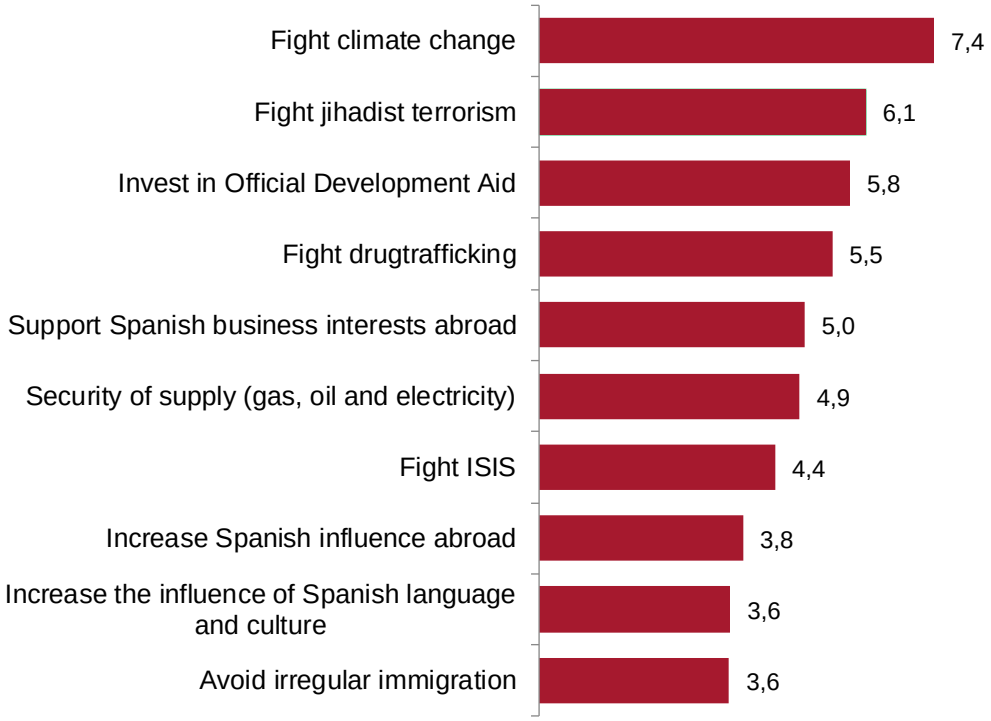


Figure 14: Foreign policy priorities Spain

Source: Real Instituto Elcano (2018d: 15)

According to respondents, key disadvantages of interconnections and of an integrated power market include: higher prices, increased energy dependence from other countries (a concern that was also raised by some of the elite interviewees), environmental impacts and non-competitive market practices (i.e. power companies behaving as monopolies or oligopolies). Citing higher prices as a disadvantage could be related to respondents thinking that they will fund infrastructures. However, from a purely economic perspective, greater supply in a freely functioning market should decrease electricity prices. Future work could include follow-up questions to try to understand citizens' views on the pricing matter.

Despite limited knowledge of interconnections, with the majority of respondents being unaware of their country's capacity to reach EU's 2020 interconnection goal, respondents exhibit clear preferences as regards who should pay for these infrastructures. The EU, power companies and governments of interconnected countries are most frequently cited institutions that should fund interconnections according to respondents. As expected, very few respondents want to pay for interconnections themselves.

These results can be of interest for policy-makers in several ways. First, lack of information should be tackled if interconnection goals and an integrated EU power market are to be accepted and supported in France, Germany and Spain. Second, surveys conducted to understand public acceptance of interconnections and future cooperation mechanisms may face the problem of "non-attitudes or pseudo-opinions". To respond to a survey in an adequate manner, participants must have heard of and understand the issue and be able to provide an opinion. Given the limited public knowledge about electricity interconnections and its potential advantages and disadvantages shown in this study, future work on public acceptance should incorporate methods to minimize the problem of "non-attitudes" (this will be discussed in task 3.3) Studies might also fail to capture the vocal opposition to large infrastructure projects that are known to cause delays and design changes. Future work could therefore include sub-samples of directly affected stakeholders and citizens as well as of market participants. Third, indirect taxation of the general taxpayer as a payment vehicle to fund large-scale interconnections might generate resistance and affect citizen support for interconnections. Fourth, pricing considerations in communication strategies and instrument design is expected to have higher impact in Spain and Germany, although the phenomenon of the *gilets jaunes* took place after the survey and hence future work could test whether French respondents' concerns as regards pricing have changed. For French citizens information on access, reliability and balancing energy needs is expected to have higher impact compared to providing this information in Spain and Germany, although differences across countries are small.

5 CONCLUSIONS

The conclusions of this deliverable can be summarised as follows. Section 1 concludes that energy geopolitics differs widely across Member States eventually involved in CSP exchange and cooperation mechanisms. For instance, Germany and Italy have developed a special relationship with Russia, eroding in some cases EU's cohesion in the aftermaths of the Ukraine crisis. France also imports Russian gas, but has a particular geopolitical situation given the dominance of nuclear energy in its electricity mix. Finally, Spain imports no Russian gas and has a more diversified portfolio of gas suppliers; its main supplier is Algeria, also a priority gas supplier for Italy and to a much lesser extent for France. Their energy relations and foreign policies tend to be closely linked, but have different priorities and path-dependencies.

It also concludes that the current European geopolitical energy landscape is still dominated by fossils, especially the gas regime. Gas geopolitics regarding Russia, and to a minor extent the Mediterranean and LNG, continues to attract most of the attention. From a Member State perspective, priorities lie in the German and Italian strategic gas alliances with Russia, and Spain's and Italy's with the Mediterranean. Novelties continue to be about gas geopolitics, from the Nord Stream 2 and East Med pipelines to gas hub competition among Member States. This is relevant because geopolitical path dependency risks substituting electricity hub competition for gas hub competition. While strategists should not abandon gas geopolitics to fully shift their attention to renewables, they must include the renewable regimes in their framing of the European geopolitical energy landscape.

The results from the literature review in section 2 may be summarised as follows. First, the impacts of the energy transition have only recently (but quite fast) emerged in the geopolitics, IR and/or IPE academic literature, which so far are still dominated by oil and gas geopolitics. Second, the literature review has identified several geopolitical externalities related to renewable energies. It tends to minimise allegedly negative externalities like new dependencies and vulnerabilities (ie. critical minerals and technologies, renewables' curse, increased infrastructure vulnerability); and to emphasise positive externalities, like increased human security and safety, renewable soft power and integration within grid communities. Fourth, academic research attracted think tanks' interest, contributing to bring renewables to the European geopolitical energy landscape. Fifth, in spite of that, official energy security strategies continue missing the geopolitical externalities of renewables, and continue framing renewables under inherited oil and gas' geopolitical narratives.

Regarding CSP, the review concludes that it is almost absent from both the academic and the policy-oriented geopolitical literature. While several papers analyse the rise and fall of the Desertec initiative (including its infrastructure criticalities), no paper explores its geopolitical externalities, such as storage, geographic and technology portfolio diversification, nor its potential contribution and role in continental (and eventually trans-Mediterranean) grid communities. Other papers address CSP institutional and political de-risking in the Global South, which are not

directly applicable to intra-EU cooperation. The literature review suggests two avenues for future research with a view on D.9.2: deepening the understanding of technological and critical minerals value chain vulnerabilities for CSP; and developing the geopolitical externalities of storage capabilities in grid communities.

Section 3 presents the findings of interviews with experts and policy-makers. As expected, the results are quite disappointing: no clear strategic vision seems to exist regarding the energy security and geopolitical dimension of RES cooperation. CSP does not even appear in governments' energy security strategies. External energy policy remains focused on gas, pipelines and hub competition (including among Member States). Governments tend to assign RES a mercantilist strategic role: reducing energy imports and increasing exports, and promoting national industries and companies. No strategic role is assigned to CSP, and there is a general lack of knowledge of RES cooperation mechanisms and the CSP technology itself. Interviews tend to confirm a significant divergence in geographical preferences within the EU, but also that Europeanisation strategies and the EU are seen as key to promote RES cooperation.

However, while renewables have hesitantly entered the European geopolitical landscape (notwithstanding the deficits in the understanding of their geopolitical consequences), CSP has not. Experts were aware of the increasing importance of renewables in geopolitics, even if few were familiar with the specifics of EU's renewable cooperation and exchange mechanisms. Nevertheless, they pointed to Europeanisation as the way forward, appreciated the role of the EU and demanded more budgetary and regulatory initiatives from the Commission. They also showed interest in the issue and recognized that the immediate urgencies of fossil geopolitics overshadowed the long-term strategic implications of renewables and, especially, CSP. But contrary to other renewable technologies, most analysts are still considering CSP an "immature" and "niche" technology pre-destined to "fringe" geopolitics (and perhaps to development cooperation schemes).

Section 4 analysed the results of a survey funded by Real Instituto Elcano conducted among a sample 3,000 citizens drawn from the general population in France, Germany and Spain. Citizens were asked about their familiarity with interconnections, their knowledge about the EU goal of achieving an integrated power market, advantages and disadvantages of interconnections and of achieving an integrated power market, whether they thought governments would meet EU's 10% interconnection goal for 2020 and about who should pay for interconnections. Interconnections and an EU integrated power market were used in the survey as enablers of renewable cooperation with which respondents could be familiar (compared to RES cooperation mechanisms).

The key highlights of the survey results are as follows: there is a significant lack of knowledge regarding both interconnections and the goal of achieving a fully-integrated power market. Key advantages of interconnections cited by respondents are similar to those cited for an integrated power market and are aligned with those found in the literature. The same is true for key disadvantages of interconnections and of achieving an integrated power market. On the

advantages, balancing energy needs and ensuring security of supply (access to energy, reliability and affordable prices) were key for survey respondents. On the disadvantages, higher prices (potentially due to having to fund interconnections) and energy dependence from third countries were the most often cited responses. Finally, respondents had relative clarity as regards the institutions that should fund interconnections. The EU, power companies and governments of connected countries were the preferred funders of interconnections across the three countries studied vis-à-vis consumers.

If European interconnection and integrated power market goals are to be achieved, future policy initiatives should consider fostering greater understanding of these by citizens while constructively engaging with affected communities. Careful design of policy instruments is also advisable to avoid citizen rejection of both interconnections and EU's integrated power market.

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7 ANNEXES

7.1 Elite interview invitation letter

H2020 Research Project MUSTEC

Semi-structured interview request letter

The project

In the light of the EU 2030 Climate and Energy framework, ***MUSTEC- Market uptake of Solar Thermal Electricity through Cooperation*** aims to **explore drivers and barriers for the *deployment* of concentrated solar power *(CSP)*** projects in Southern Europe, which are potentially capable of supplying renewable electricity on demand to Central and Northern European countries. The project will also identify future CSP cooperation opportunities. It also seeks to make recommendations to overcome barriers to CSP deployment.

Elcano Royal Institute's contribution to this project entails exploring the energy geopolitical landscape in general, how energy geopolitics influences both energy policies and the functioning and configuration of European energy markets. Elcano seeks to understand Germany's external energy policy preferences regarding renewables and finally regarding CSP. Drivers and barriers of renewables and CSP deployment will be analysed and the role of the EU in RES and CSP deployment and cooperation mechanisms will be discussed.

Methods

The project uses a case study approach and analyses two producers (Italy and Spain), a transit country (France) and Germany as importer country. Qualitative and quantitative research methods will be employed to meet the above stated aims.

Interview request

We would therefore be very grateful if you could agree to be interviewed on the 19th of October 2018. The interview will last approximately 30 minutes. Your responses will be used for the sole purpose of this research project and they will be anonymised. Should you wish to receive the results of the project we would be delighted to share these with you, once the European Commission has approved the deliverables.

7.2. Elite interview guideline

H2020 Research Project MUSTEC

Semi-structured interview guide

The project

In the light of the EU 2030 Climate and Energy framework, ***MUSTEC- Market uptake of Solar Thermal Electricity through Cooperation*** aims to **explore drivers and barriers for the *deployment* of concentrated solar power *(CSP)*** projects in Southern Europe, which are potentially capable of supplying renewable electricity on demand to Central and Northern European countries. The project will also identify future CSP cooperation opportunities. It also seeks to make recommendations to overcome barriers to CSP deployment.

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Methods

The project uses a case study approach and analyses two producers (Italy and Spain), a transit country (France) and Germany as importer country. Qualitative and quantitative research methods will be employed to meet the above stated aims.

We would therefore be very grateful if you could agree to be interviewed during the first week in June 2018. The interview will last approximately 30 minutes. Your responses will be used for the sole purpose of this research project and your responses will be anonymised. Should you wish to receive the results of the project we would be delighted to share these with you, once the European Commission has approved the deliverables.

The remaining sections provide a short introduction to the geopolitical background as well as the key questions we will formulate.

Geopolitical background

Energy geopolitics differs widely across the countries that are used as case studies in MUSTEC. For instance, Germany and Italy have developed a special relationship with Russia, eroding in some cases EU's cohesion in the aftermath of the Ukrainian crisis. France also imports Russian gas, but has a particular geopolitical situation given the dominance of nuclear energy in its electricity mix. Finally, Spain imports no Russian gas and has a more diversified portfolio of gas suppliers; its main

supplier is Algeria, also a priority gas supplier for Italy and to a much lesser extent for France. Their energy relations and foreign policies tend to be closely linked, but have different priorities and path-dependencies.

These differences are hypothesized to give rise to divergent preferences in their energy policies (domestic and external) that may influence European renewable cooperation patterns. From a political perspective, it could also influence the capacity of the Commission to enforce the cross-border measures to achieve the 2030 EU's renewable target (32% by 2030).

Questions

A. General questions on external energy policy

1. What are the general external energy policy preferences of your country? (if prompt needed state energy security – access and affordable prices-, environmental, other)
2. To what extent are your countries' external energy policy preferences aligned with EU's policies? Are there any significant divergences?

B. Questions on external renewable energy policy

3. What role do renewable energies play within your country's external and energy security strategies? (if prompt needed mention the reduction of energy dependence, meeting climate and energy commitments, building a green reputation, acquiring social legitimacy, etc.)
4. I would now like to discuss renewable cooperation mechanisms such as statistical transfers, joint projects and joint support mechanisms.

Types of Cooperation Mechanisms

Articles 6 to 11 of the Renewable Energy Directive (2009/28/EC on the promotion of the use of energy from renewable sources) introduce Cooperation Mechanisms. They provide Member States with the option to agree on cross-border support of RES and to make use of another country's more cost-efficient RES potentials. By joining forces, Member States may explore potentials which otherwise would have remained untapped and achieve efficiency gains in view of their binding 2020 renewable energy targets.

The RES Directive introduces different options for cooperation between Member States: *Statistical transfer Joint projects between Member States Joint projects with third countries Joint support schemes*

a. What is the relevance assigned by your country to EU's renewable cooperation mechanisms?
b. How likely is your country to participate in cooperation mechanisms?

   c. Which are the key advantages and disadvantages of the above mentioned cooperation mechanisms? (mention physical interconnections and integration of EU legislation, if respondent fails to discuss these).
   d. Which (geo)political drivers and barriers of renewable cooperation mechanisms would you like to highlight?
5. What role do you believe the EU plays in fostering renewable cooperation mechanisms?
6. What role do you believe the EU should have in fostering renewable cooperation mechanisms?

C. <u>Specific questions on CSP deployment and cooperation mechanisms</u>

7. What role does CSP currently play within your country's external and energy security strategies?
8. What role could CSP play in the future within your country's external and energy security strategies?
9. What are the policy preferences of your country regarding CSP deployment?
10. What are the policy preferences of your country regarding CSP cooperation mechanisms?
11. How likely is your country to participate in CSP cooperation mechanisms?
12. Which MS do you think your country would prefer to participate with?
13. Which (geo)political drivers and barriers for CSP cooperation mechanisms would you like to highlight?
14. Which role has the EU (Commission) played in fostering CSP cooperation mechanisms?
15. Which role do you think the EU (Commission) should play in fostering CSP cooperation mechanisms?
16. Given all the above topics we have discussed, is there anything you would like to add that we have not touched upon today?

I would like to thank you for your time and insights. Let me know if you wish to receive the results of the project so I can forward these to you once they are ready.

7.3. Questionnaires

En azul: Comentarios para programación

El cuestionario irá sin la numeración de las preguntas

Francia/España: se adaptará este texto para cada uno de los países

ESTUDIO "ESPAÑA Y FRANCIA ANTE LA UNIÓN EUROPEA": CUESTIONARIO

Estamos realizando un estudio sobre algunos aspectos de la situación nacional e internacional. Le agradecemos su colaboración. Sólo serán unos minutos

CONTROL DE CUOTAS: Muestra proporcional a estas tres variables

- Sexo
- Edad
- Comunidad Autónoma/Región

1.- Para empezar, ¿cómo diría usted que es la situación actual del país?

4. Muy buena
3. Buena
2. Mala
1. Muy mala
9. No sé, no tengo opinión

2.- En general, ¿con qué frecuencia habla con amigos y familiares sobre…?

	Con bastante frecuencia	Rara vez	Nunca	No sé, no tengo opinión
Temas de política local	1	2	3	9
Temas de política nacional	1	2	3	9
Temas de política europea	1	2	3	9

3.- ¿Me puede decir, de 0 a 10, hasta qué punto se siente usted …

No me siento nada **Me siento mucho**

De su ciudad o pueblo0 1 2 3 4 5 6 7 8 9 10
De su región
De España/Francia
Europeo

4.- ¿Le parece que entiende usted cómo funciona la Unión Europea?

1. Sí
2. A medias
3. No
4. NS/NC

5.- ¿Diría usted que la pertenencia de Francia/España a la Unión Europea, en términos generales, es positiva o negativa para su país?

1. Positiva
2. Negativa
3. Neutra, ni positiva ni negativa
4. NS/NC

6.- En una escala de 0 a 10, ¿qué grado de confianza tiene usted en las siguientes instituciones?

	Ninguna confianza	Mucha confianza
Los medios de comunicación		
El gobierno de España/Francia	*IDEM PREGUNTA 3*	
La Comisión Europea		
El Parlamento de (Francia/España)		
La Iglesia católica		
El Parlamento europeo		
El ejército		

7.- ¿Recuerda de memoria cómo se llama el actual presidente de la Comisión Europea?

No lo sé, no lo recuerdo …… 9

8.- En su opinión, ¿qué sería mejor para España/Francia?

1. Seguir en el euro
2. Salir del euro

3. No sé, no tengo opinion

9.- Cree Vd. que en estos temas deberían existir políticas comunes de la Unión Europea o que deberían ser sólo competencia de cada Estado?

	Políticas comunes de la Unión Europea	Sólo competencia de cada estado	No sé, no tengo opinión
El seguro de desempleo	1	2	3
Las normas bancarias	1	2	3
La política fiscal, los impuestos	1	2	3

10.- ¿Cree usted que la Unión Europea debe dedicar dinero al rescate de países de la Unión que se encuentren en una crisis económica grave?

1. Sí, siempre
2. Sólo si esos países aceptan las reformas que la Unión Europea dicte
3. No, nunca
4. No sé, no tengo opinion

11.- ¿Cuáles cree usted que son los principales logros de la Unión Europea? (máximo tres respuestas)

1. El euro
2. La posibilidad de viajar libremente por Europa
3. La posibilidad de vivir y trabajar en otro país de la UE
4. El programa Erasmus
5. La Política Agraria Común
6. La paz entre los Estados europeos
7. Las ayudas regionales
8. La política exterior común
9. Otras respuestas (especificar) _____
98. Ninguno *(Respuesta única)*
99. No sé, no tengo opinión *(Respuesta única)*

12. ¿Cuáles diría usted que son las principales desventajas de pertenecer a la Unión Europea? (Máximo tres respuestas)

1. No hay desventajas *(Respuesta única y filtra a Pregunta 13)*
2. El euro
3. La llegada de inmigrantes de otros países de la UE
4. La llegada de refugiados
5. La pérdida de soberanía **francesa/española** sobre muchos temas

6. La competencia comercial con otros países de la UE
7. La burocracia europea
8. Otras respuestas (especificar)
99. No sé, no tengo opinión *(Respuesta única)*

13. ¿Cuál cree usted que debería ser el principal objetivo de Francia/España en su relación con la Unión Europea? ¿Y el segundo más importante?

		Primero	Segundo
Aumentar la influencia **española/francesa**		1	1
Evitar la inmigración irregular		2	2
Hacer de Europa una potencia con más influencia en el mundo		3	3
Conseguir más ayudas para la agricultura		4	4
Cambiar la política económica europea		5	5
Defenderse de la competencia comercial de China		6	6
Aumentar la colaboración para luchar contra el terrorismo		7	7
Aumentar la colaboración para luchar contra el cambio climático		8	8
Otros (especificar) _____		9	9
No sé, no tengo opinión	99	99	

No preguntar por el segundo

14.- ¿Qué tres países cree que deben ser los principales aliados de España/Francia dentro de la Unión Europea? *(En la versión francesa, poner también en orden alfabético, respetando el código original)*

	Primero	Segundo	Tercero
Alemania	1	1	1
Austria	2	2	2
Bélgica	3	3	3
Bulgaria	4	4	4
Chipre	5	5	5
Croacia	6	6	6
Dinamarca	7	7	7
Eslovaquia	8	8	8
Eslovenia	9	9	9
España ***(Sólo en Francia)***	10	10	10
Estonia	11	11	11
Finlandia	12	12	12
Francia ***(Sólo en España)***	13	13	13
Grecia	14	14	14
Hungría	15	15	15
Irlanda	16	16	16

Italia	17	17	17
Letonia	18	18	18
Lituania	19	19	19
Luxemburgo	20	20	20
Malta	21	21	21
Países bajos	22	22	22
Polonia	23	23	23
Portugal	24	24	24
Reino Unido	25	25	25
República Checa	26	26	26
Rumanía	27	27	27
Suecia	28	28	28
No lo se, no tengo opinión	99	99	99

15.- Dentro de la Unión Europea hay países más influyentes que otros. ¿Cuáles diría usted que son los cuatro países más influyentes? *(En la versión francesa, poner también en orden alfabético, respetando el código original)*

	Primero	Segundo	Tercero	Cuarto
Alemania	1	1	1	1
Austria	2	2	2	2
Bélgica	3	3	3	3
Bulgaria	4	4	4	4
Chipre	5	5	5	5
Croacia	6	6	6	6
Dinamarca	7	7	7	7
Eslovaquia	8	8	8	8
Eslovenia	9	9	9	9
España	10	10	10	10
Estonia	11	11	11	11
Finlandia	12	12	12	12
Francia	13	13	13	13
Grecia	14	14	14	14
Hungría	15	15	15	15
Irlanda	16	16	16	16
Italia	17	17	17	17
Letonia	18	18	18	18
Lituania	19	19	19	19
Luxemburgo	20	20	20	20
Malta	21	21	21	21

Países bajos	22	22	22	22
Polonia	23	23	23	23
Portugal	24	24	24	24
Reino Unido	25	25	25	25
República Checa	26	26	26	26
Rumanía	27	27	27	27
Suecia	28	28	28	28
No lo se, no tengo opinión	99	99	99	99

16.- ¿Cuál cree usted que debe ser el objetivo principal a largo plazo de la Unión Europea?

1. Ser una potencia capaz de competir económicamente en el mercado global
2. Lograr el mismo nivel de bienestar en todos los países de la Unión
3. Extender a todo el mundo los derechos humanos
4. Pacificar los conflictos en las zonas cercanas a la Unión (Norte de África, Oriente Medio, …)
5. Otro objetivo: especificar _____
6. No lo sé, no tengo opinión

17.- Como sabe, dentro de la Unión Europea hay diferentes opiniones respecto a lo que debe ser su futuro. En su opinión, ¿qué cree que debe hacerse? *(Una respuesta)*

1. Devolver a los gobiernos nacionales competencias que son ahora de la Unión Europea
2. Aumentar las competencias de la Unión Europea
3. Mantener como está ahora la división de poderes entre la Unión Europea y los gobiernos nacionales
4. No lo sé, no tengo opinión

18.- En general, ¿es usted optimista o pesimista respecto al futuro de la Unión Europea?

1. Optimista
2. Pesimista
3. No lo sé, no tengo opinión

19.- Como usted sabe los británicos han votado en un referéndum a favor de que su país salga de la Unión Europea. Ahora el Reino Unido está negociando con la Unión las condiciones de su salida. ¿Cómo cree usted que debe actuar la Unión Europea en estas negociaciones?

1. Con firmeza y sin ofrecerles concesiones especiales
2. Ofreciéndoles concesiones para mantener buenas relaciones
3. No lo sé, no tengo opinión

20.- Cree usted que la salida del Reino Unido de la Unión Europea puede beneficiar de alguna forma a Francia/España.

1. Si …….. Hacer Pregunta 20A
2. No …….. Pasar a Pregunta 21
3. No lo sé, no tengo opinión ……. Pasar a Pregunta 21

20A. ¿De qué forma puede beneficiar a Francia/España? Por favor, anote todo lo que crea conveniente

_____

No lo sé, no tengo opinión, no se me ocurre nada …… 99

21.- ¿Cuál cree que son los principales problemas o desafíos que tiene ahora la Unión Europea? (Tres respuestas como máximo)

La salida del Reino Unido..... 1

El desempleo..... 2

La llegada de refugiados/inmigrantes 3

La desunión interna 4

Los problemas del euro 5

El calentamiento global 6

El terrorismo 7

La desigualdad social, la pobreza 8

El envejecimiento de la población,

el sistema de pensiones..... 9

La intervención de Rusia..... 10

Movimientos separatistas 11

El auge de la extrema derecha 12

Otras respuestas (anotar)..... 98

No sé, no tengo opinión 99

22. Respecto a la política de defensa y el gasto militar ¿me puede decir hasta qué punto está Vd. de acuerdo con esta frase?: LOS ESTADOS EUROPEOS DEBEN DEDICAR MÁS DINERO A LA DEFENSA

Muy de acuerdo …… 4

De acuerdo …….. 3

En desacuerdo …….. 2
Muy en desacuerdo …… 1
No sé, no tengo opinión ……. 9

23. ¿Qué más le pediría usted a la Unión Europea? ¿Qué le gustaría que la Unión Europea hiciera y no está haciendo ahora?. Por favor, anote todo lo que a Vd. le parece importante

No se, no se me ocurre nada, no tengo opinión ……99

COMO SABE, VIVIMOS EN UNA ÉPOCA DE GRAN RELACIÓN ENTRE CASI TODOS LOS PAÍSES DEL MUNDO, LO QUE SUELE DENOMINARSE COMO GLOBALIZACIÓN.

24. ¿Qué efectos positivos cree Vd. que tiene la globalización para Francia/España? Máximo dos respuestas)

1. Más facilidad para viajar
2. Acceso a cine, música, TV, otros aspectos culturales positivos, de otros países
3. Oportunidad para las empresas **francesas/españolas** (invierten fuera, comercian fuera)
4. Bienes de consumo más baratos
5. Bienes de consumo diferentes (frutas exóticas, por ejemplo, muebles de Ikea…)
6. Posibilidad de emigrar a otros países
7. Posibilidad de estudiar en otros países
8. Mayor inmigración
9. Ha beneficiado a China, India y otros países en desarrollo
10. La globalización reduce la desigualdad/pobreza en el mundo
11. La globalización reduce la desigualdad/pobreza en **Francia/España**
12. Mayor variedad cultural
13. Otras respuestas. Especificar: _____
99. No sé, no tengo opinión

25. ¿Y algún efecto negativo? (Máximo dos respuestas)

1. Llegan demasiadas empresas extranjeras al país
2. Las empresas **francesas/españolas** se van a países con mano de obra más barata

3. La competencia comercial de otros países arruina a las empresas **francesas/españolas**
4. Hay más paro
5. Llegan demasiados inmigrantes
6. Se pierde la identidad nacional
7. La globalización produce más desigualdad/pobreza en el mundo
8. La globalización produce más desigualdad/pobreza en **Francia/España**
9. Hay más riesgos para la seguridad/más delincuencia internacional/más terrorismo
10. Otras respuestas. Especificar: _____

99. No sé, no tengo opinión

26. Anote, por favor, si está más bien de acuerdo o más bien en desacuerdo con las siguientes frases.

	Más bien de acuerdo	Más bien en desacuerdo	Prefiero no opinar
La apertura de los mercados constituye una buena oportunidad para las empresas **francesas/españolas**	1	2	3
La liberalización mundial de la economía puede ser una amenaza para el empleo de los **españoles/franceses**	1	2	3
Las organizaciones internacionales están quitando mucha capacidad de decisión al gobierno nacional	1	2	3
El comercio libre hace que haya mejores productos disponibles procedentes del extranjero	1	2	3
La creciente presencia de películas, libros y música extranjera, está dañando a nuestra cultura nacional	1	2	3

27. En general, en temas de política europea e internacional, cree usted que España y Francia … (Elija una respuesta de cada par)

1. Suelen tener intereses comunes

2. Suelen tener intereses diferentes
3. No sé, no tengo opinión

1. Suelen ponerse de acuerdo para defender la misma posición
2. Cada uno actúa de forma autónoma sin coordinarse con el otro
3. No sé, no tengo opinión

28. Anote, por favor, los temas en los que colaboran España y Francia, según su opinión

---
No sé, no lo recuerdo, no se me ocurre nada ……..99

LA INMIGRACIÓN ES UNO DE LOS ASPECTOS EN LOS QUE EXISTE COOPERACIÓN ENTRE FRANCIA Y ESPAÑA. A CONTINUACIÓN VERÁ ALGUNAS PREGUNTAS SOBRE ESTE TEMA

29. ¿Hasta qué punto cree usted que Francia/España debe permitir que vengan a vivir a aquí personas que emigran por razones económicas desde países africanos? *Una sola respuesta*

1. Permitir que vengan muchos
2. Permitir que vengan algunos
3. Permitir que vengan muy pocos
4. No permitir que vengan
5. No sé, no tengo opinión

30. ¿Y respecto a los que piden refugio o asilo y vienen desde Oriente próximo o África? *Una sola respuesta*

1. Permitir que vengan muchos
2. Permitir que vengan algunos
3. Permitir que vengan muy pocos
4. No permitir que vengan
5. No sé, no tengo opinión

31. ¿Y respecto a los inmigrantes muy cualificados de cualquier parte del mundo? *Una sola respuesta*

1. Permitir que vengan muchos
2. Permitir que vengan algunos
3. Permitir que vengan muy pocos

4. No permitir que vengan
5. No sé, no tengo opinión

33. En su opinión ¿hay algún aspecto concreto en que deberían mejorar las relaciones de Francia con España/ España con Francia? Anote todos los aspectos que quiera destacar

_____

No se, no se me ocurre nada ……. 99

34. No todas las sociedades tienen los mismos valores éticos, hay diferencias entre los países, incluso entre los europeos. Pensando en Francia y España/España y Francia, ¿cree que ambos países comparten algunos valores diferentes a los de otros países? ¿Puede mencionar alguno? (máximo dos respuestas)

1. La igualdad de derechos entre hombres y mujeres
2. El rechazo a la pena de muerte
3. La solidaridad con los refugiados
4. El rechazo a los castigos físicos
5. La tolerancia hacia la homosexualidad
6. Otras respuestas. Especificar: _____
7. No sé, no tengo opinión

34.bis. Diría usted que el desarrollo científico y tecnológico aporta más bien ventajas o más bien desventajas para…

	Más bien ventajas	Más bien desventajas	NS/NC
La creación de empleo			
La calidad de vida			
La conservación del medio ambiente			

HABLANDO AHORA DE OTRO TEMA, EL DE LA ENERGÍA ELÉCTRICA

35. ¿Ha oído usted hablar de las interconexiones de energía entre países?

1. Si ……. Hacer Pregunta 36a
2. No …….. Pasar a Pregunta 37

36a. ¿Recuerda usted qué son esas interconexiones? Anote todo lo que se le ocurra

_____

No recuerdo, no lo sé …….. 99: Pasar a Pregunta 37

36b. ¿Tienen alguna ventaja estas interconexiones? Anote, por favor, todo lo que se le ocurra

_____
No lo se, no se me ocurre nada …….…… 99

36c. ¿Y algún inconveniente? Anote, por favor, todo lo que se le ocurra

_____
No lo se, no se me ocurre nada …….. 99

37. La Unión Europea está promoviendo la creación de un mercado europeo de la energía en el que todos los Estados estén interconectados eléctricamente. ¿Había oído hablar antes de esto o ahora es la primera vez?

1. Lo sabía ya, había oído hablar de esto ya antes
2. Lo oigo ahora por primera vez

38a. ¿Cree usted que eso tiene alguna ventaja para Francia/España? Anote, por favor, todo lo que se le ocurra

_____
No lo se, no se me ocurre nada …….. 99

38b. ¿Y alguna desventaja? Anote, por favor, todo lo que se le ocurra

_____
No lo se, no se me ocurre nada ……. 99

39. ¿Cree usted que Francia/España alcanza el nivel mínimo de interconexión eléctrica que recomienda la Unión Europea (el 10% de la capacidad de producción instalada nacional)?

1. Sí
2. No
3. No lo sé …… Pasar a Preguntas de clasificación

40. ¿Qué nivel de interconexión, en %, cree que tiene Francia/España? *(Numérica)*

___ ___ %
No lo se ……99

41. ¿Quién cree que debería pagar para construir las conexiones eléctricas entre los países europeos? (Dos respuestas como máximo)

1. La Unión Europea
2. Cada país conectado
3. Las empresas eléctricas
4. Los consumidores
5. Otras respuestas (especificar) …….
9. No lo se. *Respuesta única*

Datos de clasificación

Nivel educativo. ***El utilizado habitualmente por Toluna***

¿Cuál es su ocupación actual?

Estudiante

Trabajador/a a tiempo parcial o completo

Desempleado/a

Jubilado/a

Ama de casa

NS/NC

¿Cuántos habitantes tiene el pueblo o ciudad en la que Vd. vive habitualmente?

10.000 ó menos habitantes

De 10.001 a 100.000 habitantes

Más de 100.000 habitantes

No lo se

Cuando se habla de política, se suele considerar que una persona está más bien a la izquierda o más bien a la derecha. Pensando en las expresiones izquierda y derecha ¿En qué punto se situaría Vd., entre 0 y 10, donde el 0 representa el punto más a la izquierda y el 10 el punto más a la derecha? *Válido si no la responde*

Izquierda **Derecha**

0 1 2 3 4 5 6 7 8 9 10

***Sólo en España*: Respecto a la forma de organización territorial anote, por favor, cómo preferiría usted que se organizase España:**

1. Un Estado con un único Gobierno central sin autonomías
2. Un estado en el que las comunidades autónomas tengan menor autonomía que en la actualidad
3. Un Estado con comunidades autónomas como en la actualidad
4. Un Estado en el que las comunidades autónomas tengan mayor autonomía que en la actualidad
5. Un Estado en el que se reconociese a las comunidades autónomas la posibilidad de convertirse en Estados Independientes.....
6. No lo se
7. Prefiero no responder

MUCHAS GRACIAS POR SU INESTIMABLE COLABORACIÓN

7.4. Verbatim

The following transcribes the descriptions of interconnections as provided by respondents

1. Spain

- no lo sé
- Intercambio de energía eléctrica entre países.
- Intercambio de energias
- una conexion de estados unidos a europa
- intercambio
- energia en comun
- Cambios de energia
- suministro de energía
- energías de otros paises
- La energía eléctrica que Francia nos vende
- Compartir energia
- Gaseoductos y tendido eléctrico entre países.
- Son elmuy conjuntos de lineas electricas que comparten paises fronterizos
- Compartir entre paises
- son las conducciones de energia entre los productores y los consumidores de ducrrentes paises... se envían corriente de unos a otros
- Si a Francia le falta producción eléctrica y nosotros tenemos excedentes, se la trasferimos.
- Una forma de compartir energía en caso de necesidad
- intercambio/compraventa de energía entre paises vecinos
- Canales subterráneos de envío de gas
- que se ceden energia
- es una interconexión subterránea de energía entre francia y españa
- Enlaces electricos como el de bizkaia
- ELECTRICIDAD
- Referidas a la compra de energía por parte de los países con déficit de esta misma.
- El 27% de energías renovables
- importar-exportar electricidad
- Conexiones unidas.
- conexiones internacionales
- intercambios de energia
- posibilidad de intercambio energia entre los paises
- Grandes cables de energía que unen un país con otro
- Pues creo que se refiere a los gasoductos y transporte de petróleo, así como la venta de energía a países aliados
- si que estan comunicados todos los paises de la union

- Política común en cuanto a la producción enérgetica y su distribución entre los países miembros
- Imagino q venta de energía entre países
- Son líneas de alta tensión por dónde circula la energía de un país a otro
- necesidades de energia que tiene un pais y que a otro le sobre y se la venda
- Que cuando un país cercano necesita un extra de energía electrica o de gas natural se han creado las infraestructuras necesarias para que se las pueda suministrar un pais vecino. Se que se esta creando un gaseoducto que proporcionara gas a toda Europa para no depender tanto del gas Ruso.
- es una política que exitste entre diversosos paises de eurpoa y en america
- Conexión de energía para ahorrar
- Comercio de exceso electrico
- No recuerdo
- compartir electricidad
- la conexuines electricas entre dos paises con el fin de atender el deficit electrico de uno de los paises
- cementerio nuclear
- Si con países europeos
- que un pais puede comprar energia electrica a otro si lo necesita
- Energía producida en un país y utilizada en otro
- poder derivar excesos de produccion lectrica a la red de paises vecinos
- Pago a otros países por prestar energía
- es para garantizar la calidad y cantidad del suministro electrico
- La línea de Muy Alta Tensión que une España y Francia, o los tubos de gas que quieren unir Rusia con el norte de África
- poder pasar energia de un pais a otro
- Intercambio electrico entre paises vecinos
- Entre Francia y España por ejemplo con Energia Electrica.
- Conexiones de energía,eólica,gas,petroleo
- Interconexiones entre países para abastecerse unos a otros de energía eléctrica
- abastecerse de energia de tros paises
- optimizar el uso compartido de energía
- La interconexión subterranea eléctrica entre España y Francia creo que es uno de los mayores proyectos europeos en este sentido
- Gaseoducto
- Conexiones internacionales
- disponer de suficiente suministro energético
- vender electricidad entre paises.
- Unir esfuerzos
- Suministro de energia desde otros paises
- Comparte conexiones en varios países
- Por ejemplo los oleoductos o los gaseoductos

- Telefonia movil con idèntica tarifa que en el país de origen
- No sabría explicarlo.
- intercambio de electricidad con países vecinos
- la posibilidad para un pais de comprar energia a otro
- Servicios compartidos entre diferentes países
- gaz, electricidad
- Un pais produce y otro consume
- Sobre en uno se vende a otro
- pasar energia electrica de un pais a otro.
- hay interconexión entre España y Francia,en energía eléctrica.
- compra o venta de energias segun se presente
- Quer las compañías productoras de electricidad traspasan las fronteras suministrando a los países vecinos
- Compr venta de la fabricación de sus energias
- conexiones internacionales
- La importación o exportación de energía cuando hay escasez de la misma a un lado u otro de la frontera.
- LA TRASLACION DE ENERGIA DE UN PAIS A OTRO
- Compensacion mutua de energia electrica
- el pasar energia de otro pais
- MATT
- CESIONES DE ENERGÍA DE MUY ALTA TENSIÓN ENTRE LOS PAÍSES SEGÚN LAS NECESIDADES DEL CONSUMO PROPIO.
- conexion entre la red de un pais y otro
- sobre la energía nuclear
- Energía eléctrica (o gasística) es trasvasada entre países, del que tiene al que la necesita. Del que produce al que le urge.
- A traves de las fronteras
- Trasvases de energia de un pais a otro
- redes nacionales interconectado con otros paísea, vender exceso de elctricidad a otros paises
- mayor seguridad del suministro
- Se envía energía de unos a otros paises
- traspaso de energia electrica entre naciones
- vender electricidad
- Las interconexiones eléctricas sirven para un funcionamiento mas eficaz del sistema eléctrico entre países
- venden electricidad de unos paises a otros nosotros yu creo que solo con francia los demas yo creo queno a lo mejor en algun muy preciso pero poca cosa
- Líneas de muy alto voltaje
- Si hay estados que tienen un mercado electrico muy potente se lo venden a otros que estan mas deficitarios

- Por ejemplo en electricidad, y en gas
- consumir la e electrica ue produce otro pais, cuamdo es necesario
- vender energia de un pais a otro
- Compartir energia
- Compra-venta de energia
- transferencia de enrgia electrica entre francia y españa cuando es necesario
- Compramos electricidad a Francia
- la compra de energia a francia
- MAT
- Transferencias de energia de todo tipo transfrontereras
- la utilización de la misma energía
- El uso de la energía sobrante o que el otro pais puede necesitar
- intercambian energias y redes de comunicacion
- LOS ENLACES PARA INTERCAMBIO DE SUMINISTROS
- INTERCAMBIO DE ENERGÍAS
- Conjuntos de subestaciones y líneas que permiten intercambio de enegía entre paise vecinos, con grandes ventajas para lo que se conecten
- Traspaso de energias diversas entre ambos paises
- facilitar energia a otro pais
- Interconectar los sistemas de suministro
- eléctrica y gas
- Consumismo electricidad Francesa
- Francia suministra parte de la energia electrica consumida en España
- venta de energia entre paises
- LA ENERGIA ELECTRICA NO SE PUEDE ACUMULAR ES IMPORTANTE QUE LOS PAISES SE CONECTEN ENTRE SI Y PUEDAN EN HORAS DE BAJA DEMANDA EN UNO Y ALTA EN OTRO SE PUEDAN TRANSFERIR ENERGIA, Y AUNQUE NO ES EL TEMA ENOTROS TIPOS DE NERGIA SUCEDE QUE ALGUNOS PAISES TIENEN SUFICIENTE PRODUCCION EJ GAS NATURAL Y OTROS CARECEN DE LLOS ASI ES FACTIBLE INTERCONECTARSE Y SATISFACER LA DEMANDA
- ceder energia sobrante
- acuerdos para solucionar problemas entre paises
- POR EJEMPLO CON FRANCIA EN ENERGÍA NUCLEAR
- Mejora de servicios
- vender enrgia de unpais a otro
- Disponer de mayor intercambio energético
- ofrecer la energia que sobra en un pais
- Compartir energías
- Seguridad del suministro,Mayor estabilidad y garantia de la frecuencia, mejor aprovechamiento, facilitan los intercambios comerciales
- El intercambio de Energia electrica
- suministros de electricidad y gas

- La energía queda conectada entre los países
- La posibilidAD DE INTERCAMBIO DE ENERGÍA ENTRE DIFERENTES PAISES.
- Intercambio de energías
- Por ejemplo España vende energía eléctrica a Francia
- La cesión de energia entre paises distintos
- intercambio de producion y abastecimiento entrepaises
- alianzas
- La interconexión de líneas eléctricas de alta tensión en casos de deficit enérgetico de una de las partes
- Si hablamos de energía eléctrica, creo que se trata de poder vender a otros países la energia sobrante
- la venta entre paises el excedente electrico
- La posibilidad de importar-exportar electricidad desde y hacia otros países de la UE
- Energia nuclear
- comprar energía
- se vende energia de un pais a otro
- cooperacion energetica
- Compra-venta de energía
- que hay plantas de e. electrica en Francia que proveen a España y viceversa
- trasvase de escedentes energeticos
- Se traspasan excedentes de producción, me parece.
- LINEAS DE ALTA TENSION QUE TRANSPORTAN ENERGÍA
- traslado de energía de otro país
- Sé vende energia de un país a otro
- Energia producida en un pais que se consume en otro
- EMPRESAS UNIDAS PARA DISTRIBUIR ENERGIA EUROPEA
- energia entre paises
- Acuerdo energetico
- relación entre varios países
- son puentes entre paises para vender energia entre ellos cuando haga falta
- red de conexiones electricas para transportar electricidad de unos paises a otros
- Europeas de líneas de alta tensión y renovables
- La electricidad excedente de un país se transfiere de otro país y así no se desperdicia. Ultimamente, con el auge de las energías renovables, que no son constantes y son caprichosas, son muy necesarias esas interconexiones para aprobecharlas.
- gas natural
- Una red de intercambio de enrgía l´ctrica entre países
- Compramos energía a otros paises
- Aprovechar los recursos naturales para producir energia.
- compra y venta de electricidad
- Se que entre Francia y España hay unos cables con los que nos conectamos a ellos y les compramos energia.

- malentendisos
- Traer electricida a.
- la red siepac
- energia
- conexiones intercontinentales
- COMPRA-VENTA DE ENERGIA ELECTRICA
- Oleoductos
- que unos se pasan energia a otros a cambio de dinero
- ELECTRICIDAD, GAS..
- compartir energia entre paises
- Energía nuclear
- la venta o traspaso de energia entre paises
- Conexiones electricas que permiten importar o exportar electricidad de un pais a otro
- Canales de distribución de electricidad, gas...
- Gas del norte de africa,
- francia vende electricidad a los demas
- Traspaso de suministro de energia
- Un unos enlaces que permiten conectar las líneas eléctricas entre 2 países próximos y así en el caso de que en un momento puntual unos de esos países tenga un déficit en la producción de energía pueda comp
- conexiones de electricidad entre ambos países
- energia
- Interconexiones energéticas
- poder traspasar energia libremente
- excedentes
- oleoductos gasoductos...
- coneciones inetrnacionales para comprar/vender energía
- los paises productores venden electricidad a otros
- LINEAS ELECTRICAS
- comprar o vender electricidad a otro país
- TRASPASOS DE ENERGIA
- pues el paso de energia electrica de un pais a otro
- Creo que es la demanda de energia electrica en periodos determinados a otros paises, en nuestro caso a Francia
- conectar las redes eléctricas de ambos paises
- que nos llega energía eléctrica que se produce en otros países
- mayor eficiencia, mejor suministro
- Traspaso de energía de un país a otro
- FRANCIA CON ESPAÑA
- Venta de energía de un país de origen (Francia) hacia otro receptor (España).
- Las interconexiones de energia son líneas de alta tensión para poder exportar/importar

energía de otros países y poder más competitividad entre empresas. Esto favorece a los ciudadanos que podrán tener un precio más barato. Muchas empresas están en contra y forman lobbys, como por ejemplo Iberdrola
- puntos donde ser comparte la producción electrica de cada pais
- Red eléctrica interconexión subterránea 370 kmd,de España (golgo Bizcaia) Francia.
- UNIFICCION DE LEYES SOBRE EL TEMA
- Compartir energia
- GASEODUCTOS
- Redes internacionales de transporte de electricidad que permiten el trasvase de energía eléctrica entre distintos países...
- la compra de electricidad a alemania y francia
- infraestructuras que permiten transportar la energía a través de las países limitrofes
- poder dar o recibir energia de la red cuando se necesita
- Colabotacion
- Favorece el intercambio de energía
- energia de frania mas brta
- capacidad de intercambio entre paises
- sumionistro de energia entre paises
- intercambio de energia electrica
- Comprar energía a otros países
- Interconexiones internacionales para compartir energía en caso de necesidad, o para comerciar
- son un conjunto de infraestructuras que permiten el intecambio de energía entre paises vecinos
- Pasar energía eléctrica de un país a otro
- COMPRAR O VENDER ENERGIA
- acuerdos para poder intercambiar energia
- Vender electricidad a otros paises
- inportar energia electrica
- la electricidad entre europeos
- poder comprar y vender energía entre países
- electricas gas r
- la posibilidad de recibir o enviar energía electrica a otros miembros de lal Union de acuerdo a las necesidades y posibilidades de cada uno de los implicados
- La posibilidad de que un pais suministre energia electrica, gas etc a otro pais.
- Trasvase de energia entre ambos
- Estructuras eléctricas compartidas por varios países como España y Francia.
- la del tren
- compra-venta de energia
- compra de energia electrica
- Una misma interconexión que beneficie a ambos países y reduzca costos
- Intercambio de electricidad que favorece el suministro y permite implantar las energías

renovables
- Las que transfiere energía, datos
- Redes inalámbricas conectadas entre sí pero a nivel mundial
- reparto de energia
- Por ejemplo, si hay una demanda energética superior a la que un país puede satisfacer, estas interconexiones permitirían suplirla con energía de un país vecino.
- Aseguran el suministro de energía y deberían tenedor a un único mercado, teniendo los mismos deberes y derechos todos los miembros del estado europeo
- españa vende electricidad a marruecos
- Ayuda entre países en el suministro energético
- Compartir producción con todo lo que conlleva
- Algo he oído con Francia
- He oído hablar, querían hacer una conexión entre España y Francia, para vender electricidad
- Contribución a la seguridad y continuidad de las energias
- relaciones entre paises
- comprar y vender electricidad entre paises según la demanda energética
- comercilalización entre unos paises y otros
- cuando un pais tiene excedente en energia electrica la vende segun demanda
- Comprar energia..
- Suministro Eléctrico conectado entre paises
- intercambio de electricidad
- Compra de energía a paises extranjeros
- Intercambio energético
- intercambiar electridad
- La utilización de cualquier conexión de un pais por otro
- compra y venta de energía entre países
- CONEXIONES ENTRE LAS REDES DE ENERGÍA DE PAISES VECINOS
- produccion mutua y venta mutua
- submarinas, terrestres aereas. Formas de distribuir excedentes o falta de energía electrica
- Posibilidad de comprar o vender
- INTERCONEXION DE REDES,TENDENCIAS TECNOLOGICAS Y DEL MERCADO,REPETIDORES,HUBS,SWITCH,BRIDGES
- CABLES SUBMARINOS, USO DE SATÉLITES COMPARTIDOS
- VENDER ENERGÍA A OTROS PAÍSES
- MAYOR CAPACIDAD DE INTERCAMBIO ELECTRICO ENTRE PAISES VECINOS
- compra de energia, trasvases
- MATT
- union electrica españa francia
- electricas
- El poder compartir electricidad entre diferentes países

- pasar electricidad de un pais a otro
- COMPRA DE ENERGIA Y CONEXION EN EL ENVIO DE LA MISMA
- compra-vent energia
- comprar y vender energía entre los países
- interconexion electrica subterranea entre españa y francia
- Venta de energia entre paises
- Conectar la red eléctrica
- Gaseoducto
- redes de energia que van de un pais a otro
- Mejorar el aprovechamiento de la energia, facilita el intercambio comercial
- Se trata de aprovechar los recursos de unos países para otros. Por ejemplo, España, en ocasiones, abastece a Francia de energía eléctrica
- INTEGRACION DE LAS ENERGIAS,SERVICIOS DE TELECOMUNICACIONES
- Conexiones de electricidad que permiten la venta y compra de energía sobrante de un país a otro
- integración energética
- Redes como la de Gas que pasan provenientes de Rusia.
- no
- Zonas comunes entre dos países para obtener energía
- Francia y España
- la electricidad entre los diferentes paises europeos
- la de gas y electricidad
- Ayudas entre países

2. France

-
- liaison permettant des apports mutuels d'electricité
- Vente de courant électrique pour pallier une forte consommation
- Comme aujourd'hui, une sur-demande de Kw en achetant à l'étranger des Mw
- Basculement d'énergie d'un pays à un autre en cas de besoin, c'est le cas pour la France avec l'Allemagne et l'Espagne
- achat d'électricité
- permet de s'acheter de l'énergie électrique en cas de tension de consommation
- Produire et revendre de l'energie à d'autres pays
- permet une assistance mutuelle entre pays voisins en cas de défaillance
- échange de produits énergetiques
- possibilité de recevoir ou de donner du courant électrique en fonction de besoins
- électricité et gaz
- partage de l'electricité entre pays voisins
- electricite
- echanges

- Communication
- L'allemagne,La suisse,l'Italie
- possibilité de vendre de l'électricité à d'autres pays
- électricité
- vendre ou acheter via le réseau de chaque pays
- on echange des capacités electriques
- france espagne
- liens entre les lignes électriques
- échange des énergies
- Faire appel à la production étrangère en cas de besoin et vente d'électricité
- ligen electrique
- lors de hausse de consommations on achète aux autres pays l'electricité
- echange energetique
- acheter vendre de l'électricté
- achat energie
- electrique transport
- exportation d'électricité
- partage des ressources en cas de pointe énergétique
- Quand il ya une insuffisance de production dans un pays ce pays peut se fournir dans un pays étranger, les réseaux sont connectés entre eux
- echanges d'electricité aide en cas de besoins
- échange d'energie(ex: electricité venant d'allemagne)
- Echange d'électricité entre pays
- Échange d'énergie
- échange d'électicité - connexion des réseaux
- achat d'energie entre les pays
- L'ELECTRICITE
- possibilités d'augmenter notre capacités en énergie
- quand la france n'a pas assez d'électricité lors de fortes consommations elle peut en obtenir chez d'autres pays et vice versa
- Si un pays à un manque de ressource électrique à un instant donné, il peut demander à un pays voisin de lui en vendre.
- echange des energies
- Fourniture gaz et éléctricité
- Partager les besoins de courants en fonction de qui en a et qui en manque
- electricité partagée
- aide consommation
- reçevoir quand on enmanquede l'energie
- achat production energetique lors de gros besoins ponctuels
- anticiper des besoins en électricité
- centrale électrique

- on vend de lélectricité à l'etranger, et on en achète aussi
- Électricité
- allemagne achète de l'électricité française depuis de nombreuses années, l'espagne fait du délestage en vendant son surplus à la france
- Meme consommation
- Transfert d'énergie et dépendance
- Fourniture d'énergie entre pays
- meilleure gestion des heures de pointes
- patage de l'energie produite
- Petrole et gaz
- importation ou exportation d'énergie
- échange de production électirque entre pays qui sont en sous capacité temporaire
- un echange d'energie a certain moments
- echange et vente de l'energie electrique
- connexion des réseaux d'énergie
- interconnexions des reseaux electrique
- electricité gaz
- energie
- edf
- VENTE ELECTRICITE
- LIAISONS CABLEES SOUS MARINES
- la régulation de l'énergie via ses réseaux de transport
- fourniture en aller retour
- achat d'éléctricité et de gaz à l'étranger
- lorsque il fait trés froid on peut demander à l'allemagne par exemple de nous fournir de l'énergie électrique
- espagne/france
- achat d electricite
- partage d'energie à mon avis
- achat ou vente d'electricité
- reseau interconnectés
- grande liaison électrique transpyrénéenne pour echange de courant
- possibilité de se fournir en énergie
- interconnexions électriques entre l'Allemagne et la France
- Permettent de combler les pointes de charge
- les mêmes sources d'énergie à favoriser par rapport à d'autres plus polluantes ou coûteuses
- la rréciprocité entre pays
- Transfert d'énergie en cas de besoin
- delestages renforcement aux pointes
- la vente d'energie en cas de besoin

- achat d'electricite
- la possibilité de pouvoir exporter/importer l'energie en fonction des besoins
- Achat /Revente d'électricité entre les réseaux en fonction de la consommation
- Vente d'énergie d'un pays à un autre
- concretisation de la grande union europenne en reliant tous les réseaux electriques européens
- 96
- on vent ou achete de l electricite a d autres pays
- échange énergetique
- pratage d'électricité
- L Italie et la Corse
- gazoduc, cable fibre intercontinental
- electricité
- Gazoducs
- La possibilité de fournir de l'électricité à un autre pays
- courant d'un pays à l'autre
- une compensation et un libre échange d'énergie entre pays adhérents en cas de défaillance de l'un d'entre eux
- exportation d'electricité vers l'Allemagne, Gaz venant de l'Ukraine
- Envoyer notre surplus , et acheter notre déficit
- RESEAU DE DISTRIBUTION
- l energie passe d un pays a l autre
- La fourniture d'électricité d'un pays vers l'autre
- l'echange d'énergie entre les pays
- Oui
- La possibilité de vendre ou acheter de l'énergie en cas de besoin
- On fait venir de l'électricité d'autres pays UE lorsqu'on risque d'en manquer
- bonne avancé
- achat d'electricité ou vente à d'autres pays de l'ue
- échanges d'énergie
- on dépend d autres pays
- DES ACCORDS MULTINATIONAUX D'APPROVISIONNEMENT ENERGETIQUES
- acheter de l'electricité oui en vendre a l'Allemagne
- achat déélectricite en allemagne
- La relation entrel'italie et la france sur la electricite
- échange d'énergie entre pays en cas de besoin
- en cas de penurie en France, nous recevons de l'électricitéd'Espagne
- l'espagne est dépendante de la france pour l'electricité THT , l'eau
- liaison entre plusieurs phemomenes
- Ventes d'électricité
- achat entre les pays

- pics de consommation
- ventes entre pays d'électricité
- oui
- vente d electricité certaines périodes
- echange d'energie
- VASE COMMUNIQUER POUR LE GAZ ET L ELECTRICITE
- partage des réseaux d'électricité
- ACHAT ELECTRICITE
- chaque pays importe quand il a besoin et exporte quand il en a trop
- la mise en réseau des réseaux nationaux
- connexions de réseau entre les différents pays
- électricité et gaz en particulier
- le partage
- l'Allemagne envoie de l'électricité en France
- RTE les gère entre la France, l'Espagne et l'Allemagne
- cheminement énergie
- vend le l'énergie entre elle
- collaboration
- pas de frontières
- réseaux électriques reliés entre les pays, permettant des transferts d'énergie
- vente d'excedants d'energie
- echange d'energie ,
- électricité ,gaz,police
- Ce sont des aides entre pays pour pallier les difficultés d'acheminer l'énergie électrique par exemple
- autoroutes de l'énergie
- Vente et achat d électricité
- oui
- Aide si probleme aux autres pays
- AIDE EN CAS DE MANQUE DANS AUTRE PAYS
- fournir de l'electricite en période de pointe
- Assistance entre pays voisins en cas de défaillance
- la fourniture d'électicité ou de gaz entre pays en cas de manque
- 5
- en cas de pics de consommation, la france peut faire appel à un autre pays pour la fourniture d'électricité
- acheter de l'énergie d'un autre pays
- quand un pays manque d'énergies,un autre pays livre le complément
- LES COLLABORATIONS
- gaz electricité
- Des moyens d'échanger ses surplus de production

- électrique
- sorte d'entr'aide entrel les peys
- moyens d'échange d'électricité entre pays
- Achat d'energie Électricité et gaz à nos voisins
- achat de l energie à nos voisins
- achat et vente d electricite
- les connexions des réseaux électriques permettant d'acheter ou de vendre de l'énergie à d'autres pays voisins
- pouvoir importer ou exporter de l'électricité
- assurer une distribution énergétique
- importation d"électricité
- par exemple la founiture d'electricité entre pays en cas de besoin
- interconnection
- vente electricité aux autres pays
- échange d'électricité avec l'allemagne
- Un pays aide un autre en cas de pénurie.
- Interconnexion entre pays par l'électricité
- un système capable de permettre la livraison de l'energie propre
- cela permet de vendre ou d'acheter du courant aux pays limitrophes
- entente des entreprises entre elles
- de pouvoir utiliser l'électricité d'un autre pays en cas de besoin
- l' électricité
- echange d'energie
- associasion, connection
- ras
- salud
- connexions culturelles
- Mondialisation connectée
- Fourniture d'électricité p.e., Aide en cas de catastrophe
- OUI
- Achat et vente d'électricité
- en cas de crise
- Vente d'énergie entre pays en cas de besoin
- tous nos réseaux éléctriques sont interconnectés, on peut se vendre de l'énergie entre pays
- la revente des energies
- achat / vente
- chine
- vend de l'energie entre pays
- assistance entre pays
- le nucléiare français dont l'électricité peut être vendu à d'autres pays

- L'Espagne pousse la France à accélérer l'Europe de l'énergie.
- avec pays limitrophes allemagne espagne
- Achat d électricité d un pays à l autre ex France allemagne
- pour stockage déchets nucléaires
- Vente de gaz ou d'électricité entre pays
- Achat et vente d'électricité aux pays voisins en cas de forte demande.
- l exportation de l energie nucleaire excedentaire,reamenagement de reseaux de chleur afin de reduire les factures des usagers
- Les échanges énergétiques entre pays
- LIVRAISON ENTRE LA GB ET LA FRANCE DE SURPLUS ELECTRICITE PAR TUNNEL SOUS LA MANCHE
- Au niveau de la production d'électricité et de sa distribution et également pour le gaz
- echage d"electricité
- vente d'éléctricité en surplus aux pays frontaliers
- achat electricite
- C'est quand un pays et en manque de couverture d'électricité et qu'un autre pays le dépanne !!!
- Liaisons energetiques, électriques, gazières entre différents pays pour permettre de sauvegarder une certaine sécurité
- l'électricité à travers les barrages
- echange d'energie
- ELECTRICITE
- vendre de l'énergie en cas de consommation accrue
- Electricité, Gaz
- Partager
- équipements, technologies et réseaux permettant l'interconnexion entre l'offre et la demande de courant électrique
- lla possibilité de fournir de l'énergie aux autres pays membres
- tous les pays ensembles pour fournir l'électricité
- Un réseau qui permet de distribuer l'électricité à d'autres pays
- Câbles sous marins de télécommunications
- Acheté de l'énergie à un autre pays
- Nucléaire, électricité commune
- Un pays envoi de l'energie a un autre, il y a echange
- Les réseaux de différents pays sont connecté, ce qui permet de vendre ou acheté de l'elctricité a n'importe le quel de ses voisins
- on s'achete et se vend de l'energie
- Cop 22

3. Germany

- Gute Preise
- Das der strom der in einem land produziert an ein anderes Land weiter gegeben werden kann
- der strom wird ausgetauscht
- Lieferung von Energieüberschüssen
- rwe
- UCTE
- Imort / Exort von Strom
- der strom kann untereinander ausgetauscht werden
- Bezug von Strom aus anderen Ländern
- um Überschüsse zu verteilen oder bei Engpässen dazukaufen
- Daß z. B. Überkapazitäten bei der Stromproduktion an andere Länder abgegeben werden und daß auch in der Regel Überkapazitäten z. B. eines Atomkraftwerks in Grenznähe grenzüberschreitend in das Stromnetz des Nachbarstaates eingeleitet wird.
- die Länder kaufen und verkaufen sich gegenseitig Strom, wenn nötig
- Energiegewinnung und Verbrauch steuern
- Es dient dazu, Stromschwankungen einzelner EU--Staaten ausgleichen zu können.
- gdfg
- Scahhfung von Netzen zur Versorgung mit Solarstrom
- Stromtrassen um die unterschiedlichsten Städte gleichmäßig und ohne AUsfall mit Strom versorgen zu können
- interner Stromtransport
- Das Energienetz wird stabiler, die Zuverlässigkeit des Netzes wird gesteigert
- Stromschwankungen ausgleichen
- es kann strom aus anderen europäischen Staaten eingekauft werden, wenn e szum Engpass kommen sollte
- Länderübergreifende Stromversorgung
- Grenzüberschreitender Stromverbrauch
- engmaschiges Stromnetz
- Überkapazitäten werden an andere Länder abgegen
- Lieferung von Strom in andere Länder
- aufwendiges, landschaftszerstörendes Konstrukt ohne Notwendigkeit
- Abstimmung und Ausgleich von Netzfequenzen
- Grenzüberschreitende Stromversorgung
- die ausländischen stromnetze sind verbunden und speisenbei höherem verbrauch ein, wenn die nationale produktion nicht reicht
- Stromnetze aus verschiedener Herstellung aus de und Eu werden über ein Netz eingespeist

- EIN GEMEINSAMES STROMNETZ MIT EINER MINDESTSPANNUNG
- ja geldabzocker
- Verbundnetz
- übernationale Ausgleichsmöglichkeiten bei Versorgungsschwankungen
- das strom aus dem Ausland eingekauft werden kann
- Was mit Strom
- manchmal nicht definierbar , jeder will damit Geld verdienen
- Er zwar Ländern tauschen
- durch Verbund Strom billiger, Öko-Strom ausweiten
- Länderübergreifender Netzzusammenschluss
- strombörse
- ...
- Energieüberschuss wird abgegeben
- Europaweite Einspeisung und Regulierung nach Bedarf und Verbrauch unter Einhaltung der notwendigen 50 Herz.
- wir beziehen Atomstrom aus Frankreich oder Rumänien
- ist der austausch von energie
- Grenzen überschreitende Stromversorgung
- Kernkraftwerke, Verbindung zu dem Eurp. Ausland
- die unterschiedlichen länder speisen je nach bedarf strom in das verbundnetz ein um über bzw unterversorgung zu regulieren
- Ja, Austausch von Überkapazitäten, Transferierung von Netzspitzen
- die Deutschen liefern billigen Strom ins Ausland, den wir hier teuer bezahlen müssen
- Stromversorgung
- df fgdh gdfh
- Land A erzeugt Strom und gibt ihn an Land B ab
- Kauf und Verkauf von Strom über Ländergrenzen
- Überkapazitäten verteilen
- Ausgleich Verbrauch
- Stromschwankungen werden durch Nachbarländer ausgeglichen
- strom wird je nach bedarf weitergeleitet - grenzüberschreitend
- Einspeisung des erzeugten Strom ins europäische Netz
- Weitergabe von nicht benötigtem Strom
- blödsin
- erklärt siuch von selbst
- x
- Nein, ehrlich gesagt nicht
- große Energieversorger wie z.B. RWE bauen Stromverbundnetze
- gemeinsame Versorgung aufbauen
- Überflüssiger Strom wird an Nachbarländer abgegeben, z.B. Nachtstrom an

Österreich
- vo n Land zu Land
- Stromengpässe auszugleichen
- Verkauf des durch erneuerbare Energiequellen übeschüssig erzeugten Stroms an Nachbarkänder, da keine Möglichkeit der Speicherung besteht.
- das überschüssiger Strom in andere Netze eingespeist wird
- Im Bedarfsfall wird Strom im oder exportiert.
- netze, die grenzenübergrifend strom leiten
- Stromkauf und verkauf
- Sicherung der Stromversorgung
- dient dem Ausgleich von Angebot und Nachfrage; mehrere Stromverbundnetze in Europa, vor einiger Zeit Schwierigkeiten wg. Störung auf dem Balkan; Stromverteilung über Ländergrenzen hinweg
- Bei Störungen Hilfe und Ausgleich aus dem Netz
- Verbindung von Strom zwischen Länder
- Stromnetze, verbunden innerhalb Europas
- Netze zwischen Ländern welche Energie zur Stromverteilung. Die Energie wird bei überproduktion in die Netze Länder welche gerade weniger Energie in ihren Netzen haben gespeist.
- Mischung von Stromerzeugnissen
- wsir verkaufen unsern strom überschuss ins ausland
- Von andere Länder Strom nehmen oder verkaufen
- der strom kommt aus dem ausland
- Hochspannungssysteme die verschiedene Länder verbinden
- gemeinsame leitungen
- Austausch von Energie zu Stoßzeiten bei Überschuss in anderen Gebieten
- Viele Netze sind mit einander verbunden.
- Zusatzstrom bei Mangel
- fddf
- das sind die Netze, mit denen teurer deutscher Strom ins Ausland verschenkt wird
- Strom aus verschiedenen Länden kann über Verbundnetze schnell ausgetauscht werden
- gemeinsamer Strom
- Lieferung von Energie über Landesgrenzen, Abstimmung über Herstellung von Energie, wer wann wieviel
- wie der Name sagt
- die Länder Europas glätten durch Vernetzung Stromverbrauchsspitzen
- ermöglicht den Stromaustausch zwischen den Ländern
- Leitungsnetze über Grenzen
- Die Stromnetze verschiedener Länder sind miteinander verbunden.
- Strom wird exportiert
- Angleichung über Grenzen

- sicherung der Stromversorgung
- Ausgleich von Über- oder Unterkapazitäten
- Zeitunterschiede im Verbrauch ausgleichen
- Zusammenschaltung der nationalen Stromnetze zum Stromaustausch-/handel und Stromtransfer bei Havarien (Stromausfällen)
- Wenn irgendwo mehr bedarf ist als vorhanden wir bei einem anderen Land wo mehr vorhanden ist als bedarf angezapft
- Es gibt teils eine Überlastung der Netze wenn Großveranstaltungen herrschen. Oder Es wird im Moment zu viel Energie produziert als gebraucht wird. In beiden Fällen wird Strom hin und her verkauft.
- Strom,der zuviel vorhandenist wird in Ländern mit weniger Strom verkauft
- die Verteilung des zu viel erzeugten Stroms in Europa
- Austausch von Strom
- um eine stabile Stromversorgung sicherzustellen, sind Kraftwerke in Europa miteinander verbunden
- Das europäische Verbundsystem ist das kontinentaleuropäische Verbundnetz für den Austausch elektrischer Energie.
- gegenseitige Hilfe, Handel mit Strom, mehr Versorgungssicherheit für alle beteilöigten Länder
- strom kann in allen Bundesländern aus allen bundesländern bezogen werden
- A ungleich im Schwerlastbetrieb
- Wenn in einem Land kurzfristig "Strommangel" herrscht, springt ein anderes Land mit Strom ein
- Es fällt schwer, zwischen umweltgerechter und verantwortungslos produzierter Energie zu unterscheiden - Strom hat im Gegnsatz zu Wasser "immer die gleiche Farbe und Form"
- Stromübertragung
- stormnetze die länderübergreifend sind
- Gemeinsames Stromnetz
- Nachfrageausgleich
- Eon
- Länder versorgen sich untereinander mit Strom, wenn es z.B. bei einem Land zu wenig Strom gibt.
- grenzüberschreitend
- Spannungsfeld und Auslastungsausgleiche länderübergreifend
- ja, vom Norkap bis Süd Italien und von Ost nach West.
- ledership
- tesco
- Gegenseitig Strom schicken
- Nordstream
- Länder die mehr Strom produzieren, geben das teilw. anderen Ländern ab
- Sie sind mit einander verbunden und unterstützen sich

- bei Stromengpässen können die Länder in anderen Ländern Strom zukaufen
- gegenseitige kompensation
- sichert, dass es immer genug Strom gibt
- Wenn ein Land Stromüberschuss hat, werden diese an die Nachbarländer Verlauft - wenn zuwenig, dann eingekauft
- Ein Netz um Strom zwischen Ländern zu teilen
- länder unterstüzen
- Miteinander verbundene räumlich getrennte Netze, die viele Stromerzeuger und Nutzer umfassen
- Internationaler Stromhandel
- austausch von energie
- EON
- Deutschland gibt einiegn Nachbarländern billig überschüssigen Strom ab, der in deutschland erzeugt wurde.
- Hochspannungsleitungen bzw. Erdkabel über die Grenzen hinweg
- Gehört schon, aber viel weiss ich nicht, jedoch denke ich an Effizienz und Wirtschaftlichkeit im positiven Sinn.
- Mehrere Länder mit Netz verbunden
- kauf und lieferung ins oder aus dem nachbarland
- grenzenüberschreitende Stromversorgung
- Länderübergreifende Stromnetze
- Ausgleich von Stromproduktion zwischen Ländern mit Überschuss mit Ländern mit Strombedarf
- Laender übergreifende Stromanbieter
- Die Stromnetze der einzelnen Ländern werden zusammengeschaltet
- Frankreich liefer Deutschland Strom
- verschieden staatn
- Ausgleich von Lastspitzen in den Ländern
- Es sind viele europäische Ländern in dieser Kooperation eingebunden
- Strom wird hin und her geschickt
- austausch
- Länderübergreifende Stromnetze zur gemeinsamen Nutzung
- grenzüberschreitund wird Strom ausgetauscht
- sTROM AUS ANDEREN lÄNDERN BEZIEHEN
- kann ich nicht erklären
- Die Kraftwerke und Konsumen Europa sind in größeren Netzen miteinander verbundenten in
- Continental Europa
- strom
- Stromkabel durch Meere
- austausch
- Ein Stromnetzt das sich über ganz Europa erschliesst

- ja
- Geregelte netzlasten, die über Zentralen rauf und runter gefahren werden, um Stabiilität zu erhalten
- In Stromverbundnetzen werden Netzschwankungen ausgeglichen
- Internationaler Stromhandel
- nicht genau
- gemeinsame energiegewinnung aus bestimmten kraftwerken
- Strom der durch mehrere Länder verbunden ist
- Zukauf oder Abgabe von Strom bei bedarf
- Stromaustausch über Ländergrenzen
- Schwankungen ausgleichen
- Ich meine der Zuammenschluss der Stromnetze verschiedener Länder zum Beispiel Deutschland und Frankreich
- Das Nutzen von Strom innerhalb Deutschlands, der z.B. in Frankreich produziert wird
- netze über mehrere Länder
- Strom aus dem ausland
- Stromverteilung über Ländergrenzen hinweg
- Länderübergreifende Netze
- Stromverbundnetze sagt doch bereits der Name!
- D-Schweiz D-Finnland
- Europäisches Stromabkommen
- Vernetzung und Ausgleich bei Spitzen Strombedarf
- eu strom netzanbieter
- Verteilung von Strom um Engpässe oder Überschüsse zu vermeiden
- Stromversorgung über Landesgrenzen hinweg, Ausgleich von Mehrbedarfen
- Überkapazitäten werden frei verkauft
- Es soll der Strom von Nord nach Süd transportiert
- Der Transver von elektrischer Energie über nationale Grenzen
- Grenzüberschreitende Lieferung
- ewe und rwe
- Europäisches Stromnetz
- Strom wird über Grenzen hinweg verkauft und angeboten
- ein europäisches sromnetz
- Kapazitäten, die länderübergreifend zur Verfügung stehen
- Bei Stromschwankungen hilft der Nachbarstaat aus
- -
- europäischer versorgungszusammenschluss
- Wenn ein Land Stromüberfluss hat gibt es Strom an Nachbarländer ab
- es ist ein europaweite seine matschiges Stromnetz aus hoch und Höchstspannungsleitungen ,die zur Verteilung von elektrischer Energie dienen. es bestehen Verbundsysteme und der Austausch von elektrischer Energie erfolgt

zwischen verschiedenen Netzbetreibern..

- verbund von nord und südtrssen
- stromtrassen
- Einkauf und Verkauf von Strom
- Energieausgleich
- zum ausgleich von schwankungen tauschen länder überkapazitäten aus
- Windkraft
- Man teilt Teile des Netzes
- gazprom,
- der Strom wird über die Leitungen grenzüberschreitende transportiert
- Zusammenschluss zur Lieferung von Strom
- stromnetze sind überstaatlich verbunden
- stabile Versorgung von Haushalten und Wirtschaft
- Strom wird durch andere Länder weiter geleitet
- strom wandert über grenzen
- NBW
- Spitzenleistungszeiten werden durch das Netz in Europa in den unterschiedlichen Ländern aufgefangen
- Stromüberschuss wird verkauft
- EDF Enbw

WHO WE ARE

The MUSTEC consortium consists of nine renowned institutions from six European countries and includes many of the most prolific researchers in the European energy policy community, with very long track records of research in European and nationally funded energy policy research projects. The project is coordinated by Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas-CIEMAT.

Name	Country	Logo
Centro de Investigaciones Energeticas, Medioambientales y Tecnologicas – CIEMAT	ES	
University of Piraeus Research Center – UPRC	GR	
Eidgenössische Technische Hochschule Zürich - ETH Zürich	CH	
Technische Universität Wien - TU WIEN	AT	
European Solar Thermal Electricity Association – ESTELA	BE	
COBRA Instalaciones y Servicios S.A – COBRA	ES	
Fraunhofer-Gesellschaft zur Förderung der angewandten Forschung e.V. – Fraunhofer	DE	
Agencia Estatal Consejo Superior de Investigaciones Cientificas - CSIC	ES	
Fundacion Real Instituto Elcano de Estudios Internacionales y Estrategicos – ELCANO	ES	

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