

ENERGY

07

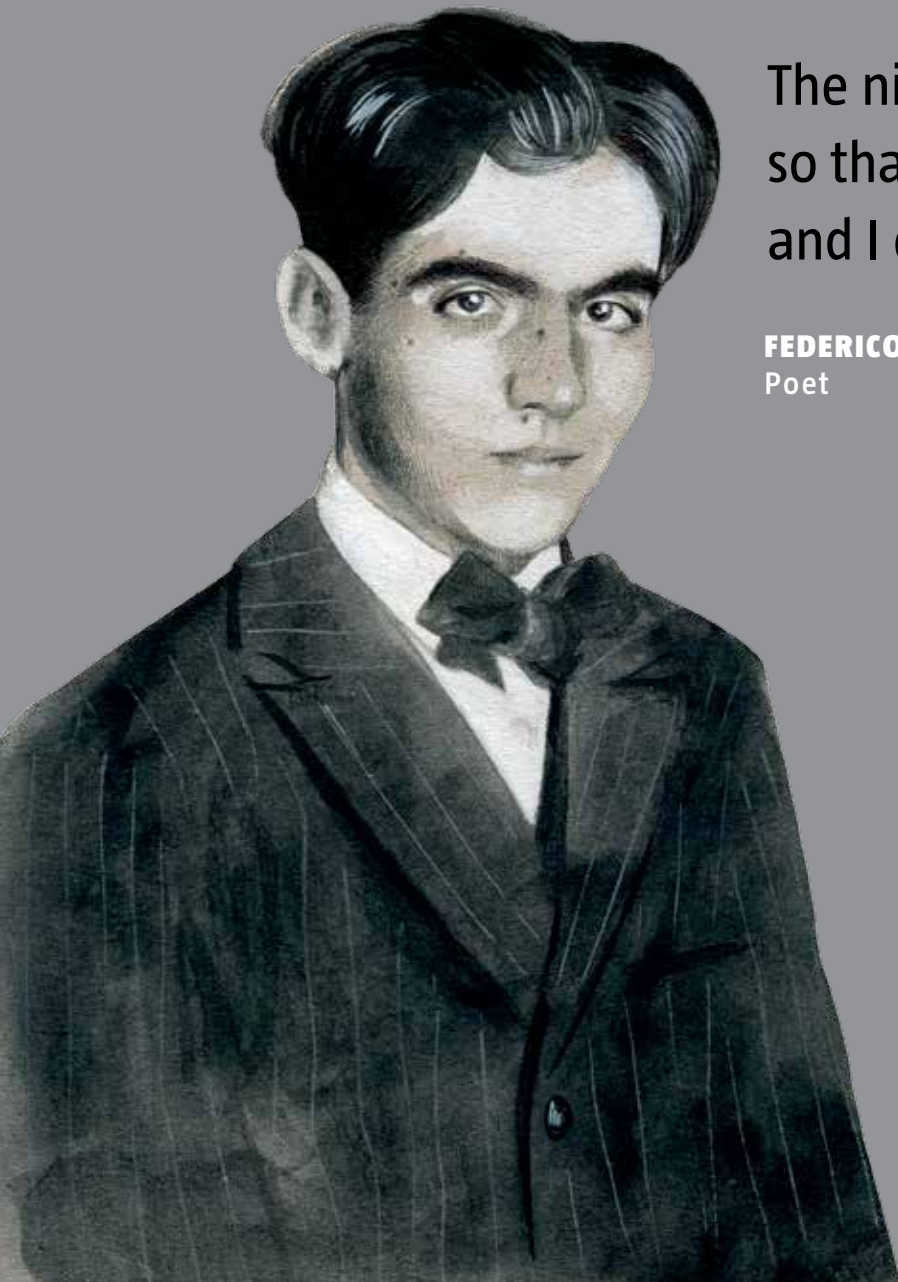
CEASING TO BE AN ENERGY ISLAND

Spain is an “energy island” subject to prices that undermine the competitiveness of many Spanish companies and increase the energy costs of the population.



The night does not wish to come
so that you cannot come
and I cannot go

FEDERICO GARCÍA LORCA (1898–1936)
Poet





SENER

Diversified but expensive

Diversification, while positive, has not been free from costs and controversy. Neither has it resolved all of the problems and challenges faced by the Spanish energy system.



Enrique San
Martín
González

Professor of Applied
Economics at the
National University
of Distance Education
(UNED)

The development of the Spanish energy system has historically been conditioned by its scarce fossil fuel deposits and, more recently, by its peripheral location, which isolates the country from the rest of Europe. The response to this situation has been diversification at all costs, with the result that Spain is one of the European economies with the most varied energy supply mix. Nevertheless, while this could be considered positive in broad terms, this diversification has not been free from costs and controversy. Neither has it resolved all of the problems and challenges faced by the Spanish energy system.

In order to analyze this problem and the challenges faced by Spain in the sphere of energy over the coming years, it is worth examining the objectives and pillars of European energy sector policy: security, sustainability, and competitiveness.

From the perspective of supply security, the most important variable underscored by all analyzes is foreign

energy dependence: Spain does not produce either oil or natural gas. The country is practically 100 percent dependent on these two fuels, while the economy as a whole registered a dependence rate of 72 percent in 2014, some twenty points above the EU average. Even so, the importance of this indicator is relative, given that importing hydrocarbons, for example, is essentially compulsory if there is no national production. So the truly important factor is vulnerability, the extent to which this country is exposed to suffering damage if its energy supply was interrupted. The key to reducing this vulnerability is diversification, and Spain has done its homework in this subject, diversifying primary energy consumption in terms of energy sources and the geographic origins of gas and oil imports, as well as the technologies used in electricity generation.

With regard to the primary energy consumption mix, in 2014 oil took second place with a share of 20

percent. The contribution made by nuclear energy stood at just over 10 percent (12.6 percent), followed by renewable energies (mainly wind, solar, and biomass; 11.6 percent), coal (10.1 percent), and hydroelectric power (3 percent).

The importance of oil in this mix is 10 percentage points above the European average thanks to the preeminent role of road transport in Spain, meaning that the question of crude supplies may be more relevant still in this country than in the rest of Europe.

The specialization of Spanish imports is very different than the rest of Europe, in particular in terms of the central role of the Atlantic Basin (sub-Saharan Africa accounted for 30 percent of crude imports in 2014; Latin America, 28 percent) and the wider Mediterranean (North Africa and the Middle East, 22 percent) in contrast to Russia (12.5 percent) and Norway (2 percent). Historical, cultural, and economic links with Latin America reduce the energy risk that region poses for Spain, but the same cannot be said of sub-Saharan Africa



IBERDROLA

West of Duddon Sands Offshore Windfarm, United Kingdom

and the wider Mediterranean, areas affected by geopolitical instability. In these cases, Spain needs the support of the EU, despite the knowledge that there is the risk of a conflict between asymmetrical interests; Spain's interests are not the same as the EU's interests, which are often excessively focused on and conditioned by Russia. Nevertheless, a flexible, integrated world oil market and geographically diverse portfolio of suppliers reduce the risks associated with dependence on oil.

Natural gas accounted for 20 percent of Spain's primary energy supplies in 2014, substantially lower than the 25 percent share gas enjoyed before the crisis when the demand for energy was on the rise. The concentration of imports is much higher than in the case of crude oil: this is logical given the existence of two gas pipelines connecting Algeria with Spain, the first via Morocco (the Maghreb-Europe Gas Pipeline) and another, direct line (the Medgaz Pipeline). Nevertheless, Spain must redress this concentration by also focusing on liq-

uefied natural gas (LNG), which lends much more flexibility and security to the gas system. Indeed, in 2014 some 47 percent of Spain's gas was LNG, which allowed supplies to be brought in from a great distance. And LNG has good prospects for the future.

Algeria was responsible for 55 percent of Spain's gas imports in 2014 (40 percent via pipeline and 15 percent from LNG), followed by Norway with 12 percent. The remaining imports in 2014 came from Qatar (9 percent), Nigeria (8 percent), Trinidad and Tobago (6 percent), France (4 percent), and Peru (3.6 percent). As in the case of oil, the wider Mediterranean and the Atlantic Basin contributed the large part of the supply; however, the big difference lies in Algeria's pivotal role in the Spanish supply. In order to limit our exposure to this risk, legislation was passed to prevent more than 60 percent of the gas being imported from a single country, and LNG regasification plants were constructed.

Diversification is also the name of the game in the electricity genera-

tion. In 2014, renewable energies (mainly wind, solar, and biomass) contributed 25 percent of the total, followed by nuclear energy (20 percent) and natural gas, hydroelectric, and coal, each of which accounted for approximately 15 to 16 percent.

The latest technologies to be incorporated into the electricity system are modern renewables (principally wind and solar) and combined gas cycles. While wind energy began its steep growth in 1998 with Law 54/1997 on the electricity sector, which established the feed-in premiums payable to renewable energy generators, photovoltaic solar energy and combined cycles would not begin to be implemented until 2002, with thermal solar energy taking off in around 2008. During the following ten years, the installed capacity of combined cycles increased tenfold, while wind energy increased twenty-five times over and photovoltaic energy by almost a thousand times. Since the generation of renewable energy is not constant, it requires certain backup capacity. Combined gas



Gemasolar thermosolar power plant owned by Torresol Energy and developed by SENER

cycles are ideal for this purpose, and may provide at least a partial explanation for the parallel development of this type of energy. Nevertheless, as this growth led to an installed capacity higher than required during the crisis, Spain saw a speculative bubble in the renewable energy sector. The reduction and subsequent eradication of these premiums as of 2010, and the fact that usage rates of combined cycles had been steadily decreasing since the start of the twenty-first century, standing at just above 10 percent in 2014, are clear indications of this situation. Moreover, the withdrawal of feed-in premiums from renewable energies has had a broader impact, affecting not only domestic but also international investors who have called on the Spanish government to take action, pointing to legal insecurity and a retroactive application of the law. Nuclear energy is still important both in quantitative and qualitative terms since it accounts for 20 percent of the market and is the main continuous energy source. All of the nuclear bases operating in this

country were constructed during the period 1981 to 1988, while the subsequent nuclear moratorium of 1991 prevented the possibility of any new nuclear facilities. As a result, Spanish nuclear plants have an average age of something over thirty years; in other words, they have already exceeded three-quarters of their useful life span (forty years), as well as the average age of closure of the world's nuclear plants (around twenty-two years). Taking into account that the average time required to build such plants in the twenty-first century is about six years, swift decisions regarding this technology cannot be postponed any longer. The selection process governing the location for the Centralized Temporary Storage Facility (Almacén Temporal Centralizado, ATC) for nuclear waste that took place in 2010 and 2011, and the nuclear accident in Fukushima, Japan, in 2011 highlighted once again the social controversy still generated by this energy source. For their part, the electricity industry has not been that committed to nuclear energy, as evidenced by the

case of the nuclear plant in Garoña, which officially closed in 2013. With regard to coal, Spain's greatest problem lies with its own coal supplies, which has always been of a comparatively low quality in terms of its calorific power, with high levels of impurities, and difficult to extract; in other words, relatively expensive. Coal mining has continued in Spain thanks to subsidies justified on the basis of social, political, and energy security grounds, although the last of these reasons has always seemed to be less important than the first two. Since Brussels questioned the legality of such subsidies to the sector, the new "Marco para la minería del carbón 2013-2018" ("Framework for Coal Mining 2013-2018") was drafted with the aim of promoting full competition between mining companies by 2019 in accordance with European directives. This will lead to the orderly closure of uncompetitive coal mines through the progressive reduction of the assistance they receive. Meanwhile, environmental externalities mainly consisting in the price

per ton of CO₂ will continue to be an important factor when weighing up the need of maintaining or reducing coal's share of the energy mix. Nevertheless, it is worth taking into account that Spanish coal accounted for 41 percent of the country's total consumption in 2012, generating some 35 percent of electricity output in that year.

From the point of view of sustainability, the Spanish energy system is hindered by a significant deficit. The hefty share of oil and use of national coal supplies, which are more polluting than imported supplies, imply higher levels of contamination. The low use of combined gas cycles and cuts to renewable premiums limit the potential for reducing carbon emissions. The current low price per ton of CO₂ does not incur high costs, but there is little reason to suppose that this situation will continue, given that the EU is increasing targets for emission reductions. Moreover, Spain's CO₂ emissions—and energy efficiency—only fell due to the crisis, which means that the country will have to make efforts to prevent an eventual economic recovery leading to soaring greenhouse gas emissions.

The Spanish energy system is pretty well diversified, and this reduces its vulnerability. Nevertheless, we could say that this diversification has been carried out without taking the costs into account, with resulting high prices above EU averages for both electricity and gas that reduce company competitiveness. But it has been Spanish households that have suffered the most from high prices, in particular in the case of electricity. Excessive feed-in premiums on renewables, a higher combined cycle capacity than is needed, a surplus of regasification plants, and the use of national coal have led to excessive costs in Spain's energy system. If we add the elimination of the CESUR auction, which fixed the last resort tariff, a move that has artificially inflated consumer electricity prices, along with the existence of a tariff deficit,



The Spanish energy system is pretty well diversified, and this reduces its vulnerability. Nevertheless, we could say that this diversification has been carried out without taking the costs into account, with resulting high prices above EU averages for both electricity and gas that reduce company competitiveness



DURO FELGUERA

Port of Barcelona combined cycle power plant and storage tanks for the regasification plant

accumulated in order to avoid placing the real cost of electricity at the doors of consumers, the diagnosis is very clear: there are glaring defects in the regulation of the Spanish energy system, including in planning and economic instruments. In this sense, it is simplistic to solely blame renewable energies for the deficiencies of the system, and such a response hinders the reforms necessary to achieve a more efficient system also capable of increasing the well-being of the general public.

A good first step toward rationalizing the system would be to achieve compliance with European gas and electricity interconnection targets (10 percent for 2020) set by the Europe-

an Commission and increase Spain's energy security with a view to making better use of investments already made in gas and renewables. The international situation greatly favors the achievement of this objective, which would strengthen Spain's role in foreign activity, making the country a key energy agent linking the EU, the Atlantic Basin, and the Mediterranean. This would realign—albeit partially—Spanish and European priorities. But there are other challenges facing the Spanish energy sector in the coming years. Profound, consensual reforms are required to avoid continuing with the political vacillations that characterized Spanish energy policy during the twentieth century.



Gonzalo Escribano

Researcher for the Elcano Royal Institute

Security, competitiveness, sustainability

The way that the Spanish energy sector is anchored to the European sector leaves some room for maneuver. Indeed, the characteristics of the sector encourage a domestic focus.

Spain's energy decisions are influenced by European Union policy, whose frame of reference is the target set for 2030 of a 40 percent reduction in greenhouse gases, a 27 percent share of renewables, efficiency gains of 27 percent, and an interconnection rate of 15 percent (10 percent for 2020). These targets also relate to energy security, and in contrast to some other member states in Eastern Europe, for example, Spain more than fulfils EU directives on supply diversification. Nevertheless, the way that the Spanish energy sector is anchored to the European sector leaves some room for maneuver, and indeed, Spain's specific characteristics urge a domestic focus. European energy policy will take up a lot of Spain's attention, but outside of the EU there are some interrelationships that call for a different kind of management. Energy security is linked to two other objectives within European energy policy: competitiveness and sustainability. Energy security is usually identified with reducing the rate of dependence on imports, but this can be achieved in many ways, not all of which are the best choices. Imported gas could be substituted with domestic coal, although the costs in terms of competitiveness and sustainability would be very high. It could also be replaced with immature renewable energies, accepting substantial losses of competitiveness in exchange for just a small drop in dependency. It is advisable for Spain to place an emphasis on efficiency and the development of its own resources when reducing its dependency rates, but not at any cost to the other two objectives. Spanish energy dependency increased tremendously up to 2005, and its subsequent turnaround can be explained more by the crisis than by a change in production model to the less intensive use of

energy that should be promoted. Evidently, Spain's high energy dependency is a serious weakness, and while it is likely that recent reductions in dependency will continue, they will also be limited.

Given these restrictions, the best strategy to follow is to manage Spain's energy dependency as best possible, since it can be reduced but not eradicated. Advances can be made toward self-sufficiency with more renewable energies, more domestic hydrocarbons (where appropriate), more nuclear energy, or even more domestic coal, but we will always rely on gas and oil imports to a certain extent. Vulnerability is mitigated above all by means of diversification, and Spain has a supply that is well diversified in terms of geographical origins and primary sources, the country's greatest assets in terms of energy security. Few European nations enjoy such a complete energy network, with natural gas, nuclear energy, hydroelectric power, a diversified portfolio of renewables, and, of course, coal.

Similarly, geographical diversification in hydrocarbons is high, and is increased by the flexibility offered by the biggest set of LNG regasification facilities in all of Europe. Latin America also offers another channel for diversification, which, along with the Gulf of Guinea, has turned the Atlantic Basin into a crucial energy vector for Spain accounting for more than 60 percent of Spanish oil imports in December 2014: 24 percent from Nigeria, 19 percent from Mexico, and 9 percent from Angola. The region of North of Africa, including the Gulf of Guinea, also represents 60 percent of Spanish gas imports. This significant diversification reduces our vulnerability to geopolitical risks, and partially compensates for our

POINT

lack of interconnectors with Europe. Falling dependency rates can be consolidated on the demand side with a change of production model to reduce energy intensity, although self-sufficiency will never be achieved—neither is it desirable, perhaps, from an economic perspective. Therefore, it is important that Spain maintains a diverse energy mix with a vast portfolio of technologies and suppliers, including the development of our own resources where possible. The best way of optimizing and capitalizing on Spain's flexibility in energy matters is by promoting its contribution to a better integration of European energy markets.

Spain's energy system is only isolated from Europe, since it is well connected to North Africa (there are two gas pipelines connecting us to Algeria and just one Euro-Mediterranean electricity interconnection), as well as the global LNG market. Its strategy for overcoming this European isolation has evolved, shifting from defensive to proactive; from domestic claims to a European focus; and from confrontation to cooperation with France, and recourse to the European Union. France has also changed its attitude, as demonstrated by the government's *Derdevet* report, which has the telling title "Énergie, l'Europe en Réseaux" (Energy: A Networked Europe). Both turnarounds are welcome, and may considerably reduce Spanish energy isolation, developing its natural position as a gas hub and, in the future, an electricity hub between Europe and North Africa. A result of this has been in the much publicized high-voltage line running between Santa Llogaia and Baixás, which has doubled Spain's interconnection capacity with France after more than twenty years of efforts and many cost overruns.

The crisis in the Ukraine has driven some progress on the European energy integration agenda. The political decision to create an Energy Union based on the physical integration (interconnection) and legislation (convergence of regulations) has made it necessary to soften the French reluctance to establish interconnections with Spain, and the two countries have been living a period of almost electrifying harmony for some months. On March 4, 2015, a French-Spanish summit approved the Declaration of Madrid on Energy Interconnections, clearing the way on this matter for the subsequent European Council meeting. The declaration establishes a High Level Group

in charge of proposing detailed routes before the end of 2015, as well as supervising progress and offering technical assistance to governments. It also recognizes the need for immediate progress on additional interconnections apart from those set out by the Commission in order to ensure interconnection rates of 10 percent by 2020 and 15 percent by 2030.

We must highlight that Spain is the only country in the EU that will not achieve the targets, unless new European projects are implemented and those projects already approved are accelerated. The objective of 15 percent for 2030 is achievable, but it will require a great deal of political capital on the part of Spain, France, and Europe. Cooperation must be extended to the gas sector, beginning with the completion of the Midcat gas pipeline between Catalonia and the South of France. Work must also begin on the design of regulatory mechanisms that promote cooperation flows. In effect, it is not enough to approve, finance, and construct interconnections; we must also equip them with the necessary regulations to establish a fully operational market that allows the exchange of gas and electricity across the Pyrenees. The road to 2030 will be long and arduous.

In terms of sustainability, the EU wants to offer a model of soft power in the sphere of energy based on support for renewables. This was also Spain's position in the past: an alternative energy power based on solid enterprises with an international presence built on the foundations of one of the largest renewable energy markets in the world. A convergence of interests and values took place, which continues to bear fruit in the form of foreign contracts. There were certainly excesses and weaknesses in the regulations along the way, but now that they have been rolled out, the argument in favor of renewable energies is very solid: in order of merit, priority is given to energies with a marginal cost of zero. The retroactive nature of the measures implemented has perhaps damaged the image of the sustainable country, but this has not prevented Spanish companies from being leaders in renewables. Maintaining a sustainable image means designing a credible legislative framework and making efforts to uphold the self-sufficiency and diversification of the industry, making use of renewable energy sources without falling into the trap of the fluctuations and excesses of the past.

COUNTERPOINT

Goal: 10 percent electricity interconnection

Now is the time to accelerate large infrastructure projects, placing a new emphasis on cross-border interconnections.

The creation of a reliable, competitive, and sustainable energy system continues to be one of the major challenges of the twenty-first century. Supply security constitutes one of the main priorities in all countries. This is especially true of nations such as Spain, where there is a high level of foreign dependence due to the limited availability of primary energy sources. Added to the growing concern surrounding access to energy sources, we have the preoccupation with the negative effects of human activity on the environment, or the impact of energy costs on the competitiveness of the economy as a whole: it is easy to understand how we have become embroiled in the process of transforming our energy model. This transformation calls for well-designed strategies that allow the country to make progress toward an economic model capable of reconciling economic development with social and environmental progress.

Having reached its peak in 2008, Spain's foreign energy dependence—calculated as the ratio of net imports to total primary energy consumption—has fallen steadily in recent years to a level of 70.5 percent in 2013. This significant progress still leaves Spain a long way off the EU average, which stood at 53.2 percent in 2013 for the EU-28. The slump in energy demand is without a doubt the reason for these advances, although it is also true that on the supply side the sharp surge in renewable energy production over the last decade is bringing about a radical change in our energy generation model.

In this context, Spain has often been classified as an energy island. Nevertheless, this claim does not have the same meaning when applied to electricity as natural gas, and must also be adjusted to certain considerations without which it is difficult to understand where

our situation will take us in the future.

In the specific case of electricity, in 2014 the net volume of international exchanges as a proportion of total consumption barely reached 1.32 percent. Our specific geographical characteristics, along with a real capacity for cross-border interconnection substantially below the 10 percent established by the European Union for 2020, are the root causes of this situation. While the recent establishment of a new cross-border line between Santa Llogaia, near Figueres in Catalonia with Baixas, near Perpignan, will double commercial exchange capacity, we are still far from being able to fulfil this minimum interconnection capacity established in 2002. With the 1400 MW new capacity, our interconnection ratio with France will reach 2.8 percent. Even taking into account the rest of the interconnections planned for the period up until 2020, if the situation is not resolved, it is possible that Spain and Portugal (which together form a single market in this respect) will be the only countries in continental Europe not to reach the target set for 2020. So it is still necessary to develop new interconnections that will facilitate mutual support between our respective electricity systems, as well as driving the European internal electricity market.

The gas sector—which also requires substantial improvements of its capacity for interconnection with France—is in a very different situation. The scarcity of domestic deposits and the great distances between Spain and international reserves has affected the development of the Spanish sector for liquefied natural gas (LNG). In terms of diversification, this type of supply makes it possible to introduce natural gas into our system from a wide range of countries, thereby contributing to minimizing the inherent risks in supply

concentration from a single source. If to this LNG supply we add the natural gas entering Spain via gas pipeline—mainly from Algeria—it is easy to understand why this country leads the field in terms of diversity of natural gas supplies.

In contrast with other European countries that are extremely dependent on Russian gas, Spain currently imports natural gas from eleven different countries, not all of which lie in the Mediterranean Basin. This diversification of supply sources is behind an improvement in our situation in terms of supply security, when taken to mean the securing of a continuous, high-quality supply.

While the current situation of the Spanish model is not ideal, it is hardly similar to the one in which we found ourselves at the start of the last decade. Merely in terms of physical interconnections with the rest of Europe, significant improvements have been made to our electricity and gas infrastructures in various geographic regions. Similarly, the whole context of the energy market in Spain in recent years has been characterized by a high penetration of renewable electricity supplies, a phenomenon that barely existed at the start of the last decade. The fact that this is a homegrown energy source influences our supply security as well as the balance of our foreign trade. The process of creating a true internal energy market in the EU requires effective measures to promote investment in cross-border interconnections, eliminating current physical barriers and allowing the convergence of regulations in order to integrate the range of national markets and networks into a single European system. Constructing these new infrastructures will involve large-scale mobilization of the economic resources to finance these infrastructures. The European

Joan Batalla

Professor of Energy Sustainability at the University of Barcelona and ex-council member of the National Energy Commission (CNE)



Commission must lead this process, acting as a catalyst through mechanisms capable of sending the right message to investors and guaranteeing the additional funding for the corridors that most need it.

With regard to legislation, a fully integrated European market demands significant advances in the process to harmonize the range of national frameworks. The recent day-ahead electricity market coupling on the European level to match purchase and sale bids across Europe constitutes an important first step. This first stage in the integration process should be followed by the coupling of other markets—such as the intra-daily market—or the coordination and integration of balancing markets used by operators in the system to guarantee a steady equilibrium between electricity generation and demand in real time.

This whole process of physical integration with a new cross-border capacity and market integration represents a unique opportunity for Spain to cease to be an energy island within Europe. The fact that Europe has set the goal of creating a more competitive, sustainable, and interconnected energy economy should allow Spain to resolve this anachronistic situation in which the promotion of interconnections has been a bilateral issue, the sole and exclusive concern of those member states sharing borders. Now is the time to accelerate large infrastructure projects, placing a new emphasis on cross-border interconnections with the aim of guaranteeing energy security and a fully operational domestic energy market that will benefit all consumers. The recent agreement between France, Portugal, Spain, the European Commission, and the European Investment Bank is a positive move toward achieving the 10 percent electricity interconnection target set for 2020.

Raúl Morales

President of Soltec Energías Renovables

“It doesn’t make sense for there to be a natural monopoly in the distribution network”

Is the state justified in stopping short its support for renewable energies?

No. In fact, this is the time for the opposite kind of action. Renewable energies are more economical than dirty energy sources to produce—especially wind and solar—but the whole lobby group of big energy companies is interested in maintaining an oligopoly that we all have to put up with.

Can renewable energies provide the key to bringing down electricity bills?

Of course. In fact, many countries are currently changing their energy model and the United States, for example, is making huge efforts to support solar energy. In Spain, since we are always behind when it comes to this kind of idea, we’ve decided now that what works is fracking, and that is not the solution. The aim of the current government is to halt the development of renewable energy at all costs in favor of conventional energy sources and the electricity and energy lobbies.

What weight should renewable energies have in our energy mix?

We often account for around 40 percent in the electricity grid, and we could even reach 70 or 80 percent. We always think of electricity, but gas and traditional fuels in the car industry can also be replaced with renewable energies. Biomass and thermal energy from renewable sources can be substituted for gas. And the car industry could be shifted toward electric cars; that would be a solution. Enterprises such as Apple and Google are already using these energies, but here

it’s seen as an oddity. They’re going to establish the first Tesla Motors supercharger in Barcelona now.

What opportunities does the sector see for positioning itself, and not just in Europe?

Today, it would be very easy to create an interconnection between Greece, Portugal, Spain, and Italy to supply Europe’s solar electric energy. The aim of the Desertec project was to fill the whole of North Africa with solar panels, in this case for thermoelectric solar generation. It doesn’t seem very logical to build concentrated solar thermal power stations in countries that are politically instable when the same thing could be done with photovoltaic energy in Spain and Portugal, supplying this energy to the rest of Europe.

What opportunities do Spanish enterprises find abroad?

The few Spanish companies that are still present in international markets have emerged from the subsidy cuts stronger than before because they’ve been able to survive these times out there in the wilderness. Luckily, there’s plenty of business. It’s just a matter of time. Some 70 to 80 percent of the population lives in sunny parts of the world. It is much rarer for people to live at latitude 60, as in the very north of Europe. In twenty to thirty years, solar energy will be the dominant energy source in the world.

What three things would you change if you were Spanish energy minister?

First, the Spanish supply network, which I would liberalize or nationalize. It doesn’t make sense for there to be a natural monopoly—as they like to call it, although I don’t see a monopoly as being a very natural thing—of private companies that the rest of Spaniards are obliged to pay. Second, I would promote the use of the electricity system. We shouldn’t be creating new gas networks when we already have the electricity networks, given that almost everything that uses gas also works with electricity. The third thing I would do is encourage use of electric cars.



Eduardo Montes

President of UNESA

What strategies should be promoted by Spain in order to achieve a less dependent energy model?

The issue that we should be talking about isn’t dependence. Instead, we should be talking about three other fundamental factors: supply security (which is primary), competitiveness and cost, and respect for the environment. These are the three key issues, and not energy independence; no one has total independence.

What weight should renewable energies have in our energy mix?

From an environmental perspective, Spain’s energy mix is one of the best in the European Union. The big secret to renewable energies in their traditional forms—wind, photovoltaic, thermosolar, and so on—lies in introducing them at the right time. What we mustn’t do as part of our national strategy is introduce any particular energy source—such as photovoltaic—when no one was producing it and at prices that have since fallen tenfold. That was a big mistake. It does fulfill environmental aims, but it also works against competitiveness.

How would the creation of the single energy market affect Spain?

There can be no economic or political union in Europe, with similar banking and tax systems, if there is no com-

mon energy system. The effects would be very positive for Spain, and Europe is actually making very significant progress in this direction.

“Supply security, competitiveness and cost, and respect for the environment are the three key issues”

mon energy system. The effects would be very positive for Spain, and Europe is actually making very significant progress in this direction.

What level of interconnection does Spain need to have with France and Europe?

Between 10 and 15 percent of installed capacity at a minimum. The latest interconnection takes us up to about 4 or 5 percent, which represents a doubling of our capacity with France, but the idea is to continue increasing this capacity in the coming years. The Plan Juncker on investment in interconnection infrastructure is designed to help us reach 10 or 15 percent, which is

the level that would make the single European electricity market feasible.

What are the possible solutions to differences in energy costs?

It’s not so much the difference in prices compared to the United States. We are much cheaper than places like Japan, and we’re not more expensive than China. Is Europe competitive, in general? Siemens, for example, ranks among the top two or three most competitive companies in the world. The problem is between European countries. Here, when it comes to Spain, the national pricing structure has led us to a ridiculous situation in which even though we have one of the cheapest electricity systems in Europe—and by electricity system I mean generation,

transport, distribution, and sale—we have ended up with one of the most expensive tax systems in Europe. Between 25 and 30 percent of our bills can be attributed to energy policy, which has absolutely nothing to do with the electricity system. In other words, some 45 percent of consumers’ bills is related to the electricity system, and 55 percent depends on other concepts.

Does the electricity market need increased liberalization and competition?

As in the telecommunications sector, the market needs to be completely liberalized as soon as possible. Without a doubt, we are for total liberalization.

