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Thinking ahead of disasters. The role of risk regulation in the European Union

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Abstract

The need to reduce the vulnerability of society against disasters has fostered the introduction of regulatory instruments which can anticipate protection before a danger is imminent and an emergency phase starts. Disaster risk regulation has therefore become a significant field of legislation aimed at complementing and supporting disaster relief measures through precautionary action.

It however represents a specific issue of disaster management: given the low probability of high impact disasters, it is difficult to assess related risks, so their regulation involves balancing different rights and interests at stake with uncertain scenarios. The need to rationalise such precautionary protection requires regulatory instruments that take into account the very nature of disaster risks (low probability, high impact) as well as other competing situations of rights and interests which can be affected by regulatory measures.

Moreover, in view of the aim of reducing vulnerability, disaster-related policies aim at achieving resilience against disasters. Being resilient means having the abilities to resist, adapt to stressful changes and to bounce back to the original structure. In a resilience-oriented context, what disaster risk mitigation should do is to facilitate the process of adaptation under stress by anticipating impact scenarios and the instruments of protection.

This article examines the European Union's (EU) approach to the regulation of risks of potential catastrophic impact by framing it in the context of resilience. In so doing, it argues that this approach is shaped by the multilevel interdependencies that exist between the EU, national administrations, and private parties. These relationships, which govern the functioning of the EU legal order itself, impact on how protection against disaster is designed, shape the nature of regulation and create a number of challenges for regulators. The modes which disaster risk regulation follows in the EU are therefore analysed as a key issue for enhancing the understanding of this complex regulatory approach.



Key-words

Disaster risk regulation, resilience, emergency, European Union, administrative law, standards, proportionality principle, subsidiarity principle, command-and-control, agreements



1. Introduction

The complexity of today's society is reflected in its increasing vulnerability to natural as well as man-made threats which can involve catastrophic impact scenarios. Broadly speaking, the increase of vulnerability to events different in nature, but characterised by the same potentially disastrous impacts, depends on the extreme interconnection between needs and resources, on the one hand, and national economies and policies, on the other hand. Natural disasters (such as floods, earthquakes, tsunamis...), pandemics, industrial accidents, terrorist attacks, and economic shocks are examples of national emergencies which not only prejudice the expected living standard of the population hit, but which can also have negative cross-border externalities on the ordinary functioning of other States. In Europe, this is particularly evident, since nearly all national States are members of that supranational legal order which is the European Union (EU). This means that if the transboundary externalities of disasters are not addressed in a supranational framework, legal ties can become a double-edged sword for the protection of individual States as well as for the functioning of the whole system.

In a view to the aim of reducing vulnerability, policies need to approach what is commonly called resilience against disasters. Resilience is a rather new concept, which conceives the capability of coping with and recovering from highly critical situations of possible catastrophic impact (Geis 2000: 151-160). Being resilient against disasters means having the abilities of resisting, adapting to stressful changes and bouncing back to the original structure.

More concretely, resilience-building policies identify a flexible approach to disaster management, so that the differentiation of the instruments to respond to disasters can reduce the impact of the disaster itself on the society and make the recovery less heavy to be sustained. Because of the involved domino effects, the management of interdependencies is essential for facing up to disasters and the correct implementation of resilient policies at national levels can significantly limit the transboundary impact of disasters.

By improving the ability to resist to disasters, risk regulation plays a significant role in the process of building a resilience-oriented society. By enhancing the preparedness and the



capacity to respond to disasters, what disaster risk mitigation policies do is to facilitate the process of adaptation under stress, by anticipating impact scenarios and the instruments of protection. The importance of risk regulation in the process of building resilience has also been recognised by the recent communication from the EU Commission on the EU approach to resilience: the resilience paradigm has been conceived of as ‘a multifaceted strategy and a broad systems perspective aimed at both reducing the multiple risks of a crisis and at the same time improving rapid coping and adaptation mechanisms at local, national and regional level’^I.

Risk mitigation policies are at the basis of any strategy aimed at enhancing the strength of the system against disasters as well as at reducing the impact of a disaster on that system. The *ratio* of risk regulation, however, should be contextualised within the broader set of challenges that resilience presents to society. The content of disaster risk mitigation policies should be shaped in a way that sustains resilience and does not constrain the capability to react to disasters. On this ground, the adaptation need that the concept of resilience entails has to be developed in coordination and coherence with risk mitigation policies.

In doing so, these policies face the problematic nature of catastrophic risks, which have only a low probability of occurring and are related to a high level of uncertainty^{II}. This means that if their possible elevated casualties and losses call for a certain level of regulation, the uncertainty of their occurrence makes it difficult to review evidentiary scientific justifications, the assessment of costs and benefits, as well as the means through which the goals of protection are going to be pursued.

Against this backdrop, what public powers can reasonably do is to provide policies aimed at minimising disaster-related risks’ negative impact on the life and health of its population, as well as additional negative effects on the supply of services and goods. The legal understanding of this precautionary approach to disaster risks revolves around the question of how legal instruments can reasonably cope with disaster mitigation.

The traditional public law approach to disasters is based on emergency regulation, while legal research on the mitigation of these low-probability, high-impact risks is still at an early stage. Even if this regulatory issue was already present in the scholarship (de Sadeleer 2002a), only recently have scholars started to focus on the instruments and challenges of regulating low-probability risks (Black and Baldwin 2012; Simoncini 2010).



Until now, the European literature on risk regulation has basically focused on non-catastrophic risks and the compatibility between the voluntary and identifiable introduction of a risk, on the one hand, and the public interest in the protection of human health and the environment, on the other hand. This way, European scholars have focused on the application of the precautionary principle, which allows assessing the tolerability of risks by shifting the burden of proof onto those parties that would like to take it (Majone 2002; de Sadeleer 2002b; De Leonardis 2005; Fisher et al. 2006; Fisher 2007; Alemanno 2007).

By following this almost new strand of research, this article aims to analyse the central issue of how regulation addresses disaster risk challenges as a preliminary condition for developing resilience against disasters. In pursuing this goal, this article focuses on EU disaster risk governance as a significant case-study to show how a multilevel system needs to cope with such regulatory challenges if it wants to preserve its own functioning.

Since the consequences of catastrophes may affect the functioning of the whole system and because they may also be distributed unequally throughout the European territory, EU governance of the risks of a possible catastrophic impact is extremely important in order to preliminarily design the capability of the EU system as such to resist, respond and recover from catastrophes. But it is only by taking into account the institutional interdependencies that govern the functioning of the EU legal order that a full understanding of the challenges of EU disaster risk regulation can be achieved. The implied effect of this approach is that disaster risk governance contributes to enhancing the cohesion of the EU legal order as such, and that it thus pushes the goals of integration forward.

When addressing EU disaster risk governance, this article focuses on the modes of disaster risk regulation as a key perspective for understanding the functioning and challenges of this regulatory framework. By analysing the regulatory interaction between different levels of government, on the one hand, and between public and private parties, on the other hand, the administrative face of such multilevel governance of disaster risks is outlined. In so doing, the manner in which these modes impact on risk regulation and on the resilience-building process is pointed out, with the aim of showing how the nature of regulation is shaped and which challenges regulators need to meet.

In order to develop this reasoning, the aim, content and specificity of disaster risk regulation is presented first. Based on this, the EU approach to disaster risk regulation is analysed and the core of EU regulation is identified in the setting of regulatory standards;



subsequently, the national ways to implement these standards are addressed. In line with the distinction between traditional command and control powers and market-based instruments, two main types of adjudicatory measures with regulatory effects are considered: prescriptive authorisations, on the one hand, and agreements between public and private parties, on the other hand. The aim is to point out the critical role of the principle of participation in the design of adjudicatory instruments. The final remarks underline and conclude on the principles and structure of EU disaster risk governance.

2. The scope of disaster risk regulation

In today's society, the search for safety is critically linked to the reasonable control of unacceptable risks. Since risks as such cannot be eliminated but can only be mitigated, the trade-off between risks and safety is associated with risk management. The goal of public policies then is to set this trade-off at the appropriate level, so that an acceptable standard of safety can be guaranteed within the interested community. Safety is, therefore, the result of a rational management of risks and, from a legal point of view, consists in the identification of those legal instruments that can capture this undetermined legal concept of safety in the most effective way.

Traditionally, when dealing with disasters the public goal is to tackle crises when they are about to occur, through preventive measures, as well as when they are actually occurring, through contingency actions. Public law has met disasters by introducing emergency regimes and regulations aimed at managing such unpredictable situations with flexibility. In national states, civil protection has traditionally delivered this governmental action through extraordinary measures aimed at preparing and responding to disasters as well as recovering from their occurrence (Fioritto 2008).

Since the '80s, the EU as well has been developing civil protection cooperation between its Member States, aimed at supporting national action in case of disasters; to this end, it introduced the Civil Protection Mechanism (CPM) and the Civil Protection Financial Instrument (CPFI)^{III}. These instruments allowed for the development of a solidarity network between Member States and the EU against disasters with the goal of enhancing the capacity to prevent, prepare for and respond to disasters (Wiharta 2008; Wendling 2010)^{IV}. To this end, the European Commission established an operational unit,



the Monitoring and Information Centre (MIC), which coordinates the assistance to Member States (as well as to third countries) hit by catastrophic events through the Common Emergency Communication and Information System (CECIS), an integrated, web-based platform which sends and receives alerts, registers the details of assistance required, makes offers of help and monitors the development of an ongoing emergency.

However, this emergency approach merely allows containing the impact in the advanced phase of the manifestation of the danger. The need to reduce vulnerability and prevent catastrophic impact scenarios from occurring, however, calls for further stages of mitigation. Risk regulation can help address those dangers whose occurrence can have catastrophic effects by keeping the related risks under control, with the aim of avoiding or at least better preparing for emergency situations.

The specific issue of regulating catastrophic risks consists in the difficulty of assessing such risks. The consequence is that both the probabilities of such risks and the related impact scenarios can be over- and/or underrated. In this precautionary approach, regulatory choices might be twisted by public perception and fear as well as ignorance (Sunstein 2005: 39-41 and 80-81) and there is the concrete possibility of recourse to an instrumental political uses of catastrophic scenarios. These circumstances threaten the rationality of regulation and favour the introduction of measures prone to pay ‘emotion premiums’ (Sunstein and Zeckhauser 2010 and 2011). More generally, these circumstances pose the problem of how to rationalise precautionary protection against disaster risks and how to identify the suitable level of safety. The main regulatory issue is, therefore, to what extent one should regulate the risks with a possible catastrophic impact.

The specificity of regulating disaster risks might consist in the definition of regulatory standards aimed at fixing *reasonable* levels of safety on the basis of the identification of a “significant” risk. This is the key concept on which the system of protection is built. It refers to the toll of victims that can be accepted within a determined timeframe and in a given territory (Comar 1979; Ricci and Molton 1981: 1096-1097; Breyer 1993:11-19; Majone 2005: 133-135; Alemanno 2008: 33-36).

This means that faced with the impossibility of preventing disasters, regulation should engage in the reduction of their possible impact to the extent that costs do not exceed benefits, that is in a proportional way. If resistance against catastrophic risks is not able, by itself, to protect against disasters, this implies that to some extent adaptation to the



consequences of disasters is necessary and unavoidable. When recognising that mitigation can address only certain – significant – risks, disaster risk regulation therefore questions the capability of the precautionary principle to protect against disasters. In the context of disaster management, risk regulation should therefore be designed in a resilient fashion. The proportionality principle represents the legal recognition that mitigation policies should be accompanied by other policies and actions aimed at pursuing resilience.

In a case-by-case analysis, risk regulation should therefore consider the severity of a threat for human health, the degree of reversibility of its effects, the possibility of delayed consequences, and the perception of the threat based on available scientific data (Sunstein 2005-2006: 893-894). As a result, the notion of tolerable risks pertains to a ‘regulative concept’ (Fisher 2003: 456) which conveys a *de minimis* protection achieved through minimum harmonisation standards. This model of protection thus tackles the (measurable) uncertainty by balancing rights in a special context: in light of the proportionality principle, the reasons of precautionary action are balanced out with other competing rights (such as economic rights) in the measure that is considered strictly necessary for avoiding negative impacts and preserving the expected living standards.

3. The EU’s regulatory philosophy on disaster risks

The need to regulate disaster risks applies with even greater force to multilevel legal orders such as the EU, where different regulatory philosophies may clash with negative effects on the functioning of the internal market and an unequal impact across Europe. In fact, the search for a transnational response to disaster risks has its very roots in the assessment of possible negative impacts that disasters can have on the interdependencies between Member States and their common objectives within the EU.

This is main the reason that, alongside Civil Protection cooperation, the EU legal order has developed a common approach to disaster risks in an attempt to both rationalise protection against these threats and make it as effective as possible. This approach is built upon the system of multilevel governance, which shapes the EU legal order and strengthens the institutional interdependencies between the different levels of government.

EU disaster risk governance needs to take into account the competences of States on the protection of public safety within their own territory in compliance with the



subsidiarity principle and the current distribution of competences within the EU. According to the principle of subsidiarity, in fact, the intervention of the EU in the regulation of disaster risks is justified only by reason of scale and effects of actions. In the current distribution of competences, disaster risks can affect many areas of shared competence between the EU and the Member States: from environment to transport, and under the most general label of ‘general common safety concerns in public health matters’ (Art. 4 TFEU).

The EU regulatory philosophy is based on the constant interaction and coordination between the EU and national regulators: the EU sets the general framework of protection by defining the common regulatory objectives, while it is then left to the Member States to implement EU rules in the most effective way. This generates tension between the need to provide common regulations at EU-level for enhancing the protection at national levels, and the counter-need to preserve the national responsibility over disaster risks. This tension is endogenous to the EU multilevel legal order, but it can also contribute to pushing European integration forward. In fact, the reallocation of the regulatory function at EU-level has the effect of fostering the process of integration by shaping and harmonising the safety requirements of Member States.

This reallocation should however be driven by the test of necessity in the choice of both the regulator and the content of regulation itself. On the one hand, this means that EU risk regulation should not go beyond what is strictly necessary to achieve the goals which cannot be reached by individual States on their own. On the other hand, according to the proportionality principle (Fromont 1995; Emiliou 1996; Ziller 1996; Galetta 1998; Sandulli 1998; Tridimas 2006:136-241; Harbo 2010; Craig 2012: pp. 590-640), the content of EU action needs to focus only on those risks that are not tenable for the EU legal order.

The regulatory result of this assessment of multiple interests is the definition of standard levels of protection against unacceptable risks: by setting minimum thresholds, the EU determines the limits beyond which the European legal order does not want to run a particularly significant risk. In line with this reasoning, corresponding alert mechanisms are set in order to adequately tackle the case when these thresholds are reached.

This way, the standard-based methodology allows for fixing and gradually controlling the level of risk that is to be considered unacceptable for the legal order. In so doing, standard-setting is based on the use of mapping, monitoring and reporting instruments as



well as on information sharing (Black and Baldwin 2012: 9), which can help control the state of risk and maintain the expected level of safety.

This regulatory philosophy has been applied to many different sectors in the area of shared competences that are exposed to dangers which may have catastrophic impact on the European population as well as on the functioning of the internal market: from the control of major incident hazards of certain industrial activities (through the so called Seveso directives)^V, to nuclear safety regulation^{VI}, and even to aviation safety (enhanced through the establishment of the Single European Sky)^{VII}.

In order to achieve its disaster mitigation goals, the EU legal order has also specifically developed a more comprehensive approach to natural disasters, which has been implemented in the key legislation concerning floods^{VIII}. This legislation identifies significant flood risks through a process of mapping and by building flood risk management plans on maps of hazard and risk according to statistics and previous experiences. At present, this model provides the most workable instruments for protection, whose rationale can also be employed to tackle other disaster-related issues: It is not by chance that this rationale has also been implemented to the management of the volcanic ash crisis, which was tackled by a coordinated use of mapping and ash concentration thresholds (Fioritto and Simoncini 2011: 120).

This EU strategy strengthens both the existing legislation, policies and programmes and the research and development on disaster risks^{IX}. This means developing clear methodologies of risk standardisation that can rationalise the management of these low-probability, high-impact risks. Along with these objectives, in the long-term the EU Commission is thinking about the introduction of a framework directive for natural disaster prevention, as a further pillar of disaster management that would integrate preventive action and civil protection with the aim of prioritising hazards, mapping risks, and managing emergency plans^X.

This EU regulatory framework aims to make the system of protection against such risks more coherent, by focusing on the goals of protection as a whole and by redirecting both public and private organisations and functions towards the objectives of prevention and mitigation (A.M. Sheehan 1984: 630-631, with reference to the Seveso directive). The setting of EU regulatory standards, however, assumes the reliability of mapping, monitoring and reporting instruments, so that the continuous control over threats can



contain uncertainty. Clearly this rational reduction of risks cannot guarantee the effectiveness of the provided solutions. On the contrary, technology can fail, leading to a consequent inefficiency of standards with (possibly) catastrophic effects. Standards can fail as well, as when assessing a risk and misunderstanding the reliability of data and technology.

Building upon this regulatory philosophy and its limits, any legal attempt to reduce vulnerability can therefore not ignore the importance of being prepared to face emergencies as well as availing itself of further regulatory instruments which socialise risks by transferring their undesired effects to those parties who are in the best position to bear them. If the latter instruments cover the area of possible remedies against the failure of safety systems and are related to the distribution of risks that cannot be prevented^{XI}, the former set of emergency measures is still part of a strategy of facing and mitigating disasters.

Since structurally risk regulation cannot prevent disasters from occurring, emergency plans and communication networks aimed at early warning from a critical level of risks need to be developed to reduce the impact of a disaster when it occurs. This is the reason why the EU Commission – with the help of a number of specialised EU agencies and committees – has been working on mitigating uncertainty through a rational control over the whole disaster management cycle, from prevention to recovery. The goal is to enhance the general safety by defining a comprehensive strategy against disasters which coordinate risk mitigation policies with emergency intervention and thereby improve the organisation and procedures of both risk regulation and emergency planning.

4. The national modes of implementing EU regulation

The EU necessity of anticipating protection against disasters impacts on the Member States' own approaches to disaster regulation. In fact, EU regulation provides Member States with binding legal standards and methodologies for addressing disaster-related risk assessment and management that should be implemented by the individual States according to their own legal framework. This means that according to art. 2 (2) TFEU, after the EU has set the “necessary” level of protection, it is then up to its Member States to identify concrete ways to implement these EU regulatory standards.



This introduces a systemic approach to catastrophic risks with a recognised transboundary impact, which aims to contain negative externalities and protect the ordinary functioning of the EU system as such. What the EU legal framework concretely does is setting, within a coherent system, the minimum binding safety conditions which are enforceable by EU institutions.

The importance of sharing a common legal basis between the EU Member States clearly appears in the case of nuclear safety, which has significantly changed the European framework with regard to this issue: before the introduction of the EURATOM directive in 2009, every Member State could develop its own management of nuclear safety^{xii}, simply by taking into account both the international convention on nuclear safety and the International Atomic Energy Agency's (IAEA) standards and principles. This means that when disputes occurred on the starting up of nuclear power plants between neighbouring Member States, these could not be solved by the European judiciary, but only through the negotiation of bilateral agreements, which politically settled the case with the introduction of international instruments^{xiii}.

In compliance with the general principle of institutional autonomy, however, national regulators can choose their own way to develop both risk management and emergency plans required by EU regulation. National regulatory variations are therefore presumed to be the operative instruments of EU integration and the political science literature on the impact of EU policies on national legal traditions has clearly addressed both its reasons and effects (Knill 1998; Héritier and Knill 2001; Knill and Lehmkuhl 2002; Radaelli 2003; Versluis 2004).

When developing such plans, Member States need to take into account some significant issues and, above all, consider the costs and benefits of action^{xiv}. In order to provide the most effective instruments to implement EU regulatory standards, this consideration is particularly relevant not only in the light of the EU's regulatory philosophy of disaster risks, but also with regard to the balance that national authorities have to perform when assessing and managing these risks.

The choice of the regulatory mode shapes the process of risk mitigation and presents different sets of challenges both for regulating and regulated parties. Broadly speaking, plans can contain both traditional measures of administrative law and market-based instruments (S.A. Shapiro 2003: 401). This means that in order to enact EU regulatory



standards, public administrations can both exercise traditional command-and-control powers and develop incentive mechanisms based on the functioning of the market^{xv}. National laws are therefore able to fix the level of convenience for resorting either to unilateral administrative legal powers or to contractual instruments which exploit economic transactions' externalities.

Regulatory choices affect the feasibility of achieving protection itself and, more specifically, the distribution of burdens for achieving the expected level of protection among the actors involved in the mitigation process. In order to decide how to distribute such burdens, the participation of public and private parties in the regulatory process becomes the central issue, which shows how the interaction of different interests at stake is necessary for arranging a feasible regulation of disaster risks. At this level, enhancing resilience means providing effective regulatory solutions aimed at strengthening protection, so that resilience itself assumes and develops its legal feature.

In order to understand the importance of this interaction between public and private parties in resilience-building against catastrophes, the following paragraphs focus on the most prominent instruments with an adjudicatory nature that national administrations can use to mitigate disaster-related risks by involving private parties at different stages. When developing this analysis, the main issues related to the corresponding modes of regulation will be pointed out.

5. Administrative powers for disaster-related regulation

At national levels, disaster risk regulation involves the use of ordinary administrative powers with a view to contributing to make the necessary trade-off between risk and safety tenable. Since public administrations are usually required to balance competing rights in the pursuit of the public interest, this ordinary decision-making process has been applied even to the special situations of (disaster) risks with the precautionary goal of enhancing public safety. In this case, when balancing competing rights – generally speaking, the right to health and safety *vs.* economic rights – administrative procedures would result in unilateral decisions that set the nature, range and conditions of the public protection against risks.



Since the goal of *ex ante* mitigating disaster impact and externalities cannot exclude the provision of preventive instruments for managing emergencies, the measures of disaster relief still represent the complementary instrument for implementing a comprehensive strategy against disasters based on mitigation. As a consequence, risk mitigation responsibilities should continue to be accompanied by contingency tasks.

The EU legislation concerning disaster risk mitigation itself requires Member States to adopt emergency plans in order to enhance their preparedness and reduce the damage from disaster occurrence. The importance of this obligation clearly appears from the European Court of Justice (ECJ) case law on the national implementation of EU chemical legislation under the Seveso directives^{XVI}. When nationally competent authorities fail to draw up general emergency plans (so called external emergency plans), based on information gathered from the power plants' emergency plans (so called internal emergency plans), Member States should respond for infringement of EU law^{XVII}.

The full range of administrative powers is therefore put at the service of protection against disasters. This engages public administrations in a constant relationship with both private parties and other public authorities, in order to regulate and control those activities which can affect public safety, on the one hand, and which can be affected by catastrophic events, on the other hand.

When setting both risk management and emergency plans, public administrations are challenged by the need to get to the right identification of the public interest, that is the setting of a tenable trade-off between risk and safety. Information exchange is critical for identifying risks and mitigating these effectively. As in other domains of administrative action, the participation of both public and private parties interested in the administrative procedure is therefore fundamental for facing this challenge.

Within the administrative procedure, public and private interests are actually competing in the pursuit of public goals. On the one hand, cross-checking with private parties helps administrations to obtain information related to specific areas of expertise, while still guaranteeing individual rights during the proceedings. On the other hand, infrastructural coordination with other public interests within the competence of other public administrations is necessary in order to make the variety of public domains coherent in the development of public policies (Merusi 1993: 21-24). For instance, land use planning is essential for reducing vulnerability: in order to decide where a power plant is going to be



built or where other activities are to be developed, it is important to know the conditions of that territory, namely its exposition to floods, the vulnerability of the population of that area, the cultural heritage in that area etc.^{XVIII}

Participation is therefore a key principle for the development of administrative action and the findings of such an examination shape the content of regulation itself. For this reason, the administrative powers and instruments which cover the administrative responsibility for setting a fair balance between competing rights and interests are extremely important for understanding what the expected level of safety is and how this can be achieved.

5.1. Prescriptive authorisations as regulatory measures

A specific control over private economic activities whose exercise can to some extent prejudice the public interest in safety is achieved through their submission to *ex ante* adjudicatory procedures of authorisation. These procedures allow administrations to limit the exercise of these activities to the possession of a series of requirements and therefore to control the compatibility of these dangerous activities with the law before these activities can even start.

Member States deal with these administrative measures through different legal regimes, but all these adjudicatory measures produce regulatory effects. Since through these measures access to the market is subordinated to further requirements, a legal barrier is introduced with the specific aim of protecting other public goods (namely safety) in the market domain. All the operators who want to carry out an economic activity that entails some risks for public safety should demonstrate the possession of some specific characteristics which alone can guarantee the expected safety standards.

The issue of these administrative measures is being able to mitigate the concerned risks by creating a relationship of control between the (controlled) private party and the (controlling) administration, which begins due to the purpose of starting a potentially dangerous activity and lasts for the entire duration of such an economic activity. This involves constant public supervision over those activities whose exercise can entail harm for the community.

As far as catastrophic risks are concerned, this regulatory approach is particularly effective in the case of industrial activities involving the use of dangerous substances, for



which industrial operators are required to regularly produce a report on the safety conditions of installations and the predisposition of an updated internal emergency plan^{XIX}. But it is also clear in the legislation on the safety of nuclear installations, which requires the possession of a licence in order to exercise a nuclear power plant: by virtue of this licence, the holders is in charge of the primary responsibility for the safety at the nuclear installation^{XX}.

In order to focus these administrative instruments on further enhancing safety through compliance with safety standards, such measures may not be limited to the control of some predetermined requirements, but can also contain prescriptions that operators need to implement in order to continue to maintain their authorisations. These prescriptions push the administrative function of control forward, by adding a further regulatory content to the measures, which involves a normative function of command.

Such further prescriptions can be required by the EU legislation itself or they can be introduced by national authorities for better fulfilling or enhancing the safety standards^{XXI}. It is also possible that the EU gives some directions and that it is then up to the Member States to identify concretely which further prescriptions are needed to comply with the safety requirements.

Since the definition of a safety level establishes a legal barrier to access the market, this further contribution by public authorities to the identification of the content of safety is not without challenges for the functioning of the EU legal order. The regulatory impact of prescriptions is able to affect competition in the internal market if such a barrier turns out to be an unjustified obstacle to trade. Prescriptions should therefore be the result of a fair balance between the reasons of protection and the goals of the internal market. The related measures therefore need to pursue safety according to the principle of proportionality, so that these measures do not affect individual economic freedom more than is strictly necessary to achieve the public goal of protection.

The certification of air navigation services is a clear-cut example: if appropriate, besides the common requirements that all the Member States should ensure the provision of air navigation services, national supervisory authorities can attach additional conditions to certificates which can only be related to a list of further prescriptions provided by EU regulation itself^{XXII}. According to this EU regulation – and in line with the general EU approach to the introduction of barriers to economic freedom – this is possible only when



such further prescriptions are ‘objectively justified, non-discriminatory and proportionate and transparent’^{XXIII}. This means that when enhancing safety, Member States cannot use prescriptive measures as an instrument for developing protectionist policies concealed behind the need for precaution. European case law clearly requires Member States to comply with the proportionality principle by demonstrating that safety goals cannot be achieved through other instruments which are less restrictive of freedom. Through the necessity test, European courts review the adequacy of restrictive measures themselves, with the aim of preventing them from becoming intolerable burdens for accessing the (common) market^{XXIV}.

When enhancing the safety level through further prescriptions, risk assessment re-emerges and distinguishes on a territorial basis, taking into account the local and concrete needs of the interested community. In order to avoid that, from being a tool for enhancing protection, this subsidiarity-based distinction becomes a discriminatory measure on the market, a legal procedure helps test the compatibility between the pursued protection against (not only) catastrophic risks and economic freedoms: the impact assessment procedure to which industrial projects are submitted ascertains not only the effectiveness of administrative measures, but also the reasonableness of the sacrifice requested by individuals.

EU legislation has established a common framework for impact assessment procedures and leaves it to the Member States to further develop the instruments in specific fields. A clear example is offered by the Environmental Impact Assessment (EIA) procedure, which is mandatory for a series of projects and optional for another class of projects, for which the final decision lies with the Member States, which can also rely on further criteria and/or thresholds for making the decision^{XXV}. The underlying idea is that administrative harmonisation at the European level should go hand-in-hand with flexibility and subsidiarity, so that it can be prevented from becoming a boomerang which decreases safety levels. From this point of view, ECJ has pointed out that the autonomy granted to Member States aims at facilitating the examination of the projects’ characteristics without ossifying procedures, but that it should not turn out to be an improper instrument for exempting certain classes of projects from EIA obligation in advance^{XXVI}.

Impact assessment procedures have gone further and in the EU approach these can also include not only single projects, but also plans and programmes (Strategic



Environmental Assessment, SEA),^{xxvii} on the one hand, and further considerations other than environmental issues, on the other hand^{xxviii}. The use of regulatory impact assessment (RIA) is today the main legal instrument for advance testing of and for supporting policies, by identifying the main options for achieving policy goals and their likely impacts in the economic, environmental and social fields (Renda 2006; Wiener 2006; Kirkpatrick and Parker 2007; Meuwese 2008). Through public participation, the regulator can *ex ante* search for better outcomes and performances in regulation and highlight potential trade-offs between risks and benefits^{xxix}.

6. The market for disaster-related regulation

Even if administrative regulation based on command and control functions critically requires the participation of public and private parties, the final decision by the public administration has a unilateral nature. When dealing with a specific issue, public participation in fact has been focused on plugging gaps in the administration's comprehension of the (risk) circumstances at stake. However, information asymmetries represent a significant burden for administrative action and result in significant collective (administrative) costs of regulation.

In order to enhance the effectiveness of risk mitigation, administrative regulation can be assisted by other market-based legal instruments that introduce collaborative modules with private parties with the aim of reducing information asymmetry problems by spreading the responsibilities for risk mitigation. In fact, private parties working in specific regulatory domains have technical knowledge in their activity's sector at their disposal that public administrations, which simply deal with the legal issues of such domains, cannot have. Where traditional administrative action cannot address all the technical issues involved in regulation by itself, adjudication can resort to co-regulation modules with the aim of finding better regulatory solutions^{xxx}.

To capitalise on this sectorial knowledge of private parties, regulators need to identify which private parties are in the best position to bear the risks at stake and then to create a system of incentives and/or disincentives which stimulate them to mitigate such risks. By exploiting the functioning of the market, private parties are made to share responsibilities for identifying the ways to achieve safety goals: if they realise that they can attain their own



interest in the pursuit of the public goal, they will assume a share in the responsibility in risk mitigation and reduce the costs of regulation.

In line with this reasoning, market-based instruments can acquire different features according to the specific way in which the private interest is stimulated. The common starting point should however be the nature of private interests as distinct from (and often conflicting with) public ones (Ledda 1993: 152; De Benedetto 2008: 54 and 90), which is at the roots of the introduction of private participation into the administrative proceedings and should be the condition upon which a collaboration between private parties and administrations is built. Collusions among interests and phenomena of maladministration can otherwise take place with the effect (among others) of reducing the effectiveness of regulation itself (Cassese 1992).

The identification of possible incentives and the definition of contractual instruments for regulating the relationship between public and private parties, as well as that between private parties operating on the market, however, pose significant challenges to regulators which can affect the effectiveness of the cooperation itself. When illustrating this further mode of disaster risk regulation, the criticalities of designing such agreements will be analysed in the following paragraph.

6.1. Agreements between public and private parties

In order to boost the collaboration with private parties and achieve the goals of public policy, public administrations can establish different kinds of agreements with private parties. By setting up a contractual framework for the relationships between private parties and public administration, the enforcement of risk mitigation policies can potentially be favoured by the engagement in a co-regulatory process of both the parties. This kind of co-regulation can play a key role in the building of resilience against catastrophes, since responsibilities (and the related risks of failure) can be shared among public and private actors and both the parties are interested in mutual control over the enforcement of their agreement (Burnett 2007).

Cooperation is crucially based on information sharing, which finds its roots in the information asymmetries across public and private sectors and helps improve protection and response by reducing information gaps and by coordinating priorities (Boyer et al. 2011: 10-12)^{XXXI}. This context generates benefits for both the parties who can better



understand the risks at stake and who can optimise the use of their resources by sharing risks and possible damage in accordance with their respective competences. This contracting develops around performance standards which set the expected level of protection against disaster risks: risk management plans consider the development of market-based instruments for the management of disaster risks as a means for implementing regulatory standards.

A clear example of this is provided by the EU discipline of performance plans for air navigation services: in the elaboration of performance plans, national authorities are required to identify not only the entities accountable for meeting the performance targets and their specific contribution, but also the incentive mechanisms to be applied to these entities to encourage the achievement of performance targets^{xxxii}.

As in the case of administrative measures, these incentives should be developed according to the general principles of non-discrimination, proportionality, and transparency in order to be compatible with competition rules and not to become an unjustified obstacle to the development of the internal market of air services. Within this category, the use of the incentives for the implementation of safety standards is peculiar and different from other performance standards provided by the regulations for air services, because safety incentives cannot have a financial nature. These incentives shall consist in action plans or measures associated with the implementation of the common requirements for the provision of air navigation services^{xxxiii}.

This regulation clearly means to introduce market-based incentives through the development of agreements with concerned entities and is aimed at shaping safety in concrete ways by identifying the most cost-effective solutions through a contractual process. However, currently neither national performance plans nor functional airspace blocks' performance plans provide any specific incentive of this kind for safety targets. If it is true that safety standards have been introduced in the SES regulation only recently, this absence clearly shows the actual difficulties that regulators face when identifying incentive mechanisms based on the assessment of information asymmetries and establishing effective partnerships in this domain.

In highly technical sectors, in fact, the development of incentive mechanisms can be a real challenge for regulators and the inability to implement such mechanisms can prevent the effective regulation of risks. The potential benefit inherent to the contractual scheme



can be nullified by the costs of searching for such an agreement and making cooperation effective.

A consolidated reference model for safety-related agreements can however be found in the EU environmental agreements, which engage both public and private parties in partnerships aimed at effectively implementing environmental policies (Rehbinder 1997; Bailey 1999; Casabona 2008). In environmental issues, this collaboration is achieved both through self-regulation, as when private parties voluntarily decide to comply with EU regulation, and co-regulation, as when public and private parties negotiate a binding agreement which helps achieve environmental goals^{xxxiv}.

Recently, agreements in the form of public-private partnerships have been applied in security-related domains as a sector of critical infrastructures, with the aim of enhancing resilience against catastrophic risks. This is especially the case for those facilities that are considered critically important to economic and social life (such as in the sector of transport, but also in other public utility domains), the harm to which can involve major consequences for organised society (Dupré et al. 2011). In principle, by distinguishing and sharing responsibilities between the private parties – who are interested in gaining financially from the awarding of the public contract – and the public authorities – who are interested in the achievement of policy objectives – different kinds of contractual agreements are entered into and some *force majeure* risks can be mitigated.

These contracting procedures force private parties to consider the long-term costs of operations and maintenance against disasters and to implement enforcement mechanisms for achieving the expected protection. Since private parties are made responsible for the whole life cycle of the infrastructure, they can be remunerated from its use only when it is effectively working. This means that if a disaster occurs and the infrastructure cannot work anymore, private parties cannot take revenue from the facility (Boyer et al. 2011: 11 and 13-19). By this reasoning, private parties may also be stimulated to invest in cutting-edge technology in the facility design, since it is much more expensive to adjust an already built infrastructure to large changes.

If in principle this generates a virtuous cycle in disaster mitigation by spreading (measurable) risks among the involved actors, this focus on long-term costs (and uncertain risks) involves higher short-term expenses and therefore requires higher attention to risk assessment in concrete circumstances. Since risk assessment becomes a supporting tool for



the decision making process, the low probability, high impact nature of disaster risks make the possible risks and losses difficult to be predicted by single operators and this increases transaction costs. National risk registers have therefore been implemented as a further regulatory tool which may support such still difficult regulatory choices and develop a transparent approach to risks and responsibilities. In fact, these registers detect and monitor the possible risks for the concerned infrastructure and are based on the basic tools and methodologies used for setting standards^{xxxv}.

In order to make the partnership really effective in its purpose of mitigating risks and enhancing resilience, the importance of interdependencies between services and infrastructure should also be taken into account when a disaster occurs (Boyer et al. 2011: 16-18; Cabinet Office 2011: 41-50). However, contracts are barely able to cover all these aspects, since information asymmetries and the related transaction costs make it difficult to set objectives and provide effective instruments of coordination and mutual control (Ménard 2013).

Considering that information asymmetries make the protection guaranteed through risk management agreements still problematic, again emergency regulation appears to be the necessary completion for enhancing resilience. When looking at the contractual modules of regulation, emergency agreements represent an interesting instrument for emergency management. When these agreements are negotiated before the occurrence of a particular disaster, the main contingencies can be covered in the aftermath through multiple agreements^{xxxvi}. Emergency contracting is more developed than risk management agreements and Europe presents many interesting domestic experiences^{xxxvii}.

Since the EU only retains supplementary competences in the area of civil protection, it can only help Member States carry out actions of risk prevention and respond to natural or man-made disasters within the Union, but is prevented from introducing any harmonisation of the laws and regulations of the Member States in this area (art. 196 TFEU). Since Member States retain jurisdiction over the sovereign domain of civil protection in emergency situations (art. 6 *f*) TFEU), cooperation within the CPM and bilateral cooperation between Member States are the only means of cross-border assistance. As a consequence, the partnership's framework in this domain is fragmented across Europe.



This fragmentation however does not help reach EU performance standards throughout Europe, nor does it foster the enhancement of resilience across Europe. From this point of view, networking and information exchange are critical instruments for supporting early interventions and for reducing the impact of disasters. Contingencies are covered through the functioning of the MIC and the CECIS, on the one hand, and through the provisions laid down in bilateral agreements between Member States, on the other hand (British Institute of International and Comparative Law 2010: 17-22^{xxxviii}).

In the area of disaster relief, resilience faces the legal challenges of coordination and the development and sharing of best practices across Europe would help each State to improve its performance when facing a disaster and to contain externalities. Even if harmonisation is prevented in this sector, the integration process and the interdependencies it creates make a common understanding of disaster relief essential for enhancing the resilience of the EU legal order. The implementation of cooperation within the EU framework makes each State aware of the main issues and criticalities of disaster management, as well as enabling them to learn from the best experiences in a peer environment. Only in this common framework does the necessary national diversity not become a systemic risk for, or at least a potential weakness in, the resilience-building process.

7. Final remarks

The need to reduce the vulnerability of society against disasters has fostered the introduction of regulatory instruments which can anticipate protection before the imminent danger/emergency phase. Disaster risk regulation has therefore become a significant field of legislation aimed at complementing and supporting disaster relief measures with precautionary action. The need to rationalise such a precautionary protection requires regulatory instruments to take into account the very nature of disaster risks (low probability, high impact) as well as other competing situations of rights and interests the exercise of which can be affected by regulatory measures.

When examining the EU approach to the regulation of risks of potentially catastrophic impact, this article pointed out the fundamental regulatory role played by the EU in the rationalisation of protection. By setting minimum harmonisation standards and reserving to Member States the fundamental responsibilities in the implementation of protection within



their own territory, the EU has developed a complex regulatory framework shaped by the complexity of the EU multilevel legal order itself.

EU disaster risk governance mainly falls within the areas of shared competences and regulation hinges upon the search for common supranational rules and the recognition of national regulatory variations. Being caught between EU standardisation and national variations, this constitutional tension within the EU legal order is based on the proportionality of EU action and finds its limits in the competition rules and the preservation of the internal market's coherence^{xxxix}. When searching for a European response to disaster risks, it is the same functioning of the internal market that is at stake. By reducing the cross-border externalities of national regulations, beneficial effects can be achieved in the management of risks; and at the same time, this pushes towards further integration.

Mitigation policies, in fact, foster the European integration through the harmonisation of legislation in areas of shared competence. The whole SES legislation on air traffic management is a clear example of the efforts to make air safety a cross-border issue that cannot be governed on a mere national basis any longer, but which needs a supranational approach within the EU – actually, based on the recognition of functional airspace blocks – in order to meet the near future challenges of increased traffic (both for movement of persons and goods) in the EU air transport sector^{xl}. In this sector, safety and efficiency needs have actually boosted the integration process and competences are partially, but relentlessly lifted to the supranational level. This case also shows the actual functioning of the pre-emption mechanism which, according to art. 2(2) TFEU, governs the exercise of shared competences (Craig 2012: 379).

On the grounds of the subsidiarity principle, EU governance of disaster risks requires loyal cooperation between the different levels of government to be effective. National measures aimed at implementing and enhancing safety levels, in fact, can have potential impacts on the market and can create significant barriers to European trade. This is the reason why public administrations, when implementing mitigation policies, need to find the right balance between the reasons of protection and the preservation of antagonistic rights (such as economic rights). The right measure of the protection against disaster risks should therefore be identified in a fair and impartial administrative procedure which takes into account the rights and interests of private parties. This means that competition and the



correct functioning of the internal market are ensured only when developing due process and the connected right (of private parties) to good administration (as stated in art. 41 of the Charter of Fundamental Rights). The principle of proportionality is the cornerstone on which the legitimacy of regulation should be founded. As a consequence, the ordinary rules and procedures of administrative law are made to be the ground for the good governance of special situations such as disaster risks.

Within this institutional context, private parties are expected to play a key role in the mitigation of catastrophes, since the occurrence of these untenable events can affect their own private goods as well as be caused by the unsafe management of private activities. Cooperation between institutions and private parties therefore becomes necessary in order to mitigate and possibly prevent disastrous impacts. This is particularly clear in disaster prevention and relief: imminent risk communication and early warning systems, emergency intervention as well as the recovery phase are critically based on the timely and effective exchange of information as well as on efficient and effective cooperation. At this level, disaster risk mitigation and disaster relief are strictly intertwined; together, these activities contribute to boosting resilience.

Cooperation is also fundamental in disaster risk regulation. Since the triangular relationship between the EU, national administrations and private parties shapes risk mitigation policies, the principle of participation contributes to founding both the legitimacy and effectiveness of regulation. As participation means cooperation between different levels of government (namely, loyal cooperation) as well as between public and private parties, it is necessary to identify, monitor, and control risks as well as to effectively govern these risks in view to reducing their impact.

The substantive necessity of participation stems from information asymmetries that divide public authorities and private parties on the grounds of their different expertise and responsibilities. But if the participation of private parties is a key instrument for achieving resilience against disasters, the same information asymmetries, however, make the results of participation problematic. As can be seen, in fact, in the regulatory process, participation helps regulation to be much more focused on the real safety concerns, to spread costs and to commit the whole society to the mitigation of disaster risks. However, information gaps can be closed only in partial ways, that is either within the rationality of the public



administration, when command-and-control schemes apply, or with ambiguous results about the effectiveness of cooperation, when contractual modules apply.

Nonetheless, the interdependencies between administrations and private parties make participation an unavoidable premise for framing the legal response to disaster risks. The interdependencies which connect all the institutional and non-institutional actors constitute the inescapable background condition which should be taken into account by any tool which aims to mitigate risks. The contribution of law to preserve the expected living standards within the EU multilevel legal order against possible disaster scenarios should therefore cope with these interdependencies – at the same time, it is itself fed by such interdependencies. Broadly speaking, the interdependent relations between the EU, national administrations and private parties create a number of challenges for regulators and this is the reason why different regulatory modes help understand the EU approach to disaster risk mitigation.

Only by considering such interdependencies and the ways they are embedded in disaster risk regulation can the system be effectively resistant to disasters. In the perspective of resilience-building, this means becoming aware of the system's vulnerabilities, considering how to reduce structural weakness by addressing the significant risks of potential catastrophic impact, and encompassing most of the areas where negative externalities are felt.

In the EU, this has meant shaping disaster risk regulation according to the multilevel relationships that take place between the EU itself, national administrations, and private parties. This triangular relationship is therefore at the heart of disaster risk governance in Europe: the more effective the regulatory process between these parties and the more it works in an integrated and systemic way, the more it contributes to making the EU resilient against disasters. The result is that the more integrated the EU is, the more it can be resilient against disasters. But integration sustains resilience-building in a biunivocal relation: like in a continuous cycle, the more resilient against disasters (of cross-border impact) the EU wants to become, the more integrated it is going to be. For this reason, when pursuing the goal of resilience-building, disaster risk regulation can actually and strategically be used for achieving more integration.



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^I Communication from the Commission to the European Parliament and the Council, COM (2012) 586, *The EU approach to resilience: Learning from food security crises*, 4-5. Even if this communication refers to resilience building in the Sahel Region and in the Horn of Africa, the main principles it provides can be extended and considered significant for achieving resilience within the EU as well.

^{II} See the model of the ‘Swiss cheese’, which shows how a series of interlocking events, at different levels, are usually required to make an accident of catastrophic impact occur. This means that the causation chain therefore originates due to the alignment of all the necessary ‘windows of opportunity’ (the holes of the cheese) at all levels in the organisation, thus leading to the occurrence of a particular accident (Reason 1992 and 1997).

^{III} EU law on civil protection cooperation has been kicked off by a ministerial meeting in Rome in May 1985; the six resolutions which followed that meeting over the next nine years formed the framework of the current Civil Protection Mechanism (CPM), established by the Decision 2001/792/EC, EURATOM of 23 October 2001 [2001] OJ L 297 and recast by the Council Decision 2007/779/EC, EURATOM of 8 November 2007 [2007] OJ L 314, and the Civil Protection Financial Instrument established by the Council Decision 2007/162/EC, EURATOM of 5 March 2007 [2007] OJ L 71.

^{IV} This system can be considered an implementation of the solidarity clause laid down by art. 222 TFEU, which introduces an obligation of assistance on both the EU and each Member State (upon request) to the Member States that face disasters. Since its creation in 2001, the CMP has been activated for over 150 times, for very different types of disasters (ECHO 2012), including the Tsunami in South Asia (2004/2005); Hurricanes Katrina and Rita in the USA (2005); earthquakes in China (2008), Haiti (2010), Japan (2011); floods in the Balkans (2010); forest fires in Greece (2007, 2012); civil unrest in Libya (2011); and explosion at a naval base in Cyprus (2011).

^V See Council Directive 82/501/EEC on the major accident hazards of certain industrial activities [1982] OJ L 230 (Seveso I Directive); Council Directive 96/82/EC on the control of major-accident hazards involving dangerous substances [1997] OJ L 010 (Seveso II Directive); Directive 2003/105/EC amending Council Directive 96/82/EC on the control of major-accident hazards involving dangerous substances [2003] OJ L 345 (Seveso III Directive).

^{VI} See Council Directive 2009/71/Euratom of 25 June 2009 establishing a Community framework for the nuclear safety of nuclear installations [2009] OJ L 172/18.

^{VII} See Commission Regulation 691/2010, as amended by Commission Implementing Reg. 1216/2011, laying down a performance scheme for air navigation services and network functions [2010] OJ L 201/1.

^{VIII} Directive 2007/60/EC on the assessment and management of flood risks [2007] OJ L 288.

^{IX} See Communication COM (2009) 82, *A Community approach on the prevention of natural and man-made disasters*. By setting disaster prevention in the short-term, this communication implements EU strategy against disasters by focusing on the development of knowledge based disaster prevention policies at all levels of government, the coordination among the relevant actors and policies throughout the disaster management cycle and the effective improvement of the already existing policy instruments.

^X European Commission DG Environment, 2008, *Assessing the Potential for a Comprehensive Community Strategy for the prevention of Natural and Manmade Disasters. Final Report 2008*: 18-19 and 85-90.

^{XI} Liability regimes as well as insurance measures vary across sectors and across countries and open a set of challenges for both regulators and regulated parties about the nature of damage that can be repaired, the possible cap to the compensation in case of catastrophic events, the legal risks that parties faces when developing an activity which involves risks for safety (for a sectorial study of the liability issues in Air Traffic Management in the Single European Sky, Simoncini 2013).

^{XII} Before 2009, there was only a Euratom directive introducing safety standards for the protection of the health of workers and the general public against the dangers arising from ionising radiation, which applied to all practices involving a risk from ionising radiation, but did not provide nuclear power plants with specific safety rules. See directive 96/29/EURATOM of 13 May 1996 laying down basic safety standards for the protection of the health of workers and the general public against the dangers arising from ionizing radiation [1996] OJ L 159.

^{XIII} An example of the international settlement of these disputes is the conflict that occurred in 1998 between Austria and the Czech Republic (that was not a Member State yet) concerning the installation of a nuclear power plant in the latter. The Commission acted as mediator between the two States and in 2001 the two States signed a bilateral agreement settling the conflict (Stanič 2010: 157-158, on the case and more in general



on the importance of harmonising nuclear safety in the EU through the establishment of a common regulatory framework).

^{XIV} See art. 7 Directive 2007/60/EC; art. 10 Regulation 691/2010/EC.

^{XV} In this regard, law and economics literature has distinguished legal orders according to their degree of confidence in the market: the more confident legal orders resort to public regulation only in specific case of intangible goods' protection, whereas the less confident ones shape the system of legal relationships on public regulation provisions (Calabresi 1970).

^{XVI} See art. 11 directive 96/82/EC.

^{XVII} See ECJ, C-289/08, *Commission v. Luxembourg*, 2009 ECR I-31; ECJ, C-342/08, *Commission v. Belgium*, 2009 ECR I-33; ECJ, C-401/08, *Commission v. Austria*, 2009 ECR I-55; ECJ, C-30/09, *Commission v. Portugal*, 2009 ECR I-170; ECJ, C-392/08, *Commission v. Spain*, 2010 ECR I-2537.

^{XVIII} To this end, according to art. 7 (3) of directive 2007/60/EC, 'flood risk management plans may also include the promotion of sustainable development land use practices'.

^{XIX} See art. 9 directive 96/82/EC.

^{XX} See art. 6 directive 2009/71/EURATOM of 25 June 2009 establishing a Community framework for the nuclear safety of nuclear installations [2009] OJ L 172/18.

^{XXI} In this regard directive 2009/71/EURATOM is emblematic, since its art. 2 'does not prevent Member States from taking more stringent safety measures [...] in compliance with Community law'.

^{XXII} See art. 7 and Annex II of Regulation 550/2004/EC of 10 March 2004 on the provision of air navigation services in the single European sky [2004] OJ L 96, as amended by Regulation 1070/2009/EC of 21 October 2009 [2009] OJ L 300/34.

^{XXIII} Art. 7 (4) of Regulation 550/2004/EC as amended by Regulation 1070/2009/EC.

^{XXIV} On the limits to the definition of risk acceptability see ECJ, 178/84, *Commission v. Germany*, 1987 ECR 1227, paras 28 and 35; ECJ, 188/84, *Commission v. Francia*, 1986 ECR 419, paras. 13-17; ECJ, C-205/89, *Commission v. Grecia*, 1991 ECR I-1361, para 8.

^{XXV} See art. 2 and art. 4 directive 85/337/EC of 27 June 1985 on the assessment of the effects of certain public and private projects on the environment [1985] OJ L 175, as amended by directive 97/11/EC of 3 March 1997 [1997] OJ L 73 and directive 2003/35/EC of 26 May 2003 [2003] OJ L 156.

^{XXVI} ECJ, C-133/94, *Commission v. Belgium*, 1996 ECR I-2323, paras 42-43; ECJ, C-72/95, *Kraaijeveld and others*, 1996 ECR I-5403, para 53; ECJ, C-301/95, *Commission v. Germany*, 1998 ECR I-6135, paras 35-46; ECJ, C-435/97, *WWF and others*, 1999 ECR I-5613, paras 42-43; ECJ, C-87/02, *Commission v. Italy*, 2004 ECR I-5975, paras 41-42.

^{XXVII} See directive 2001/42/EC of 27 June 2001 [2001] OJ L 197.

^{XXVIII} See Commission Communication COM (2002) 276, *on impact assessment*; Commission Communication COM (2005) 97, *Better Regulation for Growth and Jobs in the European Union*, which suggests a procedure aimed at testing the sustainability of policies (sustainability impact assessment); Commission Communication (2009) 15, *Third strategic review of Better Regulation in the European Union*, which improved the quality of regulation; Commission Communication (2010) 543, *Smart Regulation in the European Union*; Commission Communication COM (2012) 746, *EU Regulatory Fitness*.

^{XXIX} RIA can be considered 'a type of meta-policy targeting the governance of the regulatory process' which can be a sort of constitutional method of administration (Radaelli and Meuwese 2008: 1, 8, 10).

^{XXX} The necessity to collaborate with private parties is an application of the economic principle of make or buy, which recommends that when a subject (namely, an administration) is not able to produce by itself the good or service at stake (namely, risk regulation) it can buy it from others who are able to produce it (namely, private parties who have a specific knowledge on the functioning of the sectors interested by the mitigation policies); (Shapiro 2003: 390-395).

^{XXXI} The "need to share" information as a method to build resilience is also stressed in the Sir Michael Pitt review of the flooding emergency that occurred in UK in 2007 (Cabinet Office 2008: 292).

^{XXXII} Art. 10 (3), lett. g) and b), and art. 11, Reg. 691/2010/EC.

^{XXXIII} Art. 11 (2), Reg. 691/2010/EC.

^{XXXIV} See COM (96) 561 and COM (2002) 412. Environmental agreements in Europe can however be only additional to primary legislation, so that they can alternatively find their legal basis either in EU legislation or in national legislation implementing EU law. See ECJ, C-347/97, *Commission v. Belgium*, 1999 ECR I-309; ECJ, C-261/98, *Commission v. Portugal*, 2000 ECR I-5905. In these cases, the ECJ pointed out that voluntary agreements cannot constitute a sufficient legal basis for the implementation of EU law, since the voluntary



nature cannot guarantee the necessary general compliance and the effective enforcement of the rights and obligations provided by EU law. This limit is basically due to the necessity to preserve the coherence and the effectiveness of EU law and aims to avoid anticompetitive fragmentation in the internal market.

^{xxxv} In this regard, the UK has an interesting experience of monitoring the range of emergencies that might have a major impact within the country and since 2008 has developed a national risk register (NRR), lastly updated in 2012, which is aimed at informing the public on the Government's current assessment of the likelihood and potential impact of civil emergency risks and on how the UK and emergency services prepare for these emergencies. This is the public version of the National Risk Assessment, which is a confidential assessment conducted annually drawing on the expertise from a wide range of departments and agencies of government. However, it should be noted that NRR focuses only on mid term risks, since it considers only risks that are likely to happen in five years (Cabinet Office 2012).

^{xxxvi} The Japanese experience is very significant in this regard, since it has indeed developed emergency agreements between public authorities and some private parties aimed at reserve the private specific expertise to cover specific aspects when occurring a disaster.

^{xxxvii} For example, see the case of Italy, where the Civil Protection Department and single Regions signed emergency agreements with providers of essential services (telecommunication and the media for providing information and coordinating the communication system; water and food suppliers; rescue and assistance). Another interesting example is the UK' current development of a system of Advance Purchase Agreements (APAs) for the supply of pandemic-specific vaccine, in order to make the vaccine available as soon as it is developed (Cabinet Office 2012: 11).

^{xxxviii} This same study at Annex III offers an overview of the bilateral agreements in force between EU Member States.

^{xxxix} According to art. 101(3) TFEU, any agreement which limits competition should be justified by effective improvements in the goods, in the technical or economic progress, and it should allow consumers a fair share of the resulting benefit.

^{xl} See Regulation 1070/2009/EC (SES II package) which amended reg. 549/2004/EC, 550/2004/EC, 551/2004/EC and 552/2004/EC (SES I package) with the aim of improving the performance and sustainability of the European aviation system.

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