SELLA FORO

Findings Report

Industry, Data and Energy

Hábitat Sella I Zaragoza, Spain I November 24, 2023

> “Today’s society is participating in a process that, rather than transition, could be understood as one of transformation

Foro Industria y Energía

The ecological transition is a multisectoral and multilevel process that, for regulatory, economic, and above all environmental reasons, is unavoidable. Beyond the increase in the use of renewable energy sources in all sectors of activity, including industry, this transition can imply a transformation of the economic model as we know it.

One of the cornerstones of this transformation is renewable energy, which, to fully develop its potential, requires a series of technological, technical - especially in terms of grids -, legislative, and political requirements.

In this scenario of energy and industrial transformation, Aragon takes on a special role as a territory with high potential for the development of renewable sources and the attraction of industrial fabric. The availability of land and the richness in resources such as wind and sun give this region great prospects.

> "The ecological transition can entail a transformation of the economic model"

These are some of the main conclusions of the I International Conference Foro Sella on innovation in energy management in the industry, which took place in Villanueva de Gállego (Zaragoza, Spain) on November 24, 2023.

Energy and competitiveness

Mike Berners-Lee and Jorge Azcón.

Access to efficient and affordable energy sources is a key factor for the competitiveness of the industry and, as such, a basic criterion in the selection of industrial plant locations. In addition to competitiveness, increasingly important in a globalized environment, in recent years, regulations linked to the ecological transition process add the element of sustainability to these criteria of efficiency and energy affordability, which fundamentally influences business decision-making.

Currently, the industry needs an energy system that guarantees supply security, a competitive price, and is renewable. Beyond companies, energy is also a key element for society, a cross-cutting resource facing both technical and social challenges[1]. Indeed, it is perhaps the "most cross-cutting resource of all that exists," a State matter for Spain and also for the 27 member states of the EU[2].

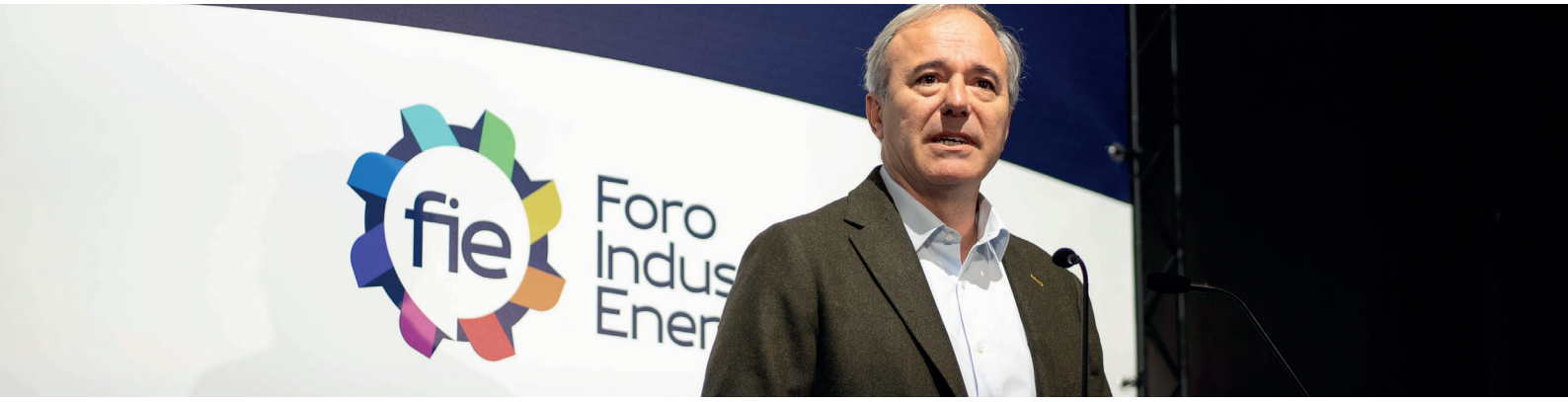
At the national level, it is essential to have sufficient access to renewable energies for three main reasons: energy independence, sustainability, and the economy[3]. In this regard, Spain has certain pending tasks, such as defining the necessary energy infrastructures and fully analyzing the electric and energy generation mix, as despite efforts to expand renewables, average prices have not decreased enough[4] to guarantee the competitiveness of the industry. This effort to promote renewables is understood by the Spanish government as a matter of national security, especially after the 'gas blackmail'[5] resulting from Russia's invasion of Ukraine.

Other factors influencing the competitiveness of the industry and companies include elements like subsidies to the industry, which are being authorized in other European countries. Some voices call for the recovery of state aid rules[6], as well as a more favorable regulatory framework, since measures to mitigate inflation have not been sufficiently effective, and the cost per unit of product is increasing, putting the Spanish industry at a clear disadvantage compared to other European countries[7].

A fundamental element for a true global ecological transition is the involvement of everyone, considering that the EU represents only 7% of global greenhouse gas emissions. Therefore, it is important to ensure that all countries are prepared to participate in this challenge. From the European perspective, to achieve decarbonization of companies, it is necessary to ensure the supply chain and that it is secure, as well as to join forces to increase the speed of the process[8].

"The industry needs an energy system that guarantees supply security, a competitive price, and is renewable. And beyond companies, energy is a key element for society."

Miguel Marzo
President of CEOE Aragón



Jorge Azcón.

Decarbonization: a change in the economic model

In the scenario of ecological transition, energy will be key in the social, industrial, and economic development of territories. In fact, the energy supply contributes to the industry and society's overall ability to change the planet[9], for better or for worse. We are in a climate and ecological emergency, yet greenhouse gas emissions increase every year. This affects us all and should influence every business decision[10].

Current society is participating in a process that, more than a transition, could be understood as a transformation. Access to energy is a key vector that will bring about changes in issues such as where businesses are located, how they are designed, and even how they operate. Therefore, companies will go where they can be guaranteed access to clean energy at competitive prices[11]. The fact that we are facing a new energy model linked to electricity is evident; the debate will be what projection it will have on the economic model[12].

Analyzing this new model, some voices suggest that the transition is possible but requires a reduction in demand[13]. In the last 50 years, energy consumption has tripled, bringing many advantages but also increasing human influence on the planet to the point of making it fragile. All available renewable energy will not be enough unless it contributes to reducing demand for fossil fuels and, moreover, overall demand[14], relying on technology as support to restore balance.

> "The fact that we are facing a new energy model linked to electricity is evident; the debate will be what projection it will have on the economic model"
>
> **Jorge Azcón**
> President of the Government of Aragon

Innovation and technology play a fundamental role in changing the economic and productive model. In this sense, data centers and ICTs, whose carbon footprint would be reduced by 80% if all the electricity they use came from renewables, have marked a before and after in society. Economic and ecological transformation, as well as any entertainment or communication activity[15], involves data centers, so it is important to minimize their energy consumption as much as possible, but it is not feasible for them to cease to exist. Additionally, their location should be where they are needed[16], such as in the EU and Spain. It is important to note that in recent years, data centers have multiplied by six, while their energy consumption has remained stable[17].

Aragon, a benchmark in renewables

Aragon is an example of development and industrial competitiveness[18], where renewable energies play a significant role. This autonomous community has the necessary resources to be competitive in both renewable energy and industry: it has natural resources, available land, sun, and water, along with a powerful business sector composed of both external and locally born companies[19].

It is a key location for the development of energy transition since, due to its richness in sun and wind, Aragon can offer continuity in the supply of renewable energies, making it an excellent location for the establishment of energy-intensive emerging businesses, such as data centers[20]. These advantages have led companies of the caliber of Amazon or Microsoft to set up there[21], along with other powerful local companies.

Aragon is one of the leading regions in renewable energies, an arrowhead in Spain and the EU. In addition to its strength in renewables, it has excellent interconnection capacity, serving as an energy bridge with Basque Country, Catalonia, or the Valencian Community[22]. While the average renewable energy consumption in Spain is 45%, Aragon's production reaches 75%, so the challenge in the region would not be to produce more energy but also to consume it[23]. This would mean an increase in industrial development and employment in Aragon[24]. Thus, competitiveness and sustainability can go hand in hand, making it a pioneering, technological, sustainable community proud of itself[25].

> "Aragon can offer continuity in the supply of renewable energies, making it an excellent location for the establishment of energy-intensive emerging businesses, such as data centers."
>
> **Mike Berners-Lee**
> Professor at the University of Lancaster.

Agustín Lalaguna, David Blázquez, Luis Miguel Gil, Ignacio Cortés and Nicolás Ramón García.

— Vídeo - Summary
— Full -day sessions

José Manuel Albares, Minister of Foreign Affairs

The challenges of the ecological transition

The increase in renewable energy consumption is a fundamental step in undertaking the ecological transition process. However, for this growth to be possible, there are still several pending challenges. These include transitioning from centralized electric generation to a distributed model, which requires strengthening the power grids and creating a conducive regulatory framework.

Regarding the first element, a crucial step is to take the necessary measures to ensure that the system can handle all the renewable energy produced[26], which is not the case currently. This requires new power lines that transform the existing radial network into a meshed network, changing the centralized model into a decentralized one and eventually evolving into a distributed generation model. Thus, more renewable energy and better grids are needed[27]. Another aspect that must be analyzed to complete the transition is the recycling of the elements that enable green energy generation[28].

In this distributed model, not all territories will be equal, and it is expected that industries will move towards those that generate energy for efficiency reasons[29]. Therefore, to achieve an integrated model of green energy competitive for all sectors, an expansion of power grids is required, ultimately calling for an unrestricted investment. This will make renewable energy manageable and allow the transfer of energy from one region to another, connecting supply and demand in rural areas where electrical availability is more complex[30]. For example, the 8 gigawatts processed by Forestalia will contribute to highly industrialized communities like Catalonia and the Basque Country to meet their green energy consumption goals[31].

The regulatory framework is crucial for the successful development of the energy transition and compliance with European directives[32]. Spain is lagging behind[33] in this regard, and it is essential to avoid a shift from economic uncertainty to regulatory uncertainty[34]. Establishing a coordinated approach at the European, national, and regional levels is vital[35]. The regulatory transition faces three major challenges: financing from both the public and private sectors, administrative simplification, and accelerating implementation[36].

> "To achieve an integrated model of green energy, an expansion of electrical grids is required, and ultimately, an investment without limitations."

Fernando Samper García
Director of Wind and Solar Development at Forestalia.

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Best practices

Along with the increase in renewable energies, it is necessary to connect these new sources with businesses and promote the strengthening of the industrial fabric through various means, primarily administrative. In the case of Aragon, industrial estates were, until recently, located in deserted and neglected areas, abandoned by the administration[37]. However, this trend has been reversing in recent years. The challenges for industrial estates and companies in general are decarbonization and profitability, both from an economic and sustainability perspective[38].

Some examples of good practices in energy transition in the industry are presented by companies, both national and international, located in Aragon.

"Saica has included decarbonization within the company's strategic plan."

Luis Miguel Gil Ballano
Head of Energy Services and R&D Manager at Saica

Saica

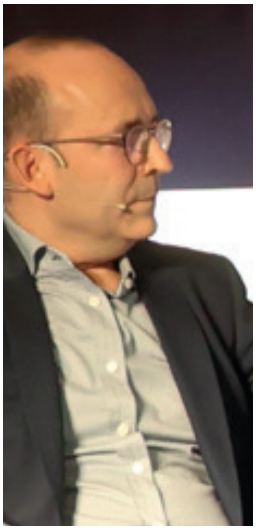
This Aragonese company with a presence in ten countries has circular economy principles in its DNA[39] due to its activity as a manufacturer of paper solutions to promote recycling. The company has intensive activities in both electricity and thermal energy and has set decarbonization as a challenge, as well as an obligation given the European environment in which it operates[40].

To achieve this, their first approach has been to include decarbonization in the company's strategic plan, as well as the creation of an internal multidisciplinary working group to analyze available technologies for the process. Recently, the company has also joined the Science Based Targets initiative, which sets a minimum decarbonization commitment of 45% over a ten-year horizon[41].

An initial step that the company took in 2022 was measuring its carbon footprint. Afterward, it has focused on decarbonizing its electricity consumption and, as a significant challenge, its thermal energy consumption, where it is intensive. The company currently relies on thermal energy through cogeneration and is analyzing technologies that can help decarbonize, all in a very volatile environment, both in terms of prices and regulations[42].

An action that the company has already implemented is the deployment of biomass valorization plants in its factories in France. This experience, along with the variety of countries where the company operates, has led them to conclude that the solution for decarbonization may not be a single one but a combination of several[43].

"Energy efficiency has been achieved through demand reduction, consumption monitoring, and awareness campaigns."



Nicolás Ramón García
Purchasing Manager for Indirect Materials at BSH Spain

BSH

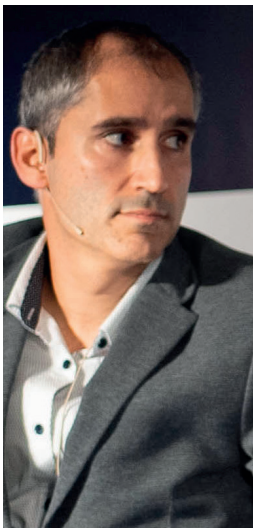
The company, with five production centers and two warehouses in Spain, has been carbon-neutral since 2020, achieved through a commitment to energy efficiency and renewables.

Energy efficiency has been addressed through demand reduction, achieved through process improvement, consumption monitoring[44], and awareness campaigns to reduce consumption. Currently, the company applies this energy efficiency criterion when making investments and acquiring facilities[45].

In terms of the commitment to renewable energy, the company has been purchasing green energy with a certificate of origin guarantee since 2017. The next step they are implementing is self-consumption through photovoltaic installations, starting at the Montañana factory in Zaragoza and expanding to other factories with the goal of reaching an average of 15% self-consumption[46].

As the company remains intensive in gas consumption, it achieves emission neutrality through compensation by acquiring rights. Part of these emissions comes from combustion linked to manufacturing processes, and a significant portion comes from the fleet dedicated to customer service, which is currently undergoing electrification[47].

"Aragon is a privileged location for electrical decarbonization, thanks to its solar and wind resources."



Ignacio Cortés Alonso
Head of Renewable Electricity at Stellantis

Stellantis

The company's decarbonization plan aligns with the EU's Green Deal for 2050, but Stellantis has advanced this challenge to 2038. To achieve climate neutrality, the company focuses on emissions from product manufacturing and road transport, which represents 20% of its CO_2 emissions. Aligned with the EU, Stellantis's decision is the implementation of electric vehicles[48].

By 2030, the company aims for 100% of vehicles sold in Europe and 50% in North America to be electric. Concerning production processes, the company has set a milestone for 2025 to reduce energy consumption and emissions by 50% compared to 2021 while promoting energy autonomy through self-consumption[49].

The company's energy consumption is half electric and half thermal, with the main challenge being the decarbonization of the latter. Aragon is a privileged location for electrical decarbonization, thanks to its solar and wind resources. For thermal energy, Stellantis relies on low-depth heat pumps or geothermal solutions for lower temperature needs, replacing gas with resistances in medium-intensity furnaces, and for higher temperatures, less electrifiable through biogas or hydrogen[50].

"AWS addresses the ecological transition through two pathways: efficiency and the transition to clean energy sources"

David Blázquez
Head of Infrastructure, Energy, and Sustainability Policy at Amazon Web Services (AWS) Spain

Amazon Web Services (AWS)

One of Amazon's leadership principles is based on the belief that all companies have a responsibility, and for those with greater success and scale, this responsibility is even greater, both globally and with the communities where the company operates. In response to this responsibility, Amazon launched its climate pledge in 2019, committing to advance the goals of the Paris Agreement by ten years, a challenge that other companies also joined[51].

AWS addresses the ecological transition through two pathways: efficiency and the transition to clean energy sources, making them the largest corporate buyer in Spain, Europe, and the world. Currently, the company has 479 global renewable projects generating 71,900 GW/hour. In Europe, its capacity reaches almost 6 GW/hour, which could power five million homes, and in Spain, it has reached 2.3 GW with an investment of 670 million euros, creating 1,800 associated jobs[52].

Furthermore, AWS has developed more efficient data centers—five times more efficient than 'on-premise' infrastructures in Europe—improving sustainability. A European average company moving its computing load from 'on-premise' infrastructure to AWS would reduce CO2 emissions by 80%[53].

In line with AWS's belief that collaboration between companies and administrations "calls for a boost,"[54] the company has established various agreements in Aragon. One of them is with the Villanueva de Gállego City Council to prevent water leaks in infrastructure, resulting in a saving of 33 million liters of water per year. Another agreement in Fuentes de Ebro focuses on recovering water from crop drainage, allowing the return of approximately 864 million liters to the system annually[55].

Findings

1. The industry requires an efficient and affordable energy system to ensure its production at a competitive price in a globalized environment. The current climate emergency situation further imposes sustainability within the criteria for choosing energy for the industry, which cannot remain oblivious to the ecological transition. Alongside regulatory and environmental considerations, price fluctuations, and supply issues of fuels like gas linked to international conflicts are driving the industry to embrace renewable energies to decarbonize its processes.

2. For the renewable energy transition to be feasible, several conditions are required: an increase in renewable energy production, improvement of distribution networks, a conducive regulatory framework, and sufficient public and private investment.

3. In this new scenario of promoting renewable energies, Aragon emerges as a region with excellent potential to attract industrial development, thanks to its ability to offer continuous renewable energy due to its abundance of sunlight and wind. The availability of industrial land and its strategic location completes this virtuous circle.

4. The transformation towards a new energy model will bring about changes in the economic model that are yet to be defined, although some trends are beginning to emerge. Values such as efficiency, both in energy and processes, will play a prominent role in this new model, as well as sectors like ICT and data centers, whose prominence will continue to grow. The sustainability of the system also necessitates a reduction in demand, primarily through the simplification of production processes.

"The industry requires an efficient and affordable energy system to ensure production at a competitive price in a globalized environment."

— Video - Summary
— Full -day sessions

Footnotes

[1] **Miguel Marzo**, President of CEOE Aragon

[2] **José Manuel Albares**, Minister of Foreign Affairs of the Government of Spain

[3, 12, 23, 24] **Jorge Azcón**, President of the Government of Aragon

[4,6,7] **Javier Santacruz**, International Energy Markets Analyst

[5, 22] **José Manuel Albares**, Minister of Foreign Affairs of the Government of Spain

[8] **Ingo Stender**, Minister Counselor of the Embassy of the Federal Republic of Germany in Spain

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[15, 16, 17] **Manuel Giménez**, Executive Director of SpainDC

[18] **Eduardo Álvarez**, Technical Director of the Forum Industry and Energy

[19] **Miguel Marzo**, President of CEOE Aragon

[21] **Agustín Lalaguna**, Vice President of CEOE Aragon

[25] **Mar Vaquero**, Vice President of the Government of Aragon

[26, 27, 29, 33] **Julio Tejedor**, Representative of the Energy Cluster of Aragon

[28] **María López Palacín**, Manager of Grupo López Soriano

[30, 31] **Fernando Samper García**, Director of Wind and Solar Development at Forestalia

[32, 34] **José María Yusta**, Associate Professor at the University of Zaragoza

[35, 36] **Yolanda García Mezquita**, Head of Unit at DG Energy of the European Commission

[37, 38] **Mercedes Royo**, President of the Federation of Business Parks of Aragon

[39, 40, 41, 42, 43] **Luis Miguel Gil**, Head of Energy Services and IDi Natur and New Activities at Saica

[44, 45, 46, 47] **Nicolás Ramón García**, Head of Purchasing for Indirect Material at BSH Spain

[48, 49, 50] **Ignacio Cortés**, Head of Renewable Electricity at Stellantis

[51, 52, 53, 54, 55] **David Blázquez**, Head of Infrastructure, Energy and Sustainability Policy at Amazon Web Services (AWS) Spain

— Vídeo - Summary
— Full -day sessions

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“The ecological transition is an opportunity for companies, enabling the creation of a new business and energy context.”