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ENHANCE

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Deliverable 6.1: INVENTORY OF POLICY INSTRUMENTS AND INDICATORS FOR MSP-POLICY INTERACTION

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Author(s)	JAROSLAV MYSIAK, ELISA CALLIARI, DIONISIO PERÈZ BLANCO,
Contributers	SILVIA SANTATO (FEEM); SWENJA SURMINSKI (LSE); MARIA MANEZ COSTA (HZG), ROGER CREMADES (HZG)
Organization	FONDAZIONE ENI ENRICO MATTEI (FEEM), LONDON SCHOOL OF ECONOMICS (LSE), HELMHOLTZ-ZENTRUM GEESTHACHT (HZG)
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Executive summary

The Enhance project sets to develop and analyse new ways to enhance society's resilience to catastrophic natural hazard impacts, among others by contributing to the development of new multi-sector ***partnerships*** (MSPs) to reduce or redistribute risk. In Máñez Costa et al. (2013) and McLean et al. (2013) the *Multisectoral Partnerships* (MSPs) have been defined as '*voluntary but enforceable commitments between partners from different sectors (public authorities, private services/enterprise and civil society), which can be temporary or long-lasting. They are founded on sharing the same goal in order to gain mutual benefit, reduce risk and increase resilience*'. In this report, and benefiting from the research conducted in the case studies Mysiak et al., (2014b, 2013), we examines and take stock of multitudes of partnerships and European policies that govern them. Drawing on a wide-reaching policy review and the partnerships analysed in the case studies, we somewhat refine the above constituting characteristics of partnerships.

This report is structured as a collection of three research papers amply complemented with insights from the case studies research.

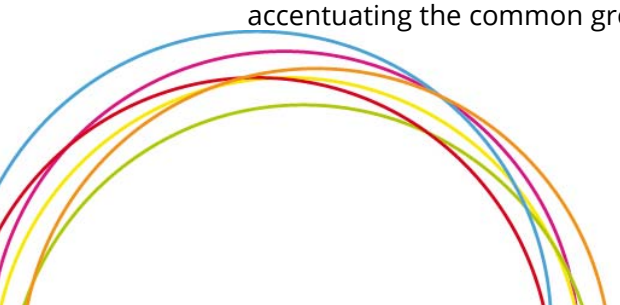
The first paper (Section 1) explores **partnerships for affordable and equitable disaster insurance** (Mysiak & Perez-Blanco, 2014). It reviews and analyses the EU policies governing the public-private partnerships (PPP), including the recent reform of the public procurement (Directives 2014/24/EU and 2014/25/EU) and the newly introduced concession directive (2014/23/EU). Furthermore, by addressing the natural hazard insurance, the paper scrutinises the state aid regulation, the solidarity clause and the EU Solidarity Fund (amended in May 2014), the Solvency II directive (2009/138/EC), and the civil liability regimes in Europe.

The second paper (Section 2) addresses **partnerships for a better governance of natural hazard risks** Calliari et al. (2014). It focusses on policies fostering territorial (regional) collaboration, de- and self-regulation, and public involvement in EU environmental policies and the Union's disaster risk reduction. The paper reviews different examples of *decentralised*, *multi-level governance* partnerships, including *public-public* partnerships (PuP). PuPs are often seen as a counterpart of the *public-private* partnerships (PPP), hence they do not contemplate a direct profit-seeking behaviour as a driver for cooperation. Public-public partnerships hold sway over PPP especially in public policy areas in which multiple, legitimate views are to be taken into account and ethical principles dominate in judging the policy fairness. We argue that the involvement of private entities in PuPs can be motivated by a host of other incentives.

Lastly, the third paper (Section 3) **investigates the Partnership for disaster resilient and climate-proof infrastructure** (Mysiak, 2014)**.** It reviews European policies that (i) sponsor an interoperable and well-connected *Single European Transport Area*; (ii) advance the trans-European transport network (TEN-T) through innovative financial instruments encouraged by the *Connecting Europe Facility* (CEF), and (iii) promote the *Critical infrastructure protection programme* of the Union. Furthermore, it discusses the protection of the essential infrastructure as a central quest of the climate adaptation, and the security and safety of passengers.

The insurance (public-private) partnerships in which the state plays a role as a partner will have to comply with solvency requirements even if operating under state guarantee. It is of public interest to turn the guarantee schemes *transparent* in terms of state aid regulation. A sound risk analysis and assessment is an essential prerequisite and a preferred theme to be addressed in truly multi-sectoral partnership. The reformed *general bloc exemption* regulation (GBER) has no bearing on the public-private ventures but makes it easier to develop alternative state administered or supervised schemes of economic recovery in the aftermath of the disaster. This may encourage the MS to keep open the gateway for direct grants or other parallel forms of economic aid to citizens and enterprises, within the margins of the Stability and Growth Pact (SGP). While account is taken for disaster induced hardship in the SGP corrective arms - the excessive deficit procedure, recent calls to exclude the disaster recovery and protection expenditure from the SGP margins may undermine the fiscal rigour and consolidation. On contrary, the reduction of the annual endowment of the EU Solidarity Fund from one to a half of billion, while extending the scope of its mobilisation (regional disasters are eligible on their own right and not as a derogation from the general rule), may possibly lead to more frequent calls for a larger public compensation and aid in the aftermath of a disaster. The partnerships should be ***well-designed*** and targeted at ***market failures***, that is uninsurable losses and affordable, socially-fair risk transfer mechanism. They should promote a ***sound use of public resources*** while limiting to the extent possible the ***distortion of competition***. This also means that the partnerships should not substitute or sustain actions that would materialise anyway. The agreements should actively promote or at least not harm the ***incentive for risk reduction***, for example by making the individual insurance costs reflecting those risks that result from each individual's choices. The partnership should be built on principles of ***transparency***, ***equal treatment*** and ***effective analysis and monitoring***. Sound risk analysis and assessment along the agreed principles is the most encouraged scope of a collaboration. The sustainability of the partnership should be based on clear rules of ***viability*** and ***legitimacy***.

The *decentralised*, *multi-level governance partnerships* are exemplified by assemblies of (scarce) resource users, or territorial communities, sharing a sense and/or identity conferred to a physical place, and seeking a better protection against natural hazard risk. In both cases the partnerships seek to establish *social norms of behaviour*, whether as a response to the looming emergencies, or as a shared model of development resisting the environmental changes and threats. European policies drive partnership *fabric* either by policing the way planning decisions are made and requirements to which these decision (have to) comply, and/or by encouraging cooperation and coordination of actions where the collective (environmental and economic) performance is greater or more efficient than the individual ones. In the former sense, the EU legislation on public participation in policy and decision making is an instrument fostering (a greater) public accountability and problem solving. In the later sense, territorial partnerships are conceived as an (emerging) instrument for a greater territorial cohesion, and indirectly, an effective way of ensuring the compliance with the EU policy. The disaster risk reduction may directly benefit from both. The *policy guiding principles* (PGP), seizing the breath of policies analysed, cannot but recap the norms embraced in the White Paper (EC, 2001), standards of public consultation (EC, 2002), the Code of Conduct (EC, 2014a), and the Principles for Better Self- and Co-Regulation (EC, 2014b). Where the PuP supplant or complement the choices of competent authorities, the same normative standards apply as in the case of public decision making, i.e. openness, transparency, accountability, flexibility, and effectiveness. To be **open**, the partnership should not only make efforts to engage all relevant or representative parties, both public and private, in a genuinely concerted and collaborative pursuit. The partnership should also remain open to other parties to join in; and **flexible** enough to evolve as the scope of collaboration does. To be **transparent**, the partners should sponsor the partnership with their knowledge and skills, competences and standpoints in good faith, and share the outcomes in plain way. The partnerships established for the purpose of disaster risk reduction should pay attention to knowledge sharing and collective risk analysis. **Accountable** means that the objectives and principles of the partnership are well specified and respected. A distinctive characteristic of a multi-level governance *partnerships* is a **constructive discourse**. Because of the very nature of partnerships, an occasional clash of viewpoints, values and interests cannot be avoided and the viability of the partnership itself may become at risk. Constructive dialog means that the partners preserve the sense of common purpose, while accommodating the dissents and fertile divergences. This is particularly challenging because partnerships are voluntary in principle and operate throughout consensus. Instead of formalising the bargaining rules, the partners should stress the agreed and shared values or principles. Where a consensus remains elusive, the partnership may be reinforced with accentuating the common grounds.



The development and disaster/climate-change proofing of vital (cross-border, critical) transport infrastructure systems offers opportunities in terms of both, public-private *financial and risk-sharing* arrangements, and the *multi-governance* teamwork. The TEN-T Regulation creates enabling conditions for partnerships for shared priority setting and enactment, while the financial instruments encourage a mutually beneficial deals for the sake of growth-stimulating infrastructure development and hazard retrofitting. Transport safety and contingent mobility continuation plans shift the emphasis on the passengers' rights and liability as a complementary incentive for the service operators to pay attention to, and scrutinise natural hazard risks.

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Contents

1 Partnerships for affordable and equitable disaster insurance

1.1 Introduction

The steep upward-rising damage trend incurred by natural hazard risk and the alarming prospects of man-made induced climate change inflate the economic losses and social hardship set-off by extreme climate and weather events. This has alarmed the governments and the insurance enterprises alike. Many have suggested that while the extreme events' probability distribution is getting progressively more fat-tailed, the private insurance businesses alone will not be able to keep the pace (Botzen & van den Bergh, 2008; Capitanio, Bielza, Cafiero, & Andolfini, 2011; DEFRA, 2013; Mills, Roth Jr., & Lecomte, 2006; Munich Re, 2009; Surminski, 2009; Warner et al., 2013). The *unprecedented* (EC, 2009a) economic crises the EU has faced since the summer 2007 has sparked further concerns about the states' ability to co-finance the disaster protection and recovery, and the extent to which the public funds can compensate the private damage even in countries where this is a regular practice. Similarly, to meet the ambitious goals of the growth package for integrated European infrastructures alone by means of public funds restrained by the Stability and Growth Pact (SGP) is little probable ((Mysiak, 2014). Hence the participation of private sector along with public one in meeting the great societal challenges has been increasingly advocated not only as an opportunity but as a sheer necessity.

Public-private partnerships (PPP), a term coined for the multiple ways of public and private collaboration, have gained on importance across OECD and EU countries, notably in some Member States (MS) such as the United Kingdom and Spain (Bielza et al., 2009; CEA, 2011). The PPPs discussed in this paper address provision of (catastrophic) natural hazard insurance, and public legislation and regulation that govern them. Affordable and accessible insurance against low probability/high impact hazard events may meet the scope of a *service of general economic interest* (SGEI), that is a service deemed by public authorities as being of particular importance to citizens and that would not be supplied, or only under different conditions, if not for a public intervention . Public-mandated and/or subsidised insurance create PPPs that may address this need. From among the Enhance Project's case studies (Mysiak et al., 2014), the most advanced PPP in terms of flood insurance coverage is represented by the proposed Flood Re in the UK (Crick, Surminski, Eldridge, & Hall, 2013; Surminski et al., 2014).

The paper is structured as follows: In ***section 2*** we present the current policy context for natural hazard insurance in the EU. In ***section 3*** we address in depth the EU policies

behind the PPP. The 2014 reform of *public procurement* revised the previous regulation of public works, supply and service contracts, and introduced a new directive on *concession* contracts. The latter are the most frequent PPP form in Europe, which is why we pay attention to the newly introduced rules as well as the process through which they have been deliberated. Likewise, we discuss the changes of SGEI regulation the EC completed in early 2010s. In the ***section 4*** we discuss the EU state aid regulation and recent changes of *de minimis aid* and *general block exemption regulation* (GBER) for making good the damage caused by natural disasters. ***Section 5*** is dedicated to the review of the Union *solidarity* provisions in the view of extraordinary natural disasters. We review the implementation of the *solidarity clause* (Article 222 of the Treaty of Functioning of European Union, TFEU), along with the *Internal Security Strategy* (ISS) and the *EU Solidarity Fund* (EUSF). The ***section 6*** attends to the various liability regimes across the MS and the early attempts to harmonise the Civil law's provision for *tort liability*. ***Section 7*** is dedicated to the Union's insurance market regulation and solvency requirements (Solvency II Directive). ***Section 8*** illustrates all the above with a particular PPP, namely, the proposed Flood Re in the UK. Finally, in ***section 9*** we offer policy guiding principles (PGP) worth to follow when designing a *Multisectoral Partnership* (MSP).

1.2 The policy context for natural hazard insurance in the EU

Insurance is an arrangement offering individual protection against the risk of losses caused by various perils through pooling of risks (Baltensperger et al. 2007). Insurance is a flexible instrument, adjustable to specific challenges faced by a society at risk (UNISDR 2012). Not without constraints. Insurance schemes are outcomes of policy choices with some degree of path dependency. Current systems across the Union display highly heterogeneous features and uneven coverage and penetration (CEA 2011).

Disaster risk management entails many instruments such as risk prevention and protection (e.g. hard and soft engineering[1], information and awareness campaigns, economic incentives), and damage compensation policies to ease recovery after a catastrophe that cannot be fully prevented (including insurance, liability, and state aid).

[1] Hard engineering projects involve the construction of artificial structures that prevent natural catastrophes (e.g., dams, dykes, channel straightening and diversion spillways in the case of floods). Soft engineering projects are low maintenance and low cost tools that integrate human activities with the natural processes and ecological systems in a river basin (e.g., floodplain zoning/land use restrictions, afforestation, wetland restoration, river restoration).

Through public financing of risk prevention and protection the hazard risk burden is alleviated from risk-exposed asset holders to tax-payers. At least to some extent this may distort risk perception and result in concentration of population and wealth, and inflated property values in highly exposed areas (EC 2007a) enjoying some comparative advantages (e.g. aesthetic values, better soils, accessibility). This trend has been particularly intense during the two decades of sustained economic growth before the financial crisis. Instead of addressing this problem by deploying complementary instruments to reduce risk exposure, natural catastrophe management has become reactive and incremental. This led to a rapid increase in the marginal costs of protection, as more exposed areas are increasingly expensive to protect (Botzen & van den Bergh 2008). This dynamics has been further aggravated by the current financial crisis, which amplified the opportunity costs of investments. Moreover, natural hazards have been on the rise during the last years, with more frequent and intense events being reported in the EU (UNISDR 2012). In spite of the considerable uncertainty surrounding the future projections of human induced climate change, it is expected that damage caused by extreme climate and weather events will continue to raise, leading to more frequent crises and demanding further investments (Mirza 2003). Eventually, the marginal costs of protection infrastructures may (in some places already did) reach a point where either the budgetary implication is prohibitive or the economic costs outweigh the benefits.

At that point, traditional policy making becomes insufficient *per se* to address potential damage by natural hazards. Consequently, calls have been made for transition towards more resilient and adaptive societies. In this context, insurance has received special attention, underscored by the recent EU '*Green Paper on the insurance of natural and man-made disasters*' (EC 2013a).

Insurance is a complementary rather than a substitute to risk prevention and protection. Instead of precluding damage, insurance eases recovery after a natural catastrophe and thus reduces its economic impact. More importantly, private actuarial insurance may redistribute the cost of risk from tax-payers to back to asset holders, through risk based pricing which disincentive risky behavior (Warner et al. 2009, Surminski 2009, Surminski & Oramas-Dorta 2013). This could contribute to revert the current trends towards higher risk exposure and facilitate the transition towards a resilient and adaptive society. However, even assuming Pareto optimal insurance

markets (heroic assumption[2]), risk based pricing in private insurance markets does not guarantee equity or affordability (EC 2013a). For example, risky assets in disadvantaged areas may be relatively more expensive to insure, or even uninsurable. This motivates public intervention in the market.

The inclusion of affordability and equity issues in the natural hazards insurance debate means that the role of the public sector is extended from basic regulatory oversight and residual risk management[3] to a combination of *ex-ante* and *ex-post* subsidization and more sophisticated regulations. Public intervention has negative byproducts though, especially those concerning the weakening of the linkage between risk and pricing and its negative impact over incentives for undertaking risk adaptation measures (Surminski 2009). Managing this tradeoff poses relevant technical issues (Pérez-Blanco & Gómez 2014), but also operational and coordination challenges. The overlapping roles and conflicting outcomes of private and public agents intervention make necessary the coordination between the public and private sectors through the so-called Public-Private Partnerships (PPP).

1.3 Public-private partnerships

Public-private partnership (PPPs) are a form of *cooperation* between public authorities and enterprises intended for provision[4] of an infrastructure, a service or both (EC, 2004c). PPPs are typically characterised as a long-lived relationship bringing forth mutually beneficial resource and risk sharing arrangements (*ibid*). Though flexible in nature and application, PPPs are substantiated either as a contract[5] or an institutional entity (i.e. Institutionalised PPP or IPPP).

Contractual PPPs embrace the '*concessive model*. The *public service concession* means that a contracting entity (public partner) entrusts a provision of public service to a contractor (private partner) according to predetermined terms of reference, whereas

[2] This would require perfectly competitive markets with no externalities, in full equilibrium, with negligible transaction costs and perfect information.

[3] Residual risk falls in the tail end risk, the uninsurable risk with a very small though unpredictable likelihood and a potentially high though unpredictable damage. This uncertainty is often too high for insurance markets to develop, and public participation may arise (e.g., through *ad-hoc* state aid) (Sugarman 2006).

[4] I.e. funding, construction, renovation, management or maintenance.

[5] Specifically, as 'contract for pecuniary interest concluded in writing'

the remuneration of the service is covered by charges levied on the users of that service, sometimes supplemented by public subsidies. The *public work concession* on the other hand implies that the contractor is chosen to carry out and administer an infrastructure (e.g. water supply network) and is remunerated by users of that infrastructure which may be supplemented by payments from contracting entity. This specific way of remuneration, that is the **right to exploit the work or service**, is essentially what distinguishes classic public *service* or *works contracts* from a public *service* or *work concession*. This right however also connotes that the operational risk of not being able to recover the investment costs is born essentially by the contractor and only to some extent by the contracting entity.

IPPPs are entities established for delivery of public works or services that are 'held jointly' by the public partner and the private partner (EC, 2004c). The joint entity is responsible for delivering the work or service for the benefit of the public.

PPPs are not defined by Union's legislation and regulation directly. However, within the ambit of the Treaty of European Union (TEU), PPPs qualify either as public contracts or public concessions (EC, 2005a). While public contracts and partly public work concessions were regulated by Community secondary legislation for long time, until recently the public *service concessions* were only subject to TEU rules and principles[6] of *transparency*, *equality of treatment*, *proportionality* and *mutual recognition*. The Interpretative Communication on concessions under Community law (EC, 2000) provided some clarity of the concept and guidance for public authorities for selecting a concessionaire, but did not disperse the legal uncertainty. In 2004, the EC carried out a public consultation as for whether a concerted action was needed to harmonise the governing rules of PPPs (EC, 2004c). Based on the feedbacks and comments received, the EC decided, among others, to i) not pursue a new piece of legislation addressing all contractual PPPs; ii) explore a scope for a policy filling the regulatory gap with respect to the public *service concession* (later materialised through the Directive 2014/23/EU, see below); and iii) develop an interpretative communication on IPPP called on to perform *services of general economic interest* (EC, 2005a).

It is worth to mention the '*competitive dialog*' scheme introduced in 2004 (EC, 2004a) under specific conditions when awarding a public contract. The *competitive dialog* enables the public authorities to 'negotiate' the alternative means of fulfilling its needs and identify so the solutions best suited. Similarly, the new directive on public procurement introduced the concept of '*innovation partnership*', granting similar

[6] TFEU Articles

flexibility, for development of innovative products, services or works, not already available on the market (EC, 2014c).

1.4 State aid to make good the damage caused by natural disasters

State aid on selective basis that distorts (or threatens to distort) free-market competition is, according to the Article 107 of the *Treaty on the Functioning of the European Union* (TFEU), incompatible with the EU internal (single) market (EC, 2014d). The coma 2(b) of the same Article declared an *aid to make good the damage caused by natural disasters*[7] admissible, provided that any intention to grant a similar aid is (i) timely notified to the European Commission (EC) (Article 108 TFEU), and (ii) the EC raises no objection (Article 4 of the Council regulation 659/1999; (EC, 1999). Without a prior notification, an aid not otherwise exempted[8] is not permitted and an already provided unlawful aid may be revoked. The regulation applies to state aid granted to economic undertakings only and any compensation of losses to individuals (citizens) not associated with pursuing of any economic activity does not constitute state aid in the sense of the Article 107 of the TFEU.

Over the period between December 2006 and May 2014, the EC delivered 85 decisions. The years 2010 and 2013 stand out for the highest number of notified aid schemes (22 in each year), followed by the years 2011 and 2012. Germany, Italy and Spain feature among the countries who initiated most schemes. Direct grants are the most frequent form of aid, followed by soft loans, interest subsidies, while debt write-off, tax deferment, reduction of social security contributions and guarantee represent relatively less preferred ways of aid provision[9]. As an established practice, the Commission has considered aid to make good damage caused by natural disasters compatible with the internal market if i) a clearly established *causal* link exists between the damage and the natural disaster; and ii) the aid does not exceed damage experienced.

The only case on record in which the Commission decided to initiate a formal investigation refers to not notified aid schemes granted by the Italian government in the aftermath of the 1990 Sicily earthquake, the 1994 floods in the Northern Italy, and the

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[7] Until recently, there was no unambiguous definition of what constitutes '*natural disaster*' for the scope of the state aid regulation, although floods and some other natural hazard risks have been recognised as such previously (EC, 2013f).

[8] See further down for the exemptions from the notification requirement.

[9] Analysis conducted based on the database of the European Commission, DG Competition, available at ec.europa.eu/competition/mergers/cases [accessed on May 31st, 2014]

2009 Abruzzi earthquake (SA.35083/SA.35083). Note that for the latter disaster the EU Solidarity Fund (see section 5) was mobilised for more than 490 million Eur. The form of aid included suspension, deferral, or payment in instalments of taxes and compulsory social security and occupational insurance contributions by undertakings located in the disaster affected municipalities. Following the Eastern Sicily earthquake on 13-16/12/1990, the payment of taxes and contributions for years 1999-1992 was deferred until 2000s and subsequently reduced to 10 per cent of the amount due. Similar aid was granted in the aftermath of the November 1994 flood in the Northern Italy for the years 1995-1997, the April 2009 Abruzzo earthquake for the years 2009-2010. In 2007 and 2010 the Italian Supreme Court of Cassation ruled that the reduction of taxes and contributions granted ought to be applied to all undertakings who could have claimed the same right, to avoid 'unjustified disparity in treatment'. The EC enjoined Italy to suspend any aid under these schemes and opened a formal investigation. If eventually the EC rules the aid as unlawful, it may decide to refer the matter to the European Court of Justice (ECJ).

The aid can take the form of an ex-post or an ex-ante scheme. An example of the latter is the compensation scheme (2014-2018) provided by the autonomous Region Valle d'Aosta, Italy, who sought the clearance in 2013[10] (EC, 2013f). The scheme covers earthquakes, landslides, flood and avalanches and is entrenched within the regional legislation on the civil protection[11]. The aid under this scheme is provided to all enterprises and economic sectors except agriculture, aquaculture and fisheries for which different provisions apply. The financial assistance in form of direct grant is provided also to public entities and private persons beyond the scope of the state aid regulation. The expected budget of the scheme amounts to 1,5 million Eur but may be increased if necessary. Only material damage to property such as buildings, machinery, equipment and stocks are eligible and the damage is to be certified by licences professionals. The aid intensity is 70 per cent of the eligible damage costs, or 40 per cent if the economic activity is not further pursued, but not more than or 500.000 Eur for a single beneficiary. The compensation is subject of regional authority's declaration of an exceptional natural disaster which also determines the affected area eligible. The

[10] No. SA.36027 (2013/N) Italy Aid scheme for the compensation of damage caused by future natural disasters in Valle d'Aosta

[11] Regional law 5 (Organisation of the regional activities of the civil protection) of 18/01/2001 and the regional regulations defining when a contribution for damage inflicted by natural hazard is eligible and well as the modalities for estimating the damage.

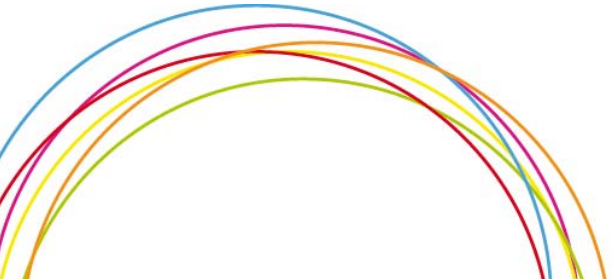
regional scheme may also apply to events for which a (national) state of emergency (SoE) has been declared by the Italian council of ministers.

The Council regulation 994/98 (EC, 1998), amended in 2013 (EC, 2013b), empowered the Commission to declare some categories or levels of aid as compatible with internal market and hence exempt them from the notification requirement. These provisions are known as *group exemptions* and *de minimis aid*. The categories for which block exemptions can be applied were substantially extended in 2013 to include, among others, the aid in favour of making good the damage caused by natural disasters and aid making good the damage caused by certain adverse weather conditions in fisheries (EC, 2013b).

As a part of the *State Aid Modernisation* initiative (EC, 2012a), the Commission has revised and simplified both *de minimis aid* regulation and the *general block exemption regulation* (GBER). The reform of *de minimis* aid (EC, 2013a) maintained the ceiling of 200.000 Eur per a single undertaking over a period of three fiscal years[12] irrespective of the form of aid and expressed as *net present value* if granted through periodic instalments. If granted in other than direct grant, such as soft loan or guarantee, the gross grant equivalent of the aid needs to be estimated. A subsidised loan up to 1.000.000 Eur over a period of 5 years is possible under the revised *de minimis* aid rules if the loan is secured by collateral covering to the level of at least 50 percent of the loan.

The Commission Regulation 651/2014 (EC, 2014a) exempted aid to make good damage caused by natural disasters from the obligation to notify the state aid, pursuant to the following conditions: *First*, the regulation declared 'earthquakes, landslides, floods (in particular floods brought about by waters overflowing river banks or lake shores), avalanches, tornadoes, hurricanes, volcanic eruptions and wildfires of natural origin' (*ibid*, recital 69 and Article 50(1)) as events constituting a natural disaster, while excluding damage arising from adverse weather conditions (frost, hail, ice, rain or drought). *Second*, the damaging event has to be recognised by competent authorities as a natural disaster, and a clear causal link needs to be established between the disaster and damage suffered. The total payments for making good the damage, including the payments under insurance policy, may not exceed 100 per cent of eligible damage costs. *Third*, the aid scheme has to be introduced within three years, and any aid granted within four years after the disaster. *Fourth*, the eligible damage costs include material damage incurred as a result of disaster and loss of income resulting from suspension of activity for a period of six months after the disaster event occurred. The damage

[12] Except the road freight transport sector for which the ceiling is 100.000 Eur



assessment based on repair cost or economic value of the affected asset before the disaster should be certified by accredited experts or insurance undertaking.

1.5 Solidarity in the wake of extraordinary natural disaster

Solidarity between the Union's Member States extended somewhat to the candidate and occasionally neighbourhood countries pervade the EU primary and secondary legislation. The Treaty on European Union (TEU) uplifted «*solidarity*» to essential values on which the Union is based and which include respect for human dignity, freedom, democracy, equality, rule of law, and respect for human rights (*Article 2*). The Chapter IV (Articles 27-38) of the Charter of Fundamental Rights of the European Union is entirely dedicated to solidarity (social and economic) rights and justiciable civil and political rights (O'leary, 2005). The former include among other services of general economic interest such as social and territorial cohesion (Article 36), and environmental protection and improved quality of the environment (Article 38).

The Treaty on the Functioning of the European Union (TFEU) substantiates the solidarity principles among other through the Articles 174-175, 196, and 222. The Article 174 recognizes (actions meant to strengthen) economic, social and territorial cohesion as vital for harmonious development. Hence the Union shall act towards reducing disparities between the levels of development of the various regions and the *backwardness* of the *least favoured regions*. The latter include rural areas, areas affected by industrial transition, and regions which suffer from severe and permanent natural or demographic handicaps. The Article 175 compels conduct and coordination of economic policies towards attainment of the objectives set in Article 174, through the policies and actions taken Structural Funds, the European Investment Bank, and Financial Instruments. Turning to disaster risk reduction, the Article 196 stipulates a cooperation between MSs to improve risk prevention, protection and response to the natural and man-made disasters.

The article 222 of TFEU (the *Solidarity clause*) invokes solidarity, in the most explicit way (Myrdal, 2010) in cases of a terrorist attack, or a natural or man-made disaster[13]. When requested by a Member State (MS), victim of a disaster or a terrorist attack, the Union is bound to 'mobilise all the instruments at its disposal, *including the military resources*' (emphasis added). The declaration (37) on Article 222 of the TFEU however leaves the

[13] The scope of the solidarity clause includes the land, sea and air of the EU territory, the ships in international waters and airplanes in international airspace, as well as critical infrastructure such as off-shore oil and gas installations under the jurisdiction of a Member State.

choice of the '*most appropriate means*' to comply with solidarity obligation to the MS. The solidarity clause complements, or offers alternatives to, the *mutual defence* clause (Article 42(7) of TEU) which compels aid and assistance in the case of armed aggression.

Coma 3 of the article 222 stipulates that the practical implementation of the solidarity clause shall be defined by a decision adopted by the Council acting on a joint proposal by the Commission and the High Representative of the Union for Foreign Affairs and Security Policy (hereafter High Representative). Coma 4 compels a regular assessment, by European Council, of the threats the Union is facing to enable an effective action.

A proposal in the sense of the Article 222(3) was released in December 2012 (EC, 2012b) as an umbrella framework of the *existing* instruments and policies, notably the European Union Internal Security Strategy (EC, 2010b), the European Union Civil Protection Mechanism (EC, 2013c), the European Union Solidarity Fund (EC, 2014f; EU Council, 2002), and the Common Security and Defence Policy (CSDP). The solidarity clause (SC) is invoked by a request of the affected MS in the wake of an *extraordinary* threat or damage beyond own respond capacity the state, after all other means, national and at Union level, have been exploited. Whereas it is a sole decision of the MS whether or not to invoke SC, the European Parliament (EP) emphasised that it is a primary responsibility of each MS to invest in own security and disaster response capabilities, rather than rely excessively on the solidarity of others (EP, 2012). However, when the MS made the call, '*it should not be a matter for debate for the others to offer assistance*' (ibid). The newly established European *Emergency Response Centre* (ERC) is a single operation hub at least initially. Once the SC has been invoked, the Commission and the High Representative jointly identify and mobilise the best suited Union's instruments and, if necessary, suggest how these should be further reinforced. The proposed implementation of SC (EC, 2012b) defines crises[14] and disaster[15] rather broadly and in a way which is not entirely consistent with natural disasters as stipulated by the State Aid regulation (see previous section).

The Union's *Internal Security Strategy* (ISS), adopted in 2010, portrays a *European Security Model* as a pool of existing tools, along with *commitments* for further cooperation and *solidarity* among MSs, and under a close involvement of the EU's

[14] *Crisis*: A serious, unexpected and often dangerous situation, requiring timely action; a situation that may affect or threaten lives, environment, critical infrastructure or core societal functions, may be caused by a natural or manmade disaster or terrorist attacks.

[15] *Disaster*: any situation, which has or may have an adverse impact on people, the environment or property.

institutions, agencies and bodies ((EC, 2010b, 2010d)). The risks posed by natural and man-made hazards are targeted by the ISS along with organised crime, terrorism and cybercrime, and management of EU external borders. Solidarity is exhibited between Member States '*in the face of challenges which cannot be met by Member States acting alone or where concerted action is to the benefit of the EU as a whole*' (EC, 2010d). The ISS's sets to, among others, '*increase Europe's resilience to crises and disasters*'. This includes crises and disasters including those associated with climate change, requiring '*both solidarity in response, and responsibility in prevention and preparedness*' (EC, 2010b). The ISS placed an emphasis on multi-hazard risk assessment covering all natural and man-made disasters. The Guidance on risk assessment and mapping (EC, 2010a) and a Synthesis cross-sectoral assessment of major natural and man-made risks (EC, 2014b) were completed by the EC, the latter based on the national risk assessment (NRA) reports produced by 17 MSs and Norway. The newly revised Union's Civil Protection Mechanism (CPM) regulation (EC, 2013c) introduced an obligation for all MS to report, starting from 2015 and every three years thereafter, on risk assessments at national or appropriate subnational level and risk management capabilities (Article 6 of the Decision 1313/2013/EU).

The *European Union Solidarity Fund* (EUSF), created in 2002 (EU Council, 2002) and amended in June 2014 (EC, 2014g), translates solidarity in form of financial aids to the EU Member and Candidate countries experiencing '*serious repercussions on living conditions, the natural environment or the economy*' (EC, 2014g). The EUSF can be mobilised in cases of natural disasters only and the attempts to extend the scope of the Fund to the man-made disasters (EC, 2005b) were unsuccessful so far. According to the newly revised rules, the EUSF can be mobilised in cases in which the *direct* damage exceeds 3 billion Eur (in 2011 prices) or 0,6 per cent of the country's gross national income (GNI), whichever is the lower, or if the damage at regional (NUTS2) level exceeds 1,5 per cent[16] of that region's gross domestic product (GDP). A neighbouring Member State or accession country that is affected by the same disaster can also receive aid, even if the amount of damage does not reach the threshold. The EUSF has an annual budget of 500 million Eur, down from a billion under the previous regulation (EU Council, 2002). The aid is limited to non-insurable damages and essential emergency and recovery operations[17]. The recent reform of the EUSF respond to some weaknesses

[16] This threshold is lowered in cases of outermost regions to 1 per cent of regional GDP.

[17] Including infrastructure restoration in the fields of energy, water and waste water, telecommunications, transport, health and education; temporary accommodation and rescue

identified previously in (EC, 2009b, 2011a, 2013e) with respect to the rapidity of the aid and the transparency of the criteria allowing mobilising of the Fund (see also (Mysiak, n.d.).

The EUSF is not the only instrument available. The EU ***Internal Security Fund*** (EC, 2014e), established in April 2014, and the resources endowed to the new EU ***Union Civil Protection Mechanism*** (EC, 2013c) provide additional resources that can be mobilised for an extended cooperation across the MS in the field of prevention, protection and response to the natural hazard risk. Furthermore, the ***article 122*** of the TFEU empowers the Council to grant additional financial assistance, in spirit of solidarity, to the MS '*threatened with severe difficulties caused by natural disasters or exceptional occurrences beyond its control*.

1.6 Civil and environmental liability

The reparation of disaster losses caused or exacerbated *intentionally* or through *negligence or omission* that damage rights or protected interests of others can be granted through civil liability. The established liability systems across the EU Member States differ substantially in taxonomy and structure (von Bar & Drobnig, 2004). The German civil code for example associates general liability for fault with cases where the wrongdoer infringed a legal right of the victim (Wagner, 2009). In contrary, the scope of English tort law is based on the duty of care. English and Irish Common Law distinguish some 70 torts among which the most important ones for our scope are trespass, negligence, breach of statutory duty, and nuisance (von Bar & Drobnig, 2004). An example of *nuisance* is a use of land which cause damage or interference with another's use and enjoyment of their land. Under the common law's *common enemy doctrine* a landowner is empowered to defend his land from diffused surface waters, for example by improving the drainage system, while increasing the volume of discharged water on lower property. In contrary, the *civil law doctrine* subjects landowners to a flowage easements for natural drainage patterns. Hence the landowners cannot alter the drainage pattern of their own land in a way that increases the discharged water on lower properties of others. The *reasonable use* doctrine is a compromise of the both, in a sense that while some alteration of natural drainage patterns is necessary, it is only lawful if conducted in a reasonable manner and the utility of drainage outweighs the gravity of resulting harm to others. Similarly, the U.S. Association of State Floodplain

services; preventive infrastructure and measures of protection of cultural heritage; and cleaning up disaster-stricken areas, including natural zones.

Managers has advocated a *no adverse impact*[18] (NAI) management principle (J. Kusler, 2011), adopted also in some EU MS (Mysiak et al., 2014). According to NAI, the actions of one property owner are not allowed to adversely affect the rights of other property owners.

The EC backed the development of '*Common Frame of Reference*' (CFR), primarily in the contract law, as a collection of common principles, terminology and model rules to be referred to by the Union legislator (EC, 2003). The *Draft Common Frame of Reference* (DCFR; (Von Bar, Clive, & Schulte Nölke, 2009) was conceived as a legal experts' response to the EC quest; an attempt to harmonise European private law. The book VI of the almost 5.000 long compilation addresses *non-contractual* liability arising out of damage caused to another. The term 'non-contractual liability' is neutral in language used in common law (i.e. tort) and civil law (i.e. delict) systems, making reference to the incidence of damage being the only connection between the damaged party and the party held accountable. The DCFR Article VI.–1:101 states 'a person who suffers *legally relevant damage* has a right to reparation from a person who caused the damage *intentionally* or *negligently* or is *otherwise accountable* for the causation of the damage' (emphasis added) (ibid, p. 2978). The *legally relevant damage* (Article VI.–2:101) is a (economic or non-economic) loss or injury resulting from a violation of a right otherwise conferred by the law or from a violation of an interest worthy of legal protection.

The European Group on Tort Law[19] produced in 2005 an alternative compilation of guidelines aiming at the harmonization of European tort law, the Principles of European Tort Law (PETL). It defines the damage as a 'material or immaterial harm to a legally protected interest' (Art. 2:101) while the accountability for the damage is given either by a fault, or by abnormally dangerous activity (Art. 1:101).

The Union's primary and secondary legislation has a little sway over the liability regimes across the MS. Generally, the damage for which third parties are held liable are excluded from the eligible damage in the state aid regulation and the solidarity aid discussed earlier. The so-called Rome Regulations (EC, 2007b, 2008) specify rules on cross-border contractual, non-contractual, and pre-contractual obligations in situations where there is a conflict of law. In 2010 the EC launched a consultation on how to make contract law in the EU more coherent (EC, 2010c). Included among the presented policy options, but not

[18] *No Adverse Impact* floodplain management is an approach which ensures that the action of one property owner does not adversely impact the properties and rights of other property owners (J. A. Kusler & Thomas, 2007)

[19] www.egtl.org

supported by the stakeholders, was the option (7) aiming at establishing a European Civil Code covering tort law and other obligations along with the contract law.

An exception from the above is the liability for damage caused to environment addressed by the Environmental Liability Directive (ELD; 2004/35/CE). The ELD (EC, 2004b) was adopted in 2004 but applies only to activities that caused environmental damage after the full transposition of the Directive into national legislative frameworks (i.e. April 30th, 2007). The ELD does not supplant civil liability insofar only the damage caused to environment (i.e. protected species and habitats, water and land) is comprised. Consequently, personal injuries, damage to property or economic losses incurred to third parties are not tackled, as they are subject of civil liability claims. Likewise, the environmental damage, is caused by 'a natural phenomenon of exceptional, inevitable and irresistible character' (Article 4) are exempted from the scope of the Directive. The ELD holds liable both physical and natural, private and public persons. In line with the Article 191(2) TFEU committing the environmental damage rectification '*at source*' and by polluter, the ELD obliges those who exercise or control *occupational* activities causing environmental damage[20] to i) adopt preventive and remedial measures; and ii) inform competent authorities. The Directive distinguishes two liability regimes: First, *strict liability* applied to activities listed in the Annex III holds the operator liable irrespective of whether the damage caused is a result of fault or negligence. Second, the *fault-based* liability applies to any other activities not listed in Annex III for damage to protected species and natural habits only in case of proved fault and/or negligence. The Member States are left wide discretion whether or not to impose financial security mechanisms, including for the case of insolvency, so that the operator are capable to fulfil the imposed liability. The ELD is due to be reviewed in 2014[21] and the European Commission may propose the amendments deemed necessary.

The EC commissioned several reports analysing the ELD transposition by MS, definition of biodiversity damage, and possible revision of the Annex III activities (BIO Intelligence Service, 2012, 2013; Ltd & IUCN, 2014; Salès, Mugdal, & Fogleman, 2014; Stevens & Bolton LLP, 2013). The possible changes include imposing a strict liability on activities currently under fault-based liability regime, extending the scope of the environmental

[20] In the sense of the Article 2

[21] Due to delays in reporting and evaluation, the report expected by April 2014 will not be submitted before the end of 2014 (see http://ec.europa.eu/environment/legal/liability/index.htm, accessed in June 2014)

damage to the air, a stricter regulation of the financial security and guarantees; and establishment of an industrial fund.

1.7 Insurance market regulation and Solvency directives

The Solvency II Directive 2009/138/EC (OJ, 2009) codifies and harmonizes the regulation across the Union. It represents the latest among a series of efforts to facilitate the development of a single market in insurance services, while ensuring an adequate level of consumer protection. Following an EU Parliament vote on the Omnibus II Directive[22] on 11 March 2014, Solvency II is scheduled to come into effect on 1 January 2016 and replace 13 previous EU directives.

Early EU solvency regulations goes back to the 1970s. Substantial modification were adopted through the third generation of insurance directives in the 1990's, which eventually led to the Solvency I Directive (OJ, 2002), and have finally crystalized in Solvency II. As its predecessors, Solvency II regulate margin requirements to limit the risk of insolvency. The newly added regulatory include authorization, corporate governance, supervisory reporting, public disclosure, risk assessment and management, as well as solvency and reserving. The Solvency II project is divided in three areas (OJ, 2009) or 'pillars' (EIOPA, 2014): quantitative basis (Pillar 1), qualitative requirements (Pillar 2), and enhanced reporting and disclosure (Pillar 3).

Pillar 1 focuses on quantitative solvency in two ways: i) it addresses how insurers value their liabilities and assets; and ii) specifies the amount of resources insurers need to hold to make sure they are in position to pay eventual claims by policyholders. For the valuation of the former, Solvency II introduces EU-wide harmonized standards. In the latter case, two thresholds are established: Solvency Capital Requirement (SCR) and Minimum Capital Requirement (MCR). The SCR is the capital that guarantees that the insurance company will be capable of meeting its obligations during 12 months with a probability higher or equal to 99,5 per cent. It is calculated using a standard formula or (only under regulatory approval) an internal model. The MCR represents the capital threshold below which the regulator intervenes the insurance company. It is calculated

[22] The Solvency II directive needs to be adapted to the implementing measures introduced in the Lisbon Treaty (OJ, 2007) and the financial supervision measures introduced in the Regulation 1094/2010 (which established the European Insurance and Occupational Pensions Authority, EIOPA) (OJ, 2010). The harmonization process is implemented through the Omnibus II directive (EC, 2011b), adopted by the Council of the EU in December 2013 and by the EU Parliament in March 2014.

as a linear function of specified variables and cannot fall below 25 per cent, or exceed 45 per cent of an insurer's SCR.

Pillar 2 addresses how the structure and management of insurance businesses are governed, enabling insurers to identify, measure, monitor, manage and report risks to which they are exposed. In particular, it comprises i) the *Own Risk & Solvency Assessment* (ORSA), a decision-making tool that continuously assesses the solvency needs related to the specific risk profile of the insurance company; ii) an effective risk management system that quantifies and models risks, not limited to a contribution to the ORSA, but also including involvement in asset-liability management, risk mitigation arrangements, etc.; and iii) a supervisory review and intervention including an independent internal audit function.

Pillar 3 specifies what information insurers report on their business and how it is reported. Some reports are public and anyone can see them, while others are privately reported to the financial regulator. Insurers are required to publish details of the risks facing them, capital adequacy and risk management. Enhanced reporting and disclosure provides transparency and open information that help to assist market forces in imposing discipline on the industry.

The implementation of the Solvency II directive is overseen by the *European Insurance and Occupational Pensions Authority* (EIOPA), which succeeded the Committee of European Insurance and Occupational Pensions Supervisors (CEIOPS). The activity of these authorities so far has comprised *advice on implementing measures* (comprising 5 Quantitative Impact Studies, large scale field-testing exercises to assess the practicability, the implications and possible impact of the different alternatives considered) and *advice on equivalence assessments* (whether the solvency regime of a third country is equivalent to that of Solvency II; equivalence assessments have been implemented so far for Switzerland, Japan and Bermuda) (EIOPA, 2014).

On 31 January 2014, EIOPA defined a timeline with the objective of delivering the regulatory and supervisory framework for the successful technical implementation of the Solvency II regime from 1 January 2016 onwards (although this date has been previously pushed back many times). This will be done through the delivery of *Implementing Technical Standards* (or ITS, legally binding standards to ensure the uniform application of the Solvency II Directive) and *Guidelines* (to all national supervisors). These two products will be developed in two sets each. For the ITS, Set 1 will comprise “Approval processes” and Set 2 the three pillars plus “supervisory transparency”. For the Guidelines, Set 1 will comprise “Guidelines relevant for approval

processes, including Pillar 1 and internal models" and Set 2 "Guidelines relevant for Pillar 2 and Pillar 3" (EIOPA, 2014).

1.8 Flood Re in the UK

Flooding is UK's most common and costliest natural hazard. Common types of flooding that may be experienced in the UK are fluvial, coastal, pluvial, sewer and groundwater (Surminski et al., 2014). Flood insurance in the UK is provided by private insurers as part of the home-insurance bundle. This has led to high insurance penetration rates: 91% for buildings and 74.9% for contents, principally due to the need to have insurance when taking out a mortgage. However there remains a disparity amongst low income households, where only 29% have buildings insurance (Surminski et al., 2014).

An interesting aspect of flood insurance in the UK is the PPP between the UK government and the insurance industry. According to this agreement, insurance is purely underwritten by the private market, while government commits to flood risk management activities. This PPP, known as the Statement of Principles (SoP), aims to make flood insurance available for households while managing the financial implications for insurers[23]. The SoP can be traced back to the 'Gentleman's Agreement' that resulted from the 1952 flooding and the East Coast floods of 1953. By then few properties held contents cover or buildings cover, leading to large uninsured losses. Although initially considered, the government discarded compulsory insurance and opted in favour of private providers until large losses again occurred in 1960. The government aimed then at higher penetration rates, and these were attained, partly under the threat of nationalisation if insurers failed to deliver more flood insurance to private, commercial and industrial properties. The current SoP was finally established in 2000 as a result of growing flood losses. It remains valid, although a new system, known as Flood Re, is being finalised.

[23] The SoP generally provides flood insurance to both households and small businesses up to floods with a 1:75 return period. Those properties facing higher risk should be granted cover after being informed by the Environmental Agency about plans to improve flood defences in the area in the next five years –although this has been noted as not having actually been available. Government commits to investment in flood defences and improved flood risk data provision as well as a strengthened planning system. The 2007 floods and concerns regarding rising intensity and frequency of floods led the insurance industry to maintain that the SoP was a temporary solution.

Flood Re maintains a free market approach to low-risks, but the high risk households will obtain flood insurance cover via a not-for-profit pool (Flood Re). The subsidy for the latter is claimed from a levy taken from all policyholders. This levy will be £10.50 per policy for a total aggregate sum of £180m. To maintain affordability the pricing limits of insurance policies are determined by council tax bands, allowing low income homes a better opportunity to meet the costs. This system addresses equity issues beyond the alternative 'actuarial fairness' approach and puts itself closer to a 'solidaristic approach' (O'Neill & O'Neill, 2012), although both the highest council tax band H and small businesses are excluded. Allegedly, this will reduce incentives to reduce exposure to flood events by property owners and will ultimately result in higher flood risk and damages (Surminski et al., 2014). Noteworthy, Flood Re agreements are subject to agreement with the European Commission for State Aid approval, and this may bring into question the design of the scheme and its eventual implementation (Surminski et al., 2014).

1.9 Flood Re in the UK

We have reviewed and analysed Union's legislation and regulation setting a playground for private insurance against natural hazard risk, and crafting options for public private partnerships (PPP) in the wake of catastrophe events. Our analysis concentrated on i) public procurement and concessions; ii) internal market regulation of insurance and solvency; iii) state aid for making good the damage caused by natural disasters; iv) European Civil Protection mechanism and disaster prevention and response policies; and v) civil and environmental liability. On this basis we draw a preliminary list of *policy guiding principles* (PGP) that allow for designing a *partnership* within the scope of the Enhance project.

The recent directive 2014/23/EU on public concession contracts along with the revised rules of public procurement have contributed to a greater legal certainty and flexibility of designing PPP, especially the public *service concession* which accounts for an estimated 60 per cent of the partnership programs in Europe. The reconfirmed *constructive dialog* and newly introduced *innovation partnership* in public procurement regulation provide for opportunity to develop innovative and well-tailored partnership schemes where existing marketable products are either not available or not suitable for the given purpose, here an equitable and equitable insurance provision for property owners and enterprises located in areas exposed to low probability-high impact risks, with least competition distorting effects. Including the catastrophe risk insurance among the *services of general economic* (if not social) *interest* (SGEI) allow even greater flexibility of procurement and higher thresholds of *de minimis state aid*, compared to

otherwise. Though the Member States (MS) are left a wide discretion in this area, the practical feasibility of declaring an affordable and equitable state-participated catastrophe insurance partnership as a SGEI is yet to be closely explored.

The insurance partnerships in which the state plays a role as a partner will have to comply with solvency requirements even if operating under state guarantee. It is of public interest to render the guarantee *transparent* in terms of state aid regulation, that is assessed in terms of *gross grant* equivalent. A sound risk analysis and assessment is an essential prerequisite and a preferred theme to be addressed in truly multi-sectoral partnership. The reformed *general bloc exemption regulation* (GBER) has no bearing on the public-private ventures but makes it easier to develop alternative state administered or supervised schemes of economic recovery in the aftermath of the disaster. This may encourage the MS to keep open the gateway for direct grants or other parallel forms of economic aid to citizens and enterprises, within the margins of the *Stability and Growth Pact* (SGP). While account is taken for disaster induced hardship in the SGP corrective arms - the excessive deficit procedure, recent calls to exclude the disaster recovery and protection expenditure from the SGP margins may undermine the fiscal rigour and consolidation. On contrary, the reduction of the annual endowment of the EU Solidarity Fund from one to a half of billion, while extending the scope of its mobilisation (regional disasters are eligible on their own right and not as a derogation from the general rule), may possibly lead to more frequent calls for a larger public compensation and aid in the aftermath of a disaster.

The definition of what constitutes a disaster beyond the coping capacity of the MS is contingent to the scope of the regulation. The *Internal Security Strategy* (ISS) and DRR policies substantiating the TFEU *solidarity clause* embrace a broad-spectrum of natural and man-made hazards, leaving the decision of summoning for assistance to the affected MS. Similarly, the other MSs may choose the most appropriate means of assistance upon their own judgement and assessment. The financial aid in the case of natural hazards only is provided from the EU Solidarity Fund. In contrary, the state aid regulation is more conservative and narrows down substantially the eligible natural hazards exempted from the notification obligation.

Borrowing from the policies reviewed in the paper we make an attempt to draw the *policy guiding principles* that are valuable for designing the partnerships within the scope of the Enhance project. *First*, the partnerships should be ***well-designed*** and targeted at ***market failures***, that is uninsurable losses and affordable, socially-fair risk transfer mechanism. *Second*, the partnerships should promote a ***sound use of public resources*** while limiting to the extent possible the ***distortion of competition***. This also

means that the partnerships should not substitute or sustain actions that would materialise anyway (additionality principle). The agreements should actively promote or at least not harm the ***incentive for risk reduction***, for example by making the individual insurance costs reflecting those risks that result from each individual's choices. *Third*, the partnership should be built on principles of ***transparency***, ***equal treatment*** and ***effective analysis and monitoring***. Sound risk analysis and assessment along the agreed principles is the most encouraged scope of a collaboration. The MS are obliged to produce both sector specific assessment (for example under the Floods Directive FD) and cross-sector assessment under the reformed Civil Protection Mechanism. Regrettably, the costs of data collection is not contemplated among the eligible expenses under the EUSF. *Fourth*, the sustainability of the partnership should be based on clear rules of viability and legitimacy.

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2 Partnerships for a better governance of natural hazard risks

2.1 Introduction

Since the 1992 Earth Summit[24], *partnerships* have been levered to mainstream environmental and development policy instruments. The *Agenda 21* (UN, 1993) called for promoting partnerships between public and private arms of community and civil society as a way of reconciling (hazard-proofed) development and environmental protection. Partnerships were equated to '*sharing of responsibilities and mutual involvement of all parties*'[25]. Earth Summit 2002 underscored the role of private and civil society entities in achieving sustainable development (SD) goals through the so-called *Type II* outcomes, comple-menting (in some way disappointing) the inter-governmental (*Type I*) cooperative com-mitments made during the Summit. The Type II partnerships embodying voluntary, multi-stakeholders and self-organizing initiatives meant as a step change away from sole government-centred to multilevel modes of global environmental governance.

The disaster risk reduction (DRR) community retorted first in the declaration from the *First World Conference on Natural Disaster Reduction* (UN, 1994). The *Hyogo Framework for Action* HFA (UNISDR, 2005) followed the suit and called for multi-*sectoral* DRR combining efforts of civil society, scientific community and private sector. The ongoing discourse about the HFA follow-up international agreement and the post 2015 development agenda called attention to adapting governance framework(s) able to embrace the (DRR) ventures of various sectors. The UN Special Representative (2013) of the Secretary General for DRR stressed that '*such a governance approach would reflect the increasing prevalence of innovative and networked partnerships and alliances between different sectors, as effective means to address development challenges' (*p. 7*)*.

In the European Union, *partnerships* have been *indirectly* nurtured through stimulating culture of consultation and dialogue, and *directly* through inter-institutional and cross-border cooperation. The EC *minimum standards of consultation* (EC, 2002a), adopted in 2002 and revised in 2012, together with the *better* and *smart* regulation and *good lawmaking* initiatives, promoted participation, openness, accountability, effectiveness and coherence as guiding policy principles of an improved involvement of interested

[24] United Nations Conference on Environment and Development (UNCED), Rio de Janeiro, 3-14 June 1992

[25] (ibid, 12.55)

parties and civil society in policy making. The EU Cohesion Policy on the other hand encourages cross-border, transnational and interregional cooperation targeting an improved economic, social and territorial cohesion across Europe. The 2014-2020 European Structural and Investment (ESI) funds compel partnerships denoted as '*close cooperation between public authorities, economic and social partners and bodies representing civil society at national, regional and local levels throughout the whole programme cycle consisting of preparation, implementation, monitoring and evaluation*' (EC, 2014a).

This paper complements the policy analysis conducted in **Mysiak and Perez Blanco** (2014) and **Mysiak** (2014)[26] while discussing the role of decentralized, voluntary multi-stakeholder partnerships between public authorities and agencies and/or public authorities and civil society. We pay attention to *Public – Public* Partnerships (**PuP**), a term coined for public alliances in early 2000s although arguably building upon *community-based* natural resource management (CBNRM), disaster risk reduction (CBDRR) and other cooperative initiatives[27] (Hall et al., 2005). In many respects PuPs became known as a counterpart of PPPs (Corral, 2007) and quickly spread in public (water and health) service provision. For the scope of this paper, hence, we portray PuPs as arrangements tying at least one public entity *strictu sensu* together with other public bodies as well as non-state and non-commercial organizations, normally sanctioned through an institutional agreement. While the concept of PuPs match to some extent the Union's efforts to expand the horizontal cooperation and collaboration, it appears too narrow to capture the sense of European initiatives. In particular, the strict exclusion of business and commercial undertakings in the essence of PuPs by the early scholars is not compatible with the call for truly cooperative multi-governance arrangements.

This paper is structured as follows: In section 2 we examine the concept of PuP, its objectives and defying characteristics, partners involved and relationship tying them. In section 3 we examine to what extent partnerships meant to improve cooperation and coordination have permeated the EU legislation and policies. We focus especially on (the role of) inclusive governance and territorial cooperation. In section 4 we discuss examples of PuPs addressed in the ENHANCE case studies in which disaster risk reduction plays a role.

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[26] Mysiak and Perez-Blanco (2014) and Mysiak (2014) analyse the public policies governing the *public-private* partnership (PPP) in insurance and infrastructure development respectively.

[27] Such as 'twinning' programs set to promote business and cultural ties between allied cities flourishing since the World War II

2.2 Public – Public Partnerships (PuPs)

There are diverging views as for what constitutes a *partnership* and who qualifies for a genuinely public alliance. *Partnership* is often used interchangeably to cooperation, collaboration, alliance, collaborative advantage or networking (Armistead et al., 2007). The essential motivation for forming partnership is the added value of '*working jointly*', compared to what can be achieved individually. This implies that partnership canvasses (material and non-material) resources not available to an single entity operating alone. The constituting characteristics of a partnership embrace common objective(s), supported by a sense of cooperation, mutual trust and synergy (Vasconcellos and Vasconcellos, 2009), as well as (a voluntary nature of) commitments and *social* benefits striving for (McQuaid, 2000). Because many forms of loose collaboration can fulfil these principles, we add a formal institutional agreement as a discriminating component of a partnership.

The *public-public partnerships* (PuPs) are relatively recent and scarcely explored in scientific literature (Boag & McDonald, 2010). In the narrowest sense PuPs entail cooperative agreements between (two or more) public entities, i.a. public authorities and other institutions '*publicly owned, managed and financed, and subjected to public control and oversight*'. Boag and McDonald (2010b) further narrow the range of qualified public entities. Publicly owned companies, in their view, even if non-for-profit, may embody '*corporate ideology*' (sic) not reconcilable with the scope of a PuP. This narrow view eventually fails to appreciate the truly innovative strength of PuPs. As PuPs have been more and more widened to include partnerships between public authorities and civil society represented by community-based (CBO) and non-governmental (NGO) organizations and trade unions, the exclusion of private entities has been progressively losing grounds.

As a counterpart of the *public-private partnerships* (PPP), PuPs do not contemplate a direct profit-seeking behaviour as a driver for cooperation. Instead, the involvement of private entities can be motivated by a host of incentives, including philanthropy, public image, strategic or even economic motivations that are not translated into tangible individual profits arisen from the engagement in the arrangement.

Public-public partnerships hold sway over PPP especially in public policy areas in which multiple, legitimate views are to be taken into account and ethical principles dominate in judging the policy fairness. Typically for these policy areas, policy setting and implementation require combination of competences. This is why PuPs materialised first for provision of public services in the water and health sectors. Their *non-for-profit* nature reduces the emphasis on profit-taking and cost-cutting considerations, allowing

for an orientation towards longer time horizons and the fulfilment of social objectives (Boag and Mcdonald, 2010a). Consistently, PuPs have also being employed in the field of international solidarity, in the form of development partnerships tying entities located in developed and developing countries. Another goal which is commonly pursued by PuPs is that of capacity development, with public authorities within the same country or even at the international level providing their counterparts with skills and knowledge to improve the delivery of a service. Experiences of this kind are prominent in the water sector. The best-known example is the Baltic Sea PuP which took place in the early 1990s with the support of the Baltic Sea programme and involved public water operators in Scandinavia to provide capacity development activities to the municipal authorities in the transitional Baltic States (Hall et al., 2009). Finally, PuPs can be also used to facilitate the implementation of Public-Private Partnerships (PPPs), as happening in the United States with the aim of advancing business expansion (Hall et al., 2005).

The main challenge faced by PuPs concerns their financing, especially when infrastructural improvements are included within their objectives (Boag and Mcdonald, 2010a).

Potentially hampering their employment is also the lack of empirical evidence about their effectiveness. PuPs are usually ascribed benefits like lower costs, greater focus on capacity building and equity with respect to PPPs and the capacity to generate higher degrees of trust between the parties thanks to the non-profit motive of the alliance (Tucker et al., 2010). Nevertheless, sound data to assess their performances are often difficult to collect and the impact of PuPs can be particularly tough to estimate, entailing also indirect benefits/costs which span over very long time horizons.

2.3 EU policies shaping partnerships

Public policies can animate partnerships-building by stimulating attitudes of collective problem framing and solving, as well as inter-institutional and cross-border cooperation. Since the 2000s the European regulatory culture underwent substantial changes. The *better* (and later *smart*) regulation and *better* lawmaking initiatives, set off by the EU White Paper on Governance (EC, 2001a), gradually adjusted the way the legislation and regulation *is* promulgated. The general principles and minimum standards for public participation and consultation assured civil society is actively involved in policy making, and opportunities are shaped for constructive dialogue and collaboration (Section 3.1). The EU Structural and Investment Funds (ESI) are spinal cord of cross-border, transnational and interregional cooperation targeting an improved economic, social and territorial cohesion across Europe. Under the 2014-2020 period, the operations of the ESI were subjected to *partnership agreements* and a *Code of Conduct* (Section 3.2).

Likewise, the public procurement regulation analysed in (Mysiak and Perez-Blanco, 2014) provides for a public-public cooperation but is not addressed in this document.

From better to smart regulation and law making

Article 11 of the Treaty of European Union (TEU) lays down several instruments of *participatory* democracy, by i) compelling European institution to create opportunities for citizens and representative associations to '*make known and publicly exchange their views in all areas of Union action*' and preserving an '*open, transparent and regular dialog*' with representative associations and civil society; and by ii) obliging the European Commission (EC) to conduct consultations with 'parties concerned'. The Lisbon Treaty introduced a new instrument – the European citizen initiative (ECI) – which empowers the Union citizens to 'invite' the EC to table a legislative proposal on matters which citizens consider as necessitating a legal act of the Union (EC, 2011a). In Perez-Blanco and Mysiak (2014) we have discussed the ECI (Right2Water) that led to the exclusion of water supply services from the scope of the *Concession* directive in course of the public procurement reform.

This is somehow consequent to the incremental attention devoted since the early 1990s by the EU to fostering the participation of civil society in policy and decision making. The peak of such process is represented by the *White Paper on European Governance* (EC, 2001b), providing recommendations on how to improve the legitimacy of EU policies and institutions (Vos, 2005). Participation is enlisted among the principles that should inform the process, together with openness, accountability, effectiveness and coherence. From the arguments in the paper and the preparatory documents, it actually stands out as one of the most important principle among the cited (Magnette, 2003). The White Paper emphasizes the positive impact enhanced participation has on the quality, relevance and effectiveness of EU policies, as well as its capacity to promote improved confidence in the outcomes and in the institutions delivering the policies. To achieve such outcomes, online information on preparation of policy through all stages of decision-making, a stronger interaction with regional and local governments and civil society, as well as a more systematic dialogue with representatives of regional and local governments should be encouraged, among other relevant actions (EC, 2001a; Höreth, 2001).

The proposals for change enlisted by the White Paper are all informed by the need to "*renew the Community method by following a less top-down approach and complementing its policy tools more effectively with non-legislative instruments*" (EC, 2001b). From a practical point of view, this entails the use of new governance forms, including framework directives, partnerships, greater participation by civil society in

policy formation through "civil dialogue", and a wider use of the Social Dialogue (Scott and Trubek, 2002). As for the concept of partnership, the Commission encouraged development of more extensive arrangements in those policy sectors where consultative practices are already well established. Nevertheless, and as specified by the same text, the partnership arrangement would simply translate into additional consultations compared to the minimum standard. What is promoted is basically a form of enhanced consultation, and not a form of partnership in the sense we described above.

In the 2000s the EC reinforced the efforts dedicated to the *culture of consultation and dialogue*. Concomitant with the adoption of an action plan for a *simplified and improved* regulatory environment (EC, 2002b), the Commission espoused *minimum standards of consultation* (EC, 2002a) and consolidated regulatory *impact assessment* method (EC, 2002c). The minimum standards of consultation set to increase the consistency and transparency of the consultation processes, and smoothing the participation of interested parties and civil society. The general principles comprise *participation*, *openness*, *accountability*, *effectiveness* and *coherence*. The minimum standards demand that (i) consultation documents are clear, concise, and include all necessary information; (ii) all relevant parties have an opportunity to express their opinion; (iii) adequate awareness-raising publicity is ensured and communication channels are adapted to meet the needs of all target audiences; (iv) participants are given sufficient time for responses; and (v) acknowledgement and adequate feedback is provided (EC, 2012a, 2002a).

The step change towards a *smart* regulation ('*getting legislation right*') was then outlined in in the 2010 Communication (EC, 2010a), building upon the principles of *whole policy cycle* analysis (including design, implementation, enforcement, evaluation and revision), *shared responsibility* (of EU and MS institutions), and making policy efforts *accountable to those mostly affected*. The key tools in the new approach includes an *ex-post* evaluation of the legislation (*ex-ante* impact assessment was established in 2003; EC, 2005c) and a strategic assessment of the '*fitness for the purpose*' (fitness check, FC). Conducted for a set of pilot studies including water legislation (EC, 2012b) between 2010 and 2012, the FC addressed the regulatory burdens, gaps and overlaps, as well as inconsistencies and/or obsolete provision, while contributing to the assessment of the cumulative impact of a legislation. Based on the collected experiences, the EC has launched the *Regulatory Fitness and Performance Programme* (REFIT) focusing on simplifying existing legislation and '*reducing the regulatory cost for businesses and citizens without compromising public policy*' (EC, 2012c).

These changes have not altered greatly the consultation practices but created some room for alternative ways of regulation, such as co-regulation and self-regulation (EC, 2009, 2005b). Inter-institutional agreement on *better lawmaking* (EC, 2003a) defined **co-regulation** as '*mechanism whereby a Community legislative act entrusts the attainment of the objectives defined by the legislative authority to parties which are recognised in the field (such as economic operators, the social partners, non-governmental organisations, or associations)*' (p. 3). Likewise, **self-regulation** entails the possibility for the equivalent bodies to '*adopt amongst themselves and for themselves common guidelines at European level (particularly codes of practice or sectoral agreements*' (*ibid*, p. 3). The Principles for Better Self- and Co-Regulation[28], but in principle any multistakeholder process attempting to reach a specific societal goal, highlight both the framing of the pursuit (through choice of participants, open governance, clearly specified objectives, and compliance) as well as its implementation (flexibility and iterative improvements, monitoring and evaluation, dealing with dissent and financial arrangements).

As for the European *environmental* policies, a greater public participation had been encouraged since early 1990s through the European Communities' *Fifth Environment Action Programme* (EAP; 1993-2000), and later the *Sixth* EAP (2002-2012) (Rauschmayer et al., 2009). The *Seventh* EAP (EC, 2013a), that outlined the EU environmental policy until 2020 and endorsed a vision up to 2050, stresses the importance of public participation and encourages a strengthened collaboration among different actors to reach environmental objectives. Article 3, for instance, calls public authorities at all levels to "*work with businesses and social partners, civil society and individual citizens in implementing the 7th EAP*". Creating a common ownership of environmental goals and objective is one of the purposes of the Programme: consistently, the public is expected to play an active role and to be properly informed about environmental policy (art. 15). Moreover, *public dialogues* and *participatory processes* should be promoted, especially with regards to potentially conflicting issues like the development of environmental technologies.

The Programme does not go into the details of the participation tools to be enacted. When partnerships are cited, this is done referring to the drafting of implementation agreements on a voluntary basis between Member States and the Commission, involving local and regional participation when needed (Art. 65). Partnerships are also

[28] http://ec.europa.eu/digital-agenda/en/news/principles-better-self-and-co-regulation-and-establishment-community-practice

cited as a mean to involve industry and step up investment and innovation within the integrated industrial policy (Art.29).

Yet, the most prominent legal acts on public participation on *environmental* issues are the Aarhus Convention[29] and the Directives which transpose it into the Union's legislation. The Convention regulates the interactions between the public and public authorities, with regards to environmental issues at the local, national and trans-boundary level. In particular, it aims at guaranteeing public rights in the following fields - the so called "pillars": i) *access to environmental information* held by the public authorities, ii) *participation in decision-making* which affects the environment and iii) *access to justice in environmental matters*. The first and second pillars were transposed by the Directive 2003/04/EC and the Directive 2003/35/EC respectively, while a proposal for a Directive on the third pillar was tabled in 2003 and withdrawn in 2014 because of the enduring resistance of the European Council. The Regulation 1367/2006 (EC, 2006) endorsed the application of the provisions and principles of the Convention by Community institutions and bodies.

The Directive 2003/35/CE (EC, 2003b) calls on Member States to provide the public with "*early and effective opportunities to participate in the preparation and modification or review of the plans or programmes*" (Art. 2, §2). As further specified in the text, the public should be informed about the plans to be proposed/modified/reviewed and about its right to participate in decision-making. Moreover, the comments and opinions expressed by the public should be taken into due account in the decision phase. The level of public engagement proposed by the Directive is not the highest possible, as it does not reach the phase of joint deliberation[30]. Although the Directive is strongly concerned about the interests and positions of the public to be included in the decision making process, the latter is ultimately considered a prerogative of the public

[29] The UNECE *Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters* was signed in 1998, entered into force in 2001 and was ratified by the European Union as well as all its Member States (last MS to ratify the Convention was Ireland in 2012).

[30] The lack of a contextual and peer two-way interaction between public authorities and stakeholders is made explicit by the words employed in the text. The same etymology of the verb "to express" (comments and opinions, in the text) refers to a unilateral communicative moment, as the subject "pushes out" (from the Latin, *ex-* meaning out and *premere*, press or push) his view on a certain issue. Also the enunciation "to take into due account" recalls an action to be carried out by a certain subject or group of subjects on their own, without any moment of external confrontation.

authorities. Interestingly, Article 2 of the Directive 2003/35/CE concerning the public participation in relation to plans and programmes has a limited application under the EU Water Framework Directive (see below) and the Strategic Environmental Assessment (SEA, Directive 2001/42/EC) which set out for more specific and pronounced requirements for public participation.

Indeed, the Water Framework Directive (WFD, 2000/60/EC, EC, 2000) calls for an enhanced engagement of the public in decision making, acknowledging that the success of therein included provisions will depend "*on close cooperation and coherent action at community, Member state and local level as well as on information, consultation and involvement of the public, including users*" (Preamble, §14). Public participation is addressed in the Article 14, which requires information supply and consultation to be ensured by MS as well as the active involvement of all interested parties in the implementation of the WFD to be encouraged. Although the Directive does not provide a definition of "*active involvement*", it is understood as implying an active contribution of the public to the various phases of decision making. The final decision could still remain in the hands of public authorities; nevertheless, the process could reach forms of collective decision making. Not specifically required by the WFD, such option would nevertheless be considered as a best practice (EC, 2003c).

Of a particular interest for the scope of this paper are the provisions contained in Annex IV, outlining supplementary measures that may be adopted to foster the implementation of the WFD (Art.11). District Authorities are suggested to adopt a series of different instruments, including "*negotiated environmental agreements*" (NEAs). These tools specifically aim at improving *dialogue* among public authorities and stakeholders to reach objectives not expressly required by the law, by combining elements of regulation, self-regulation and co-operative relationships (WRC, 2008). One of the most prominent examples of NEAs are *river contracts*, flourished in France in the 1980s and popular in the Netherlands, Germany, England and Italy. River contracts are voluntary agreements amongst public and private subjects alike pursuing ecological restoration and socioeconomic regeneration, including flood risk reduction, of river watersheds through a participative process (Pineschi and Gusmaroli, 2013). Within the Po River Basin District area, of the Enhance case studies (Mysiak et al., 2014b), several river contracts have been signed over the past years. Frequent in Lombardy and Piedmont, the river contracts integrate the provisions of water management and protection plans with soil conservation, landscape and economic development

considerations. A significant contribution towards their diffusion was provided by the *Blueprint on River Contracts*[31], endorsed in 2010.

European Cohesion Policy and territorial cooperation

The **EU Cohesion Policy** (CP) plays a role in strengthening the Union's *economic, social and territorial cohesion* and reducing regional disparities (Article 174 TFEU). Implemented through the European Regional Development Fund (ERDF), the European Social Fund (ESF)[32], and the Cohesion Fund (CF)[33], the CP is equipped with ca. 325 billion Eur or around 34 per cent of the current *Multiannual Financial Framework's* (MFF) budget. Compared to the previous programmes, the 2014-2020 Cohesion Policy has been lined up more tightly with the **Strategy 2020**, a decadal plan expected to put the EU on the pathway of '*smart, sustainable and inclusive economy delivering high levels of employment, productivity and social cohesion*' (EC, 2010b). Regulation 1303/2013 (EC, 2013b) laid down the common rules related to the CP Funds, and detailed the split up of resources and the procedures of their provision. The CP mission is articulated in two operational goals, namely *investment for growth and jobs*, and *European territorial cooperation* (ETC). These goals have been translated in into eleven thematic objectives, among which '*promoting climate change adaptation, risk prevention and management*' (Article 9, *ibid*). These thematic objectives are translated into priorities specific for each of the ESI[10] Funds.

The Regulation 1303/2013 pioneered a new multi-governance coordination and planning mechanism, articulated through the ***partnership agreements*** (PAs). The PAs are developed by the MSs in collaboration with regional and local authorities, economic and social partners, and representative bodies of civil society. They infold tailor-made strategies, priorities and arrangements, making the ESI investments work towards fulfilling the Union objectives. The PAs are reviewed and approved by the Commission. The EC has devised a *Code of conduct on partnership* (EC, 2014a) for this purpose. The Code of conduct addresses selection of partners and their role in the formulation and monitoring of the PAs and the implementing programmes. The transparent and balanced choice of partners, one that pays due attention to the specific institutional and

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[31] In Italian '*Carta Nazionale dei Contratti di Fiume*'.

[32] ERDF and ESF together are referred to as 'Structural Funds'

[33] These three funds together with the European Agricultural Fund for Rural Development (EAFRD) and the European Maritime and Fisheries Fund (EMFF) build the European Structural and Investment (ESI) Funds

legal frameworks in each MS, is of paramount importance and the Code of conduct lists categories of public and private bodies (hereafter *partners*) that ought to be effectively represented. Among the public authorities a vital role is assigned to (higher) educational institutions, training providers and research centres. Among the economic and social partners[34] a balanced representation of large, medium-sized, small and microenterprises ought to be guaranteed. The civil society is to be represented by environmental advocacy groups, non-governmental organisations, and bodies actively engaged in fostering social inclusion and equality. The partners are to be involved in main activities leading to a PAs, including an 'analysis of disparities, development needs and growth potential', selection of the thematic objectives and indicative allocations of resources, and effective monitoring and evaluation of the programmes. The PAs are to include detailed information about the partners composition, their role in the process and results of consultations, and the actions undertaken to ensure their active participation.

The resources from ERDF and ESF are earmarked for investments for *growth and job* objective, allocated across the regions (at NUTS 2 level) according to the following typologies: (i) *less developed* regions, whose *gross domestic product* per capita (GDPpc) does not exceed 75 per cent of the average GDPpc[35] of calculated across the EU27; (ii) *transition* regions, whose GDPpc is greater than 75 and lower than 90 per cent of the average EU27 GDPpc; and (iii) *more developed* regions, whose GDPpc exceeds 90 per cent of the average EU27 GDPpc. The resources from the CF are assigned to MSs whose *gross national income* per capita (GNIpc) does not exceeds 90 per cent of the average[36] EU27 GNIpc. Special transition rules are specified for regions who benefited from the CF in 2013 but don't satisfy the above provisions. The investments for *growth and jobs goal* are appropriated a largest portion of the resources of the Cohesion Policy: over 313 billion Eur (in 2011 prices) or 96 per cent of the CP's global resources.

In contrary, the *European territorial cooperation* (ETC) goal is allocated ca. 9 billion Eur from the ERDF, accounting for 2,75 per cent of the CP resources. By reinforcing cross-

[34] Social partners (and dialog) denote the employers and trade unions; and consultation, negotiation and joint agreements thereof (see also ec.europa.eu/social/main.jsp?catId=329&langId=en).

[35] GDPpc for the purpose of the CP is calculated in purchasing power parities (PPS) over the period 2007 – 2009.

[36] GNIpc is calculated in terms of PPS as in the case of GDPpc but the reference period is 2008-2010.

border, transnational and interregional cooperation, the ETC contributes to enhancing the "*harmonious and balanced integration of the territory of the Union by supporting cooperation on issues of Community importance*" (EC, 2004). Cooperation is aimed at addressing *complex* problems that transcend boundaries and necessitate a common approach and multiple actors (both public and private) for their effective solution. A recent retrospection into the ETC highlighted three key concepts on which the territorial cooperation is based on: (i) *sharing*, in terms of knowledge or other assets; (ii) *integrating*, by means of long term partnerships across borders that enhance trust and mutual understanding; and (iii) *improving the quality of life*, by, *inter alia*, reducing risk of natural hazards like floods and fires (EC, 2011b).

The largest share of the ETC budget is appropriated to the *cross-border* cooperation (ca. 74 per cent or 6,6 billion Eur), followed by *transnational* (20,36 or 1,8 billion Eur) and *interregional* cooperation (5,59 per cent or 500 million Eur) (EC, 2013c). The current sixty cross-border cooperation programmes (EC, 2014b) connect adjacent regions (at NUTS 3 level) at the internal and external land borders of the Union, and maritime borders between Union's regions within a distance of 150 km (EC, 2013c). The priorities of the cross-border cooperation may include, in addition to the specific objectives of the ERDF, also employment, social inclusion, education and training, institutional capacity of public authorities and stakeholders, and efficient public administration '*by promoting legal and administrative cooperation and cooperation between citizens and institutions*' (article 7 of the regulation 1299/2013; EC, 2013a). The latter goal also applies to the fifteen transnational cooperation programmes unites larger transnational territories (NUTS 2 level), while explicitly encouraging the development and coordination of macro-regional and sea-basin strategies (see further down in this section). Finally, the four interregional programmes include all EU MSs and the European Free Trade Association (EFTA) countries where appropriate, are set for exchange of experiences and best practices, and analysis of development trends pursuant to the effectiveness of Cohesion Policy.

In order to enhance the effectiveness of the ETC, Regulation 1082/2006 enabled construction of the *European Grouping for Territorial Cooperation* (EGTC) – a legally recognised body composed by state, regional, and local authorities and bodies governed by public law set up for the implementation of territorial cooperation programmes. The EGTC is governed by Convention and Statute, and the provision of the law of the MS were its office is registered. The EGTC had been welcomed as a laboratory of multilevel governance, providing for the opportunity of involving different level of government within the same cooperative structure (Metis GmbH, 2009).

Disaster risk reduction has been one of the priorities addressed by the ETC programmes. Several cross-border cooperation projects focused on capacity development and knowledge sharing among national/local public authorities and research institutes or Universities, with reference to common natural hazards like floods and droughts. Transnational cooperation programmes also identified among the priority actions forecasting, predicting, mitigating and managing of the impacts of natural and technological hazards (for instance, the Alpine space Programme Priority 3, the South West Europe Priority axis 2 and the Northern Periphery Programme Priority 1[37]). Finally, among interregional cooperation programmes, opportunities were created for regional and local authorities and other stakeholders to improve tools, methods and capacities and raise awareness in the areas of environment and risk prevention.

The *Macroregional strategy* is a pioneering instrument of European policy that fosters territorial cohesion through (i) a better collaboration and multi-level governance arrangement; and (ii) a better coordination of the Cohesion policy with other sectoral policies such as environmental protection, integrated maritime and transport policy. The macro regions are delineated rather broadly as 'countries or regions associated with one or more common features or challenges' (Katsarova, 2012). The idea behind is that macro-regions with distinct identity and functionally connected features defy the administrative boundaries around which the Cohesion policy evolved. The macro regions and sea basins strategies are pursued through improved cooperation and coordination, without recourse to new legislation, institutions and funding. Rather they rely on a better use of the resources already available, coordinating and optimizing them to tackle macro-regional challenges. The strategies are being explored as *new modes of territorial governance* and should serve as platforms for EU and national actors to coordinate actions across policy areas of common interest, including environmental and disaster risk reduction concerns.

Two macroregional strategies have been endorsed - the *Baltic Sea Region* (2009) and the *Danube Region Str*ategies (2010) – and two additional initiatives encouraged - the *Alpine* and the *Adriatic* and *Ionian* areas – or prospected – the Atlantic strategy. The real benefits and added value, compared to other forms of territorial cooperation, of macro-regional strategies has yet to be addressed (Dühr, 2011). Last year, the Commission's preliminary assessment (EC, 2013d) acknowledged that macro-regional strategies have fostered the development of new projects, with over 100 flagship projects delivered in the Baltic Sea region alone; enhanced coordination and pooling of existing resources;

[37] The 2007 -2013 operational programs are available from the web site of the EC Regional Policy

and improved cooperation between countries and among authorities inside countries. Among the positive outcomes a significant contribution towards the implementation of EU policies, especially on environmental, infrastructural and civil protection issues, is also recalled, together with the reinforcement of multi-level governance due to the range of actors involved. Building on such encouraging results, the European Commission makes nonetheless clear the need for an improvement in the implementation methods. In particular, strategies should be more focused, political commitment enhanced, and complexity on the organizational and governance side reduced.

2.4 Partnerships within the Enhance case studies

Drought steering committee in Italy (Po River Basin District) and Spain (Jucar River Basin District)

Noteworthy examples of a partnership in the context of natural resource management and disaster risk reduction are explored in the Po River Basin District PRBD (Mysiak et al., 2014a) in Italy and the Jucar River Basin District JRBD (Haro Monteagudo et al., 2014), Spain. Although water is abundant in the PRBD under normal (average) weather conditions, the recent drought spells have created temporary conditions of insufficient water availability to satisfy all demands. The *Drought Steering Committee* DSC (in Italian '*Cabina di Regia*') was established in 2003 as a coordinated response to one of the most intense and severe drought spells in the recent (30 years) history. The DSC comprises water authorities, agencies and major water users who convey to deliberate cooperative solutions for tackling droughts. Promoted by the Po River Basin Authority (PRBA), the DSC engages the regional administrations of Emilia Romagna, Lombardy, Piedmont, Valle d'Aosta, and Veneto; several Land Reclamation and Irrigation Boards (LRIB); public entities supervising the operation of the great regulated lakes, the Italian Grid Distribution Operator and major power producing companies located in the basin. During the 2003 event, the DSC conducted negotiations that led to reduction of water withdrawal and moderating the adverse impact of drought. The cooperative decision of the DSC was sanctioned by a *Memorandum of Interest* (MoI, in Italian '*Protocollo d'Intesa*'). The agreement detailed the roles and tasks of each partner so as to: (i) guarantee the minimum levels of water appropriation for irrigation, and (ii) guarantee the required level of electricity generation (ADBP, 2003). The parties agreed on increased water releases from mountain reservoirs and the limitation of downstream abstractions for irrigation, obtaining so a progressive increase of the water levels in the Po river.

Given the positive experience in 2003, the *partnership* was broadened in 2005[38] to devise a coordinated way of monitoring and anticipating future water crisis. Consistently, the DSC was convened again during the 2006/2007 drought events, under the declared State of Emergency.

The DSC builds upon voluntary engagement of the interested parties. The incentive to take part in the DSC is based on two strategic considerations. The first one deals with the opportunity to coordinate with other water users before the declaration of the state of emergency. Indeed, when the emergency is declared CPD's decisions are coercive and one's own needs and interests cannot be negotiated any longer. The second reason lies in the possibility of getting to know other users' current or future behaviour, and act consistently so to get advantages or avoid detrimental consequences. The DSC plays also an important role in fostering mutual understanding and trust among parties, enhancing information exchange and collaboration experiences that are often hampered by the administrative and political fragmentation within the basin. The collaboration with other interested actors which are not formally part of the Forum, like the Emilia Romagna Regional Environmental Agency (ARPA-ER), has also considerably improved the Forum's capacity to take informed and appropriate decisions. Thanks to ARPA-ER and its modelling instruments, the Forum is now able to understand what the impacts of different decisions on agreed discharges or abstraction limitations can be throughout the basin. However, the biggest (and actually ontological) limitation of the Forum is its decision making process based on *consensus*. In case of harsh conflicts arising, this procedure could hamper the possibility to get quickly - or to get at all- to an agreement.

A similar partnership for managing water crises was established in the Jucar basin. The *Permanent Drought Commission* (PDC) had been set since 2007 as a stakeholder forum for coordinated response to droughts and insuring water crises (Haro Monteagudo et al., 2014, 2013). The PDC is convened when an emergency is triggered and a *Royal Decree of Exceptional Situation* is released (Haro Monteagudo et al., 2014). Before 2007, the drought commissions were summoned through Royal Decrees which also specified their mandates. The range of the stakeholders involved in the Commission was extended over the past decades, including now water users, NGOs, economic and social partners, and other representative civil society organisations. The PDC is assisted by *Drought Technical Bureau*. The PDC is empowered to adopt decisions on water

[38] "Attività unitaria conoscitiva e di controllo volta alla prevenzione degli eventi di magra eccezionale del bacino del fiume Po"

restriction and allocation. Usually, the decision are made by consensus of the involved partners but the modus operandi of the partnership provides also for situations in which a consensus is unlikely. Although not experienced so far in the JRBD, a compromise solution is reached by casting votes, but not all partners have a *right* to vote (Haro Monteagudo et al., 2013).

Regional cooperation (the Wadden Sea Trilateral Convention)

The *Wadden* Sea (WS), focus of another Enhance case study (Gerkensmeier et al., 2014, 2013), is a unique intertidal ecosystem in the south-eastern part of the North Sea, declared a World Heritage site[39,40]. Considered as the world largest unbroken system of tidal sand and mud flats, it is shaped by natural dynamic processes in nearly unimpaired natural state (IUCN, 2014). Extending from the Varda Estuary and Skallingen in Denmark up to the island of Texel and the mainland port of Den Helder in the Netherlands, totalling to around 450 km of coastline.

Subject to an international (trilateral) cooperation since 1978, long before the Union territorial cooperation began, the first international agreement (*Joint Declaration on the Protection of the Wadden Sea*) was signed by the governments of Denmark, Germany and the Netherlands in 1982 and renewed in 2010 (Joint Declaration, 2010). The renewed Declaration (on *cooperation*) distinguishes between the WS Cooperation and Nature Conservation Areas. The former includes areas seaward of the main dike or the spring high-tide waterline or the brackish water limits in the rivers, including the islands, the 3 nautical miles offshore zone and the adjacent protected inland areas. However, the cooperation extends to areas outside of these boundaries where this is necessary for ensuring an effective protection of the WS ecosystems. Furthermore, the Declaration specifies the vision, guiding principles, specific objectives and areas of cooperation, as well as the institutional and financial arrangements.

The Declaration (both 1982 and 2010 editions) is a formal but not legally binding commitment for cooperation at the governmental level to preserve the ecological integrity of the WS in its entirety, along with the connected cultural landscape, without

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[39] The Dutch-German Wadden Sea was inscribed on the World Heritage List in 2009 while the Danish part became a part of the World Heritage list in June 2014.

[40] The Vision of the Trilateral cooperation is summarized as follows: '*The Wadden Sea is a unique, natural and dynamic ecosystem with characteristic biodiversity, vast open landscapes and rich cultural heritage, enjoyed by all, and delivering benefits in a sustainable way to present and future generations*' (Joint Declaration, 2010)

an ('unreasonable') impairment of the local population's interest. The cooperation entails common (coordinated) policies and management, joint monitoring and assessment, public engagement through awareness-raising and environmental education, and sustainable development with due attention to its natural and cultural values.

The WS joint management plan (Sea Plan) was adopted first in 1997 and updated in 2010 (Common Wadden Sea Secretariat, 2010). The Plan is inspired by integrated ecosystem management and observes *seven management principles*, namely (i) Careful Decision Making, (ii) Avoidance (of potentially harmful activities), (iii) Precaution, (iv) Translocation (of harmful activities to where their environmental impact is lower), (v) Compensation (of potentially damaging activities by compensatory measures), (vi) Restoration, and (vii) Best Available Techniques and Best Environmental Practice (*ibid*). The Plan specifies management targets and joint priority actions. The expected human induced climate change, especially the sea level rise (expected to range between 0,5 and 1,3 m by 2010), is included among the serious threats. The plan does address the human use of the area and coastal flood defence. An adaptation strategy was adopted in 2014. It highlights safety of the inhabitants and visitors, and sustainable human use, in addition to environmental and landscape protection. Since the 2002, a WS Forum was established as a vehicle of stakeholders' participation, transnational cooperation, and collective problem solving. The WS Forum is a partner to the Enhance project. The scope of the case study driven research is to strengthen the coastal risk management topic under the WS Forum and the WS Plan (Gerkensmeier et al., 2014).

The Trilateral WS Convention is an example of a territorial cooperation which dates back to period where such cooperation had not yet been contemplated in the Union. The cooperation established *partnership* practices that to a large extent satisfy the requirements addressed in the section 4.2. Moreover, the partnership may meet the scope of a macroregional strategy, an aspect that will be further explored through the Enhance project's research.

Natural Hazard and Climate resilient partnerships

The UK *National Hazard Partnership* (NHP) was established in 2011, as a consortium of public bodies (government departments and agencies, and public sector research centers) aiming at providing applied research and analysis to adequately prepare and respond to natural hazards in the country. The partnership primarily acts as a forum for exchanging data, knowledge and expertise, and for the formulation of coordinated and coherent scientific advice to the government and the emergency responders identified by the *Civil Contingency Act* (2004). In particular, it provides a major contribution within

the *National Risk Assessment* (NRA) process, through advice and recommendations on existing and possibly concurring risks, as well as on new risks which may need to be considered. The NHP has also developed specific tools for risk assessment and communication. Among them -though still at a research phase- is the *Natural Hazard Impact model*, which will be functional to the identification of vulnerable areas and assets and the subsequent prioritization of responses by policy makers. On the communication side, daily *Early Warning bulletins* are circulated to inform relevant government bodies on on-going issues and on the general outlook for the next 30 days. Such information is complemented by pre-prepared scientific advice, mainly in the form of thematic fact-sheets on the exposure and vulnerability of the country to specific natural hazards. The NHP represents a model of cross-government cooperation which could be applied for handling other complex issues not necessarily related to natural hazards. Among the main benefits which can be detected, despite its recent establishment, is its capacity to effectively pool together competences and avoid duplication of efforts (UNISDR, EC, OECD, 2013).

A broader approach has been adopted by the *London Resilience Partnership* (LRP), funded in 2002 to foster cooperation in planning and responding to large scale emergencies. Originally created to face terroristic attacks, it is now also aimed at reinforcing London's resilience towards natural disasters. The partnerships counts on more than 170 participating entities which are involved in the preparedness, response and recovery phases of emergencies, and includes public bodies, utilities, the voluntary and business sectors. The LRP has an articulated governance structure, with a number of thematic working groups referring to the *London Resilience Forum* (LRF). The latter is in charge of over-sighting the work of the partnership and enable collaboration among agencies to carry out the planning and preparedness duties under the Civil Contingency Act. The LRF is also responsible for liaising directly with the central government on those issues which cannot be resolved at working level. Accountable to the LRF is also the London Resilience Programme Board (LRPB), which has the responsibility for the implementation of the two-year *London Resilience Partnership Delivery Plan*, outlining the roles and actions to be undertaken by partners in four main areas: i) risk assessment; ii) training and exercising; iii) coordination and information sharing; iv) communicating with the public.

2.5 Conclusions

This paper addresses horizontal cooperative *partnerships* primary involving public authorities or entities but conceived as inclusive governance *deals*, open to civil society organisations, community groups, academia, and business enterprises. *Public-Public*

Partnerships (PuPs) has been coined in the early 2000s for similar mutually beneficial alliances especially in water and public health service provision, and disaster risk management. We understand these partnerships as *cooperative **agreements** initiated for the sake of (better) public services, or to empower community solutions to resource and/or development challenges'*. PuPs are usually sanctioned through institutional agreements. Private sectors can (and should) play a relevant role in, and benefit from, these alliances but, differently from *public-private* partnerships (PPP), direct financial profits or competitive gains are not directly contemplated. This does not mean that individual and collective benefits, even if economic nature (e.g. damage avoidance or corporate image), are barred. The defying characteristics of PuP is pursuing **societal objective** especially where coping with complex issues requires cross-cutting competences and perspectives.

These *partnerships* are exemplified by assemblies of (scarce) resource users, as in the cases of the Jucar and Po river basin districts (RBDs); or territorial communities, sharing a sense and/or identity conferred to a physical place, and seeking a better protection against natural hazard risk. In both cases the partnerships seek to establish *social norms of behaviour*, whether as a response to the looming emergencies, or as a shared model of development resisting the environmental changes and threats.

While *partnerships* are flexible and often cost-effective policy instruments, they resist a *one-size-fits-all* approach not only in the way a partnership is conceived but also accomplished and nurtured. An apparently incontestable principle of partnership as implying voluntary choice (to adhere) is countered or at least challenged in the cases we analysed in depth. Both (users) *steering committees* (SC) established in the Jucar and Po RBDs are similar in scope, aiming at a re-allocation of temporarily scarce water resources among the many competing and socially requisite uses of water. The collective choices these bodies seek to stimulate are realised by persuasion and voluntary commitments. Yet in the Jucar case, the SC is mandated by law, while in the Po case it persisted as a deliberated choice. Does this disqualify the Jucar SC as a *partnership*? We don't believe so. *Firstly*, if the SC fails to reach a compromise, in the Jucar RBD the final decision is deliberated by vote, whereas in the Po RBD it is compelled by special power vested in the *Civil Protection Mechanism*. *Secondly*, the statutory character of the partnership which essentially recognises the right to partake in the important decisions limits the public authority's discretion to adopt unilateral choices. *Thirdly*, the law mandated partnerships may under specific circumstances contribute to spreading the (initial) innovation once its benefits have been recognised as examples of best practice. Notwithstanding, the analogously institutionalised partnerships bear risk of becoming inflexible and ineffective in the longer term. Hence the defining

characteristic of a partnership may be less related to its statutory character than the ability to evolve and adapt to changing conditions under which it operates.

The choice between PPP as explored in (Mysiak and Perez Blanco, 2014) and PuP analysed in this paper depends on the specific institutional, political, economic and social conditions, as well as the nature of the problem (or risk) at hand. In the literature the PuPs are often juxtaposed to PPPs. The reasons for this are the explicit profit-raising character of, and the high attention paid by the international organisations to, the PPP. The primacy of PPP is sometimes contested (Tucker et al., 2010). In reality, the PuPs may well create enabling condition or oversaw PPPs and numerous instances (may) exist along the continuum between the genuine instances of PPP and PuP.

European policies drive partnership *fabric* either by policing the way planning decisions are made and requirements to which these decision (have to) comply, and/or by encouraging cooperation and coordination of actions where the collective (environmental and economic) performance is greater or more efficient than the individual ones. In the former sense, the EU legislation on public participation in policy and decision making is an instrument fostering (a greater) public accountability and problem solving. In the later sense, territorial partnerships are conceived as an (emerging) instrument for a greater territorial cohesion, and indirectly, an effective way of ensuring the compliance with the EU policy. The disaster risk reduction may directly benefit from both.

The *policy guiding principles* (PGP), seizing the breath of policies analysed in this paper, cannot but recap the norms embraced in the White Paper (EC, 2001a), standards of public consultation (EC, 2002a), the Code of Conduct (EC, 2014a), and the Principles for Better Self- and Co-Regulation (EC, 2014c). Where the PuP supplant or complement the choices of competent authorities, the same normative standards apply as in the case of public decision making, i.e. openness, transparency, accountability, flexibility, and effectiveness. To be **open**, the partnership should not only make efforts to engage all relevant or representative parties, both public and private, in a genuinely concerted and collaborative pursuit. Recall that the Regulation 1303/2013 compels who should be involved and how an effective participation should be guaranteed. The partnership should also remain open to other parties to join in; and **flexible** enough to evolve as the scope of collaboration does. To be **transparent**, the partners should sponsor the partnership with their knowledge and skills, competences and standpoints in good faith, and share the outcomes in plain way. The partnerships established for the purpose of disaster risk reduction should pay attention to knowledge sharing and collective risk

analysis. **Accountable** means that the objectives and principles of the partnership are well specified and respected.

A distinctive characteristic of a *partnership* though is a **constructive discourse**. Because of the very nature of partnerships, an occasional clash of viewpoints, values and interests cannot be avoided and the viability of the partnership itself may become at risk. Constructive dialog means that the partners preserve the sense of common purpose, while accommodating the dissents and fertile divergences. This is particularly challenging because partnerships are voluntary in principle and operate throughout consensus. Instead of formalising the bargaining rules, the partners should stress the agreed and shared values or principles. The Wadden Sea Plan management principles (see section 4.2) are an outstanding example. Where a consensus remains elusive, the partnership may be reinforced with accentuating the common grounds.

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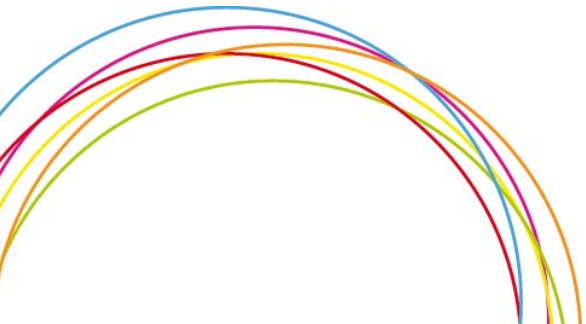

3 Partnership for disaster resilient and climate-proof infrastructure

3.1 Introduction

Economic growth and social and territorial cohesion of the European Union are catalysed by multiple, interconnected and mutually dependent - functionally and geographically - facilities such as transportation, water and energy networks, information and communication systems, government services, banking and finance, health structures, food supply and, often not fully appreciated, ecological systems and social networks. The most important among these '*spinal cords*' are commonly referred to as *critical infrastructure* (CI). Because of their interdependencies and importance for maintaining critical services, any disruption or destruction of CI as a result of natural hazard events or other threats amplifies the hazard losses far beyond physical damage and initially affected area.

In this paper we address the transport infrastructure, vital for the Union's ambitious goals of growth, cohesion (EC 2010a) and internal security (EC 2010b). The choice to focus on transport infrastructure is driven by the Enhance case studies, in particular the *Rotterdam* seaport (Nicolai et al. 2014), the Austrian railways (Otto et al. 2014), and the European air traffic (Ulfarsson et al. 2014). We focus on the European policies that (i) sponsor an interoperable and well-connected *Single European Transport Area* (EC 2011a); (ii) advance the trans-European transport network (TEN-T), and (iii) promote the *Critical infrastructure protection programme* of the Union (EC 2006, 2008). Furthermore, we discuss the protection of the vital infrastructure as a central quest of the climate adaptation (EC 2013a, b) and the security and safety of passengers (EC 2014a).

This papers complements the analysis presented in *Calliari* et al. (2014) and *Mysiak and Perez-Blanco* (2014) in twofold way: First, the investments into improved infrastructure that is indispensable to meet the goals of the Europe's Strategy 2020 impose mobilisation of private finance support through innovative financial instruments and public-private partnership (PPP). In *Mysiak and Perez-Blanco* (2014) we discussed the recent reform of the Union's public procurement regulation and the newly introduced concession directive (EC 2014b). Second, the protection of the CI calls for a partnership between public authorities and private sector (operators) not unlike the partnerships for societal goals examined in depth in Calliari et al. (2014).

3.2 Transport infrastructure in Europe

The European Union[41] disposes with an extensive stock of infrastructure including almost 70.000 km motorways, 214.000 km rail lines (of which ca. 7.000 km high-speed rail), 41.000 km of navigable inland waterways, over 360 airports[42] and 1.200 merchant ports along the 100.000 km long coastline[43] (EU 2013). The transport (and storage) sector generated gross value added (GVA) of almost 5 per cent of the total (EU-27) GVA in 2010 and employed over 11 million persons (*ibid*).

The Union pursues ambitious *goals*, by way of shifting 30 (50) per cent of road freight over 300 km distance to rail or waterborne transport by 2030 (2050); three-fold increasing of the high-speed[44] rail network length by 2030 and completing European high-speed rail network by 2050; and completing TEN-T *core* (comprehensive) network by 2030 (2050) (EC 2011a). A steady reduction of the greenhouse emission from transportation (expected to account for 1 per cent reduction per annum from 2012 onwards) is to be achieved from a lesser energy intensity and a greater deployment of renewable energy sources (EC 2011b)[45].

The *Single European Transport Area* (EC 2011a) that embrace road, railway, air, inland water and maritime transport systems allowing smooth, safe, economical and rapid movement of persons and freight with low environmental impact is among the '*backbones* of the single market' (EC 2011c). The European policies attended to competitive and efficient operation, citizens' rights, and optimal capacity development keeping pace with the Union's population and economic growth. The **Single European Sky** (SES) regulations[46] reorganised the use of European airspace, regulated the

[41] Where not specified otherwise, the latest available data (from Eurostat) may refer to the EU-27 (i.e. preiod before Croatia joined the Union).

[42] Only airports counted that carry more than 15.000 passenger a year.

[43] Twenty two out of twenty seven EU Members States have maritime boundary and around 43 per cent of their inhabitants live in coastal regions. There are 194 cities with over 100.000 inhabitants located within 50 km of the sea (EEA, 2010).

[44] While maintaining a dense railway network.

[45] GHG reduction goal for transport is at least 60 (20) per cent 2050 (2030), compared to 1990 (2008) levels.

[46] The SES I package was introduced in 2004 as consisting of Regulation (EC) No 549/2004 (Framework Regulation), Regulation (EC) No 550/2004 (Service provision Regulation), Regulation (EC) No 551/2004 (Airspace Regulation), and Regulation (EC) No 552/2004 (Interoperability Regulation. The SES II package was adopted in 2009 though the Regulation (EC) No 1070/2009 amending all the previous regulations.

provision of air navigation services (ANS), seized competences in air traffic management (ATM), and structured the interoperability of the European *Air Traffic Management Network* (EATMN). The **Single European Railway Area** was established by the Directive 2012/34/EU (EC 2012a) but the railway service market was regulated since the early 1990s[47]. Three successive regulatory packages opened up the cross border competition and efficiency of the market for rail by separating the network management and railway operation, improved networks' interoperability and safety, and contributed developing rail transport infrastructure. The *Blue belt* (EC 2013c) urges similar benefits by endorsing the European maritime transport maritime transport space without barriers.

The **trans-European transport network** (TEN-T) as concerned the Articles 170-172 of the Treaty on Functioning of European Union (TFEU) had been gradually realized since mid-1980s/early 1990s. Masterminded through the *Union guidelines* for the development of the trans-European transport network (first adopted in 1996 and substantially revised in 2001, 2004, 2010 and most recently in 2013), the TEN-T network represents a *blueprint* for the coordinated expansion of the European transport infrastructure and for priority setting of the European financial support. The current guidelines (EC 2013d) introduced several changes. *First*, as a step-change away of previous practice, the 2013 TEN-T guidelines pay attention to multi-modal transport infrastructure and the principal bottlenecks of the transboundary network: (i) the cross border infrastructures, (ii) the technical interoperability and (iii) the integration of different transport modes (road, rail, inland waterways, maritime and air transport). *Second*, a distinction is made between *core* and *comprehensive* networks and the available Union resources are channelling mainly to the former. The TEN-T Regulation defined nine multi-modal core network corridors and connection platforms. *Third*, a multi-governance arrangements have been put in place for the core TEN-T network. This is exemplified by the figure of an *European Coordinator* appointed for each core network corridor and acting on behalf of the Commission. Corridor Forums are to be established as consultative bodies. They are chaired by the European Coordinator and involve Member States (MS) and representative parties including 'regions, infrastructure managers, ports, airports, rail-road terminal operators, users and other stakeholders' (EC 2014c).

The **Connecting Europe Facility** (CEF) was established by the regulation 1316/2013 as a mean to '*accelerate investment in the field of trans-European networks and to leverage funding from both the public and the private sectors, while increasing legal certainty and*

[47] The first railway package consisting of the directives 2001/12/EC, 2001/13/EC and 2001/14/EC were amended in 2004 (second package) and 2007 (third package) and recast in 2012 Directive 2012/34/EU. In 2013 the Commission unveiled the plans for the further reform (fourth package) (EC 2013h)

respecting the principle of technological neutrality(EC 2013c, recital 2). Together with the energy and telecommunication the estimated investment needs up to 2020 amount to 970 billion Eur (ca. 7,5 per cent of the EU-28 GDP in 2013). Appropriated with 33,242 billion Eur[48] (0,25 per cent of the EU-28 GDP in 2013), including a transfer from the Cohesion Fund (CF, see also Calliari et al. 2014), the resources available for Trans-European Networks (TENs) were increased threefold compared to the Multiannual Financial Framework (MMF) 2007-2013 (EC 2014c). Because the financial needs to complete the networks exceeds by a large the available resources, the CEF put emphasis on *public-private partnership* (PPP, see also Mysiak & Perez-Blanco 2014)) *and innovative financial instruments* as means to maximise the leverage of Union funding. In particular, the traditional grants are earmarked for projects that are *unattractive* from private sector finance. This is consistent with the Strategy 2020 pledges (EC 2010a) and the Commission's recognition of the PPP's value as 'vehicles for the long-term structural development of infrastructures and services' (EC 2009a).

The previous TEN-T regulatory regime allowed some projects to benefit from the *Loan Guarantee Instrument* (LGTT), a guarantee facility making it easier to access the capital at the early operational stages of projects. The PPP arrangements were successfully supported by the Risk-Sharing Finance Facility (RSFF), and the 2020 European Fund for Energy, Climate Change and Infrastructure (the 'Marguerite Fund'). In 2012 the Commission started a pilot project with 'project bonds' (EC 2011d, 2013f). The CEF set fort the practice of employing grants and procurements, while reinforcing the application of financial instruments including a larger scale deployment of project bonds. The CEF resources deployable for financial instruments cannot exceed 10 per cent of the overall appropriation and the project bonds' ceiling for the year 2014-2015 is set to 230 million Eur.

The early Union's transport policy articulated through the 1992 and later 2001 White papers (EC 1992, 2001) paid relatively little attention to natural hazard risks. The 2011 White Paper (EC 2011a) urges transport systems' resilience by means of scenario development and disaster planning. The 2013 CEF and TEN-T regulations pay substantial attention to disaster risk reduction and climate adaptation (along the Union goals to spent no less than 20 per cent of the Union budget on climate-related objectives. TEN-T network, to be resource efficient, have to take full account of 'of the vulnerability of transport infrastructure with regard to a changing climate as well as natural or man-made disasters' (Article 5 of the Regulation 1315/2013, also Article 35, EC 2013d). In terms of service quality, the operators Contingency management plans. Disruption of passenger transport, including measures guaranteeing *alternative transport arrangements* and observation of passenger *rights* are addressed in the Commission

[48] Of which 11,305 billion Eur in current prices from the Cohesion Fund (CF)

staff document (EC 2014d). Part of the later is the risk to compensation in the case of major delays which, as in confirmed for the passenger rail transport by a recent sentence of the European Court of Justice (ECJ, case C-509/11[49]), holds also in the cases of *force majeure*.

3.3 Critical infrastructure protection in Europe

There are multiple and partly diverging accounts of what constitutes 'critical' and 'infrastructure' (see OECD, 2008). Hereafter we adopt the definition of critical infrastructure systems as "*physical or virtual assets, systems, networks or part thereof, the disruption or destruction of which would have a significant impact on vital social function, health, safety, security, economic or social well-being of people, or any combination thereof*" (Popescu & Simion 2012).

The concerns about the CIS safety have centred on configuration, deteriorating conditions and quality, viable (re)investments and more recently threats posed by climate change and terrorism. Confronting the challenges of 21st century, the US National Academies of Science have outlined a superior framework for CIS renewal that consists of (i) a broad and compelling vision focused on competitiveness, energy independence, environmental sustainability, and quality of life; (ii) emphasis on essential services of the CIS; (iii) recognition of the critical interdependencies; (iv) systems-based approaches to leverage available resources and cost-effective solutions across institutional and jurisdictional boundaries; and (v) performance assessment ensuring transparency in decision making by quantifying the links among infrastructure investments, the availability of essential services, and other national imperatives (NRC 2009).

In the aftermath of the 9/11 terroristic attacks in the United States, Madrid and London, the European efforts to protect CI to human-made and natural hazards intensified by adoption of the *European Programme for Critical Infrastructure Protection* (EPCIP) (EC 2006) and, later, the European Council's *Directive* 2008/114/EC (EC 2008). Initiated by the European Council in 2004, the EPCIP was conceived as a blueprint to CI protection in Europe. The Programme embraced, among others, all-hazards approach, sector-by-sector accomplishment, and stakeholder '*cooperation*' (EC 2006). Not only, the Commission called on Member States (MSs) to initiate a '*consistent, cooperative partnership between the owners and operators of critical infrastructure and Member States authorities*' (EC 2004). The EPCIP initiated a debate about what constitutes an *European* Critical Infrastructure (ECI), as opposed to *National* Critical Infrastructures (NCI) which is equally valuable but completely within the competence of the MSs, and

[49] ÖBB-Personenverkehr against the Schienen-Control Kommission (Rail Network Control Commission)

how ECI should be identified and designated. The criteria, outlined in EC (2004, 2006) included social (including health), environmental, political and economic effects. The EPCIP established a (Critical Infrastructure) *Warning Information Network* (CIWIN) and a CIP Contact group with representatives from the MS.

The CI were defined as those '**facilities, networks, services** and **assets** which disrupted or destroyed, would have a *serious* impact on the health, safety, security or economic well-being of citizens or the effective functioning of governments in the Member States' (*ibid*, emphasis added). The definition of ECI, agree on in the Directive 2008/114/EC (EC 2008), saw ECI as those critical infrastructure 'located in Member States the disruption or destruction of which would have a significant impact *on at least two* Member States'. The Directive focuses on *energy* and *transport* sectors only and is to be reviewed with a view to assessing its impact and the need to include other sectors within its scope, inter alia, the information and communication technology (ICT) sector. Pursuant to the Directive 2008/114/EC, for the identified ECI the owners/operators are required to develop an Operator Security Plan (OSP) detailing the security measures adopted. The operator is also to appoint a *Security Liaison Officer*. Following to somewhat disappointing[50] review (EC 2012b) and upon realisation that only a few infrastructure systems have been designated as ECIs, the Commission outlined the next steps in pursuing the protection of ECI (EC 2013g). Four sectors with highest European dimension (Eurocontrol, Galileo, electricity transmission grid and gas transmission network) have been chosen for a target pilot actions. For these four sectors, a detailed review of the prevention, preparedness and response measures, interdependencies and potential cascading effects will be conducted.

3.4 Climate adaptation

The *White Paper* on adapting to climate change (EC 2009b), by recognising the threats climate change poses to infrastructure systems, (i) called for methodologies to ensure climate-proofing of existing and planned infrastructure, especially those which have been funded under the Union's Cohesion Policy; (ii) pledged to make climate risk assessment conditional for public (and private) investments; and (iii) asked to assess the practicality of assimilating climate impacts into construction standards. Working in collaboration with the MS, the Commission set up the *Impact and Adaptation Steering Group* (IASG), supported by technical expert groups, instructed to conduct a wider consultation with the representatives of the civil society and academy.

The accompanying Commission staff working document (EC 2013g) to the 2013 Climate Adaptation Strategy (EC 2013b) was entirely dedicated to the infrastructure. The

[50] Less than 20 ECI have been designated and only a few Operator Security Plans produced (EC 2013g)

document highlighted both threats driven by climate change and opportunities set-off by concerted adaptation actions. In the transport sector, the threats are exemplified especially by the extreme weather and climate events as well as (slow-onset) sea level rise leading to damages and economic losses, transport disruptions and delays, health threats, loss of infrastructure, and in medium to long term, slower economic growth and loss of (international) competitiveness. The opportunities are epitomised on the one hand by avoiding damage and losses, and on the other hand by *creating value* through new business (revenue-generating) chances, innovation and employment. While recognising that the adaptation is predominantly a matter of MS responsibilities, the Commission has highlighted the ways to pave the way to an increased resilience of infrastructure systems, for example through regulated standards and (environmental and strategic) impact assessments. The revised TEN-T Guidance and the Connecting Europe Facility (see section 2) are examples of how resilience can be facilitated by the Union funds

3.5 Enhance case studies

Three Enhance case studies address the transport infrastructure in depth, while several other pay attention to different infrastructure systems as a secondary part of their research. The first case study addresses the **Rotterdam seaport** (Nicolai et al. 2013, 2014), Europe's largest port in terms of tons of freight traffic. In 2011, some 370.256 million tons of freight were loaded and unloaded, more than 6 per cent down compared to 2010 but still more than the three next most-important seaports (Antwerp, Hamburg, Marseille) taken together (EU 2013). The second case study analyses the **Austrian railways'** approach of coping with the natural hazard risk. Austria is among the EU Member States with highest pro-capita infrastructure (length), characterised by high quality and good performance of transportation systems. The bottleneck of the railway system is the passage through Alps (IRF). Because as much as 65 per cent of the Austrian territory extends in the mountain regions of the Eastern Alps (Otto et al. 2014), the railway operation is at risk to a host of natural hazards, including floods, landslides, rack falls and avalanches (Thieken et al. 2013). Lastly, the third case study focusses on the disruption of the air traffic in Europe, encumbered by weather conditions such as storms, heavy rain- or snowfall. In 2010, the large portion of European airspace was closed due to the volcanic dust caused by the eruption of the Eyjafjallajökull volcano (Ulfarsson et al. 2013, 2014). Some 110.000 flight had been cancelled, affecting around 10 million passengers (EC 2014d). The common feature of all three case studies, promoting the *multi-governance partnership*, focus on the improved (and collective) risk assessment, scenario development and cooperative decision making.

3.6 Conclusions

The development and disaster/climate-change proofing of vital (cross-border, critical) transport infrastructure systems offers opportunities in terms of both, public-private *financial and risk-sharing* arrangements, and the *multi-governance* teamwork. We have explored both in the previous articles (Calliari et al. 2014, Mysiak & Perez-Blanco 2014). This paper's focus on rule-making policies for the *Single European Transport Area* and the trans-national (cross border) transport infrastructure enriches the partnership discourse. The TEN-T Regulation creates enabling conditions for partnerships for shared priority setting and enactment, while the financial instruments encourage a mutually beneficial deals for the sake of growth-stimulating infrastructure development and hazard retrofitting. Transport safety and contingent mobility continuation plans shift the emphasis on the passengers' rights and liability as a complementary incentive for the service operators to pay attention to, and scrutinise natural hazard risks.

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4 Credits

The authors have contributed to this report as follows

Section 1: Elisa Calliari and Jaroslav Mysiak with contribution from Silvia Santato and María Máñez Costa

Section 2: Jaroslav Mysiak and Dionisio Perèz Blanco with contribution from Swenja Surminski and Roger Cremades

Section 3: Jaroslav Mysiak