LEGITIMIZING RISKY INDUSTRIAL ACTIVITIES: REGULATION OR "ECONOMICALLY ACCEPTABLE"?

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Abstract–This paper questions the implementation of the French Bachelot Act, which have created the major "Technological Risks Prevention Plans" (TRPP) as they are applied to an industrial and port zone. It reveals how a regulation aiming at protecting industrial activities and urban zones through their separation, can generate a strong tension between economic interests. One reason of this tension comes from the very notion of economic acceptability, used by Seveso companies in order to put limits to demands formulated by the environmental administration. Even if this notion is considered by the Bachelot Act and previous regulations, paradoxically it has no formal definition. So it can be used by companies without any possibility of a public control. Nevertheless, it quickly appears that what is considered as acceptable by Seveso companies may be inacceptable by other companies. So the economic acceptability is a much more complicated notion than supposed (and not defined) in industrial risks regulations. Actually, the Bachelot Act could force non Seveso big and small companies to delocalize because it creates non-risks zones around Seveso plants. Thus local decision makers engage themselves in a process of adapting and rearranging the rules of the Bachelot Act, asking the French government for support. Finally, some kind of "side law" has been invented by State to find a solution to the tensions between economic interests.

Index terms - Technological Risks, Economic Acceptability, Industrial Zones, Regulation

I. INTRODUCTION

As has been shown by many studies, the protection of the industry has been a constant challenge for the French central government in regulating industrial risks. A famous Napoleonic decree of 1810, at the origin of the creation of "classified installations" (dangerous, unhealthy and inconvenient) allows the State to supervise the conditions of implementation of factories. It limits, without completely controlling, the scope of local disputes, industry or owners refusing the devaluation of their activities or their property due to nuisances, pollution or the threat of accidents [4]-[8]-[9]-[11]. It traces the path of a weak regulation removing most obstacles to the expansion of the industry.

Succeeding this domestic protectionism with negative ecological consequences, the European and French regulations of the last third of the 20th century slowly change the previous trend. They respond to the rise of the challenge of environmental pollution, periodically fueled by the repetition of accidents. They reflect a gradual increase in the requirements for major technological risk prevention through the Seveso Directives (in 1982 and later). The regulations thus try to contain an urbanization that catches up with the factories [II]-[III] and to limit the "seriousness" of potential catastrophic events. These regulations mark progress, but often limited or partial. For example, in the absence of adequate regulation on the transport of dangerous goods, industrial establishments circumvent the storage thresholds imposed by the directives, by varying the volume and frequency of supplies. Marshalling yards are thus becoming very large temporary storage centers for hazardous materials, though Seveso regulations do not apply to them.

A third period emerges after - and because of - the social crisis created by the catastrophe of the AZF factory (Toulouse, September 2001), whose effect is a hardening of the prevention of major industrial risks. The Act of July 2003 on major technological and natural risks, generally called the "Bachelot Act", is adopted in order to redraw the relationship between industry and the city. It is embodied in Technological Risk Prevention Plans (TRPP) around the so-called "Seveso High Threshold" factories.This regulation is based on the idea of "putting factories in the countryside" without relocating them, so witha need to transform the space that surrounds them. Such an idea logically generates a double movement: "emptying" around the Seveso high threshold establishments, the riparian territories then being subject to expropriation, abandonment or pre-emption measures [7]; imposing on these companies transformations aiming at the reduction of the risks at the source in order to limit the surface of the territories thus emptied and frozen.

The Bachelot Act, however, protects industrial risky companies by putting the notion of "economically acceptable" at their disposal, a security that allows them to set limits to the risk-reduction measures at the source that are required by them. Companies can thus oppose to the injunctions of the "environmental police with an argument of economic unacceptability vis-à-vis their economic survival.

This notion of economic acceptability plays an undeniable role in the negotiations between environmental inspectors and companies, but without this role being clarified. It has been considered through its computability [10] or its scope for the

decision through cost-benefit analyzes [13]. But sociological process of which economic acceptability is the expression has hardly been the subject of research.

The purpose of this text is then to examine this sociological process, that is to say, the dynamics of disputes, negotiations and decisions passing by the reference to economic acceptability. In this sense, this notion of acceptability is taken here not as an economic question, but as a source of tension whose modalities of loosening are built on the ground. In this perspective, the examination of this process makes possible to highlight an ambivalence of what is "economically acceptable".

On the one hand, economic acceptability is regulatory without being regulated. Indeed, while the notion of "economically acceptable" by companies constitutes a target for administrative requirements, it is not defined by the regulations. This notion is thus unilaterally determined by the companies which loosen the constraints that the State could impose by law to reduce the risks at the source. The disagreements (technical), between the public administration and the companies, on the calculations of probability of accident, are thus evacuated by the latter under the "economic unacceptability" of some administrative requests.

However, the principle of economic acceptability is being turned against Seveso companies. Indeed, as the principle of economic acceptability was not defined, it could have been displaced by local decision-makers when the desertification around Seveso establishments implied a massive departure from riparian economic activities other than Seveso. The notion of economic acceptability, a priori applicable only to Seveso companies, is unexpectedly questioned by other economic activities. This dilemma: closing businesses to keep others, moves the unilateral nature of the informal principle of economic acceptability under the pressure of the manager of the industrial field.

These proposals are based on a research work conducted between 2012 and 2015 on the industrial-port area (Zone Industrialo-Portuaire : Zip) of Le Havre-Gonfreville (Seine-Maritime, North-East, of France), whose TRPP is a case study in France. Indeed, this site:includes a large number of Seveso "high threshold" petrochemical and chemical plants (16 plants), making this TRPP the largest in France;

- concentrates many non-Seveso economic activities (more than 250 companies of all sizes are listed), which are close to Seveso companies and thus directly concerned by the TRPP;
- commits the territory of the Grand Port Maritime of Le Havre (GPMH) as well as the economic activities hosted;
- concerns a dense urban zone integrating six cities including the city of Le Havre itself.

From 2011 to 2015, more than fifty interviews were conducted with elected officials, industrialists, State deconcentrated services, environmental associations, representatives of Seveso trade unions, neighborhood associations, GPMH officials, local government officials. These interviews are completed by an participation to several meetings, institutional or associative.

In Le Havre, although housing issues have elicited reactions from elected representatives and associations, the impact of TRPP measures on non-Seveso economic activity - including those of the Port - has gradually become an issue. major, at the origin of a national reflection to "arrange" certain aspects of the law of 2003 and to change the conditions of its application. As such, the analysis of the development process of the TRPP of the Havre-Gonfreville Zip is an opportunity to grasp the way in which the territorial commitment and the stakes for the local economy have profoundly transformed the management principles of the area.

In this context, it will be highlighted how, at first, disagreements on the method of calculating risks between the administration and Seveso companies are concluded, for companies, by the regulatory recourse to "the economically acceptable"; then how, in a second time, the question of the economically acceptable is sent back to the companies at risk when the non-Seveso economic activity is threatened and, beyond, the development of the industrial-port area proves to be thwarted.

II. MAJOR TECHNOLOGICAL RISK VS ECONOMIC RISK: ON MEASURABLE CALCULATIONS

Adopted shortly after the catastrophe of the AZF plant, the Bachelot Act is presented as an experimental regulation whose stakes are immediately perceived by only a small circle of insiders. Most politicians believe that it will go away on its own as implementation seems out of reach. However, after a few years of trial and error, which reflect the difficulty of the environmental administration to implement the new regulations [5], a circular of the Ministry of Ecology, dated May 10 2010, proposes a general methodological framework, reflecting the stabilization of the elements of doctrine. This circular compiles the rules, proposed in various regulatory texts between 2005 and 2010, relating to: the drafting of hazard studies, the criteria for assessing the risk reduction approach at source initiated by companies and the policy of control of urbanization around industrial sites. With risk reduction at source as a priority, the circular defines precise - and binding - criteria for assessing and managing major technological risks.

The pressure exerted by the State can therefore increase, thanks to new levers embodied by a new and sophisticated methodology of risk prevention.

However, if the 2010 harmonizing circular will lead companies to assume the financial burden of risk reductions at source, the "economically acceptable" criterion provides them with a means of controlling the level of demand for the State.

A. Disagreements on the Methods of Calculating Probabilities.

The Bachelot Act and its implementing decrees provide for an initial phase of negotiations between the environmental administration and the companies, based on the hazard studies carried out by the industrial operator. The risk assessment criteria - or "RMM criteria [Risk Management Measures]" - are at the center of this first phase. The "RMM approach", located at the heart of the regulatory methodology, appears as an "indicator of the compatibility of aplant with its environment".

Concretely, this approach results in the realization of a matrix with two inputs: "gravity" and "probability" of occurrence of an event, implying that a dangerous phenomenon whose combination of gravity and probability is too high must be subject to risk reduction at source. The positioning of all the dangerous phenomena in this matrix, with five classes of probability and severity, allows the administration to decide on the "acceptability" of the level of risk control by the company.

In this first phase, the "gravity" parameter, although a questionable topic, is not the subject of disagreements or even of debates between the administration and the companies. But probability calculations raise questions because of the existence of numerous methodologies and calculation models, both in France and internationally speaking. While some industrial groups have their own know-how and clearly identifiable methods, this is not the case for other companies, forcing them to seek a "turnkey" method from a provider. Although international methods are available from firms, based in countries where probabilism is well established (in the Netherlands, for example), no method is particularly prevailing, which gives rise to differences between companies: For a chemical leakage rate (10% or 30%), it completely changes the result. Some companies were penalizing themselves too much for those who took more flexible criteria.

However, in the context of the "RMM approach", the issue of the determination of probability classes is central because it gives the possibility of excluding dangerous phenomena whose gravity is very high but whose probability of occurrence is estimated to be extremely low. The exclusion of a hazardous phenomenon assessed as extremely unlikely is a qualitative leap in the construction process of the TRPP: it eliminates the risk associated with an event and thus frees a land area. However, the exclusion of a dangerous phenomenon requires a formal agreement of the administration, which implies that the principles of calculation of probability adopted by the companies and by the administration are if not identical, at least compatible: To exclude a dangerous phenomenon, it should be excluded according to rules that are pre-established and public. For example, before 2005, it was unclear whether certain sources of risk had been removed by the company.

During this first phase, which runs from 2005 to 2010, the administration must forge an experience of the probabilistic approach, which it did not initially have since it was mostly broken down into the determinism of the aggravating accident. Nevertheless, the administration refuses to give a blank check to the models proposed by the companies and, in doing so, faces a double difficulty. On the one hand, the administration cannot have access to the probability calculation models used by the companies. On the other hand, the administration challenges one of the essential foundations of certain methods of calculation, because they did not have enough events and experience feedback to evaluate the probability seriously.

In the case of the Havre-Gonfreville Zip, these negotiations take on a particular dimension because of the large number of risky plants on the site and their proximity to neighboring municipalities, including the quite big town of Le Havre. The administration of the environment engages in multiple negotiations with each of the companies which dispute the validity of the calculations of probabilities proposed by the State. The tensions are sometimes such that, to escape negotiations with the industry and not leading to a shared solution, the administration resorted to the public disclosure of disagreements in public dialogues committees. Thus, between 2005 and 2010, in order to harmonize and formalize methods for calculating the probability of the occurrence of dangerous phenomena, a long and "laborious" period of negotiations and round-trips between the State (notably through the Ministry of Ecology) and the main industrial groups. Tensions between the administration and industry led the government to complete the regulations and to produce, in 2010, the circular aimed at harmonizing risk assessment models. This circular allows the administration out of a situation of blockage since some companies, whose risks impacted a large urban area, refused to make risk reductions at source by rejecting the probability calculations advanced by the administration. This circular thus provided the administration with the ability to challenge and weigh the risk assessments carried out by each of the Seveso companies.

Since 2010, the obligation for companies to go through the methodology imposed by the Ministry of Ecology has led to significant reductions in gravity around Seveso companies. For example, one of the radius generated by a company is reduced from 7 km to 2.2 km, greatly reducing the number of activities and habitats likely to be removed (in particular, a large part of the agglomeration of Le Havre).

Although the 2010 circular allowed for some striking changes (particularly in the impacted residential area), the affected area is still very important and represents a major problem for zones with a high economic measures of expropriation and abandonment. Indeed, the production of a very restrictive risk assessment methodology is accompanied by a criterion of economic acceptability that provides, in practice, room for maneuver to Seveso companies to "adjust" the efforts they have to agree in terms of risk reduction at source.

B. ... to the Principle of "Economically Acceptable"

Recourse to the principle of economic acceptability predates the Bachelot Act:

During the 1990s, this principle is commonly invoked by companies to justify refusals opposed to suggestions, incentives or requests, expressed by the environmental administration to reduce the level of risk. While new rules for calculating risks are now enforceable by the administration to companies, the 2010 circular's Statements maintain the previous orientation: "The [harm reduction] project makes it possible to achieve, under economic conditions acceptable, a level of risk as low as possible, taking into account the State of knowledge and practices and the vulnerability of the facility's environment ". The circular reaffirms the need to limit risk management measures if the company considers its survival compromised.

If this principle is central, it is never explicit, in a formulation as precise as can be the calculations of probability, formulation that can serve as a basis for negotiations between the administration and companies. In practice, this principle, unquantified and therefore non-negotiable, unilaterally allows a company to put a cap on the level of effort it could make in terms of reducing risks at source. Paradoxically, even though this notion weighs down in the risk assessment process, it is entirely the result of companies' singular appreciation. Economic acceptability is a kind of veil that is not desired by the State to be lifted.

Consequently, this situation raises the question of controlling the economically unacceptable nature of the security measures requested from companies, an issue accentuated by the probabilistic approach to risk management.

In the elaboration of the RMM matrices, two types of incomparable criteria coexist with each other. While the risk equation: probability X gravity, can be an object of negotiation between controlled and controller, leading the two parties to technical exchanges, the economic acceptability, for its part, escapes this negotiation: it comes under the the rule of confidentiality enjoyed by companies, and the administration does not have the skills to discuss it. There is therefore an asymmetry between, on the one hand, the sophistication of the methodological rules organizing the calculation of risks and, on the other hand, the absence of a reference system for controlling the economic calculation of risk reduction by companies. This asymmetry raises the question of the acceptability of "economic acceptability" in a context where the Bachelot Act not only aims to petrify territories, but also and especially to empty the risk factories.

The extent of the remaining areas affected by the 2010 circular was therefore not a sufficient argument for further reduction of risks at the source by the companies. The latter refer to the economic unacceptability of the appropriate measures and refer to the local authorities the financial support of necessary protective measures. In many territories in France, this zoning strategy works as long as the affected territories concern the housing. On the other hand, in industrial zones, such as Le Havre-Gonfreville, this is not the case and the principles of the Bachelot Actfailed. Thus, facing the threat to the sustainability of non-Seveso economic activities (more than 250) located in the risk zones that are to be frozen, a new phase of negotiations is opening, extended to all local decision-makers. These negotiations will help to change the regulation of 2003 and to transform the risk management modalities.

III. A TERRITORIALIZATIONPROCESS OF THE ECONOMIC ACCEPTABILITY

In the new negotiation process that commits from 2010, stakes refer to not only the maintenance of economic activity not Seveso, but also toits development. This ambition is important insofar as this orientation, carried by the territory [12], comes up against the founding principle of the Bachelot Act consisting of "emptying" around risky plants. For local decision-makers, the aim is not only to preserve, but also to densify the economic fabric around risky businesses by encouraging the establishment of new activities, source of jobs.

A. Towards a Sharing of Risk Management.

In the Havre-Gonfreville Zip, there are different activities: logistics, chemistry and petrochemicals, manufacturing and assembly ... or even catering and services, whose cohabitation is called into question by the application of the new regulations. Many economic facilities, directly related to port activities or not, are included in the area impacted by the risks. By delimiting areas where any activity other than "Seveso" may be denied, the TRPP balances the economic acceptability of risk reduction by the companies generating them and, in addition, another economic acceptability: related activities are potentially subject to the banning measures under the TRPP. The freezing of territories resulting from risk mapping also has the consequence of calling into

question any possibility of setting up new activities. Risk mapping will thus draw the attention of the elected representatives to the extent of the problem: 70 ha to be "dumped", 450 ha on which significant safety measures must be financed, whether, for example, a reinforcement of the building or a sealing of buildings against toxic risks. For the most part, this area is occupied by entities in "temporary occupation authorization" (AOT), awarded by the GPMH, the main owner of the areas concerned.

The endangering of the non-Seveso economic activities encourages local decision-makers to find a solution to a seemingly inextricable situation because of the unemployment rate (13%).

It is true that the city of Le Havre has long been oriented towards its port activities. However, the administrative creation, in 2000, of the Codah (Community of towns) is accompanied by a reflection on the evolution of the Zip, encouraging the various municipalities of this community to converge their approaches of the port and, also, of the industry. The catastrophe of the AZF factory in Toulouse, in 2001, will catalyze this movement of rapprochement between local authorities and companies: a "Major Hazards" service is created within the Codah, with the agreement of the Prefect; then, in 2002, a territorial structure is formed, dedicated to the industrial risks: the Office of Major Risks of the Estuary of the Seine (l'Ormes), which aims to set up an information system of scope on the risks.

L'Ormes, which has a status of association, reflects a propensity to the interconnection of major technological risks. Its creation will encourage the Chamber of Commerce and Industry of Le Havre (CCIH) to set up an "Industrial Risks Commission", essentially grouping Seveso companies, which will allow it to be represented in the Ormes. This association brings together local decision makers: the CCIH, the City of Le Havre, Codah and the GPMH which, as owner and manager of the field of implantation of a large part of the companies (in particular Seveso), can choose its tenants.

Thus, although risk management is normally the responsibility of the State, a set of local decision-makers is gradually taking over this issue since the 2003 regulation now inherently links risk management, maintenance of economic activities and territorial development. The willingness of local decision-makers to unite their thoughts on risk issues within the framework of an institutionalized structure: l'Ormes is, in France, a very atypical situation.

The Ormes will have a significant effect: that of encouraging Seveso companies to consider risk management in a collective way, whereas, traditionally, this management is a singular responsibility: each company assesses its risks, by not having to be accountable only to the State services and only constrained by the regulations in force. With the Bachelot Act, risk-generating companies that enter a non-Seveso area with a strong economic activity have no choice but to leave their self-centered risk management stance.

In certain territories and in Le Havre in particular, the principle of the economic acceptability of risk reduction, proposed by the regulation for companies that generate risk, becomes obsolete: it comes up against other economic interests and not only the residential redevelopment of a territory.

The trade-off between risk reduction at source and keeping non-seveso activities as well as the development of non-Seveso activities will depend both on the relationships that the industries maintain with each other (subcontracting, for example), but also on decisions and positions of the GPMH, as land owner and manager. The idea of a "collective risk management", promoted by l'Ormes, is made effective by a voluntary commitment of all the decision-makers (CCIH, local authorities, GPMH). It is driving these local decision-makers into new negotiations: it is a question of going beyond the regulation by obtaining from the Seveso companies additional "efforts" in terms of risk reduction at source so as not to hinder economic development. .

B. From economic unacceptability to regulatory transformation

If the principle of maintaining refining and chemistry in the Zip is consensual, it cannot hide the issue related to the sustainability of other economic activities, industrial or services, located on the site. Two large families of activities coexist: port (handling, services) and industrial, comparable in terms of employment (respectively: 14,300 and 17,300 jobs). The "industry" family is itself diversified between "Seveso" (chemistry and refining) and the others: automotive, aerospace manufacturing, assembly and services to industries. The Zip is therefore only partially dependent on refining and chemistry, which accounts for about 40% of direct industrial employment and 15% of total direct employment, including port employment.

This raises, at least, the question of keeping companies after the adoption of the TRPP, according to a dual possibility: to keep the Seveso activities and to close businesses that are territorially incompatible, or to close the Seveso activities that are territorially compromising to keep the others.

In this context, the GPMH will play a vital role. Indeed, the statutes of the GPMH, stemming from the Fillon Act of 2008, confer to it levers to perpetuate, or not, the companies established on the Zip, on the grounds of which it is the owner. The Fillon Act organized the reform of "autonomous ports" and their transformation into major maritime ports. It has had the effect of removing the port from its administrative function (the management of land entrusted to it by the State), to grant it more autonomy, thus more room for maneuver in the management of its domain that has become his property. Thus, the constitution of the GPMH led him to move from a land manager function

to that of manager of an industrial-port zone. Under the impetus of the GPMH, the risk map will be redrawn.

Like any owner, the GPMH is led to study the conditions of profitability of its space, thus the compatibility of risky activities and other activities, including those that are to be developed. For example, the "wind power project", representing several hundred potential jobs in the manufacture of equipment and energy production, appears promising, but it requires land available in the Zip. Although the GPMH has not accepted to take an institutionalized action - desired by the administration - in the prevention of risks on the Zip, it will intervene strongly in the risk management by tracing an innovative way. This involvement of the GPMH in risk management can only be indirect since, apart from taking charge of the security of the port activities up to the edge of the wharf (exceptionally up to the boats), the GPMH does not have the competence "Major technological risks". He cannot enter a factory to inspect it, nor can he formally interfere in the procedure specific to hazard studies, which remains a prerogative of the administration of classified installations. The intervention of the GPMH will be no less effective.
The challenge is twofold: to get Seveso companies to reduce risk at source, far beyond what regulation may require, to free up space and make it profitable; and, also, to obtain from the State a loosing of the regulation of the development of risk zones.

Risk reduction therefore becomes a problem not of preventing accident but of control of land, considered from the point of view of economic development. However, the GPMH and local decision-makers admit that "additional" risk reductions at the source to reduce the surface of frozen territories must be limited as Seveso companies indicate that they are going to survive.
Local decision-makers (forming the "quadripartite": City Council of Le Havre, Codah, CCIH, GPMH) will therefore, at the same time as local negotiations, commit to the Ministry of Ecology a request for the transformation of the Bachelot Act in order to make the rules more flexible.

This approach leads to a new regulatory complement taking a "soft" form, without being a soft law, through "administrative notes" published in 2011 and 2012. Two notes, relating to the "Treatment of Economic Activities" (May 2011) and to "Application of the TRPP Doctrine in Port Areas" (January 2012), initiate a significant inflection of the methods for implementing the Bachelot Act and, even a questioning of some of its principles.

Indeed, far from preserving the letter of the Bachelot Act and its implementing texts, these notes aim to introduce new criteria and elements of negotiation on the maintenance of riparian activities: "The economic activities are by nature very varied and present characteristics that must be taken into account ... these characteristics mean that they cannot be treated in a comprehensive way and that it is essential to differentiate their treatment ". By the notes of 2011 and 2012 is thus admitted the possibility of derogating from the founding principles of the Bachelot Act by authorizing an implementation of activities in areas that should, a priori, have been "emptied", a possibility formulated explicitly: " "Application of land measures on these activities does not seem relevant" when activities are connected to Seveso companies or when they are port or when they fall under "activities with possible protection". In other words, while the Bachelot Act was aimed at creating a vacuum around institutions at risk, its inflections led, in highly industrialized areas, such as the industrial-port area of Le Havre, to reconsider this ambition.

CONCLUSION

The emergence of a "side law" to the Bachelot Act is part of the general perspective of reducing the environmental vulnerability of the neighboring populations. In practice, it has to deal, without established regulatory levers, with questions relating to the socio-economic vulnerability of an industrial area. The application of the regulations appears, basically, as a paradoxical injunction, that is to say a sociological process that leads to having to choose a solution without being able to choose all the conditions of the choice to be made [I]. Thus, the regulation formulates requirements in terms of the level of risk vis-à-vis the companies but it gives them, at the same time, the ability to refuse these requirements for their economic unacceptability.

We are witnessing the formation, not of a soft law, implying a voluntary commitment of the parties, but of what could be called a side law. This side-law is made up of possibilities of derogations built by trials and errors, the scope of which is great although the legal source of these derogations: notes or circulars, weak.
This side-law can therefore be considered to represent State arrangements with itself rather than conventional arrangements between the State and stakeholders. It results from the fact that risk regulation may not only create risks (Gilbert 2003) but also competition between economic interests. Unlike the Napoleonic decree of 1810, which takes the new activities against the old ones, the Bachelot Act is overwhelmed by itself because of its unforeseen stakes on the desired coexistence of existing and future activities.

From this point of view, the notion of side-law makes it possible to reveal the growing complexity of risk

regulation, which goes far beyond actual risk issues without regulating this excess.

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