

Siting (and mining) at the border

Spain-Portugal nuclear transboundary issues¹

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Abstract

This article is focused on nuclear transboundary issues between Portugal and Spain, two countries that share a long history of nuclear collaboration and conflict of late, where national borders played a crucial role. The issues at stake cover the full spectrum of the nuclear cycle: uranium mining, power production and waste disposal. The first stage, under two fascist dictatorships, was characterised by collaboration within a common techno-political imaginary, where nuclear energy was understood as a driver of modernity, but with the absence of the public in decision-making processes. The second stage was marked by the advent of democracy in both countries and the reconfiguration of nuclear policies: while Portugal abandoned the nuclear endeavour, Spain implemented

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a nuclear moratorium but kept ten reactors operative. The third phase, which started in 1986 and goes until the present time, was marked by two crucial events: joining the European Communities (EC) and the Chernobyl accident. The first event allowed Brussels to become a referee on Spanish/Portuguese nuclear disputes. The second one implied that Portugal expanded its institutional vigilance on Spanish nuclear activities and led to the emergence of transboundary social movements against nuclear power.

Keywords

nuclear power plants, uranium mines, waste repositories, cross-border, cooperation, anti-nuclear

Introduction

Portugal and Spain share a land border of 1214 kilometres, one of the longest borders between two countries in Western Europe. It was originally established in 1143 and most recently revised in 1926. Three of the five main rivers of the Iberian Peninsula cross the border flowing from Spain into Portugal (Tagus, Douro and Guadiana, the last two serving as the border at times). Divided by the political frontier, the border regions share ecosystems and geographical, historical, cultural and economic elements, as well as a long history of collaboration and conflict. On both sides, the border areas are characterized by low population densities and a relative economic underdevelopment, due to the arid climate and the distance to the economic centres of each nation (Dobado, 2006). There is some literature on border issues between Spain and Portugal, encompassing economic, political and environmental aspects (Lorenzana and Mateos, 2008; Medeiros, 2010; Gualda et al. 2013; Calderón, 2015; Martin and Hortelano, 2017). However, there is no scholarly work on the historical evolution of transboundary nuclear issues between the two Iberian nations. As Kaijser and Meyer define in the introduction to this special issue: “Transboundary issues relate to a problem which is due to a shared border between two (or more) neighbouring countries (...) they result from external, cross-border effects of risks or pollution, which are at geographical proximity (...) and trigger a variety of transboundary relations between different kinds of actors, at different geographical and political scales” (Kaijser and Meyer, 2018a).

The Iberian history of nuclear border issues is an emblematic case study to delve into the interplay of politics, technology and social movements at different geographical levels, from the local to the national. It highlights the transnational dimension of nuclear projects and its potential to generate social and political dissent, showing how the civil uses of the atom have generated strong social and political reactions and affected

diplomatic relations. Over the past 900 years, this border has witnessed wars, commercial exchange, competition over the control of natural resources as well as cooperative relations.

The Iberian Peninsula tends to be neglected in studies of anti-nuclear movements, which tend to focus on Central and Northern Europe (Börj and Pollusen, 2009; Milder, 2014 and 2017; Müller, 2013; Oberlé, 2016; Tompkins 2016a and 2016b). What makes the Iberian Peninsula a particularly interesting test case for nuclear transboundary issues is that it encompasses aspects relating to all stages of the nuclear cycle, from uranium mining to nuclear power and waste management, along with the dual transition from dictatorship to democracy, which is probably a unique case in Europe. Moreover, similar to the experience of transboundary relations between Danish and Sweden discussed in the special issue (Kaijser and Meyer 2018b) the Spanish/Portuguese context is marked by a long history of cooperation between nuclear institutions (public and private) across the border, that more recently prompted conflict, but also by the emergence of transboundary activist networks: a heterogeneous movement composed of environmental activists and former uranium miners. Over the past forty years, vibrant anti-nuclear movements have flourished in both countries; however, they have only started to attract scholarly attention in the past decade (for Portugal see Araújo and Mendes, 2013; Barca and Delicado, 2016; Graça, 2017; Mendes and Araújo, 2011; Pereira, Fonseca and Carvalho, 2018; for the case of Spain see Costa Morata, 2009; Espluga et al. 2017; Hamilton, 2017).

Portugal never materialised its commercial nuclear ambitions, only operating an experimental reactor in Sacavém since 1961. The Spanish program, however, operated at its peak ten commercial reactors, four of which use the Tagus River for cooling, which runs from Spain into Portugal (see Figure 1). Political disputes over the use of rivers that cross the border had existed between both countries from the days of the hydroelectric projects of the early twentieth century. They re-emerged in relation to nuclear issues towards the end of the century. The difference between the country upstream (Spain) and the country downstream (Portugal) marked the different perceptions about transboundary issues. Over the past three decades various Spanish plans for nuclear related facilities close to the Portuguese border have resulted in suspicion, diplomatic tensions and public mobilization, with relevant impacts on foreign relations and the unfolding of Spanish nuclear projects. In the case of Spain and Portugal, nuclear transboundary issues tended to escalate to supranational problems by the continuous call to Brussels, typically at the level of the European Commission, as referee by the Portuguese authorities.

Within this context, transboundary refers to issues that arise precisely because of the presence of a border, beyond which one of the contestants



Figure 1: Nuclear power projects in Portugal and Spain 1960s-2018, urban areas and main rivers

Source: Own elaboration based on Rubio-Varas and De la Torre (2017) for the nuclear plants. For urban areas Schneider et al. (2003).

has no legislative power over a matter that may potentially affect its own side of the border. Transboundary matters are transnational in essence since they affect more than one nation. However, transboundary issues are different from other transnational matters given that in other nuclear transnational conflicts the existence of a shared border between the contenders is irrelevant. This has become particularly evident after the Chernobyl accident, leading to the long-range spread of radioactive substances (Kalmbach, 2013), or the controversy over deep sea waste disposal (Hamblin, 2008). Both cases had transnational implications among nations not sharing a common border. Close proximity plays a larger role in transboundary issues, but “closeness” has a changing meaning over time as we shall see. Our research addresses a central aspect of environmental humanities, ‘the complex interrelationships between human activity (cultural, economic, and political) and the environment, understood in its broadest sense’ (TORCH, 2016). In addition, the cases presented serve to reflect upon the interplay between the border as a political construction and the recognition that the environment is also a social phenomenon, one of the key insights stemming from environmental history (Warde et al., 2018).

In this article we set out to delve into the evolution of transboundary nuclear issues between Portugal and Spain over the past sixty years, trying to show how earlier chapters of this story help to understand the present. The parallel evolution of the institutional settings in both countries (from dictatorship to democracy and the simultaneous joining of the European Economic Community) contrasts with the separate paths that both countries took regarding nuclear energy. In order to obtain the empirical data supporting our analysis, we relied on a number of primary sources from public and private archives in Portugal, Spain and the United Kingdom. We also consulted documentation from supranational bodies such as the European Union and the United Nations. Reports from NGOs and plenty of national, regional and local newspapers, from both sides of the border, also provided excellent sources for our research.

The article structure follows the historical evolution related to three phases of transboundary nuclear issues. The first section enquires about the collaboration of state, research and industrial actors over the period in which two fascist dictatorships shared a common techno-political imaginary – they both understood nuclear energy as a driver of modernity and the public was absent from the decision-making process (Pereira, Fonseca and Carvalho, 2018). The second section identifies the event that seems to mark the beginning of the nuclear mistrust between the two nations: the Manzanares spill. Section three covers the second historical phase of transboundary relations marked by the advent of democracy in both countries and the reconfiguration of nuclear policies: while Portugal abandoned nuclear power, Spain implemented a nuclear moratorium but kept ten reactors operative. Sections four and five tackle the conflicts regarding waste management and uranium mining that arose during the last historical phase which started in 1986 and lasts until the present time. This last phase was marked by two crucial events that took place in 1986: both countries joined what was at the time still called the European Communities (EC), and the Chernobyl accident. The first event allowed Brussels to become a referee on Spanish/Portuguese nuclear disputes. The European Union (EU) provides an international framework for the resolution of such conflicts, and new supranational legislation was implemented at the European level as a consequence of Chernobyl. Another direct consequence of the accident in the Soviet Union is that Portugal expanded its institutional vigilance on Spanish nuclear activities. The event also led to the consolidation of transboundary social movements against nuclear energy. We conclude the article with a summary of our findings.

The transnational nuclear cooperation phase (1950s to 1970s)

In 1958, at the dawn of civil uses of nuclear energy, a British report to the Chairman of the United Kingdom Atomic Energy Authority (UKAEA, 1958) stated that Portugal has recently suggested that Spain should be invited “to cooperate technically in the activities of OEEC (Organization for European Economic Co-operation) in the field of nuclear energy”. Concerned with the rapidly increasing energy needs of the post-World War II European economic recovery, and particularly the possibilities presented by nuclear power, the Council of the OEEC (the predecessor of the OECD) set up the European Nuclear Energy Agency (ENEA) in February 1958. A month earlier, on 10 January 1958, Spain’s Association Agreement with the OEEC had been signed. Barely eighteen months later, on 20 July 1959, Spain became a full member country of the OEEC and the ENEA. By that time the Portuguese had been supplying the Anglo-American Combined Development Trust with tons of uranium oxide for over a decade (Gaspar, 2018). The British considered there would be clear advantages for Portugal to cooperate closely with Spain on nuclear matters, among other things, because all transport of nuclear material or fuel from Portugal to the rest of Europe by land would cross the Spanish territory. Moreover, Spain was the only country with which Portugal could associate for joint production of nuclear power, as it does not share a land border with any other nation. Therefore, the British report concluded, it would be desirable for the two countries to coordinate their health and safety precautions, and there might be opportunities for joint exploitation of uranium deposits near the frontier (UKAEA, 1958). In fact, the Iberian Peninsula is among the main European uranium mining regions, together with the Czech Republic, East Germany and France (Dahlkamp, 2016; for global analysis on uranium trade see Hecht, 2014).

Portugal was aware of significant uranium reserves on its territory since 1907. Its exploitation began in 1913, in the mines of Urgeiriça, Canas de Senhorim (Viseu) and ore processing infrastructure was also built in the area that holds the most important reserves of uranium. By the end of World War II, Portugal was the third largest producer of uranium concentrates in the West (Oliveira, 2002). In 1949, Portugal signed an agreement with England that preceded the beginning of the Cold War and encouraged the exploitation of 4,370 tons of uranium oxide in sixty-one small mines spread over the districts of Guarda, Viseu and Coimbra.

In Spain, access to the country’s uranium and radioactive mineral resources was nationalised in 1948 and exporting them was strictly

forbidden.² Like a number of other European countries such as Sweden or Denmark (relying on uranium from Greenland) in the age of “techno-scientific nationalism” (Nielsen and Knudsen, 2013: 237f.) in the 1950s and early 1960s, Spanish authorities cherished the idea of a nuclear program relying on natural uranium mined domestically. As elsewhere, the idea was abandoned in the mid-1960s, when turn-key American light-water reactors relying on enriched uranium entered the market.

In line with the British advice mentioned above, Spain and Portugal cooperated on nuclear issues throughout the 1960s. The fact that both countries were at the time corporatist/fascist regimes probably facilitated these relations. Both the Portuguese Estado Novo and the Spanish Francoist regime enforced nationalist and conservative Roman Catholic values on their populations, restricted freedom of speech and association, applying censorship to the press and all published material (Gaspar, 2018; Saraiva, 2016; Rubio-Varas et al., 2018). Both nations created similar institutional structures for the development of nuclear civil uses, even with an identical name: *Junta de Energía Nuclear* (JEN, “Nuclear Energy Board”). Both JENs exchanged students and scientists and shared resources (natural and man-made). In the early 1960s, both countries began to operate experimental research reactors (Romero de Pablos and Sanchez Ron, 2001; Ramalho et al. 1999). By 1968, the two countries provided mutual assistance in uranium mining and the fuel cycle, information about nuclear plants and high energy physics (ABC, 1968a; ABC, 1968b).

The informal collaboration was made explicit in 1971, when both countries signed an agreement for cooperation for the development of civil uses of nuclear power (ABC, 1970; ABC, 1971). The agreement institutionalised the pre-existent cooperation on nuclear research and the exploitation of natural resources, knowledge and installations (BOE, 1972). Spain had a long experience in such treaties, having been among the earliest signatories of bilateral cooperation agreements for civil uses of nuclear power – with the US (1955), France (1956), Great Britain (1960), Canada and Italy (both in 1965). In line with the rest of the nuclear cooperation agreements signed at the time, the text made no reference to safety or other shared regulations regarding nuclear power. Before the end of the 1970s, Spain signed agreements of nuclear cooperation with Germany (1973), India (1973), Argentina (1978), and Mexico (1978) in similar terms.

Collaboration at the political level fostered cooperation in the private sector. Following the visit of the Portuguese Minister of Economy to Spain

² Decree of December 29, 1948 published in *Boletín Oficial del Estado* [BOE] N° 19, (Madrid 1949).

in 1964, governments agreed to create a commission to study the viability of a joint nuclear power plant on the southernmost part of the Guadiana river, in the area where the river acts as the border, to provide electricity for both countries. Two private utilities, *Empresa Termoelectrica Portuguesa* (ETP)³ and the Spanish utility *Sevillana de Electricidad* carried out the study. In 1966, they presented the feasibility study which included technical, economic and safety aspects. However, the project never passed the planning stage and the idea was eventually abandoned.⁴ As both countries were under the rule of a fascist elite, citizens usually were not informed about major technological projects, including plans for nuclear development. Like in the socialist dictatorships in central Europe, including East Germany, discussed in the contribution on the planned nuclear waste depository on the inner-German border (Kirchhof, 2018), such a sociopolitical context did not permit the emergence of organized anti-nuclear mobilisation.

A couple of years later, the private sector once again took the lead, putting forward plans for a nuclear facility using the Tagus River. Spanish private utilities contacted their Portuguese counterparts on the proposal for the Almaraz nuclear power plant (NPP), a town in Cáceres Province, Extremadura, roughly 100 kilometres from Portugal. For most of 1968 and 1969, the Portuguese seemed interested in participating in the construction and exploitation of Almaraz with a 25 per cent share (*Compañía Sevillana de Electricidad*, 1968). In the end, the Portuguese eventually pulled out. They could not find neither financial nor political support to embrace the venture. Hence, Almaraz formally took off as an exclusively Spanish project in 1972.

The Manzanares radioactive spill (1970): the first signs of mistrust?

So, when did the nuclear controversies begin between the two neighbors? The earliest instance of disagreement on nuclear matters between Spain and Portugal that we can identify goes back to the early 1970s, due to an under-reported accident at Spanish JEN installations in Madrid which was finally made public after the Portuguese authorities disclosed their measurements.

³ In April 1958, the Portuguese Association of Nuclear Companies (*Companhia Portuguesa de Indústrias Nucleares*, or CPIN) was created. CPIN was a joint venture of several companies. In 1964 CPIN sold its assets to *Empresa Termoelectrica Portuguesa* (ETP)

⁴ *Compañía Sevillana de Electricidad and Empresa Termoelectrica Portuguesa, Informe sobre viabilidad de una central Hispano-Portuguesa en el sur de la península ibérica*, December 1966.

The events unraveled as follows: in November 1970, during a maintenance operation at JEN-1 experimental reactor and reprocessing center headquarters in Madrid, some 300 liters of liquids contaminated by strontium-90 and cesium-137, both radioactive, leaked to the Manzanares river, a tributary of the Tagus (Blansfield, 1987a; Díaz Díaz and López Jiménez, 1993). According to a report in *Nuclear Engineering International* (1971) the leakage amounted to “about one thousand Curies”. The same report explains that for months, Spanish nuclear circles quietly commented that JEN had been collecting and taking away vast amounts of agricultural products, fish, water and mud from the river banks, to be disposed of at El Cabril, the mine acting as nuclear waste storage at the time (see Figure 3). The “Operación Jarama”, as it was named, “gathered more than 300 barrels of radioactive mud and vegetables” (Blansfield, 1987a). Although the press was censored, some newspapers in Madrid began to disclose some information on the event five months after it took place. In May 1971, seven months after the accident, a Spanish JEN official still denied the event in the press: during spring and autumn, JEN claimed, levels of radioactivity usually increased in a sunny country.⁵ A few days later, another officer from the Spanish JEN actually stated that “a certain abnormal – but not dangerous – increase of radioactivity was detected in November in the Manzanares, Jarama and Tagus rivers” (*Nuclear Engineering International*, 1971). However, on 15 May the Spanish weekly magazine *Sábado Gráfico* reported that the amount of radioactivity released in less than one month in the Jarama and Tagus rivers seemed to be “between 100 and 1000 times higher than the normal waste produced by a nuclear power station in the same period of time”. By then, the Portuguese JEN announced they had detected the contamination downstream in the Tagus river in Portugal (*Nuclear Engineering International*, 1971). Only after that an official statement from the Spanish JEN disclosed the accident, almost half a year after it occurred.

The official statement by the Spanish JEN declared that the combination of technical (a broken pipe) and human errors (a safety valve connecting the facilities with the city sewer system, that should be closed, was inexplicably open) caused 40 litres of liquid containing diluted fission products to end up in the river. JEN estimated that direct radiation was close to null, and only in specific spots along the Manzanares, Jarama and Tagus the radiation was above normal (Carrión, 1971).⁶

⁵ ABC, 2nd May 1971. This statement is also reported in the piece in *Nuclear Engineering International* (1971) with an expressive “Spain is different!”.

⁶ 45 years later we contacted by email Ignacio Carrión, the journalist who was responsible for the report. “What I do remember is that a certain solemnity was given to my visit, as if it were not a Nuclear Center but rather less than

As this episode unravelled, the two countries were in the process of negotiating and signing the first cooperation agreement for the development of civil uses of nuclear power mentioned above. Interestingly, safety issues were excluded from the agreement. But for the first time a Portuguese action (the official disclosure of information long denied) had an effect on the other side of the border (forcing transparency on the Spanish side).

Democratisation and the new actors (1974-1986)

By the mid-1970s, both dictatorships came to an end almost simultaneously but in rather different fashions. In Portugal, in April 1974, the fascist dictatorship was overthrown by the Armed Forces Movement (MFA) in a coup d'état known worldwide as the Carnation Revolution. In Spain, the dictator died in his bed in November 1975, triggering a period known as the Democratic Transition. In both cases the end of the authoritarian rule had strong implications for the nuclear endeavour. On both sides of the border, antinuclear movements that started as grassroots local movements managed to gain resonance at the national level and paved the way for the first environmental movements (Barca and Delicado, 2016; Costa Morata, 2009; Santos Pereira, Fonseca and Carvalho, 2018). Although, at least in Spain, some local and regional protests of environmental nature had taken place during the dictatorship (Corral Broto, 2016), the advent of democracy substantially transformed political ecologies in both countries, leading to the emergence of environmental social groups.

As elsewhere in Western Europe, transnational links and transfers ranging from nuclear knowledge to protest culture and tactics were important for the nascent Iberian movements (Kirchhof and Meyer, 2014; Tompkins, 2016a and 2016b; Milder, 2017). During the demonstrations against the only Portuguese commercial nuclear power project at Ferrel, especially during the *Festival for Life and Against Nuclear* of 1978, the Portuguese antinuclear movement benefited from the expertise and experience of environmental activists from Western Europe. A large number of Portuguese activists and scientists became familiar with environmental protests and concerns while studying in France (Barca and Delicado, 2016), and various Spanish activists came to Portugal to support their Iberian friends.

Yet – despite the importance of these movements that made the public aware of the problematic sides of nuclear power, eventually it was structural constraints, and not necessarily antinuclear movements, that undermined

one of the dependencies of the Palacio del Pardo [i.e. the residence of General Franco]” (personal communication).

the viability of nuclear power for both Portugal (UNDP/World Bank, 1984; Gaspar, 2018; Santos Pereira, Fonseca and Carvalho, 2018) and Spain (Rubio-Varas et al., 2018) – the former halting nuclear energy entirely, the later restraining it to ten reactors after the nuclear moratorium of 1984.

What is relevant for our purposes here is how democratisation and the subsequent change of nuclear policies affected transnational and trans-border issues. Democratisation led to a new set of institutions to deal with nuclear issues, a process intended to reshape the institutional structures in accordance with the new political rule. This coincided with an international shift towards institutionally separating promotion and research from the regulation of safety, to allow for independent supervision of the growing commercial nuclear power sector and to avoid conflicts of interests. Following British and US examples, where the Atomic Energy Commissions were split or abolished in 1971 respectively 1975 (Josephson, 2018; Butler and Bud, 2018), the twin institutions that had led nuclear development in both countries during the dictatorships – the JENs –, were subsequently abolished and replaced by newly created bodies concerned with either safety issues or research.⁷ In 1979, Portugal created the *Gabinete de Protecção e Segurança Nuclear* (GPSN -the Safety Assessment Office). Nuclear energy, instead of playing a fundamental role in the definition of national energy policies, progressively became a matter of concern. In Spain, the Parliament approved in 1980 the law creating the CSN (Nuclear Safety Council) for nuclear safety and radiation protection as an independent public body – without any promotion function – which operates in Spain since 1981. Despite this institutional reshuffle, most of the experts from JEN remained as employees of CSN and GPSN. The main difference is that the new institutions now responded to democratically elected parliaments, regional and local authorities, and to the public in general. Since its creation, CSN's main objectives included timely information of both the parliament and the public.

The newly created bodies were to carry out the agreements that would mark the nuclear relationships until the entrance of both countries in the European Communities (EC) in January 1986. On the one hand, a Protocol for Cooperation in Nuclear Safety was signed among GPSN and JEN (later transferred to the CSN) as well as the Luso-Spanish Agreement for the Safety of Border Nuclear Installations, which was signed in Lisbon in March of 1980

⁷ The Portuguese JEN was closed in 1979 by the following law: Decreto-Lei nº 361/79 de 1 de setembro – Formalização da extinção da Junta de Energia Nuclear. The Spanish JEN slowly mutated into the CIEMAT officially created in 1986, in the making since 1983, Romero de Pablos Sánchez Ron (2001).

and ratified by the respective Parliaments in 1981 (CSN/IS/1/81:28). A first of its kind between the two countries, the agreement defined border nuclear facilities as those installations (reactors, nuclear fuel factories, nuclear waste sites and reprocessing facilities) “siting at a distance of less than 30 kilometres from the border line between both countries, or any other distance internationally defined and accepted by both parties”. Both countries agreed, for ten years, to:⁸

- warn the neighbouring country with sufficient notice of any intention to build, operate or exploit any such facility;
- provide comments and observations both on the authorisation process and during the operation of the installations (which had to be addressed by the liable country);
- establish in their territories the necessary systems to detect radioactivity levels and to mutually inform in the event of an emergency that could have implications for the other country.
- Respect the restrictions established by any of the parties concerning the secrecy of provided reports and documents regarding installations, technical process, conditions of exploitation and commercial relations.

Beyond the aforementioned commitments, competent authorities of the building country would keep the competent authorities of the neighbouring country informed of any significant incidents at other nuclear facilities that may affect their territory.

In order to enforce the agreement, a binational Permanent Technical Commission (PTC) was created, in charge of organising meetings at least once a year. Composed of members of the CSN and the GPSN, the PTC met twice in 1981, in September and December (CSN/IS/1/81: 28). In both occasions, the main issues were the Portuguese comments and observations on the Spanish authorisation for Sayago’s nuclear power plant, the only border installation according to the definition in the transboundary agreement, since it was just off the Portuguese border in a small village south of the Douro river (see Figure 1). The project of Sayago’s nuclear plant was submitted for approval in 1973 by the Spanish largest electricity company – Iberdurero – and the government initial permission was granted in 1975.

⁸ *Acuerdo sobre Cooperación en materia de Seguridad de las instalaciones nucleares fronterizas entre España y la República de Portugal* [Agreement on Security Cooperation of border nuclear facilities between Spain and the Republic of Portugal], “BOE” núm. 196, de 17/8/1981, pp. 18859-18860.

The town mayor recalls that in 1976 and 1978 two agreements with the utility specified the economic benefits the village would get in return: (La Opinión de Zamora, 2008): “Iberduero and the City Council reached an agreement. If the project did not materialize, the land would revert to the City Council. The benefits offered by the then Iberduero included the sanitation and the public lighting for the town, as well as the development of two workshop schools which were all materialised”. In line with the promise of prosperity to nuclear communities, which had accompanied nuclear power from the very beginning (Brown, 2013), the catalog of projects was much broader: construction of a new Town Hall, Rural Hygiene Center, sports hall, swimming pool, extension of the cemetery... All in exchange for the land to build the nuclear plant on, which was yet awaiting final authorisation by the Government.

These plans coincided with the early anti-nuclear mobilisations in Portugal, against the Ferrel nuclear plant. Anti-nuclear groups organised two important events against the Sayago project: during the International Day Against Nuclear Tests, in 1979, coordinated by the antinuclear committee of Lisbon, several activities directed against nuclear energy were put in place, such as debates, conferences on energy issues, exhibitions and concerts. The Portuguese antinuclear movement was against both nuclear weapons and energy (Santos Pereira, Fonseca and Carvalho, 2018). Two years later, ties across the border had been established and the Spanish side became involved; in June 1981 there was an anti-nuclear festival in Miranda do Douro, 15 kilometres from Sayago, in June 1981 was supported by local authorities from both sides of the border, as well as both Portuguese and Spanish environmental groups (Guimarães and Fernandes, 2016; Madeira, 2016).

The comments by the Portuguese government were to be considered in the pending authorisations by the Spanish authorities (CSN/IS/2/82: 39). Even if the Sayago nuclear power plant never obtained the final authorisation to be built, the preparatory works at the site were well advanced, the reactor vessel had been built by ENSA in Santander and the financing for a reactor manufactured by Westinghouse had been guaranteed by the Export-Import Bank (Rubio-Varas and De la Torre, 2017). Yet it is premature to conclude that the fate of Sayago was primarily due to Portuguese objections. With the arrival of the Socialist Party to the Spanish Government, in 1982, Iberduero froze the project. All that is known is that at the time of the Spanish moratorium of 1984, Sayago NPP was excluded from compensations to the utilities, since the plant never obtained the final authorisation, in contrast with the five reactors officially halted by the moratorium. In Spain, the number of uncompleted nuclear projects is more than double the number of reactors that were

eventually connected to the grid, as shown in Figure 1 above, with seven of the anticipated almost thirty reactors being located within 100 kilometres of the Portuguese border.

Within the framework of the Agreement on the Safety of Border Nuclear Installations, throughout the first half of the 1980s there were technical visits by the Portuguese to other Spanish installations close to the border (but not so close as to be defined as border installations by the agreement), namely to the building sites of Almaraz and Valdecaballeros NPP, and the fuel factory of ENUSA in Salamanca (CSN/IS/2/82: 39). There were exchanges of personnel between GPSN and the CSN, plans to collaborate to study the radioactivity in the Tagus river, and talks about opportunities for future collaboration, given that the Portuguese energy plan of 1984 still included nuclear plants, even if the plan was yet pending approval (CSN/IS/6/84: 68).

With the Sayago project abandoned and Valdecaballeros NPP paralysed by the Spanish nuclear moratorium of 1984, most of the activity of the binational PTC focused on the vigilance of Almaraz NPP after Chernobyl's accident. This nuclear station is located about 100 kilometres (60 miles) from the Portuguese border (see Figure 1). After Chernobyl, that distance seemed far too close from the Portuguese border. The two reactors of the plant make use of the Tagus River for its cooling needs, which flows right into Portugal's economic heart and capital city, Lisbon. A meeting on nuclear emergencies was organised in July 1986, and the GPSN representatives were invited to the emergency drills at Almaraz later that year, while the GPSN requested information on the Spanish part to prepare a model to simulate potential leakages on the Tagus river (CSN/IS/11/86: 108).

In parallel, in Portugal massive public demonstrations against the Ferrel power plant in 1976 compromised the political viability of nuclear energy – by the late 1980s the focus shifted towards an increase in natural gas production, and during the early 2000s towards renewable energy sources (Estanqueiro et al., 2008). In 1987, Portugal decided to abandon its nuclear plans forever. From then onwards, Portugal expanded its institutional vigilance on Spanish nuclear affairs. During the 1990s there were a number of initiatives that illustrate this trend in Portugal, such as the creation of the Council for Nuclear Accidents and Radiological Emergencies in 1994, the development of a Technical Group for Nuclear Emergencies in 1997, and the creation of a Commission for Radiological Protection and Nuclear Safety in 1998 (Oliveira, 2002). The remaining paper shows evidence of the change in the transboundary nuclear relations that take place after 1986, in vivid contrast with the previous three decades of friendly and cooperative relations between Portugal and Spain.

Such a change in diplomatic relations between neighbours on the issue of nuclear installations at the border is remarkably similar to the change in international relations between Denmark – once it had given up its nuclear plans – and Sweden, which continued to rely on nuclear power, discussed in the relevant contribution to this special issue (Kaijser and Meyer, 2018b).

Siting waste at the border

In 1987, the Spanish government approved the First Nuclear Waste Plan as submitted by the National Company of Radioactive Waste Management (ENRESA by its Spanish acronym). The Spanish Parliament created ENRESA three years earlier, in 1984, as a public, non-profit organisation responsible for the management of radioactive waste. Spain's National Waste Plan charged ENRESA with searching for suitable sites for nuclear waste storage, since spent fuel remained stored at fuel pools at the nuclear power plants. As the contribution to this special issue on the Gorleben nuclear waste site aptly demonstrates (Kirchhof, 2018), the waste issue remained unsolved across the European Communities (EC). In 1985, the first European Research Framework Programme supported research in the field of radioactive waste management in which Spain participated, most notably in the actions related to safety of geological waste disposal (Finzi, 1989). According to the Call document (European Commission, 1985), at least two pilot underground facilities focused on testing and demonstrating processes in different geological formations were already underway in the EC at the time: the Asse salt mine in the Federal Republic of Germany (HAW project) (Kirchhof, 2018; Tiggemann, 2004) and the argillaceous layer located under the Mol nuclear site in Belgium (HADES project). The Spanish ENRESA had presented a plan to the EC for a subterranean pilot installation to study the behaviour of granite as an isolator. In November 1986 it received a 5.5US\$ million grant under the European COST Action programme (Blansfield, 1987b). The project name was *Instalación Piloto Experimental Subterráneo* (IPES by its Spanish acronym). The IPES project was exposed to the public as it was included in the First Nuclear Waste Plan for Radioactive Waste approved by the Government in 1987.

The site for the IPES was Aldeadávila de la Ribera, a village located in the basin of the International Douro river (for 112 kilometres, this trans-boundary river shared between Spain and Portugal represents the natural and political border between both countries, see Figure 3). The location was chosen because the high walls of granite carved by the river would

facilitate access to deep granite formations from the river banks. The site, on the outskirts of the village, was located on land owned by the Spanish largest private utility Iberduero (Blansfield, 1987b). The exact location was four kilometres from Portuguese territory. The Douro River at the time was providing water for roughly half of the 10 million Portuguese (see Figure 1). ENRESA's plan to install a laboratory for fuel disposal experiments unleashed a torrent of protests in the region, on both sides of the border.

By then, the Spanish province of Salamanca already hosted other nuclear industries, such as the uranium mines of Saelices el Chico since 1975, and the neighboring uranium fuel factory in Juzbado, since 1985 (see Figure 3). This last facility had already mobilised thousands of protesters in the early 1980s (2,500 people according to *El País*, 17 June 1980), without managing to stop it, with the Anti-Nuclear Committee of Salamanca (Spanish name, CAS) leading the protests on the Spanish side and the Portuguese antinuclear movement joining forces from early on. The news of a waste pilot plant therefore added fuel to the antinuclear movement in the region, leading to street protests in the area.

In opposition at the time at the national level, the Spanish party of the right, the Partido Popular, seized the opportunity and tried to line up with this anti-nuclear sentiment to criticise the socialist party. The controversy came to a head when the vice-president of the Provincial Council of Salamanca, Luis Calvo Rengel, from the Socialist party, was detained by local protesters in the Town Hall of Aldeadávila during 30 long hours between April 2 and 3 1987. Although he went to Aldeadávila to show his solidarity with the protesters, he was held hostage in an attempt to pressure ENRESA to discard the project, and his release was only secured after the intervention of the police.

A few weeks later, coinciding with Chernobyl's first anniversary, on April 26 1987, a rally in Aldeadávila de la Ribera got over 10,000 people from both sides of the border attending. Spanish and Portuguese anti-nuclear groups and media invoked regional identities to legitimate their cause: a columnist commented that the rally constituted "a true rite of identity for the [Salamanca] region".⁹ This is not a unique trace of the Iberian antinuclear movements, as other European antinuclear groups have frequently drawn on regional identity since the 1970s (Meyer, 2019). A couple of weeks later, about 30,000 Spanish and Portuguese marched

⁹ Municipal website of Cabeza del Caballo, "Hace 23 años..." <http://www.cabezadelcaballo.org/verNoticiaAction.do?id=165> (last accessed on 2 October 2018).

in the university town of Salamanca, located halfway between the border and Madrid, under the slogan “We want hospitals, culture and progress – we don’t want to be Europe’s nuclear waste dump”.

The rejection of the IPES received support from other actors besides social movements: the Senate of the University of Salamanca, the oldest in Spain, approved an institutional statement in which it expressed “its most resounding rejection of the aforementioned project, while defining its non-participation in research programs that imply the development or consolidation of this nuclear laboratory project” (*El País*, 18 June 1987). On the Portuguese side, anti-nuclear groups at the local level managed to obtain the support of important societal actors such as the Catholic Church. This is remarkable, because elsewhere in Europe, for instance in Germany, the Catholic Church and its hierarchy were more hesitant to support anti-nuclear protests, while Protestant pastors were often very involved in the anti-nuclear movement (Schüring, 2015; Schramm, 2018). The blessing of the church reinforced the credibility and legitimacy of their claims about the impact of the nuclear threat. The Bishop of Bragança, D. António Rafael, pleaded his congregation to pray against the IPES, and asked the Holy Lady of Douro to keep the Spanish nuclear threat far away from the Douro river (*Ambiente em Movimento*, 2017b). Eventually a statue of the Holy Lady was strategically placed at Penedo Duraio in 2002, a place for praying for the river.

ENRESA’s spokesman repeatedly insisted on the experimental nature of the installation and guaranteed that it would never become a waste disposal facility (ENERESA, 1988). But social movement pressure continued and so did Portuguese diplomatic action, both at the bilateral level, through direct contacts with the Spanish government and at the multilateral level, through the mediation of the Council of the European Union. Six months later, in October 1987, the Spanish government officially abandoned the IPES project (ENRESA, 1988). The announcement was received with satisfaction by the affected populations on both sides of the border. The Portuguese Government stressed that the end of the construction of the nuclear laboratory by the Spanish Executive eliminated the only dispute that could disturb the atmosphere of the planned Iberian summit between Prime Ministers Felipe González and Cavaco Silva. This could serve as an indication that friendly relations were more important in times of democracy than pushing through nuclear ambitions/solving waste issue. A member of the Socialist Spanish government at the time, Javier Solana, attributed the abandonment of the “project exclusively to financing problems by the European Community”, but Lisbon preferred to see in the decision a result of the pressures exerted by the Portuguese authorities and by the public opinion of both countries (*El País*, 1987). At the Portuguese Parliament, the demise of the IPES project was considered a diplomatic victory, and a

Portuguese MP praised the “success of the energetic diplomatic action of the Government of Professor Cavaco Silva, who managed to protect the Douro river from the nuclear threat” (*Diário da Assembleia da República*, 1987).

Eleven years later, in 1998, demonstrations returned following a complaint made by the Antinuclear and Environmentalist Committee of Salamanca, claiming the border area was again under consideration as a possible storage site. The Association of Municipalities of Trás-os-Montes and Alto Douro (Portugal) promoted a march on foot by the riverbank inside the Portuguese Douro International area. Spanish and Portuguese citizens wanted to draw attention to the fact that Aldeadávila was inside an international conservation unit: a natural park. At the origin of this objection was the law under discussion in the Spanish Senate, which would give full authority to Spain’s National Radioactive Waste Company-ENRESA to select the location of a nuclear waste site. The Spanish Government, through ENRESA, attempted since then to find a solution for the nuclear waste storage.

The proximity issue of siting waste at the border played a key role. In fact, some of the Portuguese mayors of Bragança district, near the border, suggested that the appropriate decision would be to find a location closer to where nuclear energy is used, like Catalonia or Madrid (Fernandes, Barca and Meira, 2018). While the mayors were indeed making an environmental justice argument about the territorial environmental justice between beneficiaries and affected citizens, they would not have made such a claim had the planned repository be sited on the other side of the Peninsula. To be sure, Portuguese institutions have never interfered when similar conflicts have arisen in other parts of the Peninsula further away from the border, such as in El Cabril or at the selected site for the Centralised Temporary Storage facility for nuclear waste (ATC) in Guadalajara (see Figure 3).

The end of Portuguese nuclear ambitions in 1987 and the experience of Chernobyl reinforced the transboundary networks between activists and social movements, as the Aldeadávila case above illustrates. From the Portuguese side the focus was now on attempting to undermine the Spanish nuclear program, motivated by concerns with nuclear plants close to the Portuguese border. In November 2015, the transnational Iberian Antinuclear Movement (MIA in Portuguese and Spanish) was established, comprising Spanish and Portuguese Activists. It aims at closing Iberian nuclear plants but also deals with nuclear waste management and uranium mining, thus reflecting historical transnational concerns that have affected Iberian nuclear issues. António Eloy, a leading Portuguese antinuclear activist who played a fundamental role during the Ferrel controversy, is still active forty years after the first protests, serving as the Portuguese coordinator of MIA.

In December 2016, the Spanish government announced their plans to authorise the building of a nuclear waste depot at the Almaraz nuclear plant (see Figure 1). The two reactors at Almaraz, operating since 1982 and 1984, were about to initiate the process of requesting extensions to continue working beyond year 2022 and 2024, respectively after the expiration of their original forty-year license.¹⁰ The government in Lisbon contended that Madrid violated a 2014 European directive requiring countries to “initiate consultations” on “potential transboundary repercussions” to the environment in their public projects, namely the directive on directive on Environmental Impact Assessments (European Union, 2014). Following several protests on the streets, in January 2017, Portugal filed an official complaint to EU authorities. At the same time, Portugal’s Parliament voted unanimously (all members of Parliament, from all parties, left to right) to call for the closure of Almaraz nuclear power plant. Madrid dismissed the complaint and remained adamant that construction would press ahead as scheduled. In February 2017, due to the initiative of EU President Jean-Claude Juncker, Spain and Portugal reached an amicable settlement. According to the EU statement (2017), under the auspices of European Commission officials, Lisbon was to withdraw its complaint as long as Spain postponed its plans to construct the waste storage facility until Portuguese officials had conducted their own inspection of the structural plans. As a result, a “working group” was commissioned in April to assess the potential transnational impact of the Almaraz repository, including members of the Portuguese Environmental Agency, the National Department of Health and the National Society of Engineers. The report stated that the repository was “safe” and its construction was “adequate” but recommended that Portugal should be able to accompany the various stages of the project (Ferreira, 2017). The president of the Portuguese Environment Agency stated that “significant transboundary impacts are not estimated in normal warehouse conditions nor in the event of severe accidents” (Ferreira, 2017).

Despite of the governmental agreement, environmental groups such as Quercus, anti-nuclear activists, politicians and lay citizens reignited the nuclear controversy in Portugal (Silva, 2017). In fact, the MIA announced, in the same month of April, the organisation of a demonstration in Madrid, under the slogan “Closing Almaraz and every other Plant!” (Figure 2). The event took place on June 10th 2017, when over 125 environmental organizations from both countries, with the full endorsement

¹⁰ The utilities owning the plant initiated the bureaucratic process in June 2017, by presenting the information required three years before the expiring date (Foro Nuclear, 2017).

of green parties both sides of the border, marched against Almaraz and the Spanish nuclear endeavor (Yuste, 2017; Esquerda Net, 2017). Carla Graça, from the Portuguese branch of MIA, stated that:

Until we reach our goal, we will join our voice to the voices of our Spanish brothers and we will keep on shouting and singing: “Closing Almaraz and every other Plant!” (Graça, 2017: 61)

Despite its initial reaction, the Portuguese government attempted to close the controversy based on technical arguments, thus attempting to silence public dissent. If, from the standpoint of the government, the controversy reached its “closure”, it is expected that during the next few months and years Almaraz NPP will remain a breeding ground for the dissemination of confrontational and combative relationships between politicians, science and society, highlighting the perils and vulnerabilities of what Callon et al. designate as “double delegation” (Callon et al., 2009) – the delegation of political or administrative issues on elected officials and civil servants and the delegation of technical issues on scientists and experts – especially when related to nuclear issues.

Mining uranium at borders

It is interesting to note that the mining of uranium was not explicitly included in the Luso-Spanish Agreement on the Safety of Border Nuclear Installations of 1980, despite the fact that most uranium deposits of the Peninsula lie on both sides of the border (see Figure 3). In fact, for social movements – worldwide – uranium mining remains entangled with civil and military uses of nuclear power, which they have been fiercely opposing (Kirchhof, 2014). If the antinuclear protests in Ferrel during the 1970s led to the emergence of the first environmental movements in Portugal, the actions of former workers and uranium miners shed light on the inability of the Portuguese State to deal with environmental and health risks, becoming the latest chapter of cross-border nuclear issues and the most recent display of Iberian antinuclear activism.

As previously mentioned, Portugal mined uranium since World War I. However, from 1977 the mines were nationalised and the active and decommissioned mines in the country were placed under the exclusive control of the state-owned *Empresa Nacional do Urânio* (ENU, National Uranium Company). The process to dissolve ENU began in 2001, leaving behind large social and environmental liabilities. This gave rise to the fight for compensation and the organisation of anti-uranium groups and numerous protests throughout the country (Fenandez et al., 2018). Some of the anti-uranium groups created included, for instance, “(Former) and

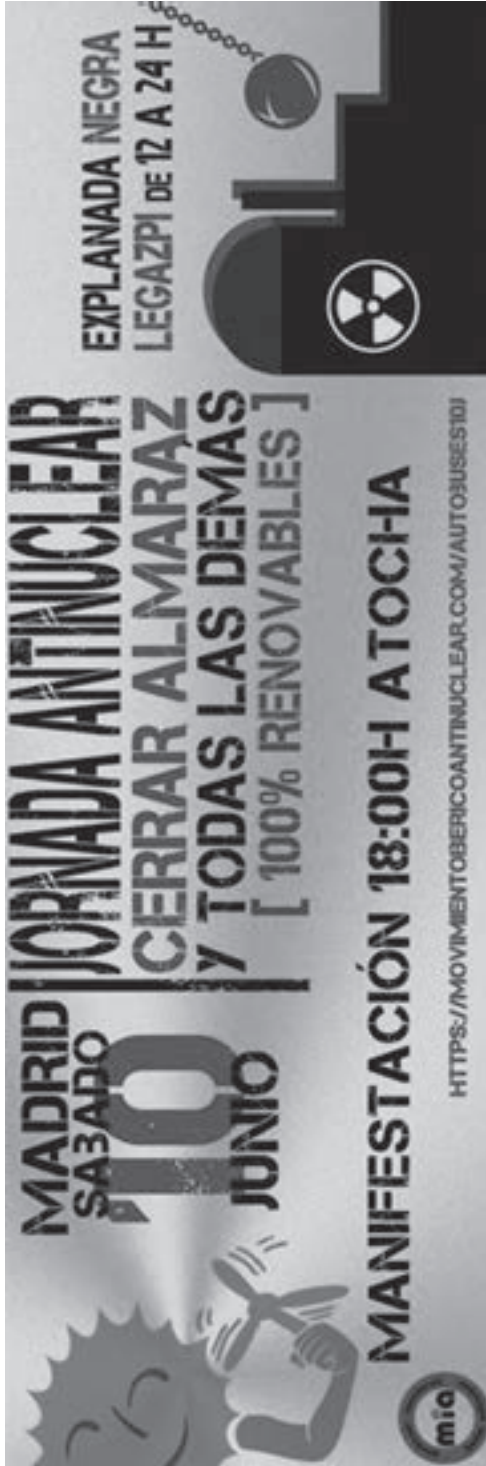


Figure 2: Poster of the anti-nuclear march in Madrid (June 2017)

Source: <http://www.accionenredmadrid.org>



Figure 3: Uranium mines and fuel cycle facilities in Portugal and Spain (1950s-2018)

Source: Own elaboration. Portuguese abandoned mines from Santos Oliveira et al. (2002). Spanish mining zones from Junta de Energía Nuclear (1969). Note none of the mines are currently exploited. The IPES project was never built (see text). The ATC site remains politically blocked.

Present workers of ENU”, focused on labor and social rights, and the “Commission of Inhabitants of the Residential Area of ENU”, mostly concerned with radiation levels around the mines (Araújo and Mendes, 2013:87). The Association Environment in Uranium-rich Areas-AZU (in Portuguese *Associação Ambiente em Zonas Uraníferas-AZU*) was founded in 2002, comprising former miners and inhabitants of affected areas. Its main goal was the development of an epidemiological study to assess the role of uranium mining on the incidence of cancer and the implementation of the Decree-Law n.º 198-A/2001, which established that the Portuguese State was responsible for compensations linked to environmental and health consequences of the mining industry in Portugal (Ambiente em Movimento, 2017).

These groups opposing uranium mining strengthened both the Portuguese and the Iberian antinuclear movement, literally embodying the grim consequences of nuclear energy, reinforcing the idea that, from the societal perspective, antinuclear movements do not separate uranium mining, nuclear power plants and waste disposal. These victims had to resort to their “contaminated bodies”, emotions and ethical issues in an attempt to influence politicians and public opinion (Mendes and Araújo, 2011). However, these mobilisations never attained the same national and international attention as the Ferrel protests. After various demonstrations and decades of struggle,

compensations were approved and regulated by the Portuguese Parliament in February 2016, to be claimed by families of those who died of cancer (including bone, lung and lymphatic cancer) (Ropio 2016).

A new transboundary conflict emerged due to the intention to reopen uranium mines on the Spanish side. On July 16, 2008, the Australian company Berkeley Resources Ltd announced that it had been chosen by ENUSA as that company's partner to conduct a feasibility study to develop ENUSA's uranium mining assets in Salamanca Province, Spain. Previously, the Spanish Council of Ministers approved the co-operation agreement with ENUSA, given that the latter is the public company in charge of manufacturing and handling nuclear fuel to power plants in Spain and internationally. In December 2010, Berkeley Resources announced their intention to reopen the uranium mine in Retortillo, 40 kilometres from Portugal (see Figure 3). If inaugurated, it would be the only open-cast uranium mine in Western Europe. The echo of the explosions in the nuclear reactors of Fukushima in Japan arrived to Salamanca and the plans to restart uranium mining in the zone from 2012 onwards were delayed, as confirmed by the Australian company Berkeley Resources (*El País*, 2 May 2011).

Once the feasibility studies confirmed the technical and economic viability of the project, in 2013, the bureaucratic process to obtain the necessary permissions from regional and national companies was initiated. Meanwhile, the social movement's campaign against the reopening of the mines gained momentum. The public platform against the uranium mine in Salamanca (Plataforma contra la mina de uranio de Salamanca) 'Stop Uranium' described the approval of the Environmental Impact Statement in 2013 as an "environmental nightmare" (WISE, 2018). In parallel, the Portuguese ecologist Party "Os Verdes" presented a petition to the Portuguese Parliament questioning the ongoing licensing process of a uranium mine project. The Platform Stop Uranium collected the statements of the president of the Duero River Basin Authority (Confederación Hidrográfica del Duero), José Valín Alonso, who considered that Berkeley's project in Retortillo was "unsustainable and environmentally unsound". In addition, Stop Uranium referred to the report issued by the CSN, which qualified the waste from the mining operation and the processing plant of the project Retortillo-Santidad as "radioactive", requiring a "joint and inseparable" radiological assessment of both facilities (WISE, 2018). The claim was accepted and delayed the procedure for one year, given the need to carry out a new assessment.

The project has faced local, regional and transboundary opposition ever since. Early in 2014, a round table on the theme "Uranium mining in Salamanca. Health effects: the Portuguese experience", organized by the

Spanish ecologist Party-*EQUO* and by the “Platform Stop Uranium” was attended by members of the Association of Former Workers of Uranium Mines and the Association of Uranium Mining Areas. In March 2014, the environmentalist parties *EQUO* of Spain and *Os Verdes* of Portugal filed a joint complaint in Brussels to “paralyse” the project. They said the project violated several European laws. Despite of this and the pending report from CSN, in April 2014, Berkeley obtained a Mining License valid for an initial period of thirty years, renewable for two additional periods of thirty years. CSN approved the Radiological Analytical study for the project over a year later, in September 2015. The National Court declared admissible an appeal against the authorization given by the Ministry of Industry. The appeal was lodged by *EQUO* and *Ecologistas en Acción*. (*El País*, 28 April 2016).

Activists continued to make use of legislative action as well as protests, signature collections, road blockades, etc. (WISE, 2018) and eventually by 2017 the European Commission opened an investigation in order to assess whether the project complied with various provisions of European Union legislation, including the Environmental Impact Assessment Directive and the Habitats Directive.

The investigation was opened “following several complaints and written questions”, said the European Commissioner for the Environment, Karmenu Vella. The European Commission also recalled in its written reply that Spain had not fulfilled its obligation to properly inform Brussels of such a project. Uranium mining is an operation which falls under the scope of Article 37 of the Euratom Treaty of 1957 and therefore obliges the licensing Member State to submit all relevant information. “The Commission has reminded Spain of this obligation”, said the reply, dated 26 June (*El País*, 5 July 2017). But none of that stopped the uranium mine project which was now due to start works by 2018.

On 24 February 2018, approximately three thousand people from Portugal and Spain participated in a demonstration in Salamanca (Spain) against the potential construction of the uranium pit mine (Esquerda. Net, 2018; EFE, 2018). The Portuguese former uranium miners marched along, providing antinuclear movement with embodied examples and narratives of the dangers of uranium exploitation (see Figure 4).

The Portuguese Minister of the Environment, Matos Fernandes, requested a meeting with the Spanish government in late March 2018, and two Portuguese MEPs (members of the European Parliament), Marisa Matias (Left Block) and Ana Gomes (Socialist Party), along with a Spanish MEP Xabier Benito Ziluaga (GUE/NGL), posed a parliamentary question to the European Commission requiring a written answer, which stated the following (EU Parliament, 2018):



Figure 4: Portuguese ex-miners march against the uranium mine in Salamanca (February 2018, Spain).

Source: <https://www.centronoticias.pt/2018/02/27/azu-e-atmu-marcam-presenca-na-manifestacao-contra-a-mina-de-uranio-em-salamanca/>.

In 2015, the Commission gave its assent to the construction of Europe's biggest open-cast uranium mine, in Retortillo (...) close to the Spain-Portugal border. (...) It is a threat to the environment and the health of the residents on either side of the border, and we need serious, transparent and informative studies on the potential impact of the mine.

1. Does the Commission know whether studies, including those provided for in Directive 2011/92/EU and in the Euratom Treaty, were carried out to assess the impact that building the mine would have?
2. If they were, what were the results?
3. In order to guarantee to EU citizens that it has protected their interests with regard to both the environment and their health, can the Commission make available the information and documents that it has on this process?

So, a decade after its initial announcement, the project still lingers. This is the last of the transboundary nuclear conflicts between the two countries, illustrating once again the common pattern of nuclear transboundary controversies in the Iberian Peninsula that emerged only after 1986: a Spanish nuclear related project is developed or announced; Portuguese anti-nuclear groups (often with the collaboration of their Spanish counterparts) are mobilising, drawing public attention to the issue; the Portuguese government is forced to react due to public pressure, demanding information from Spanish authorities; the case is brought to

the attention of the European Commission (a supranational third party) that acts as a mediator, eventually leading to the reconsideration of the Spanish initial project under Portuguese supervision, the delay or even the abandonment of the project at stake.

Conclusions

Spain and Portugal share a long nuclear history which includes the relations of institutions, private companies and environmental movements, concurring with the transnational dimension of nuclear projects and ontologies. We contend that a history of nuclear border issues must consider the role of social movements and collaborations between antinuclear groups at the Iberian and international levels. Such an approach allows us to analyse how these nuclear controversies were fundamental in the development of new forms of public accountability and engagement with science and technology, since, at least in the Portuguese case, the Ferrel NPP controversy led to a new style of science/society couplings (Santos Pereira, Fonseca and Carvalho, 2018). The Iberian nuclear history can be analysed according to three distinct phases marked by the institutions and social movements that lead the nuclear realm in both countries, encompassing various aspects of the nuclear industry, such as uranium mining, fuel fabrication, reactors and waste siting.

The first phase (1950s-1974) was one of collaboration between the two fascist regimes, and was only compromised by the Manzanares river accident, which was only recognised by the Spanish authorities after their Portuguese counterparts revealed they had detected radiation downstream on the Tagus river. During this time the two countries had ambitions to build nuclear power and both cooperated towards this effort. The 1971 agreement was for cooperation “for the development” of civil nuclear power. The most ambitious cooperation plan was to build power stations together, siting them at the border being the natural option to serve both electricity grids. Domestically, it was argued that these nuclear facilities would also lead to job creation, which would benefit these economically deprived regions, and in both countries nuclear energy was profoundly intertwined with ideas and imaginaries of “modernity” and “development” (Puig, 2005; Santos Pereira, Carvalho and Fonseca, 2017).

Two joint nuclear proposals, one in 1966 and that of Almaraz two years later did not come to fruition due to the difficulties to find financial resources and political support on the Portuguese side. The Portuguese response to the Tagus leakage of 1970 comes across as rather soft taking

the long-term perspective on the matter. The fact that Portugal had its own nuclear aspirations at the time may justify the absence of a more energetic response.

The second phase (1974-1986) remained a collaborative one at the institutional level. Both countries reshaped their nuclear institutional structures in accordance with the new political reality, transforming JEN into CSN and GPSN, organizations that are more regulators than promoters of nuclear power, in line with what was happening in other nuclear countries at the time. The democratisation processes affecting both countries from the mid-1970s onwards opened spaces for bilateral commissions of vigilance and, for the first time, an explicit agreement about the safety of border nuclear installations. Democratisation also opened the floodgates of political dissent, leading to the emergence of antinuclear movements. Such movements had started to grow internationally since the early 1970s, cooperating across borders and borrowing ideas and protest practices from each other, as the other contributions to this special issue amply demonstrate (Kaijser and Meyer, 2018a and 2018b, Renard 2018, Kirchhof, 2018). During the 1980s, the majority of legislative and regulatory devices dealing with nuclear energy were mostly concerned with public health, radioprotection and the environment. It is also during this second phase that we can identify the earliest contacts of Spanish and Portuguese antinuclear activists, supporting each other in their domestic nuclear struggles, reinforcing the Portuguese anti-nuclear stance (after the official demise of its nuclear project in 1987) and leading to multiple instances of joint demonstrations against Spanish projects.

The third phase started in 1986 and goes until today, and its characteristics contrast with the previous ones. This phase is marked by two crucial events: joining the EC and the Chernobyl accident. The first event allowed the European Commission to become an arbiter on Spanish/Portuguese nuclear disputes, just as the Nordic Council framework did for the Danish/Swedish conflict around Barsebäck, as the relevant contribution to this special issue demonstrates (Kaijser and Meyer, 2018b). The second implied that Portugal expanded its vigilance on nuclear issues beyond the thirty kilometres from the border initially considered in the transboundary agreement between both countries. The Almaraz NPP, one hundred kilometres from the border, upstream one of the principal rivers of the Peninsula, was redefined as “close”. Especially from 1987 onwards, after the demise of the Portuguese nuclear endeavor, Portugal became particularly concerned with Spanish nuclear activities, requesting Brussels to intervene in each and every occasion, as made evident by the waste related cases of IPES and Almaraz, and more recently by the reopening of Spanish uranium mines. In these three cases, transboundary

issues attained a national dimension, clashing with the aspirations of antinuclear and environmental movements towards a radioactive-free Portugal. Demonstrations and other actions by social movements drew the attention of the Portuguese government that resorted to its foreign diplomacy devices to question Spanish projects. Realising that regular bilateral diplomatic channels with Spain were insufficient, Portugal eventually brought these issues to the attention of the European institutions, which acted as a referee. However, the European Commission's role as an independent arbiter in nuclear conflicts was a new one, and due to changing European legislation in the wake of Chernobyl. It differed fundamentally from how the EC was perceived in the 1970s, when it was attacked by a transnational alliance of anti-nuclear movements for being a relentless promoter of nuclear power (Meyer, 2013; Meyer 2014). The results of this chain of actions are mixed: the IPES was indeed cancelled but Almaraz waste repository will be eventually expanded, while the reopening of the uranium mines is still pending.

Siting and mining at the border led to a new pattern of foreign relations between the two countries from 1986 onwards. It also created new opportunities, this time not for government cooperation towards a common nuclear goal, but for the emergence of a joint, cross-border movement against nuclear energy. The case studies presented also make evident that social movements have an encompassing view of the nuclear realm that includes uranium mining, power plants and waste management, while institutionally only the last two made it to multilateral nuclear agreements of supervision of borders installations. Cross-border rivers – and the upstream location of the Spanish plants, with the downstream Portuguese being potentially affected – played a key role as vectors that triggered controversy and concerns about environmental impacts and environmental justice.

The transnational dimension of nuclear energy became self-evident after Chernobyl. Since 1987, when the energy policies of Spain and Portugal went separate ways, the border became a thin line separating two nuclear ontologies (Hecht, 2006). Borders can be understood as a metaphor indicating a clash of energy policies, but the trans-border character of radioactivity is also an opportunity for new forms of action, solidarity and cooperation. Nevertheless, more research is needed to unveil many of the aspects that remain unknown, particularly the role of specific actors, political groups and negotiations at the European Commission level, but also regarding the business side of the decision-making process, in order to understand better their specific role throughout the Spanish/Portuguese nuclear history. These “invisibilities” may help us re-assess the real role played by social movements and diplomatic efforts in the closure of nuclear controversies at the Portuguese-Spanish border.

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