

Q&A: The Future of Nuclear Energy in Spain

NucNet



NucNet spoke to *Ignacio Araluce*, president of Spanish industry group *Foro Nuclear*, about energy policy, plant shutdowns and how Spain's nuclear industry is successfully diversifying overseas.

NucNet: *At 21 %, nuclear generation had the highest contribution to Spain's electricity output in 2016, with a slight increase over 2015. How would you summarise the situation for nuclear and its future in Spain?*

Ignacio Araluce: Nuclear is the primary source of electricity in Spain. Wind is second. In the first quarter of 2017 nuclear's contribution was 25%, but by the end of the year it will even out to more or less the same level of 2016. So nuclear is still very important for Spain's energy mix. The question is, what will happen with nuclear in the near future?

There are commitments Spain has taken on related to the future of its energy mix and the fight against climate change. Some come from the COP21 Paris agreement, others from legislative proposals by the *European Commission*. We must take them into account when deciding on the best energy mix.

Spain's nuclear power stations are efficient. They are working at more than 90 % operability, with no incidents, and everything looks good from a technical point of view.

The country's total electricity generation is about 260 TWh a year. Of this, about 60 TWh comes from nuclear, about 60 TWh from renewable energy sources (RES), 100 TWh from CO₂ emitters such as coal, gas and gas oil, and 40 TWh from hydro.

So what is the problem? For Spain to meet its climate policy commitments, we must reduce greenhouse gas emissions by 60 % until 2030. This means roughly 60 TWh of fossil fuel sources need to be replaced with sources that do not emit CO₂.

If this were done with renewables, it would mean almost doubling existing renewable generation capacity by 2030. Otherwise we will not meet the targets we have agreed on.

NucNet: *The energy minister Álvaro Nadal said the government will be looking for a "great" consensus on energy policy goals for 2030. What place does nuclear have in this consensus?*

Ignacio Araluce: There is about 30 GW of installed renewables generation capacity in Spain. This will need to double by 2030 to meet emissions targets. If we add 3 GW a year until 2030 it could be done. It would be difficult, but feasible.

But imagine that at the same time we shut down all seven nuclear reactors. This would mean losing 60 TWh of electricity generation, which would need to be replaced with renewables, on top of the extra 30 GW of new renewables we already need to meet climate targets. That's a total of another 60 GW of renewables to be deployed by 2030.

This would be impossible. So for this reason we are saying nuclear is needed for the transitional period. It would not be possible to double renewable generation by 2030 to meet emissions goals and at the same time shut down nuclear plants and replace them with more renewables.

Our position is that at least until 2030 all nuclear power stations in Spain must remain in commercial operation.

NucNet: *Does this mean the future of nuclear in Spain limited to long-term operation of existing units. Or would you say there is still a chance for new build in the future?*

Ignacio Araluce: At this stage and under these circumstances new build is improbable. This is not so much because of the views of the government, or the opposition, or even the public, but because of practical business considerations.

We must ask ourselves an important question: is nuclear still a business or not?

We have reached this fundamental stage. The economic conditions have changed over the last decade.

Owners and operators of nuclear stations, and potential investors, are asking these questions. They are in the game to make profits. If it was solely about the public good, then the government could draw up investment plans, but this is not the case.

Today the nuclear sector in Spain is losing money. This was not the case in the past. The tax burden on nuclear generation is heavy. For nuclear operators, taxes and charges amount to more than 40% of revenues.

NucNet: *What form do these taxes take?*

Ignacio Araluce: We are paying an increased fee for the final management of spent nuclear fuel and the search for intermediate and final repositories. The fee has been increased dramatically and is now more or less € 7 per MWh produced, when the average market price for 1 MWh is about € 41.

A law passed in 2012 obliged all electricity producers to pay fees in order to cover a deficit incurred because of subsidies to renewables in the past. Producers have to pay because the government at the time decided not to increase the regulated price for final consumers. Subsidies to renewable energy sources (RES) created a big deficit which nuclear also needs to cover for.

Nuclear operators also have to pay environmental charges in their local communities.

At the same time, the price of electricity has decreased dramatically. Last year it was on average approximately €41 per MWh. As I said, more than 40 % of this goes on taxes and charges. Companies are losing money and there is the possibility that if the situation does not change, they will abandon nuclear on economic grounds.

NucNet: *Foro Nuclear has called for a new regulatory framework to ensure the economic viability of keeping reactors in operation. What are the positions of the government on nuclear? Is there a realistic assessment on the role of nuclear in Spain's energy mix?*

Ignacio Araluce: Nuclear shutdowns could create problems with supply. Spain's grid is not well-connected to its neighbours. Imports are not easy.

We need a debate about the future of the energy mix in Spain. It must include all available sources and must be realistic, not a dream.

However, the government seems unwilling to discuss a new policy framework. We argue that nuclear is a low-carbon source of energy and provides stability to the grid. The ruling conservative party [Partido Popular] believes nuclear is necessary and yet, is not open to

defining a new regulatory framework. They say it is needed, but do not say how it can be done.

This grid stability has a price. RES need this stable support, because they are intermittent. We need a comprehensive market that takes into account these elements, so the baseload availability is rewarded.

The government is considering a package to accommodate the whole CO₂-free economy. They promised to speak to all stakeholders openly and we hope to have the opportunity to explain our views. I hope that in one year we will have a new framework that will be respectful of all sources important for the stability of the grid. Decisions taken today will be very difficult to reverse and so everything must be thought through carefully. I am a little uneasy because there are risks if decisions are taken in a rush and without discussion.

NucNet: *If you had the power to make one big change to support the nuclear industry, what would it be?*

Ignacio Araluce: To reduce the tax burden. This is the most urgent issue.

NucNet: What is the public's attitude towards nuclear?

Ignacio Araluce: The most recent polls showed about 56 % were against nuclear and 26 % in favour. But 50 % think nuclear is safe and well operated. The discrepancy comes from the fact that the public is sensitive to the waste topic.

Few people were aware that nuclear does not produce CO₂ or that it provides stability to the grid. People need to be better informed.

NucNet: *What about the future of the Spanish nuclear industry beyond reactor operation?*

Ignacio Araluce: In Spain we have built up a robust nuclear industry including many elements of the nuclear cycle, from engineering and fuel manufacturing to the manufacture of big components. If we phase out nuclear, it would be a significant blow to all these associated industries.

However, the industry has been diversifying its customer base by looking at export markets. The Spanish nuclear industry is selling products and services to customers in 40 different countries. Revenues were around € 280 m last year.

Also, many nuclear industry products can find applications in other industries, so this is another area for expansion.

NucNet: *Has Enresa, the state-owned company in charge of spent fuel and decommissioning, made any progress on the proposed Villar de Cañas centralised interim storage facility?*

Ignacio Araluce: Enresa is financed by fees paid by all nuclear operators into a designated fund, which already holds € 4.5 bn. Operators pay roughly € 400 m a year. Villar de Cañas, in central Spain, was approved as a site for an intermediate repository by the Spanish government in December 2011, but construction has not started. Regional authorities have been delaying the process over certain ecological requirements – they wanted to expand a bird-protection area that would include the site where the repository [Almacén Temporal Centralizado, or ATC] would be built. However, the Supreme Court rejected this request.

Enresa, is still going through the licensing process for the ATC, waiting for the Ministry of Agriculture, Fishing, Food and Environment to complete the environmental impact assessment and then for the Ministry of Energy to authorise construction.

Until a centralised repository is built, all spent nuclear fuel is kept onsite at the respective nuclear station. We have temporary dry-cask storages onsite at several



The control room of the Spanish nuclear power plant St. Maria de Garoña. The plant was permanently shut-down after 41 years successful operation following 5 years long-term shutdown and the political decision not to resume operation in summer 2017. (Photo, courtesy: nucleenor).

locations – José Cabrera, which is shut down and being decommissioned, Trillo, Asco, and soon at Almaraz and Garoña. More money is spent this way because of the lack of a centralised repository.

NucNet: *Finally, you were recently appointed president of Foro Nuclear. Could you outline your vision for the Spanish nuclear industry and also for Foro Nuclear itself?*

Ignacio Araluce: Foro Nuclear should be flexible and fast enough to react to the environment, which is changing rapidly. We would like to help open new markets for Spanish nuclear companies. We have traditions in this and we will continue to do it, in France, in China, in the UK.

We have to continue supporting the nuclear industry and to explain the importance of nuclear in the energy mix. I would like our voice to be heard. We need to explain the positive and negative aspects of nuclear power. It is vital that people are well educated and aware of the realities.

NucNet: *How will the decision to close Garoña affect the rest of the nuclear fleet? What is the view of Foro Nuclear?*

Ignacio Araluce: This decision was made by the ministry in spite of a judgment from the Nuclear Security Council that Garoña could continue operation.

It is a specific, one-off decision that does not affect the continuity of operation of the rest of fleet. The Garoña case became political and closing the plant, which has been inoperative many years, did not jeopardise network stability. The government's position is to maintain nuclear energy and ensure that the Garoña decision will not affect the rest of the fleet.

Nuclear energy is non-polluting, plays a key role in the electricity mix and is the biggest source of electricity production in Spain.

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