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Who Is Affected? Defining Nuclear Territories and Their Borders: A Historical Perspective on the Nuclearization of the Rhône River from the 1970s to the 1990s

*Louis Fagon**

Abstract: » *Wer ist betroffen? Festlegung der nuklearen Gebiete und ihrer Grenzen: Eine historische Perspektive auf die Nuklearisierung der Rhône in den 1970er bis 1990er Jahren*«. Through the example of two nuclear power plants (*Superphénix* and *Saint-Alban*) in France along the Rhône River, in the *Isère département*,¹ I show that the areas involved and potentially “affected” by nuclear power at the local level do not overlap historically and that they are the result of a scientific, political, and administrative construction based on nuclear risk. I suggest that the various zones established around nuclear power plants (potentially affected by an accident, involved in public inquiries, included in various committees in charge of information and control, allowed to collect taxes) tend to grow under the influence of anti-nuclear protest, of local populations, and also of elected officials who are exposed to the effective or potential effects of nuclear power plants. Despite the difficulty of framing the nuclear risk spatially, it delimits a growing nuclear territory surrounding each nuclear power plant, from several municipalities at the beginning of the 1970s to an entire region at the beginning of the 1990s. The numerous maps available in French local archives thus shed historical light on the construction of nuclear territories.

Keywords: Nuclear, France, Rhône River, zoning, risk, thermal pollution, radioactive pollution, environmental history.

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¹ The *département* is the largest unit of local government in France, created in 1790. It corresponds more or less to a county in the UK. Each *département* is governed by an elected general council. It holds responsibility for local services. Each *département* is also the second-tier administrative subdivisions of France, below the regions. An official called a *préfet*, a commissioner, represents the national government. A *sous-préfet* is a commissioner in charge of a smaller administrative subdivision.

1. Introduction

In October 2016, following the Fukushima nuclear accident in 2011, the French government decided to extend the iodine distribution zones around the nuclear power plant sites to a radius of 10 to 20 kilometres around each site. These iodine tablets, distributed to the surrounding population, are to be taken in the event of an incident involving the release of radioactive products into the atmosphere. In doing so, they indicate the zone considered to be affected by nuclear risk. However, this zoning is above all administrative and arbitrary (Suchet 2015): It considers the zones to be homogeneous and is not based on a real consideration of the risk in the event of an accident (Fassert 2020; Ekardt, Fassert, and Pellizzoni 2017). Zoning will thus “establish and reify a territorialization of a risk that is nevertheless eminently difficult to circumscribe spatially and temporally” (Fassert 2020, 20). In Fukushima itself, the question of zones illustrates one of the issues at stake in these arbitrarily defined zones: taking into account the risk and the damage suffered during the accident, which delimits the area that will be eligible for financial aid and compensation. In this paper, through the study of two nuclear power plants in France, I intend to make a contribution to the history of the construction of nuclear territories. I compare the different zones surrounding two nuclear power plants in France and when they were built in the 1970s and put into operation in the 1980s. By showing that these zones (emergency zoning, zone with access to information on each power plant, regions eligible for financial compensation) are the result of negotiations and compromises, aiming to delimit the territories “affected”² in one way or another by each nuclear site, I demonstrate that they always tend to be extended to correspond to the spatial risk implied by nuclear energy. The problem is that this risk is hard to spatialise and its boundaries are unclear: this uncertainty explains the numerous negotiations from the construction to the operation of the nuclear power plants.

1.1 Nuclear Energy Is Constantly Creating New Zones

As early as the 1950s, the question of the delimitation of a zone to be evacuated in the event of a nuclear accident was raised by US authorities. In 1957, the “Wash-740” report (US Atomic Energy Commission 1957) defined different zones, instituting a concentric distribution that was always used thereafter: a sheltering zone as close as possible to the installations, a temporary evacuation zone, a final evacuation zone, and beyond that, a zone not

² In French and in this case in French administrative terms, the word “concerné” is used to refer to the municipalities affected by nuclear power plants. I will use the term affected in the following paper for clarity.

affected. The zoning makes it possible to assert that the problem is or will be localised and “that the threat [is] therefore under control” (Topçu 2016, 4). As many works note, “One of the more explicitly geographic aspects of nuclear technology is its close association with zones” (Alexis-Martin and Davies 2017, 3). Nuclear power is constantly creating zones: exclusion zones, control zones, and zones where information flows. However, these zones are not the same in every country and, above all, they change over time: Emergency planning zones are different in almost every nuclearized country (Kubanyi et al. 2008). For example, what zone should be considered in the event of an evacuation? Ten, twenty, thirty kilometres around a power plant?

These zones are created by both siting and planning operations (Nadaï 2007): while the authorities draw administrative zones through rational planning, on a regional scale, the site itself recomposes local landscapes and local communities and triggers the emergence of new concerned groups. The French local archives contain many maps showing the municipalities³ affected, favoured, or disadvantaged by the establishment of a nuclear power station, or kept informed of the work sites and risks. By comparing these overlapping zones from the 1970s to the 1980s, I show that local authorities are debating a simple question: is the nuclear risk enough to define a nuclear territory?

I distinguish five types of zones:

- *The area affected by the risk*: what area must be evacuated or protected in the event of an accident or incident?
- *The area involved in the decision-making process*: who can give their opinion during the public enquiry? For example, regarding the water discharge authorization?
- *The zone receiving information*: who can benefit from the information distributed locally regarding the operation of the plant?
- *The economic benefit zone*: which area benefits from the economic output? For example, which municipalities are entitled to collect taxes?
- *The area of contestation*: facing these official zones, antinuclear movements try to extend the area of contestation much broader.

These zones are not just about risk, as nuclear energy is “simultaneously quotidian and spectacular, exceptional, and everyday” (Alexis-Martin and Davies 2017, 1). While this zoning is well studied by geographers (Sérandour, Meyer, and Martin 2022; Johnson 1985), the historical construction process and negotiations that instituted it are less documented.

³ The French municipalities, called communes, correspond more or less to the English parish or local government, but do not constitute a governmental administration level in France.

1.2 A Historical Analysis through the Study of Two Power Plants along the Rhône River (France)

I study the debates surrounding the definition of the different zones affected by nuclear power at a local level, by studying the siting processes of two power plants along the Rhône River (France), from the 1970s to the 1990s. In 1974, in response to the oil crisis, the French government decided to build several dozen nuclear reactors in just a few years. A few nuclear facilities were already built along the Rhône River (Marcoule, Pierrelatte), mainly by the CEA, the French atomic energy commission, in charge of producing plutonium for bombs. Sixteen new reactors were constructed by *Electricité de France* (EDF, the French Electric Power Company) along the river during the 1970s and the 1980s. With the need of water being a central issue for nuclear energy, the Rhône was used to cool the reactors, as studied by Sara Pritchard (Pritchard 2011). I focus on two nuclear power plants located in the same county: the *Saint-Alban* power plant (pressurized water reactor [PWR], 2 x 1300 MW) whose construction started in 1976, and the *Creys-Malville* power plant known as “*Superphénix*” (Fast Breeder Reactor, 1 x 1200 MW) whose construction started in 1973, but which has been closed since 1997 (Figure 1).

The two nuclear power plants are quite different, technically and historically. The *Saint-Alban* power plant has two PWR reactors, like almost all French nuclear power plants. The building of Saint-Alban was not controversial: after a few protests in 1976, the antinuclear movement stopped demonstrating and the plant started operation in 1987. On the other hand, *Superphénix* was highly controversial, and its construction provoked the largest antinuclear demonstration in France ever in July 1977, bringing together over 100,000 people (Tompkins 2016; Chambru 2014). Superphénix is the symbol of the antinuclear movement in France, and an antinuclear committee against Superphénix was established in almost every town in France between 1976 and 1978. Superphénix is also a European project, financed by France, Italy, and Germany, but built in France by a specific daughter company of EDF called NERSA (Centrale nucléaire européenne à neutrons rapides SA, [European fast breeder nuclear plant company]), and seen as a French success (Le Renard 2018, 2021). The Fast Breeder Reactor does not use uranium to operate, but plutonium surrounded by liquid sodium instead of water: this sodium could be set on fire in contact with air and could explode with water. This explains the numerous protests against Superphénix in France, but also in Switzerland (mainly Geneva) and Germany. After years of protest, lawsuits, and petitions, the antinuclear movement weakened and Superphénix operated between 1986 and 1997, despite numerous incidents.

Figure 1 Map of the Main Nuclear Sites along the Rhône in 1979

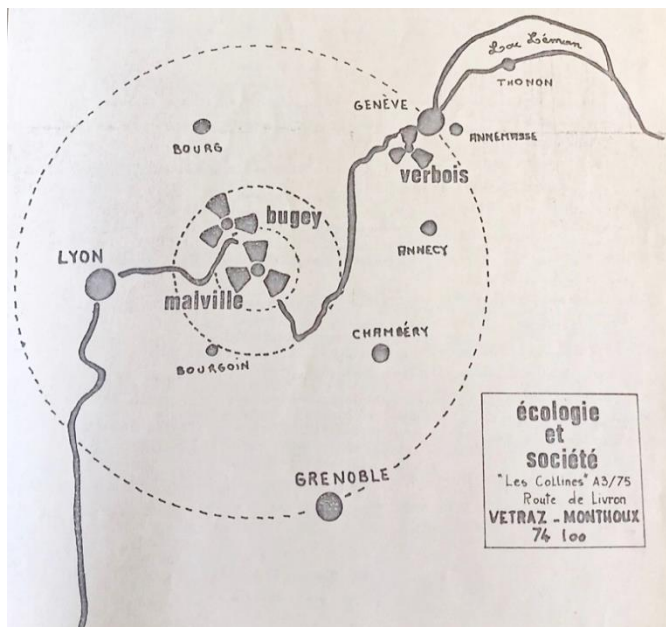


Nuclear facilities along the Rhône in 1979. From upstream to downstream: Creys-Malville (international fast breeder reactor); Bugey, Saint-Alban, Cruas-Meyssse, and Tricastin (EDF nuclear power plants); Eurodif (international uranium enrichment plant); and Pierrelatte and Eurodif (CEA facilities from the 1950s).

Despite those differences, the two nuclear power plants offer a perfect study for comparison. First of all, both plants are located in the same French *département* (county), called Isère. Secondly, they are located along the Rhône River, *Superphénix* upstream from Lyon (50 km) and *Saint-Alban* downstream (50 km). Thirdly, the timeframes are comparable: the sites were built in parallel, with only a few years difference. Thus, the two plants share the same administrative level, the same commissioner, and the same cooling and radioactive discharge flow: the archive material is also the same, on a local and on a regional scale. I rely on archives from the local administration (38 boxes) and from the regional administration in charge of the river (10 boxes),

which I gathered in four different towns during five years of PhD research. I went to the adjacent counties because the Rhône River is systematically an administrative border between administrative divisions (*Ain, Loire, Rhône, Isère, Ardèche*, see Figure 5). I also had access to the EDF files regarding the construction of each plant and all the files gathered by the local administration regarding the different zones involved in the construction of nuclear power plants. The local police department gathers information on antinuclear movements; the local health administration has access to the files regarding nuclear safety and emergency planning; the department in charge of water quality defines the areas in which public enquiries are organised in order to start the facilities. The commissioner constantly receives letters from the local mayors and other local officials regarding safety measures, public inquiries, access to information, or financial compensation.

Figure 2 French Flyer against Superphénix from 1976 Showing the Area at Risk up to Geneva



We notice that the national border is erased by nuclear risk. 12 December 1976, in the Savoie Department Archives (Annecy), box 1087W51.

The main issue for the local administrations is the *extent* of the different nuclear zones they have to define. For example, they have to organise public inquiries in the region around each nuclear power plant. The extent of this area is not clear and the local commissioner can decide the number of

municipalities participating: who is considered as affected by the nuclear power plant and therefore should be involved in the decision? For EDF and for the government, the main goal is to limit this area as much as possible, in order to minimise fear and debate (Topçu 2010). On the other hand, anti-nuclear activists struggle to extend the number of municipalities involved, because the nuclear risk is not limited to a five-kilometre radius. By challenging the official framework, they also intend to create an international movement, especially against Superphénix, where protesters came from Switzerland (see Figure 2), Italy, and Germany to try and stop construction in 1977 (Tompkins 2016).

Besides this question, the issue at stake is the link between risk and local involvement: given that the radioactivity is hard to spatialise and that a nuclear accident could affect an important area, should the local population be more involved? The answer is highly debated within the administration and between local officials and local inhabitants, and the debates contribute to creating the “nuclear territories” already studied by many geography researchers.

1.3 Historicising Nuclear Geographies

Until recently, French geographers did not pay as much attention to the issue of nuclear risk as their Anglo-Saxon colleagues (Oiry 2017), but new studies are now interested in the making of “nuclear territories” (Alexis-Martin and Davies 2017). The work focuses in particular on nuclear communities, the “shared experiences of radiation,” and the creation of space, landscapes, and the various exclusion zones. Nuclear sites are often analysed as exceptional places, such as nuclear waste sites, which are considered to be real “nuclear oases” (Blowers 1999). It is true that nuclear sites are exceptional, both in terms of the risks involved and the legislation that governs them. But nuclear power is also an industry, which, like any industry, modifies the environment and society, as geographers along the Rhône River already studied in the 1980s (Pelletier 1987; Chabert 1987). More recently, Teva Meyer has clearly shown the territorial impact of this energy development, as an industry producing territories and employment in France, Germany, and Sweden (Meyer 2014a, 2014b). With Audrey Sérandour and Brice Martin, he also studied the development of emergency planning measures around the nuclear power plant of Heysham in the UK in 2019, and showed how the evacuation areas are delimited and negotiated locally (Sérandour, Meyer, and Martin 2022).

My goal is to historicise these data and to show how the building principles of these areas have evolved since the 1970s. I suggest that the area involved in the control of each nuclear power plant and where the information is distributed grew between the 1970s and the 1980s, evolving from a small area limited by the authorities to the area affected in case of an accident. I study

the constant negotiations on a local scale, and I pick up on the work of Marc Collinson, who calls for a rethinking of the role of local archives in analysing the effects of nuclear siting in North Wales (Collinson 2021). Local officials and local inhabitants have a different view of the nuclear power plants, which are even named differently on a national and on a local scale. The *Creys-Malville* power plant, called *Superphénix* by the administrations and by antinuclear activists in the national debates, is designated as “the plant” at the local level (Garcier and Le Lay 2015). There are also different issues: numerous studies have focused on the contested geography of accidental and post-accidental zones (Ekardt, Fassert, and Pellizzoni 2017; Pitkanen and Farish 2018), but the daily operation of the plants also implies contested areas and restructured territories. Where does the economic and social impact of a nuclear power plant end (Flaire and Flaire 1978)? Where do the workers come from and do the nuclear power plants create new “work territories” (Fournier 2005)?

By comparing the different areas defined by the local authorities from the 1970s to the 1980s, I underline that they were constantly challenged and negotiated by the local officials and by the population. It is no surprise to see that the homogeneous evacuation zones based on roughly circular model are always criticised and do not fit in well with the reality of the topography nor with administrative action (Mangeon 2016). But the “dependency zone” (Meyer 2014b), the area defined retrospectively as under the influence of the plant, is also hard to define and challenges the local administration: for example, which municipalities should receive financial compensation due to the building of the plant? Is it adapted to each plant? If the goal is to compensate the risk, it would require taking into account zones that are far too large in the event of an incident, as the Chernobyl accident showed: where to stop? It is hard to extend the area too far, given that 3.8 million people live within an 80-kilometre radius of *Saint-Alban*, and other power plants in France are much closer to major cities.⁴ And what about the risk of daily operation (Martiquet 2015): if a municipality is within range for environmental monitoring around the nuclear power plant, should it be also involved in its local control?

By examining these questions, I will demonstrate that these zones change over time, according to reforms of the legislative framework, local adaptations, scientific advances, and administrative and political negotiations, but mostly because of the acknowledgement that nuclear risk has no spatial limits.

⁴ For an overview of the figures in France, see Pascal (2012).

2. Challenging the Official Areas: Is There a Limit to Superphénix?

French nuclear power plants were built without any real consultation in France (Topçu 2010) but they faced a strong contestation that challenged the institution. During public inquiries, the locals first contested the choice of site and protected their region. Given that the construction began anyway, the critics shifted to the zoning of risk developed by EDF and by the authorities. For example, given that the nuclear power plant discharges radioactivity into the river, where does this risk end?

2.1 The Issue of Water Discharge and Radioactivity: Where Is the Limit Downstream?

Nuclear power plants need water to operate: the water flow is used to cool the reactor, and is discharged into the river, but much warmer. The thermal pollution resulting from nuclear power plants is much more worrisome than that from other power plants, because nuclear power plants are more powerful and release more heat into the water (Högselius 2022). Alongside the cooling water, radioactive effluents are also discharged into the river flow. In order to discharge these effluents, EDF needs to submit an official request to the local administration in charge of the river management.⁵ A file presenting the power plant (functioning, water discharge, chemicals, and radioactive components) is then submitted to a public inquiry in the area surrounding the power plant.⁶ The case of the public enquiries for *Superphénix* show that nuclear power plants create much more boundary effects than other local regulatory investigations: people were worried for the river itself, and feared that radioactivity could contaminate the water flow all the way to the mouth of the river.

Three successive public inquiries about Superphénix took place between 1975 and 1981. In 1975, and again in 1978, the enquiry was held in only three municipalities: the authorities feared antinuclear protests and chose to limit the number of municipalities involved.⁷

In 1978, among the 42 comments in the enquiry register, there were many complaints about the geographical framing of the investigation. A student from Lyon, the nearest large city, noted, for example, that the file “made as if

⁵ EDF, Industrial Water intake request for the Superphénix nuclear power plant, 13 August 1974, in the Rhône Department Archives (Lyon), box S/3648.

⁶ EDF, presentation file for the Superphénix nuclear power plant, 17 July 1973, in the Rhône Department Archives (Lyon), box S/3648.

⁷ Which are the three communes closest to the site: Creys-Pusignieu, Mérieux in Isère, and Briord on the other side of the Rhône.

this effluent only concerned the neighbouring municipalities, whereas there could be no question of it.”⁸ Another comment noted that the impact study did not take into account the power plants upstream (a project planned in Switzerland) and downstream (the *Bugey* power plant, 32 km downstream from the site, which already existed at the time). Other residents insisted on the difference between radioactivity and other chemical pollution: due to the unlimited risk presented by radioactive contamination, radioactive effluents concerned the entire river, and an inquiry should be organised on a watershed level.⁹ It was also a way for antinuclear activists to increase the potential for contestation by extending the boundaries. Given the numerous projects along the Rhône, people were also afraid of the risk of accumulation and synergies between all the nuclear power plant effluents (Figure 1), a risk that EDF officials were not willing to discuss.

During the 1970s, EDF and the local administrations were not ready to extend the areas involved in the inquiries, as they merely obeyed the rules: the public inquiry had to take place within a five-kilometre radius around the power plant, an arbitrary distance defined by law.¹⁰ It was also a way to prevent contestation: given that the enquiry should be limited to the locals, and that “the numerous observations made in this register or annexed to it come largely from people from outside the country and often from far away from the concerned part of the Rhône,”¹¹ every opposition was disqualified by the local commissioner. Limiting the debate was also limiting the perception of risk: for instance, if 70 inhabitants lived within a radius of one kilometre of the power plant, 3,000 within a radius of five kilometres, and 450,000 within a radius of forty kilometres,¹² the number of protesters would be influenced by the radius discussed. In 1981, the context was different: after 1978, the local protest decreased drastically, given that the construction could not be stopped. In order to show that the authorities took local opinions into account, the last public inquiry was organised in 1981 in a much wider area than the first.¹³

The local populations were not the only ones affected by the effect of water discharged on a watershed level. The Basin Agency, in charge of the watershed management, also insisted on taking the nuclear risk into account on a

⁸ Préfecture, Public enquiry register, 30 May 1978, in the Rhône Department Archives (Lyon), box S/3617.

⁹ Préfecture, Public enquiry register, comment by M. Vollat, 30 May 1975, in the Rhône Department Archives (Lyon), box S/3648.

¹⁰ NERSA, Comment on the duration and scope of the enquiry - public information issues, June 1978, in the Rhône Department Archives (Lyon), box S/3617.

¹¹ Sous-préfet, Comment on the public enquiry, June 1978, in the Rhône Department Archives (Lyon), box S/3617.

¹² EDF, presentation file for the Superphénix nuclear power plant, 17 July 1973, in the Rhône Department Archives (Lyon), box S/3648.

¹³ Prefectoral decrees submitting the applications for intake and discharge to public enquiry, 12 December 1980, in the Rhône Department Archives (Lyon), box S/3617.

wider scale. Its engineers had access to internal documents explaining that their influence could extend to 100 kilometres.¹⁴ By expressing their concern, they forced EDF to take the entire watershed into account.

2.2 Protecting the Rhône and the Entire Country from Nuclear Risk

For each nuclear power plant, EDF had to submit an environmental monitoring programme to monitor the effects of the releases into water, air, soil, and into the ecosystem around each site.¹⁵ These programs were standardised and limited to a well-defined zone around the power plant. Local authorities in charge of watershed management were not satisfied with the data that EDF used to establish these programmes: it was a very theoretical view, and the data were often several years old.

The Basin Agency and the other local administrations in charge of river management were supposed to protect the water quality. Their role was not easy: even though they lacked the power to force EDF to respect their decision, they demanded wider studies and consideration of the Rhône River as a whole. The Basin Agency, established in the 1960s, was supposed to limit the pollution of the river by financing studies and systems to clean the water.¹⁶ Although the *Superphénix* files did not mention the cumulative effects of the nuclear power plants downstream, in 1976 EDF was encouraged by the Basin Agency to take into account the entire watershed in order to anticipate the effects of each site on the river as a whole. It was more of an invitation: the Basin Agency could not force EDF to do anything. But since the nuclear facilities were a threat to the entire watershed, it was a way for the Basin Agency to justify its existence and to express the concern of the local elected officials who were members of the Agency. As early as November 1973, the Basin Agency insisted on creating a river-wide coordination system to anticipate the environmental effects of the nuclear programme.¹⁷ It was also a way of echoing the fears of anti-nuclear opponents and local populations that the entire river could die because of the nuclear facilities. In order to show this threat, some antinuclear flyers called for a global protection of the Rhône River. For example, the map on Figure 3 does not face North (North is on the left), to emphasize the proximity between Superphénix and the Mediterranean Sea: the entire watershed is seen as threatened by nuclear energy.

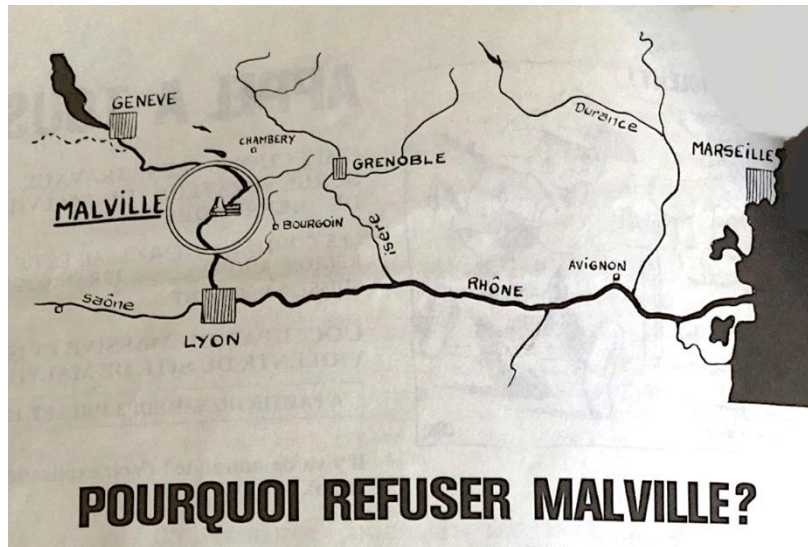
¹⁴ Internal notes to the navigation department on nuclear power plants, 11 June 1976, in the Rhône Department Archives (Lyon), box S/3619.

¹⁵ Decree of 31 December 1974 on liquid radioactive discharges.

¹⁶ They were created by the Water Act of 16 December 1964.

¹⁷ Basin Agency, Comment on the files submitted by EDF for its nuclear power plants along the Rhône River, 13 November 1973, in the Rhône Department Archives (Lyon), box 5494W164.

Figure 3 “Why refuse Malville?” French Flyer against Superphénix from 1976, Showing the Rhône River (5 November 1976)



Anti-nuclear opponents called for a much broader consideration of the risk, both spatially and socially, and the struggle against the zoning process was also seen as a battle. The demonstration against the Superphénix reactor in Malville in July 1977 intended to show the global dimension of the anti-nuclear struggle (Figure 2). Protesters coming from Switzerland and Germany contested a society based on police control: a “plutonium society” protected by fences, military zones, and repression, as shown in Figure 4.¹⁸ Superphénix was seen as a threat not just for the local populations, or for neighbouring cities such as Geneva in Switzerland (Association pour l’appel de Genève 1981); it was a global threat without real boundaries.

¹⁸ Intelligence Note on Switzerland and Superphénix, 2 December 1976, in the Savoie Department Archives (Annecy), box 1087W51.

Figure 4 “Today: Malville. Tomorrow: France.” Antinuclear Poster from 1977



Source: Collectif d'enquête 1977, 99.

The case study of Superphénix in the 1970s and the 1980s shows that the area affected by the potential risk implied by a power plant is highly controversial and was debated during protests and public inquiries. Superphénix is a borderline case, due to the tension and to the demonstrations against the Fast Breeder Reactor; there was no such protest against Saint-Alban, but the zones were also debated.

In 1986 and 1987, both nuclear power plants went online, causing a new problem: now that the facilities were in operation, who should benefit from taxes and who should receive information about each nuclear power plant? Was it related to the risk?

3. Who Has a Word to Say? Who Should Collect Taxes? The Spatial Boundaries of Nuclear Risk during the 1980s

During the 1980s, almost every nuclear power plant in France was in operation or about to go online. The political context was also very different

because the left won the 1981 elections, and François Mitterrand had been elected president. During his campaign, he promised to change nuclear governance, but remained quite ambiguous about the future of the French nuclear industry. The anti-nuclear opposition had decreased, and the left-wing government did not radically change the French nuclear policy. A new institution was created in 1981 to respond to requests for transparency and to spread information on a local scale: it was called a *Local Information Commissions* (CLI¹⁹); one was established for each power plant (Kerveillant 2017). This new institution was established at a crucial time for the nuclear power plant in Isère: at the same time, local administration had to create an emergency plan in case of an accident and to designate the evacuation area. It was also the first decade when local municipalities could finally collect taxes based on the production of each power plant. How did all of these zones interact?

3.1 Does Risk Give Access to Information? The Local Information Committee

The evolution of the CLI area of Saint-Alban between 1983 and 1985 illustrates a significant change in the definition of the area recognised as affected by a nuclear power plant by the local administration in France. A CLI is a local committee established to inform elected officials and local populations about the operation of nuclear power plants. It includes local elected officials, trade unionists, local representatives of industry and agriculture, and local environmental protection associations.²⁰ In the beginning, in 1981, their spatial extent was not defined by the law, and the local commissioner was free to define its limits.

The perimeter of the CLI of Saint-Alban was extended twice between 1983 and 1985, after negotiations and protest from mayors. The perimeter of the CLI was first established based on the perimeter of the first public inquiry: only the municipalities in a five-kilometre radius around the power plant could be involved in the committee. This decision was quite confusing for some mayors: for example, *Serrières* and *Peyraud*, two little towns downstream from Saint-Alban but located in another *département*, had been consulted during the public inquiry about liquid discharges but were not included in the CLI.²¹ *Serrières* eventually joined the commission, but not *Peyraud*. Other municipalities were included in the Emergency Planning Zone, an area within a ten-kilometre radius around the nuclear power plant

¹⁹ “Commission locale d’information” in French.

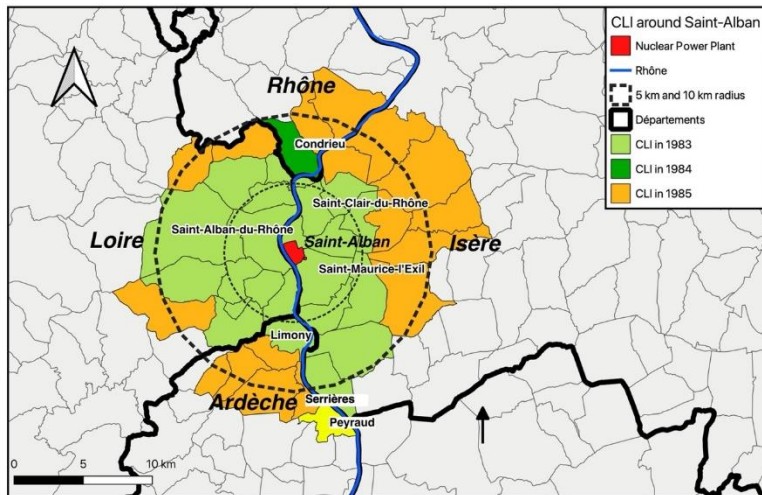
²⁰ Circular by the Prime Minister of 15 December 1981 on local information commissions, in the Rhône Department Archives (Lyon), box 7442W1.

²¹ Saint-Alban CLI, Meeting held on 19 September 1984, in the Rhône Department Archives (Lyon), box 7442W3.

(Suchet 2015), but they were not invited to the CLI either. How could they be exposed to a risk and yet not be involved in the commission?

After three extensions of the area involved in the CLI, the meaning of the CLI itself changed: first based on the five-kilometre radius of public inquiries, it was finally based on the ten-kilometre radius of the Emergency Planning Zones. But the power games were not over; in 1989, the local officials decided to create an additional commission to gather all the CLIs in the *département*. This new commission was also in charge of *monitoring* the nuclear power plants, by organising hearings of experts and by gathering reports on the nuclear power plants in the *département*.

Figure 5 Map Showing the Result of a two-year Negotiation and the Expansion of the Area Covered by the CLI around the Saint-Alban Power Plant



As shown on the map, four departments are affected, beyond the theoretical five-kilometre radius used for public inquiries.

Another problem remained in the 1980s: if other political subdivisions on the other side of the Rhône could have access to information because they were exposed to a potential risk, could they also collect taxes?

3.2 Does Risk Give the Right to Collect Taxes?

An operating nuclear power plant producing electricity means a lot of business taxes for the surrounding municipalities. For example, the entire region around Superphénix was able to collect 24 million francs each year from 1991

to 1997.²² But the Rhône is an administrative and a political boundary between different authorities, with different budgets and finances. Given that the risk was considered the same, and that all the municipalities were involved in the CLI, the taxes should be the same. Around Superphénix, the struggle was real: for six years, from 1991 to 1997, the Isère *département* managed to collect more than the Ain *département* on the other side of the river. As a matter of fact, all the small towns around the construction site took on abyssal debts to finance roads and houses for the workers building the nuclear power plants. In this case, the risk of greatest concern was not radioactive but financial.

4. Conclusion

Through the case study of the two nuclear power plants built in the same French *département* during the 1970s and operating in the 1980s, I demonstrated that the numerous areas affected by nuclear power plants were constantly growing and evolving symmetrically to the difficulty to spatialise nuclear risk. EDF officials and national authorities faced strong opposition from anti-nuclear opponents, but also from local populations and elected officials, pushing to expand the areas potentially or effectively affected by the construction and by daily operation of the nuclear power plants. Each of these actors argued that if there was a risk, there should be a right and a compensation: a right to be involved in the control of nuclear power plants, to be involved in the decision-making process, to have access to information, or to collect taxes. By challenging the official zones defined by EDF and by the national authorities, zones arbitrarily limited to prevent anti-nuclear reactions, local officials, local populations, and antinuclear activists questioned the extent and the boundaries of nuclear territories. But the spatialisation of nuclear risk is extremely difficult: where is the limit downstream for radioactive effluents? Should the entire watershed be involved? The entire country? Neighbouring countries such as Switzerland? Local authorities had to take into account these critics, but they also had to establish spatial boundaries. Through the example of the Local Information Commissions, in charge of gathering and giving access to technical information about each nuclear power plant in the surrounding areas, I have shown that the building principles of these areas evolved. Established at the beginning of the 1980s to reassure and inform the populations living in the direct vicinity (a five-kilometre radius), they were progressively extended to match the emergency planning zones (a ten-kilometre radius), which means that the risk should give the

²² Isère Department, referral following the absence of a decision on the business tax, 19 October 1995, in the Isère Department Archives (Grenoble), box 7869W36.

right to be involved in the control of the nuclear industry. But it is not enough, and in 1989, local officials established another area including the whole *département*, acknowledging that there is indeed no clear limit to nuclear territories.

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Geographies of Nuclear Energy. An Introduction.

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