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MAINSTREAMING SUSTAINABLE DEVELOPMENT IN EU CLIMATE, BIODIVERSITY AND COHESION POLICIES

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MAINSTREAMING SUSTAINABLE DEVELOPMENT IN EU CLIMATE, BIODIVERSITY AND COHESION POLICIES

The role of cross-border cooperation

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Executive summary

Environmental and sustainability related problems are increasingly becoming globalized in terms of their intensity, interconnectivity, variety and scope of their impacts as well as the ultimate socioeconomic forces that generate them. Climate change, water scarcity, pollution, loss of biodiversity, or land use change all of these are environmental problems that do not necessarily fit with national sovereignty, administrative jurisdictions or territorial boundaries. To address such challenges, new political arenas and constituencies have appeared that no longer correspond to the divisions that once were useful to the particular goals of the old nation-states, but are now created upon other new cooperation goals (including environment and sustainability) that transcend international borders.

Cross-border or transborder regions, commonly known in the European context as Euroregions or Euregios, have been created across state borders in order to decrease the limiting effect of nation-state borders which often act as as barriers for cooperation in an attempt to redefine fixed, border-induced state territoriality. These institutional arrangements may provide in this context the adequate political and institutional framework or platforms to promote the necessary linkages among different networks of actors and policy domains in a particular cross border territory. This is specially the case of those Euroregions that fall and match within the geographical limits of the existing natural resources.

This thesis intends to explore two intertwined overarching questions. On the one hand, we intend to look to what extent EU cross-border cooperation policy initiatives have been and are able to establish effective collaborative partnerships between adjacent local public bodies subject to different national legal systems in the domains of climate, biodiversity and regional development in ways that contribute to sustainability And on the other, we want to explore to what extent sustainable development concerns have been mainstreamed in these three domains in a coherent manner in a way that do actually contribute to strengthening the agent and institutional capacities to deal with societal and environmental changes at cross-border regional level.

In order to respond to these questions, we have used different methodologies starting with the theoretical analysis of the institutional elements of Euroregions, but also a quantitative research on 46 European funded Operational Programmes; and a more in depth and qualitative analysis of 2 case studies in the Spanish Portuguese border - Euroregions EURO AAA and EURO ACE- using in depth interviews and workshop techniques combined with the formulation and integration of different climatic and socioeconomic scenarios and their associated institutional pathways.

The results reveal the potential that Euroregions have to support sustainable development both from an operational and normative perspective. In particular these new institutional arrangements can be viewed as political transnational spaces situated beyond the territorial logic of either the nation states or the supranational organizations, with a great capacity *a priori* to integrate sustainability considerations due to their flexible and innovative organisational nature. However, Euroregions are now too dependent on external resources, so their leadership capacity and exchange of cognitive resources with other stakeholders to manage sustainability related common public concerns are still rather constrained. These limitations are related to their low level of institutional autonomy, the lack of cooperation among national, regional and local entities; the excessive dependence on European funds; the asymmetry in power relations within the respective Spanish and Portuguese institutional settings; and last but not least, because a notable absence of a strategic sustainable development approach for the regions that clearly incorporates the precautionary principle and the ecosystem approach as key elements, which is reflected by the failure to include climate change scenarios into those strategies. As a result, this situation evidences that such Euroregions have yet a far way to go in terms of political mobilization, governance building and strategic unification in the sense of integrating sustainability considerations in a comprehensive, systematic and transformative manner.

Resumen ejecutivo

Los problemas ambientales y de sostenibilidad son cada vez más globalizados en términos de intensidad, interconectividad, variedad y alcance de sus impactos, así como las fuerzas socioeconómicas que los generan. El cambio climático, la escasez de agua, la contaminación, la pérdida de biodiversidad o el cambio en el uso de la tierra son problemas ambientales que no necesariamente encajan con la soberanía nacional, las jurisdicciones administrativas o las fronteras territoriales. Para afrontar estos desafíos, han surgido nuevos ámbitos políticos y circunscripciones que ya no corresponden a las divisiones que una vez fueron útiles para los objetivos particulares de los antiguos Estados-nación, sino que ahora se crean con otros nuevos objetivos de cooperación (incluyendo el medio ambiente y la sostenibilidad) que trascienden las fronteras internacionales.

Las regiones transfronterizas o transfronterizas, comúnmente conocidas en el contexto europeo como Euroregiones o Euregios, han sido creadas a través de las fronteras estatales para disminuir el efecto limitador de las fronteras nacionales que a menudo actúan como barreras para la cooperación en un intento de redefinir la territorialidad estatal inducida por la frontera. Estos diseños institucionales pueden proporcionar en este contexto el marco o las plataformas políticas e institucionales adecuadas para promover los vínculos necesarios entre las diferentes redes de actores y dominios políticos en un territorio fronterizo concreto. Esto se da es especialmente en aquellas Euroregiones que coinciden con los límites geográficos de los recursos naturales existentes.

Esta tesis tiene la intención de explorar dos cuestiones generales entrelazadas. Por una parte, analizar en qué medida las iniciativas de la política de cooperación transfronteriza de la UE han sido y son capaces de establecer asociaciones de colaboración eficaces entre organismos públicos locales adyacentes sujetos a diferentes sistemas jurídicos nacionales en los ámbitos del clima, la biodiversidad y el desarrollo regional de una manera que contribuya a la sostenibilidad. Por otro lado, queremos explorar hasta qué punto las consideraciones de desarrollo sostenible han sido incorporadas en estos tres ámbitos de una manera coherente de tal forma que contribuyan a fortalecer las capacidades institucionales para hacer frente a los cambios ambientales y sociales a nivel regional transfronterizo.

Para responder a estas preguntas hemos utilizado diferentes metodologías a partir del análisis teórico de los elementos institucionales de las Eurorregiones, pero también una investigación cuantitativa sobre 46 Programas Operativos financiados con fondos europeos; así como un análisis más detallado y cualitativo de 2 estudios de caso en la frontera español-portuguesa - eurorregiones EURO AAA y EURO ACE- mediante entrevistas en profundidad y técnicas de taller combinadas con la formulación e integración de diferentes escenarios climáticos y socioeconómicos y sus vías institucionales asociadas.

Los resultados revelan que las Euroregiones pueden considerarse como espacios transnacionales políticos situados más allá de la lógica territorial de los Estados nacionales o de las organizaciones supranacionales, con una gran capacidad *a priori* para integrar consideraciones de sostenibilidad debido a su carácter organizativo flexible e innovador. Sin embargo, los resultados también revelan una serie de limitaciones de las eurorregiones analizadas relativas a su bajo nivel de autonomía institucional, la falta de cooperación entre entidades nacionales, regionales y locales; la excesiva dependencia de los fondos europeos; la asimetría en las relaciones de poder entre los respectivos entornos institucionales español y portugués; y por último, pero no menos importante, una notable ausencia de un enfoque estratégico de desarrollo sostenible para las regiones que claramente incorpora el principio de precaución y el enfoque ecosistémico como elementos clave, lo que se refleja en la incapacidad de incluir escenarios climáticos en esas estrategias. Como resultado, esta situación pone de manifiesto que estas eurorregiones todavía tienen mucho camino por recorrer en términos de movilización política, construcción de la gobernanza y unificación estratégica en el sentido de integrar las consideraciones de sostenibilidad de manera global, sistemática y transformadora.

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Introduction

In recent decades environmental problems have become globalized in terms of their existence and impacts as well as the socioeconomic forces that generate them. Climate change, pollution, loss of biodiversity, etc., all of these are environmental problems that do not know about national sovereignty, administrative jurisdiction or territorial integrity. In fact, a border drawn on a map only defines where one country's territory begins and another ends, but this is an abstract concept that has nothing to do with the messy and dynamic human and ecological interactions that are generated in that area. Furthermore, managing natural resources in border regions poses additional challenges for many countries. While countries try to govern and manage natural resources throughout the national territory, the logistics and practicalities of controlling and managing present growing challenges. The intensified cross-border exchange has also increased pressure on natural resources and other related transnational environmental problems, which has led to the development of initiatives of transborder coordination of natural resource management.

In general, the level of complexity of spatial governance processes has increased as a consequence of growing concerns with environmental issues in the last decades in transboundary areas. Environmental governance and management are facing a multiplicity of challenges related to spatial scales and multiple levels of governance. In fact, levels of government and administration typically do not fit the environmentally relevant scales, resulting in inefficiencies, spatial externalities and spillovers (Moss and Newig, 2010).

Due to this fact, new political arenas have appeared that no longer correspond to the divisions that once were useful to the particular goals of the old nation-states, but are now created upon other new cooperation goals (including environment and sustainability) that transcend international borders. In order to advance towards a more adaptive governance structure capable to deal with the new environmental risks and uncertainties, the different governance scales need to be integrated and coordinated towards the achievement of common objectives, in this case, the protection of the environment and the promotion of the sustainable development agenda.

To this end, new spaces are being created, new scales of organization are being developed, and new horizons of action are being imagined, but the proliferation of these new spaces is a phenomenon that adds further layers of complexity, creating both opportunities and threats for existing economic, political, and social forces (Jessop, 2003).

Political and non-political actors have sought to institutionalize and protect in a more integrated way their own sets of regional biophysical entities. The EU has required its member states to designate Special Protection Areas (Birds Directive) and Special Areas of Conservation (Habitats Directive), areas which have been designed according to scientific and ecosystem-based approaches and which do not necessarily fit inside a single national boundary (Debarbieux et al, 2013). WWF, for instance, has promoted the concept of ‗eco-region', which also invokes natural science paradigms and criteria (Olson and Dinerstein, 2002). All these initiatives are related to each other through the idea that ecological components should be taken into account in the territorialisation of public policies (Debarbieux et al, 2013), hence contributing to the coupling of the nature and the scale of the environmental dynamics with the appropriate political institutions dynamics. In the context of water management, the Water Framework Directive (2000) established the river basin as the unit upon which resource governance may better achieve sustainability objectives. This model sought to bring previously fragmented policy interventions under the unifying governance structure of the river basin and established that coordination of competent authorities in international river basins should be ensured (EC, 2002).

Ultimately, better integration involves identifying interdependencies between multiple policy domains and administrative agencies both in terms of synergies and conflicts, while promoting new modes of agent interaction to enhance a transformative response which is appropriate under existing climate and extreme events pressures. (Tabara, 2010)

Cross-border or transborder regions, commonly known in the European context as Euroregions or Euregios, have been created across state borders in

order to decrease the role of these borders as barriers in an attempt to redefine fixed, border-induced state territoriality.

Euroregions and other cross border cooperation arrangements may provide in this context the adequate political and institutional framework or platform to promote these linkages among different networks and domains in a particular cross border territory, specially in those areas that the geographical limits of the Euroregions match with the limits of the existing natural resources (examples of the Pyrenees, Lake Constanza, etc.).

However, it must be noticed that the territorialisation of EU policies is not an uncontroversial topic, for instance the concept of the river basin as the ‚natural' unit for water management co-determining the level of governance has been criticised by human geographers. They point out that it is presented as an uncontroversial concept which has become a globally hegemonic, practically uncontested discourse (Molle 2009; Warner et al. 2008). By presenting it as ‚natural' and thereby closing debate on the scale at which water management is implemented, the inherently political nature of the choices being made are concealed (Warner et al. 2008: 123-124; Molle 2007: 358). For example, the specific decision on the scalar organization of environmental governance is clearly affected also, and not only, by the corresponding legislative processes. In this sense, it is different if re-scaling is negotiated among federal or unitary states (Benz, 2009: 198ff). Also, depending on the specific goals and strategies formulated, and the institutional, technical and human capacities acquired, cross border structures can also constitute a barrier to sustainable management of common natural resources in so far as its development and growth goals conflicts with other purposes such as abating climate change considerations.

From this point of view, the political, social, cultural and institutional challenges of territorialisation of EU public policies in the framework of cross border cooperation structures should not be underestimated. With this regard, it is important to understand how cross-border regions are emerging, which new configurations of territory are built, by whom, and to what use, and particularly which implications this evolution has in the management of the sustainability aspects of natural resources and other environmental problems in the cross border region.

Consequently, this thesis intends to explore two intertwined overarching questions. On the one hand, we intend to look to what extent EU cross-border cooperation policy initiatives are able to establish effective collaborative partnerships between adjacent local public bodies subject to different national legal systems in the domains of climate, biodiversity and regional development in ways that contribute to sustainability. And on the other, we want to explore to what extent sustainable development concerns have been mainstreamed in these three domains in a coherent manner and do actually contribute to strengthening the capacities of agents to deal with societal and environmental changes at cross-border regional level.

Therefore, we will explore what kinds of institutional incentives and conditions are required, as well as the difficulties that are likely to be encountered for cross-border institutional arrangements to develop the capacities and redistribute responsibilities for mainstreaming sustainability concerns in such multiple policy domains, such climate, biodiversity and environmental regional development policies (Tàbara et al. 2009; 2010).

Due to the high number of factors that can contribute to the success or failure of this type of initiatives in terms of sustainability performance, we will focus first on the theoretical analysis of the institutional elements of Euroregions in order to determine to which extent they can favour, or on the contrary, represent a barrier for a better integration of environmental and sustainable development considerations in a particular cross border area.

Secondly, we will look from an empirical point of view at particular case studies in order to determine if these novel institutional arrangements have integrated in reality some sustainability considerations, while detecting which are the main problems, opportunities and challenges they face in this regard from an institutional/governance perspective. To do this, we will analyse a significant number of European-funded Operational Programmes (46 in total) in order to find out how cross border Operational Programmes (Ops) have integrated environmental concerns compared with other typologies of programmes. To do that, we will have to rely on an evaluation framework that is capable of a) identifying a successful model of Enviromental Policy Integration (EPI) in the context of European funded OPs and b) which allow us to evaluate

the existing experiences against this benchmark After we will proceed to develop a more in depth and qualitative analysis of 2 Euroregions in the Spanish Portuguese border in order to assess the capacity of these cross-border actors and organizations to promote transformative cooperative responses in transboundary river basins in the face of global environmental change. In this case, we will need to create another framework that enables us to consider the extent to which a particular Euroregion fulfils some key success criteria, thereby reflecting its institutional capacity to effectively influence transformative and sustainable adaptive management practices in transboundary river basins

From the academic standpoint, studies on border, cross-border regions and cross-border cooperation, have primarily examined the reterritorialization of state power and institutions across borders, documenting the emergence of cross-border governance networks and power relations from a governance perspective (e.g., Anderson et al, 2003; Blatter, 2004; Kramsch and Hooper, 2004; Tambou, 1999, Perkmann, 2002, 2003;). On the other hand, literature has extensively treated issues relating to governance for sustainable development and EPI (Jansen and Hanf 1998; Meadowcraft, 2009; O'Riordan and Vosey 1998; Jordan and Schout, 2006; Lafferty W and Knudsen J, 2007; Lenschow, 2002; Nunan et al, 2012)

However, despite the academic and policy related advances in the field of Cross Border governance, on one hand, and in the field of governance for sustainable development and EPI, on the other, so far little research has actually been carried to actually apply such integration tools and investigate the multiple trade-offs created by different environmental and cohesions policies acting upon the same cross-border territory. These various policies include domains such as climate adaptation and mitigation, biodiversity conservation and the building of transport infrastructures such as those promoted by the structural /cohesion funds and others.

But first we need to refer to a number of capitals concepts for the development of this thesis. We talk about sustainable development, governance for sustainable development, institutional capacities, Environmental policy integration (EPI), policy entrepreneurship and the concept of Euroregion itself.

The development of European environmental policy has been characterized by a gradual increase of issues considered relevant to environmental management, up to the current situation where the concept of sustainable development is predominant together with the development of policies oriented to cope with the challenges that pose climate challenge.

Sustainable development goes beyond the limits of economic growth or the environment and has become a general paradigm. Sustainable development pursues three main objectives: one of economic efficiency in the use of resources and quantitative growth; a social objective, based on equity and poverty reduction; and an environmental one, based on the conservation of natural resources. This concept has its origin in the report that elaborated the Brundtland Commission (1987) commissioned by the UN General Assembly. According to this, "sustainable development is development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs." This definition encompasses two fundamental concepts:

- The concept of needs, particularly the basic needs of the poorest people, who must receive a priority treatment;

- The idea of limitations arising from the ability of the environment to meet "current and future capabilities."

These elements show that sustainable development is a normative principle that questions the current development model and proposes an alternative model, more equitable and enduring.

It is, therefore, an ambiguous concept that may incorporate different realities.

According to O'Riordan and Voisey (1998) sustainable development would be a moral ideal to be pursued, such as justice or democracy. According to other authors such as K. Hanf (2002), sustainable development is a process of social construction involving major changes in the daily lives of citizens. This refers to different scales and perspectives:

- Temporary, that is, present and future generation

- Spatial; global-local axis

- Sectoral; the different types of human activities.

The concept of sustainable development has been criticized, as we can see, by its excessive ambiguity. In this sense, the idea of linking the concepts of economic development and environmental protection is contradictory in itself according to some environmental groups and some academics, precisely because industrial development and consumerism are the root of the current environmental crisis (Ridclift, 1993). According to many NGOs, the vagueness of the term has allowed that under this label are carried out many activities harmful to the environment (Lafferty, 1996).

Other criticisms relate to the difficulty of defining the concept on the basis of rigorous criteria. According to some authors, the concept of sustainable development takes ideas from different fields and links them randomly (Bäckstrand, et al., 1996). Therefore, the meaning is not clear. On the other hand, others argue that the ambiguity of the concept is the cause of its success, since sustainable development principles fit perfectly into the current Western economic model without challenging their structures (Bäckstrand, et al., 1996).

Without going further into this debate, from our perspective, it is important to understand and perceive sustainable development as a process of change of the current values in which the principle of shared responsibility plays a crucial role, whereby all players, whether public or private, have a responsibility and a role in this transition (Hanf and Jansen, 1998). Despite the vagueness of the term, it is clear that this can be more or less accurately defined through participation and consensus of the stakeholders in a given area, with the aim of integrating social, economic and environmental goals.

In this regard, the development of European environmental policy has been characterized by a gradual increase of issues considered relevant to environmental management, up to the current situation where the concept of sustainable development is predominant together with the development of policies oriented to cope with the challenges that pose climate challenge. Despite the ambiguity of the concept, an emerging consensus around some of

its core features has raised: the emphasis on the links between socio-economic and biophysical system; the goal of supporting future generations; the need to establish limits and constraints to the current development pathways; and the importance to do it engaging with relevant stakeholders. More operationally, the EU Sustainable Development strategy sets the following specific goals and challenges to bring down the abstract concept of sustainability into the EU policymaking strategies[1]: 1) climate change and clean energy 2) sustainable transport 3) sustainable consumption and production, 4) conservation and management of natural resources 5) public health 6) social inclusion, demography and migration 7) global poverty and sustainable development challenges.

Moreover, the different disciplines who wanted to conceptualize sustainable development have adopted different perspectives: ecology emphasize the need to preserve ecosystems and biodiversity; economy focuses on the internalisation of externalities; ethics draws on universal philosophical principles; and political science is concerned with government, governance and distributive justice (O'Riordan and Voisey, 1998).

From this last perspective, sustainable development is related to good governance, the latter being a necessary condition for achieving the objectives of the first. This relationship is illustrated in documents that set guidelines for sustainable development, both internationally and in Europe. For example, the Johannesburg Plan of Action (2003) states that "good governance within each country and at the international level is essential for sustainable development."

An institution can be described as —a relatively stable collection of practices and rules defining appropriate behaviour for specific groups or actors in specific situations‖ (March and Olsen, 1989). A more extensive definition has been provided by Keohane et al (1993:45), according to whom institutions are —persistent and connected set of rules and practices that describe behavioural roles, constrain activity and shape expectations. They may take the form of bureaucratic organizations, regimes (rule-structures that do not necessarily have organizations attached) or conventions (informal practices)‖. On the other

[1] http://ec.europa.eu/environment/eussd/

hand, the concept of governance captures important changes in the way the function of governing societies is performed in contemporary societies and, at the same time, provides a useful analytical perspective for observing the functional conditions (or institutional imperatives) in terms of the type of governance needed to organize and manage the collective decision-making (Kooiman, 2003). The term —governancell is often used in a normative sense to describe the move towards a process in which formal institutions enter into contact with other social actors, often outside the core of public agencies, around the formulation and implementation of public policies. This is related to the emergence of relational mechanisms that are more cooperative, consensual and democratic than the traditional ones, which tend to be more hierarchical and bureaucratic.

This approach focuses on governance mechanisms, both formal and informal, that guide and influence the processes of social regulation, from the local to the global. It also establishes a relationship between governance and learning processes, adaptation and innovation (Pierre and Peters, 2000). In this regard, the Commission on Global Governance, in its report "Our Global Neighborhood" (1995) defines governance as "the sum of the different ways in which individuals and institutions, public and private, manage their common affairs; a continuing learning process through which conflicting or different interests are concealed and cooperative action is taken " In this sense, the Commission's White Paper on —Eurpean Governancell (2001: 18) recognises that —Plicies can no longer be effective unless they are prepared, implemented and enforced in a more inclusive wayll.

From an academic point of view, governance also refers to a "system in which the different institutional levels share, rather than monopolize, decisions on broad areas of competence ... with a highly variable and non-hierarchical pattern of interaction between different actors in different policy areas "(Llamazares and Marks, 1999: 128), or" the totality of interactions between public and private actors aimed at solving problems or creating new opportunities for society "(Kooiman, 2003, 4).

In this context, these authors believe that the governance approach is more appropriate and inclusive for the complex, diverse, interdependent, highly

dynamic and uncertain problems that the society faces nowadays than the more traditional public policy, public administration and good government approaches.

Finally, governance can also be understood as a new response to the problems of modern society based on more thoughtful and eclectic decision making processes than the ones based on the free market or rationalist bureaucracy systems (Evans et al, 2005)

Some authors see a parallelism between this gradual process of change from public management or good government towards governance with the transition process towards sustainable development (John, 2001; Goss, 2001). Therefore, the profusion of new instruments to facilitate the participation and interaction between civil society and government would facilitate the fulfilment of sustainable development goals. According to Christie and Warburton (2001: 154), "the determining factor for achieving sustainable development must be the democratic debate, meaning the decisions based on open and transparent dialogue based on shared objectives and mutual trust. Sustainable development requires a fully alive representative democracy trusted by the represented and supplemented with new forms of participatory democracy that motivate people to engage in building a better world". Governance for sustainable development refers to the group of actors and processes, formal and informal, designed to facilitate the transition of a society towards sustainable development.

With this regard, the EU Sustainable Development Strategy is based on the idea that effective governance is a prerequisite for developing and implementing the necessary measures to address the challenges arising from sustainable development. In this sense, the strategy proposes: urgent action, political leadership and clear commitments with a long-term perspective, a new approach in policy formulation, broad participation and accountability at international level (European commission (EC), 2001). The link between these concepts is implied by the need to integrate the three aspects of sustainability and the views of the actors involved in the transition towards sustainable development adopting decision making processes and implementation procedures that effectively coordinate all these elements. The very term

sustainability represents a challenge to the traditional division of powers between different levels of government and the classical sectors of governmental activity classics.

However, the development of this type of good governance involves a collective learning process by deploying the necessary skills, both technical, organizational and human (Tàbara et al. 2009). Therefore, the concept of governance is related directly with the the concept of institutional capacities (Scharpf, 1997). According to March and Olsen (1995), governance "implies the development of skills and capacities for an appropriate political action between citizens, groups and institutions (...). However, acting in the appropriate way will require learning from experience, but also [the sharing of] collective skills and capacities. —From this perspective, we must take into consideration which should be the institutional capacities that will enable to open the field of decision making in civil society and subsequently successfully implement strategies for integrating sustainability in all economic and social areas.

The term was formulated from the consideration by some scholars that the Putnam concept of social capital was overly focused on civil society and therefore underestimated the associated state and political factors (see, among others, Lowndes and Wilson, 2001: 629). In fields such as sustainability, the participation of all stakeholders is required, but public administrations play or should play a predominant role leading and coordinating the process.

Healey et al (1999) examined the concept from the work of Innes et al. (1994), which identified three types of capital that trigger the relationship between institutional and social actors: intellectual, social and political. The ability and the degree of use of those capitals determine the ability to influence the process of decision making and achieve the planned objectives. The use of these capitals also activates and mobilizes the networks in which the actors are involved. Healey et al. (1999) have reformulated these types of capitals in terms of cognitive resources, relational and mobilizing capacities. Together they constitute institutional capacities. The first has to do with the reflection process of each actor, the latter with the degree of understanding, communication, and the last one with the ability to direct relationships with other actors towards the realization of shared objectives. Therefore, the institutional capacities are

defined on the basis of the actors and their networks and their capacity to us precisely these resources to reproduce and preserve the activity of the network itself.

It is a dynamic concept that has evolved from a more technical and organizational view, related to management capacities, to wider issues related to the facility to adapt to new demands, culture, values and a more receptive environment for social learning (Segnestam et al, 2002). In this sense, the institutional capacities (public, social and private) include elements such as leadership, social participation, cooperation and access to information.

Institutional capacities may be understood in two complementary ways (Evans et al, 2005): as institutional/organisational learning, and as the creation of institutional/organisational capacities (Tàbara et al. 2010). The institutional learning process refers to the processes by means of which new ideas enter the institutions, whereas the creation of institutional capacities is related to the degree to which the material, scientific, technological, organisational and institutional resources of a given country are mobilised. According to March and Olsen (1995), governance implies joining institutional and social capacities to carry out political action. However, acting in an appropriate way and learning from experience require political willingness and also the pooling of collective abilities.

Institutional capacity is therefore a collective product resulting from the joint efforts of different actors in society, each of whom has a limited, but important, potential for acting in relation to the problem to be tackled (Morata and Hanf, 2001).

Environmental Policy Integration (EPI) would be one of the most crucial institutional capacities needed by public administrations or governments in general to develop a successful transition towards sustainable development in terms of good governance. Indeed, the integration of environmental considerations and objectives across a broad range of sectoral policies has been the subject of debates within both the academic and the policy-making communities, particularly in the context of the European Union. This process of integration has been formalised around the concepts of Environmental Policy

Integration (EPI) and, more recently, ‗mainstreaming', and while some authors distinguish between the two terms (Jordan and Lenschow, 2010; Nunan et al, 2012.), in this paper they are used interchangeably and as synonyms (see also Persson, 2008).

The European Environmental Agency (EEA) (2005; 12) defines EPI as ‗moving environmental issues from the periphery to the centre of decision-making, whereby environmental issues are reflected in the very design and substance of sectoral policies'. While satisfying the criterion of definitional parsimony, we must necessarily go deeper and explore the full consequences of such a definition.

First, and in terms of the normative origins of the concept, Lenschow (2002) understands EPI as a key principle to implement and enhance the idea of sustainable development among various diverse institutions. Based on an analysis of the Brundtland Report, Lafferty and her colleagues (Lafferty and Hovden, 2003; Lafferty, 2002; Lafferty and Knudsen, 2007) argue that EPIs ‗mother concept' – sustainable development – attributed ‗principled priority' to environmental objectives in the process of ‗balancing' economic, social and environmental concerns (Lafferty and Hovden, 2003:9). In this sense, Lafferty and Knudsen (2007) considered that policies should prioritize the environment. On the other hand, some authors search prefer to talk of synergies and ‗win–win' solutions (Collier, 1994: 36), without attributing ‗principled priority' to environmental objectives, which can be interpreted as weaker understandings of the concept.

Second, we must talk about the scope of EPI. On the one hand, in order to be effective, as already mentioned, environmental concerns must be reflected across a wide range of policy areas given the environmental consequences of these policy areas. On the other, mainstreaming operates, by definition, in a complex multi-level governmental context – not only vertically, but also horizontally, involving a diverse range of policy actors, trade-off decisions, and their vested interests operating at various levels of action (Jordan and Schout, 2006; Nikvist, 2008). Thus, mechanisms must exist for EPI to take place across all levels of government involved in a relevant policy area.

Finally, here, mainstreaming not only entails introducing environmental goals and activities into a particular policy or funding instrument, but also permeates all the stages of the policy-making process. Thus, mainstreaming should influence the objectives of policy making ex ante, and be allocated sufficient financial resources; it should be reflected in multi-level and horizontal cooperation engagements among actors from different policy domains; and should be present in the monitoring and evaluating of the impacts of the instruments.

In this respect, Kivimaa and Mickvitz (2006) have developed a conceptual model of the policy cycle that can be used as a basis of evaluating policy integration. They distinguish four evaluation criteria related to the policy cycle: the mere ‚inclusion' of environmental aspects in a particular policy; the presence of some level of ‚consistency' of environmental aspects with regard to other aspects as a further integration step; the weighting of environmental aspects as having principled priority over other issues; and the need for establishing reporting mechanisms to gather feedback for policy consistency.

With regard to the factors that promote EPI, three broad categories of factors influencing the success of EPI have been identified by the literature: normative, organisational, and procedural (Lenschow and Zito, 1998). A tendency to emphasise normative factors would put the focus on aspects such as political commitment and leadership, as well as on the establishment of environmentally related objectives and actions on a strategic level in a particular public policy. An emphasis on organisational factors would look, for instance, at improving inter-departmental relationships, allocation of resources and ensuring that opinions and input from environmental departments and actors are taken into account in the formulation of other public policies. Finally, an emphasis on procedural means for EPI, such as monitoring systems and strategic assessment tools, suggests that the focus should be on decision-making processes and how they can be made more rational or more influenced by environmental concerns (Persson, 2004), for instance, through the elaboration and follow up of environmental indicators.

However, in order to develop, institutional capacities such as EPI require some sort of institutional activism: "The new institutions appear when actors

with sufficient resources perceive them as an opportunity to realize their objectives" (DiMaggio, 1988). These policy entrepreneurs deploy their resources in order to get cooperation from other actors by providing them with common meanings and identities (Fligstein, 1997). In this sense, institutional change is seen as a socio-political process that reflects the power and interests of actors organized as policy entrepreneurs willing to identify public opportunities, define problems and mobilize support. In this sense, they seek to introduce ideas, norms and values in new social structures (Rao and Friedman, 2000). According to Kingdon (1984: 170), a policy entrepreneur must meet three basic characteristics: incorporate the views of leaders from various interest groups; have negotiating skills; and be consistent. The key element of institutional entrepreneurs is the way they connect their projects for change with the activities, goals and interests of other actors. These actors tend to defend an idea in a very active way and pressurize to introduce a solution. With this objective, they invest a lot of resources -time, money, reputation, energy- with the expectation to receive certain benefits. In fact, both governmental and non-governmental actors act as policy entrepreneurs when they deploy strategies to promote their own political choices. If transformability can be understood as the capacity to create a fundamentally new system when ecological, economic, or social structures make the existing system untenable (Walker et al. 2004, Westley et al. 2013), policy entrepreneurs are the actors that make possible such process of transformation by taking advantage of windows of opportunity (DiMaggio 1998) to introduce new ideas, norms, and values into existing social structures (Rao and Friedman, 2000); and convening all stakeholders around a common vision in order to promote their own agenda.

Transfrontier cooperation is defined by the Madrid Convention as —any concerted action designed to reinforce and foster neighbourly relations between territorial communities or authorities within the jurisdiction of two or more Contracting Partiesll. The simplest definition of a cross-border region (CBRs) is a territorial unit that is made up of contiguous sub-national units from at least two nation states (Perkmann & Sum, 2002). The idea for cross border cooperation (CBC) organisations was first raised by the Council of Europe. However, the CBC region „Euregio‘ (Germany – The Netherlands) originated the

name ‗euroregion' which gradually became a general term defining a form of CBC throughout Europe.

Typically, this involves a combination of local political authorities across national boundaries but sub-national units can also include planning regions, ecological areas, industrial districts or tourist zones.Generally speaking the cross-border structures are arrangements for cooperation between units of local or regional government across the border of two different countries in order to promote common interests and enhance the living standards of the border populations within the limits of the geographical scope of cooperation.

Usually, they have formal governing institutions such as councils, secretariats and working groups, and some may even have their own symbols such as logos and flags. The EU supports Euroregions, invoking them as a model and an engine of European integration that help to reduce tensions between states and to alleviate regional economic disparities (Popescu, 2008)

Based on the experience of the INTERREG initiative, the EC has put forward territorial cooperation as an aim of the Structural Funds for the periods 2007-2013 and 2014-2020. Under these funds, European regulators have attempted to create new structures of governance that are not a new tier of local or regional government, but a space for exchanges and cooperation between public and private-sector actors. These institutional mechanisms (euroregions, euregios, working communities, etc.) act as platforms for cross-border relationships between citizens, politicians, institutions, economic forces, knowledge-holders, and other social and cultural agents.

Although the euroregions comprise an extremely heterogeneous group in legal and organisational terms, they do have a number of common features: permanent structures, a separate identity from their members, their own technical, administrative and financial resources, and their own internal decision-making.

With this regard, some studies suggest that cross-border cooperation institutional frameworks such as Euroregions offer great opportunities to mainstream sustainable development considerations into national and regional

development policies (Sherer and Zumbush, 2011; Morata et al, 2008; McEvoy, 2010).

The rationale behind this hypothesis is that some ideas, rules and values may penetrate and circulate more easily in these more atypical and flexible institutional frameworks than in more centralized and isolated ones, namely traditional states or regions. As we will see in the course of this thesis, such cross border institutional arrangements present some particularities that may favour the linkage between multiple policy domains and actors in a more –innovative way–, not being subject to the usual scarce flow of information and cooperation between different departments and organizations in traditional bureaucracies. On the other hand, the topics of climate change, biodiversity and sustainable development in Europe have the importance, urgency and the necessary potential to generate ideas, rules and values which, once introduced and mainstreamed into cross border institutional arrangements, can create spill over effects and influence national and regional policies. The mainstreaming of sustainability, biodiversity and climate change considerations into other policy domains and into EU financing instruments in an integrated way is a key element in terms of meeting several announced EU objectives such as halting biodiversity loss, or achieving a 20 % reduction in EU greenhouse gas emissions or 20% improvement in the EU's energy efficiency by 2020, to name a few (Werners et al, 2010a; 2010b). The mainstreaming approach can generate genuine co-benefits for all these domains, avoiding hindrances alongside other policy objectives and driving remarkable sectoral transformations if properly implemented. The effectiveness of such integration in the context of cross-border cooperation will depend on political will, as well as the activity of actors sensitive to those multiscalar considerations in the implementation of INTERREG and other transboundary projects.

Articles, methodology and case studies

This thesis includes the introduction, a chapter on background and theoretical information about Euroregions' governance and sustainable development, and compiles 4 different articles written in the framework of 3 different European projects:

- The ADAM project (http://www.tyndall.ac.uk/adamproject/about), funded by the 6th European Community's Framework Programme from 2006 to 2009, which supported the EU in the development of post-2012 global climate policies, the definition of European mitigation policies to reach its 2020 goals, and the emergence of new adaptation policies for Europe with special attention to the role of extreme weather events.
- The SURF NATURE project, (http://www.surf-nature.eu/), a project funded through European Interreg IV C programme in the period 2009-2012 which aims to improve the current and future funding opportunities for nature conservation and biodiversity through the European Regional Development Fund (ERDF);
- The 7th EU Framework programme funded project IMPRESSIONS - Impacts and Risks from High-End Scenarios: Strategies for Innovative Solutions (www.impressions-project.eu/), which aims to advance understanding of the implications of high-end climate change, involving temperature increases above 2°C, and to help decision-makers apply such knowledge within integrated adaptation and mitigation strategies.

Each of the articles has its own focus and specific approach due to the requirements of the projects in which they are inserted. The introduction,aims at helping the reader understand the links and commonalities among the different articles and the drawing of the final conclusions incorporating the main insights and the key reflections from these articles.

The thesis starts describing in Chapter 1 the characteristics, background and goals of cross border cooperation in Europe as background and contextual information. Indeed, this chapter defines the concepts of cross-border cooperation, Euroregion and Working Community among others. It continues discussing the principles and requirements to ensure effective governance in the framework of Euroregions, and their compatibility with the institutional aspects associated with the transition processes towards sustainable development. This chapter constitutes the common background of the 4 compiled articles, which by nature have a more narrowed and specialized approach, but all of them are related to cross border cooperation and

sustainable development issues from an institutional or governance perspective.

This first chapter of the thesis constitutes an adaptation and updating of some chapters of the publication: Morata F, Cots F, Roca D, 2008, ``A sustainable development strategy for the Pyrenees ‗Mediterranean Euroregion: basic guidelines", a report published by the Consell Assessor de Desenvolupament Sostenible which sought to formulate the necessary requirements for putting in place a strategy aimed at the sustainable development of the Pyreness-Mediterranean Euroregion.

Following the common background information, the first article, *"Mainstreaming biodiversity considerations into European Cohesion Policy: evidence from the European Regional Development Fund Operational Programmes" (2016),* sets out to assess the extent to which environmental and particularly biodiversity considerations have been mainstreamed into cross border Operational Programmes (OPs) funded by Structural Funds in the last European financing period 2007-2013. In order to do this, it focuses on the analysis of 46 OPs as it has been conducted by the SURF-Nature Project, funded through the Interreg 4C Operational Programme. In this analysis, the level of integration of such considerations has been compared between different typologies of OPs: cross border, transnational, competitiveness and convergence, using and integrating quantitative data. The results are particularly relevant since they show that cross border cooperation programmes are the ones that have best integrated biodiversity considerations, in a more comprehensive and systematic way, in the objectives, activities, budget, indicators and institutional dimensions of the OP. This article was finished in late 2016 but has not been published in any journal yet.

The second article, *"Cross-Border Organisations as an Adaptive Water Management Response to Climate Change: The Case of the Guadiana River Basin"*, published in the journal Environmental and Planning C in 2009, seeks to shed light and contribute to provide research criteria for assessing the capacities European cross border organisations have when facing the challenge of performing adaptive management practice in the face of global change in transboundary river basins. To assess this ‗enabling' capacity in reality, this

paper has commented on research which has analysed the adaptive management role of Working Communities Andalusia/Algarve and Andalusia/Alentejo as experienced by its operational unit, the GIT. In order to do that, we have applied to GIT a framework of success ‗criteria' as developed by Perkmans (2002b, 2007), based on the concept of policy entrepreneurship. Ultimately, we argue that the promotion of adaptive water management practice in cross border organisations depends on the implementation of policy entrepreneurship criteria (organisational skills, horizontal and vertical networking), combined with two further variables: the presence of a strategic approach and the explicit integration of adaptive water management and climate change considerations into the development goals of the cross-border organisation.

In the third article, *―Adapting to Water Scarcity in a Changing Climate: The role of Institutions in Transborder* Settings‖ (2010), published in the book ―Transborder Governance of Forests, Rivers and Seas‖ by Earthscan, we argue that new transborder institutional structures will be needed to enable effective adaptation responses, to ensure that a balanced multiple-goal strategy is in place, and ultimately to promote regional development pathways in transboundary areas that are sustainable in the long term. To this end, the article recognizes the cross-cutting nature of possible adaptation responses, and that planned adaptation can manifest itself in many forms, focusing on managing the impacts and reducing the exposure or vulnerability of the climate-related hazards and involving therefore a wide range of public and private actors.

In the fourth article, *―Exploring institutional transformation to address high-end climate change in Iberia*‖ (2017), submitted to the journal ―Sustainability‖, we assess the knowledge needs, alternative futures and capacities of regional organizations and agents to promote institutional innovations able to respond to the new challenges posed by High-End Climate Change (HECC). First, our exploration starts with the examination of the kinds of institutional arrangements that exist both in Portugal and Spain with regard to climate policy. In particular, we look at the kinds of knowledge needs of the transboundary river basin and cross-border Euroregions of Algarve-Alentejo-Andalucia (Lower Guadiana river

basin), and Extremadura-Alentejo Centro (Lower Tagus and Guadiana river basin). Second, our analysis focuses on the participative identification of the implications in terms of institutional options and opportunities for Iberia under four different scenarios. On the one hand, four explorative scenarios were developed using a participatory appraisal approach congruent with a combined set of Shared Socio-economic Pathways and Representative Concentrated Pathways. Furthermore, and in order to trigger transformative thinking and appraisal a normative future was formulated in a participative way in the form of a vision. The aim of the latter was next to identifying where Iberia could be (in the scenarios), but where key agents and actors involved in climate action would like to be in the face of HECC.

In synthesis, we have developed a first article based on a more quantitative approach focused in the analysis of 46 ERDF OPs, showing the differences in terms of integration of biodiversity concerns between different typologies of programmes, including cross border ones; and 3 additional articles based on a qualitative empirical analysis using both in depth interviews and workshop techniques to analyse two significant case studies carried out in the transboundary areas between Spain and Portugal, the Euroregion Algarve-Alentejo- Andalucia (AAA) and the Euroregion ACE (Alentejo-Centro-Extremadura), where lie the Tagus and Guadiana international river basins. These are amongst the European basins most likely to be affected by climate change and water scarcity, especially in a plausible situation of High End Scenarios (HES). The fact that they are adjacent Euroregions with similar contextual features (both inserted in the Spanish Portuguese institutional and cultural systems) allows to focus the analysis on the remaining institutional differences. Furthermore, they are representative European examples. On one hand, both Spain and Portugal have set up administrative systems for water management based on shared hydrological basin boundaries according to the Water Framework Directive. On the other hand, their institutional settings present remarkable differences which may picture European institutional diversity. In Spain, almost a federal state, the management of water resources is more centralized by hydrological confederations (HCs) with additional jurisdiction falling on several Autonomous Communities (ACs), which have

remarkable powers, competences and budget. In Portugal, a unitary state, public entities with competency in all issues related with water resources are at the national level and the Hydrographic Region Administrations (HRA) at the basin level.

In essence, this will enable us to consider the extent to which the cited cross border organisations reflect the needed institutional capacity to effectively influence the integration of sustainable development considerations in the policy process, allowing for the management of problems in different domains while linking multiscalar networks in order to enhance the whole transformative capacity of the institutional setting to cope with global environmental change. It is intended that the methodological approach and results from the analysis can be extended and/or adapted to other European transboundary contexts in which Euro- regions, Euregios, or working communities have been created.

Chapter 1. Cross-border cooperation and Euroregions: an adequate institutional framework to promote sustainable development?

This chapter has been adapted and updated from the publication Morata F, Cots F, Roca D, 2008, ``A sustainable development strategy for the Pyrenees _Mediterranean Euroregion: basic guidelines", Consell Assessor de Desenvolupament Sostenible, Barcelona, (http://www.recercat.cat/bitstream/handle/2072/204192/PM%20English.pdf?sequence=1)

1.1. The background to cross-border cooperation

There is a long tradition of cross-border cooperation (CC) in Europe. After the Second World War, contacts began between representatives of both sides of the border in several peripheral areas throughout Europe. The intention behind these initiatives was to improve living conditions in the border zones by dismantling the various existing institutional, economic, social, cultural and natural barriers. In view of the marginalisation of the peripheral areas in most countries, stress was laid on the need to promote CC in order to overcome the effects of this situation. Nevertheless, the absence of a common legal framework and the necessary institutional instruments was a severe limitation. Thus regional and local associations were gradually set up on both sides of the border based on respect for national law (AEBR, 2014). These were the circumstances under which the first experiments in cross-border cooperation arose on the German-Dutch border (Euregio) and on the border between France, Germany and Switzerland (Region Basiliensis).

Faithful to its founding objectives, the Council of Europe took this type of initiative on board in the 1960s, focusing its efforts on discussing instruments that would improve the legal status of the new cross-border entities with a view to creating stable structures, given that from a legal point of view, it was difficult to set up an administrative body in charge of a cross-border area at the sub-national level. In 1971, the Association of European Border Regions (AEBR) was set up with the aim of stimulating cooperation between the European

institutions and the cross-border cooperation communities in existence at that time.

However, it was not until the end of the 1980s that there was a major expansion of cross-border projects and cooperation entities. The realisation of the European Single Market, the European integration process in general and the democratic transition in Central and Eastern Europe made a special contribution in this regard (AEBR, 2004). In this context, the most important boost given to CC had to do with the start, in 1988, of the INTERREG programme by means of which the European Commission (EC) offered financial subsidies to cross-border initiatives fulfilling certain requirements (European Parliament, 2004).

The EC, basing itself on the experience of the INTERREG initiative, put forward territorial cooperation as a new aim of the Structural Funds for the period 2007-2013 and proposed the setting up of European Groupings of Cross-border Cooperation with the support of the corresponding financial instrument. It is due to an instrument of cooperation implemented by the European Council in 2006. Equipped with the legal status, it aims to make easier and promote the cross-border cooperation. In 2013, the EGTC counted 26 members, of which three Euroregions. Through the foundation of this new legal instrument for cross-border cooperation, the European Union makes the cross-border relationships easier within its own space and even beyond with its policy of neighbourhood. The EU grants more responsibility to all border authorities with the enforcement of principles of subsidiarity, partnership and proximity.

European Territorial Cooperation (ETC), better known as Interreg, is now one of the two goals of cohesion policy and provides a framework for the implementation of joint actions and policy exchanges between national, regional and local actors from different Member States. The overarching objective of European Territorial Cooperation (ETC) is to promote a harmonious economic, social and territorial development of the Union as a whole. Interreg is built around three strands of cooperation: cross-border (Interreg A), transnational (Interreg B) and interregional (Interreg C).

In accordance with the new design of the European Cohesion Policy 2014-2020, Interreg is based on 11 investment priorities laid down in the ERDF Regulation contributing to the delivery of the Europe 2020 strategy for smart, sustainable and inclusive growth. For 2014-2020, more than EUR 10 billion will be invested in cooperation between regions, of which around €6.6 billion will go to cross-border regions.

These figures show the impact this Community initiative has had on the development of CC in the EU.

1.2. The aims of cross-border cooperation

Over the past several years, the issue of the disappearance or reshaping of state borders has taken on increasing importance as a result of various processes, of which economic and social globalisation, and regional integration processes are the most significant (Anderson et al, 2003; Morata and Etherington, 2003). In the space of a few years, there has been a changeover from a system based on rigidly delimited economic, social and identity considerations to a more open, independent and integrated system in which the borders have become an obstacle to economic exchanges, social and cultural intercommunication, and political and administrative cooperation between neighbouring territories. Although the European integration process has been based on functional, rather than territorial, integration, borders, as an expression of the exclusiveness of state power, have gradually lost many of their traditional functions (customs, currency, protectionism, movement of people, etc.). On the other hand, in addition to the effects of the integration of markets and economies, the EU has undertaken increasingly specific policies that have an impact on the territory while providing incentives for across-the-board cooperation among the actors at the different substate levels (Morata, 2004).

In this context, the latest enlargements of the EU has, among other effects, brought with it a considerable increase in the economic and social disparities among the European regions. The administrative and institutional weaknesses of the new Member-States and, in particular, the fragility of the new local and

regional authorities, and the need to guarantee the rights of the national minorities present in all those countries, must be remembered. Hence, the need to strengthen cross-border and trans-regional cooperation within the post-enlargement framework. More generally, the EC has insisted that the evolution of Community policies ought to allow national, regional and local authorities to play an active part in promoting a shared view and a coherent framework for the development of the European regions based on enhanced competitiveness, territorial cohesion and sustainability (EC, 2004). This ought to lead to the adoption of new instruments that take into account the heritage derived from European cultural diversity in order to arrive at a joint definition of the required improvements in democratic and management practices by setting up networks of the public- and private-sector actors in the different regions. By exchanging experiences and engaging in dialogue, the different levels of government can foster mutual reflection on the contribution of territories to the construction of Europe.

Cross-border cooperation appeared very quickly as the most concrete and visible formula on the field regarding European integration and construction. Some authors regard this phenomenon as foreshadowing a Europe of integrated supra-regional functional spaces capable of better facing up to the challenges of globalisation (Keating, 1998). At all events, in spite of the economic and political progress of the integration process, the removal of internal economic, political, social and cultural borders remains one of the main challenges faced by the EU, concretised in the need to manage and strengthen diversity while preserving internal cohesion.

The post-2013 reform of cohesion policy has brought about a revival of the territorial approach through the ‗place-based narrative'. Principally, a ‗place-based policy' refers to ―along-term strategy aimed at tackling persistent underutilisation of potential and reducing persistent social exclusion in specific places through external interventions and multilevel governance‖ (Barca, 2009, p. 7). However, the place-based approach has not achieved to develop a coherent, ‗territorially sensitive' framework (cf. Mendez, 2013). Nowadays, cohesion policy has kept its emphasis on competitiveness and a focus on cities and city-regions in the context of the Europe 2020 strategy in order to create the

conditions for smart, sustainable and inclusive growth (see EC, 2014: 33). According to Mendez (2013:640) cohesion policy pays now less attention to the territorial dimension and is more focused on national perspective. In fact, the Commission has formulated country-specific recommendations and has concluded a Partnership Agreement (PA) with each member state to define the commitments towards the Europe 2020 objectives.

According to the Association of European Border Regions (AEBR, 2014), cross-border cooperation offers four types of value added: political, institutional, socio-economic and cultural. The first type refers to its direct contribution to the general objective of European integration and is connected with principles impregnating EU policies such as subsidiarity, cohesion, partnership and co-funding of territorial development. The institutional value added includes the involvement of the public-sector actors from both sides of the border and their pooling interests and resources in pursuit of shared objectives. The socio-economic benefits manifest themselves, for example, in the mobilisation of endogenous potential through the participation of the economic and social actors (technology agencies, companies, trade unions, cultural and social institutions, ecology groups, etc.) in development policies, and in better territorial and transport infrastructure planning. Lastly, the socio-cultural advantages are materialised in an overview of the cross-border region, the setting up of networks of university experts, and the dissemination of knowledge about their historical heritage or the learning of each other‘s languages as the basis for better communication.

In any case, the main motivations for cross-border cooperation are (ISIG, 2013; Aranda and Montolio, 2005):

- The move from associating the concept of border with a line of separation to seeing it as a point of communication between neighbours.

- Overcoming prejudices and misgivings on both sides of the border as a result of their historical inheritance.

- Fostering sustainable development (SD) and protection of the environment.

- Strengthening democracy in the regional and local structures and administrations.

- Overcoming the isolation of peripheral areas by transforming them into axes of cross-border development.

- Promoting economic growth and improved living conditions in general.

- Speeding up the European integration process through the establishment of relations between the respective parties.

1.3. The Euroregions of cross-border cooperation

From a functional and managerial viewpoint, Euroregions can be either associations of local and regional authorities, either cross-border associations with full-time secretariat and technical-administrative staff benefiting proper resources. The general purpose of Euroregions is to create an integrated space in the cross border area through specific policies of town and country planning in various areas: local economy, social networks, cultural activities, school institutions (Sanguin, 2013).

The AEBR has established the following criteria for defining a Euroregion (AEBR, 2014):

- An association of local and/or regional entities situated on either side of a national border.

- A cross-border association with a permanent secretariat and a technical and administrative team endowed with its own resources.

- A body according to private law based on not-for-profit associations or foundations on either side of the border according to the respective national laws.

- A body according to public law based on inter-state agreements in charge, among other things, of the participation of the territorial entities.

In any case, it is clear that euroregions are not a new tier of local or regional government, but a space for exchanges between public- and private-sector actors. Although they encompass the cross-border activities of a given area, most of the actions are taken by competent authorities in accordance with their respective national laws (ISIG, 2013).

These structures have played a decisive part in carrying out the INTERREG programmes, unlike the Working Communities. As already noted, most of the Eurregions were set up through this Community initiative. According to some authors, the typical institutional structure of the Euroregions is better suited to the European Commission‘s strategy of getting rid of border obstacles (Perkmann, 2002b: 12). In this sense, the proliferation of cross-border structures throughout Europe can be seen as a process of institutional innovation by means of which the Euroregions become legitimate partners of the EC in implementing regional policy in border areas (Perkmann, 2002b: 12).

The Council of Europe has established a list of at least 90 Euroregions. From 1958 to 1991, a first wave of Euroregions dealt essentially with the EU‘s core area: Euregio (1958), Regio Basiliensis renamed TriRhena (1963), Euregio Rhein- -Waal (1973), Euregio Maas-Rhein (1976), Pamina (1991), Cross-Channel (1991). Since 1991, the second wave of Euroregions deals mostly with the countries of Central and Eastern Europe which have become EU members after the collapse of the Soviet Empire: Pro Europa Viadrina (1992), Egrensis (1993), Pomerania (1994), DKMT (1996), EuroBalkans (2002), Pyrenees Mediterranean Euroregion (2004), Adriatic (2006) (Sanguin, 2013).

The Working Communities are groupings of local authorities which try to establish a multilateral trans-European cooperation. The purpose of a Working Community is to gather cross-border local authorities who share several common issues to be solved. Its aims take shape with the drawing up of a Cross-Border Management Master Plan (Sanguin, 2013). In comparison with Euroregion, Working Communities have more coordination problems, since more authorities with different administrative characteristics and powers are involved in them. Generally speaking, they have a more rigid organisational structure, a larger geographical scope (including five or more regions) and a more limited autonomous capacity for action than the Euroregions (Perkmann,

2007; Aranda and Montolio, 2005). Normally, these Communities carry out strategic planning activities (such as studies) or specific projects. Cooperation is usually less intense than in the Euroregions, as the Working Communities are more a forum for exchanging experiences than a platform for carrying out concrete projects. The nearest example is the Pyrenees Working Community, which has seven members in all (four Spanish Autonomous Communities and three French regions).

The cross-border governance capacity may be understood as a social infrastructure across the state borders which creates channels for the transfer or flow of material and non-material resources. The Euregions can set up the flexible frame and support the continuity of the accumulation and use of the interregional resources (Pikner, 2008)

In any case, the available studies (Durand, 2014; Nelles et Durand, 2012; Perkmann, 2007; Morata, 2004; Tambou 1999) show that the forms of cooperation established in the EU have so far not given rise to real cross-border regions, in large part because of reluctance on the part of the states concerned, but also due to other endogenous and exogenous factors relating to the regions themselves. The main obstacles tend to be the unsuitability of the legal, financial and human resources for dealing with the problems to be resolved. At the European level, the INTERREG initiative, dedicated to fostering cross-border, inter-regional and transnational cooperation, has also failed to fully live up to expectations. The business sectors are not sufficiently involved in it and neither has it stimulated networking among border regions. In fact, in spite of certain encouraging results, INTERREG has not had the legal and financial instruments needed for it to function effectively in practice.

One of the reasons for the stagnation of many Euroregions is that, in addition to the usual problems (lack of resources, dependency on INTERREG, heterogeneity of powers, the cost of coordination and the difficulty of combining the different administrative traditions), the institutions promoting them have been unable to effectively involve the key actors in society who are needed to endow these experiments in supraregional integration within the framework of the process of supranational integration with content and continuity.

Similarly, Popescu (2008) argues that due to the resistance from nation-states, Euroregions are unable to become integral territorial units and that, lacking exemptions from national regulations, Euroregions cannot function as meaningful spaces across state borders. Rather, the example of Euroregions shows that "cross-border reterritorialization carries with it the inherent contradictions of Westphalian territoriality" (Popescu, 2008:435). This view is also echoed by Johnson, who, after remarking that "transboundary regions very visibly call into question the cloth and stitching of the Westphalian quilt of political geography", notes that "boundaries and nationalism are still perhaps the most formidable obstacles to integration" (Johnson, 2009:177).

Baud and van Shendel (1997) propose an evolutionary view of borderland in six stages: borderlands, infant borderlands, adolescent borderlands, adult borderlands, declining borderlands, and defunct or relic borderlands. The first four stages make reference to a process of increase of the control of cross border activities by state agencies, while the latter two refer to a decreased role of national governments, because there are adequate good governance processes and an increase of interactions between regions, provinces, districts, civil society organizations and the private sector (Perkmann, 2003). Today it is common that natural resource governance is defined by regions, be they provinces, districts, departments or municipalities, often with multiple actors involved, since a country's natural geography and varied distribution of natural resources require differentiated regional resource governance. In this sense, Euroregions can contribute decisively integrating the views of the different administrations at both sides of the border and creating a common space for cooperation better adjusted to the geographical extension of the common natural resources.

Table 1.Euroregion criteria Table - AEBR / LACE15. Source: AEBR, 2014

Euroregion Criteria
Organisation
• Amalgamation of regional and local authorities from both sides of the national border, sometimes with a parliamentary assembly; • Cross-border organisations with a permanent secretariat, experts and administrative staff; • According to private law based on national associations or foundations from both sides of the border according to the respective public law; • According to public law based on international treaties which also regulate the membership of regional authorities
Method of working
• Development and strategic-oriented cooperation, no measures based on individual cases; • Always cross-border-oriented, not as national border region • No new administrative level; • Hub for cross-border relations; citizens, politicians, institutions, economy, social partners, organisers of cultural events etc.; • Balancing between different structures and powers on both sides of the border and with regard to psychological issues; • Partnership cooperation, vertically (European, governmental, regional, local) as well as horizontally beyond the border; • Implementation of cross-border decisions at national level and according to procedures applicable on both sides of the border (avoidance of competence and structural power conflicts); • Cross-border participation of citizens, institutions and social partners in programmes, projects and decision-making processes;

• Direct initiatives and the use of own resources as preconditions for help and support of third parties.
Content of cross-border cooperation
• Definition of fields of action according to joint interests (e.g. infrastructure, economy, culture); • Cooperation in all areas of life: living, work, leisure time, culture etc.; • Equal emphasis on social-cultural cooperation as on economic-infrastructural cooperation; • Implementation of treaties and agreements and concluded at European level between countries to achieve cross-border practice? • Advice, assistance and coordination of cross-border cooperation, particularly in the following fields:

1.4. Compatibility of cross-border cooperation governance processes and governance for sustainable development

To better understand the institutional challenges of the processes of territorialisation of EU public policies, we will analyse the complementarity of the elements required to achieve effective governance of cross border cooperation with some of the institutional challenges related to the transition towards sustainable development.

The Practical Guide on Cross Border Cooperation regards the partnership principle, the subsidiarity principle, the existence of a cross-border strategy, a programme or a common structure at the regional or local level that develop various organisational capacities to deal with the management of possible conflicts, and the participation of private-sector and civil society actors as fundamental elements for cross-border cooperation governance (AEBR, 2014:

A2-15 et seq.). These principles have been widely recognized and have become basic requirements for programs of territorial cooperation.

As we will see after this discussion, the examination of the requirements for advancing towards sustainable development and cross border integration highlight the complementarity of both approaches and their potential for reinforcing each other, taking advantage of the synergies between the two processes, even though the difficulties and challenges associated with such synergetic processes should not be underestimated.

Horizontal and vertical institutional coordination

According to the European regulations, the partnership principle has a double dimension: vertical and horizontal. The former means that the Member-States and the designated national, regional and local bodies must work closely with the EC in the execution of Community measures. The structures created for this purpose must unite their efforts and complement each other, and avoid competing with each other (AEBR, 2014: B1-17). That is why it is essential to establish suitable cooperation mechanisms between the different levels.

Horizontal partnership refers to the relationship existing between the interlocutors on both sides of the border. In this context, it is crucial that criteria ensuring parity among all the interlocutors are established and the obstacles that have to do with funding sources and the differences between the administrations and their respective powers are overcome. Horizontal relations among the different components of the Euroregion need, at all events, permanent common cross-border structures with decision-making, financial, technical and administrative powers proportional to the scope of their activities (AEBR, 2014: B1-10). These structures will have to face up to the difficulties arising from the differences, in terms of powers and administrative culture, between the administrations involved in the process. Very often there is an attempt to harmonise and adapt the competencies and powers on both sides of the border as a preliminary step to cross-border cooperation. Such attempts can involve many years of work and experience has shown that they are counterproductive, as no country is prepared to rush into changing structures

and competencies that are the result of a particular cultural evolution (ISIG, 2013).

The European Union White Paper on Governance and its SD Strategy laid down the guidelines to be followed in relation to the need to put in place appropriate cooperation mechanisms so that the policies and actions of the different actors are coherent and aimed at previously agreed goals. The EU's SD strategy considers that effective governance, in particular, is a necessary condition for developing and implementing the measures required to achieve sustainable development.

As can be seen, the very concept of sustainable development stands as a challenge to the traditional division of competencies between the different levels of government and administrative departments. The academic literature on European integration has characterised these elements as manifestations of multilevel governance. This perspective suggests that the Europeanisation process has produced a transformation of the State leading to greater interdependence among the different levels of government (European, state and substate). These levels are forced to share their resources in order to respond to the changes resulting from the European integration process (Morata, 2004: 37). According to Hooghe and Marks, –the point of departure for this multilevel governance approach is the existence of overlapping competencies among multiple levels of governments and the interactions of political actors across these levels‖ (Hooghe and Marks, 2004). This fragmentation of decision-making power among the different levels includes the private-sector actors and implies a model of relations among them based on consensus and the establishment of mutual trust, producing a de-hierarchisation among the different structures. The new forms of governance are not based, therefore, on a formal authority or legally defined powers, as in the case of nation states, but on plural decision-making processes and the sharing and exchange of resources among the different actors.

In any case, the subsidiarity principle is integrated into, and is a complement to, the perspective of multilevel governance in the EU. In the current context of interdependencies and the juxtaposition of competencies between the different levels of government described above, this principle can no longer refer only to

the distribution of formal powers among governmental entities, but must also include the relations among the different actors involved. The distribution of functions cannot be the result of an automatic operation, but the outcome of a process of negotiation and coordination among the different actors operating in the network (institutions, economic agents, NGOs and citizens). This is a much more dynamic view of the subsidiarity principle (Morata, 2004: 46-47). Lastly, subsidiarity also implies a strengthening of the local and regional entities as appropriate administrative levels for cross-border cooperation (ISIG, 2013).

The systems of governance that have been developed in the sustainability field are very similar to those guiding the cohesion policies, particularly as far as the processes relating to the creation and development of the Euroregions are concerned. SD strategies are incompatible with a centralised approach, so partnerships between the different types of actors become crucial.

When debating the institutional setting that favours resilience and adaptability of social ecological systems to global changes, authors like Westley (2002) and Tompkins and Adger (2004) point out the need to manage problems in different domains while linking networks at all levels in an interactive way. At this point, the concept of EPI mentioned in the introduction, or moving environmental concerns to the centre of decision making, plays a crucial role (Lenshow 2002) as a key principle to implement and enhance the idea of sustainable development among various diverse institutions. Olsson also argues that linking networks facilitates learning and more adaptive responses to change (Folke et al, 2005). In order to facilitate these links, innovative mechanisms that operate in the intersection between state and society may help to generate social capital (Evans, 1996). In this sense, Ostrom (2005) claims that success stories in sustaining common pool resources rely on rich mixtures of public and private instruments. For that, she advocates institutional diversity (Ostrom 2005) - public- private policy networks based on iterative and decentralised solutions can be seen as an adaptive response to bureaucracy and market failure. Before the challenge of mainstreaming climate change in transboundary regional development, it is crucial to develop capacities to work in different domains at the same time while establishing links and engaging actors in common processes in a social learning mode

The ability of the actors to make converge the transition towards sustainable development and the integration of the cross border area will therefore be one of the factors determining the eventual success of any process of this kind. It is never possible to merge all the processes, but it is feasible to foster their complementarity and coherence so that the different strategic planning frameworks reinforce each other.

The drawing of a sustainable development territorial cross border strategy

The production of a joint development strategy is an essential step in fostering cooperation between regions separated by a border. Basing themselves on the experiences that have been built up, the Practical Guide on Cross Border Cooperation, stresses the potential the joint preparation and production of this strategy have for reducing the border's typical barrier effect. Moreover, advantage can be taken of the opportunity to mobilise actors from both sides of the border and put them in contact with each other, fostering links between them and providing them with a solid and coherent basis for carrying out joint work and projects in the future (AEBR, 2014).

In fact, the synergies resulting from inter-regional collaboration and joint consideration of the different aspects of sustainability would allow a new more integrated and strategic model of management to be developed in cross border areas.

The integrating approach to environmental and sustainable development policy in a cross border area could revolve around four major axes:

1. **Territorial integration**: overcoming the political borders and considering natural macro-units (mountains, sea and inland areas) helps to reinforce the effectiveness and efficiency of public policies.

2. **Sectoral integration**: integrating environmental considerations into the other regional policies by means of horizontal coordinating mechanisms enables measures to be taken to improve various different vectors at the same time.

3. **Integrated information**: the setting up of a shared environmental information system helps to ensure greater coherence and security of major decisions while delivering advantages resulting from economies of scale.

4. **Integrated management**: sharing the many different management instruments available in each of the regions should make it easier to overcome the limits of each of the regional administrations

According to the Practical Guide to Cross-Border Cooperation, —Strategies and actions in border and cross-border regions need to recognise the inter-dependencies between environment and economic development and other development activities such as tourism. Thus, the importance of an agreed strategy is vital for the opportunities to be maximised and the threats to be minimised. Considerations of effectiveness highlight the need for a strategic approach based on assessment of problems and potential, identifying cross-border priorities and adopting a long-term time perspective. A key consideration is to ensure that environmental aspects are integrated into decision-making on and management of development projects‖. (AEBR,2014: C5-105)

A sustainable development territorial strategy is the most comprehensive instrument for directing this transition and must enable these goals to be clarified by means of integration and reciprocal concessions, managing the information appropriately and encouraging the most important actors to take part in it. Otherwise, there is a danger of implementing incoherent policies interpreting sustainability in a contradictory fashion, focusing on only some aspects of sustainability to the detriment of others.

However, the development and implementation of a strategy in a cross border area faces with a number of added difficulties in comparison with territories having a –typical‖ institutional structure. These include variables such as the scant knowledge the different legal and administrative structures have of each other; the differences in competencies among regions and countries, and the respective relations between the state and the local entities; the cultural and linguistic differences; the scant knowledge the main actors on either side of the border have of each other and their lack of mutual confidence and the co-

existence in the realms of political power of representatives of political parties with interests that often do not coincide.

Furthermore, historically, the priorities of cross-border cooperation are very often focused on transport infrastructures and concentrate on improving terrestrial, maritime, railway and air networks as well as other types of infrastructures related to industry (research and innovation centres) and energy (gas pipelines, power lines). While these strategies may have an impact in reducing the vulnerability of local populations to growing pressures derived by climate change or other sustainability challenges (and in this regards can be seen as an adaptive strategy), of course this have a potentially very negative effect on nature conservation, biodiversity, and climate change mitigation efforts. If these priorities are not balanced and integrated in a sustainable development vision, the outcome of these processes will create a blatant contradiction between the need to enhance the capacity of the whole system to respond to global change and the regional/local and short/ mid-term demands for adaptation and sustainable development. Mainstreaming sustainable development issues on other policies will finally depend on the political will and on the implication of actors sensitive to those considerations in the framework of the transboundary strategy in a multi-scale fashion.

Participation of the relevant actors and networks

One of the key elements in the transition towards SD is the participation of the leading actors and the citizenry in the process. The aim must be to get a large number of participants involved, preventing, as far as possible, the process from becoming merely a negotiation between the decision-making bodies and the actors who normally have access to the power structures. This will require time and resources. Securing the participation of the actors‘ representative of society necessarily flows from the principle of shared responsibility, according to which all the actors are important in advancing towards SD.

The Euroregion‘s integration processes, for their part, also require the participation of the actors of civil society. From this point of view, getting the capacities of the different regions involved to function as a network is essential

for structuring the respective potential and interests and achieving a bigger collective impact benefiting all the parties concerned.

As instruments of the new governance, networks provide a non-hierarchical and more integrated approach to policies as the best means for tackling issues transcending the administrative divisions, such as the environment, management of the territory, transport, immigration and social inclusion. In short, the networks assume a triple function: firstly, they mobilise the actors in the territory and help them to unite among themselves; secondly, they enhance the actions between the actors and levels of government; and, lastly, they facilitate lobbying of the higher levels of government (Morata, 2004).

According to Jachtenfuchs (2001), «the network approach suggests that governance should be based on looser patterns of relationships between public authorities at the different levels, associations and citizens». Networks are flexible modes of interaction that retain the ability to adapt as problems change and new responses to cope with them are learned. The assumption, although there is no guarantee for that, is that new forms of governance that entail stakeholder participation and citizen deliberation, public-private partnerships, can decisively contribute to improve the legitimacy, and fill implementation and governance gaps, while increasing social learning through the improvement of institutional and relational capacities of both public and private actors at the different scales in the context of European multilevel governance. When it comes to managing networks with shared responsibilities of this kind, the quality of the relationships among the different levels and sectors is more important than the formal division of competencies among the different actors. The network concept is related to effective governance of the Euroregions through the participation and involvement of private and civil society actors. Indeed, the flexible structure adopted by the Euroregional institutions is designed to foster a more dynamic type of relationship among the actors who are part of it, steering clear as far as possible of bureaucratic obstacles and hierarchies. This perspective is more consistent with the network concept, which implies greater capacity to adapt to new challenges and take new concepts and ideas on board. This principle presupposes that the actors at the different levels participating in a given network will become involved proactively and contribute

to the general decision-making process. The more citizens, organisations and local bodies participate and develop their capacities in these networks, the greater will be the collective learning required to achieve sustainable development on the basis of shared responsibilities (Morata et al, 2008; Hanf and Morata, 2001).

However, in order for them to be efficient, the networks require political leadership and management capacities. The centrality of the public actors gives them a strategic role as the link between the members of the networks and as facilitators of agreements between the different interests at stake (Morata, 2004). In this context, the ability of the actors driving the process to mediate and coordinate is essential.

The setting up of a structure with organizational capacities

This section stresses the importance of endowing the Euroregion secretariat with the resources –in terms of capacities- needed to tackle the difficulties arising from cross border integration on the road to sustainability. The example of the German-Dutch EUREGIO is extremely illustrative in this respect. Established in 1958, it was the first instance of a Euroregional structure in Europe. Since then, the EUREGIO has acted as a genuine policy entrepreneur, making use of the advantages of its position and establishing excellent vertical and horizontal relations with the other actors operating at different levels. This has enabled it to put itself in a strategic position for mobilising actors and resources. In particular, it has maintained a very special relationship with the EC based on mutual interest and networking. According to Perkmann (2007), a symbiotic relationship has grown up between these two bodies. Indeed, the EC‘s structural deficiencies in regard to the implementation of public policies and the need for it to maintain control over them have turned the EUROREGIO‘s secretariat into an ideal executive organ of the EC‘s regional policy. Obviously, this assumption of responsibilities has been accompanied by financial resources, mostly from INTERREG.

The fact that the secretariat does not have any specific powers assigned to it has allowed it to act as a policy entrepreneur with a great deal of flexibility in its relations with other actors and institutions and without being constrained by a

particular framework. This has also helped the secretariat to become a key actor in the network as a promoter of contacts between actors on both sides of the border. It gradually acquired a number of capacities which made it the ideal candidate to implement the INTERREG programme when the latter started up in 1988: its parity and representative nature; the technical quality of its agents; its diligence in obtaining funds and its fairness in allocating them; its technocratic, problem-solving approach; and its ability to mediate between and reconcile the different interests at stake (Perkmann, 2005).

Table 2 Euregio (Germany/Netherlands) Founded: 1958. Source: AEBR (2014)

Type of organisation
The EUREGIO is the oldest cross-border structure in Europe. It is made up of 120 members (districts, towns and cities, and municipalities). The territory of the EUREGIO includes areas of Münsterland (the districts of Coesfeld, Borken, Steinfurt and Warendorf, and the town of Münster) in North Rhine-Westphalia, the county of Bentheim, the town and district of Osnabrück, parts of the south of Emslandes in Lower Saxony, and Twente, Achterhoek, Nord-Overijssel and South-East Drenthe in the Netherlands. The EUREGIO has been involved for decades in cross-border cooperation activities in different fields based on cross-border development concepts. One of these concepts was put into practice at the beginning of 1972 with funds from the EU and the national ministries of the economy. The EUREGIO is directly involved in the planning and implementation of many different programmes and projects, including the INTERREG programme.
Structure and competencies: the members on both sides of the border are fully involved. • **Members of the assembly:** The assembly is comprised of 128 representatives and meets at least once a year. • **The Council:** This is a cross-border parliamentary assembly (with cross-border parliamentary groups) and is the EUREGIO‘s most

important political body.

- **Presidency:** Its responsibilities include executing the decisions of the Members of the Assembly. It prepares and executes the decisions of the EUREGIO Council.
- **The Working Groups**: They deal with the following thematic areas: spatial development and transport, economy, labour market, environment and agriculture, culture and health. They provide technical support to the cross-border projects and programmes, as well as those funded by INTERREG. Each working group is made up of representatives of the public and private sectors, and trade union and employers' associations from both sides of the border.
- **The Secretariat**: is responsible for the transfrontier region's day-to-day administration (e.g. information and consultancy), and coordinates the activity of the working groups and the EUREGIO's other bodies. It also collaborates in drafting and carrying out projects, seeks out for potential members and mediates between existing ones

INTERREG

The INTERREG I, II and III, IV and V programmes were prepared by the EUREGIO, based on the cross-border strategies adopted for this purpose. The EUREGIO, the national governments and the regional authorities on both sides of the border signed a limited agreement in order to carry out INTERREG. This agreement transferred to the EUREGIO the authority for carrying out the INTERREG programme in its territory. Proposed projects are presented to the EUREGIO Secretariat which assesses their suitability on the basis of the EU criteria, the specific cross-border cooperation criteria, the national development goals and the co-funding criteria. The EUREGIO Council is part of the Supervision and Management Committee, on which it has full voting rights.

The local/regional project managers are responsible for carrying out the project, while the technical assistance and support are provided by the EUREGIO Working Groups. Technical responsibility for financial management has been transferred to the InvestionBank of North Rhine-Westphalia, which manages the EU funds and the respective national co-

funding in a single account for the whole programme and makes direct agreements with the project partners.

Consolidation of Cross-border Cooperation

The EUREGIO structure is a good example of a high degree of decentralisation and integrated structures based on the horizontal and vertical partnership principle in the framework of the planning and execution of cross-border programmes, especially the INTERREG programme. The EUREGIO covers all the areas of cross-border cooperation.

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Again, the organizational skills and capacities needed to tackle the challenges that pose the transition towards SD are synergetic with the organizational requirements to advance in the effective governance of cross border cooperation processes.

Chapter 2. Mainstreaming biodiversity considerations into European Cohesion Policy: evidence from the European Regional Development Fund Operational Programmes

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Abstract

Multi-level and cross-border cooperation arrangements are becoming an increasingly common mechanism for mainstreaming important issues into EU regional funding strategies. However, the analysis of 46 European Regional Development Fund Operational Programmes (ERDF - OPs) between 2007 and 2013, carried out by the SURF-Nature Project which aimed to improve funding opportunities for nature conservation and biodiversity through the ERDF, found that policy narratives alone are not sufficient to achieve that goal. Actual resources and innovation are crucial funding cooperation mechanisms to more effectively promote biodiversity conservation and sustainable development. These are goals that will be increasingly important, and challenging, under a changing climate.

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Introduction

The integration of environmental considerations and objectives across a broad range of sectoral policies has been the subject of debates within both the academic and the policy-making communities, particularly in the context of the European Union. This process of integration has been formalised around the concepts of Environmental Policy Integration (EPI) and, more recently, ‗mainstreaming', and while some authors distinguish between the two terms (Jordan and Lenschow, 2010; Nunan et al, 2012), in this paper they are used interchangeably and as synonyms (see also Persson, 2008).

Despite the increasing awareness of the importance of the challenges presented by phenomena such as climate change and biodiversity loss, which is, as we shall see, generally reflected in political and policy discourse, the extent of EPI has generally been limited. There is, therefore, a pressing practical need to understand how environmental concerns can be better incorporated or ‗mainstreamed' into EU policies.

In this paper, we address one of the main challenges of the European Environmental Policy: the extent to which nature conservation and biodiversity considerations have been integrated or mainstreamed in a systematic and comprehensive way into the EU Cohesion Policy, and particularly into the European Regional Development Fund (ERDF). The ERDF constitutes one of the three key instruments of the European Union's regional policy, which seeks to reduce structural disparities between EU regions, foster balanced development throughout the EU and promote equal opportunities for all. The ERDF is further developed through the programming and implementation of Operational Programmes (OPs). The task of an OP is to specify a territorial development path by defining the fields of action and temporal and spatial priorities. OPs present a common approach to achieve these objectives.

The argument for limiting the scope of the assessment to nature conservation and biodiversity considerations is two-fold: on the one hand, the need to make the analysis operational; and on the other, the recognition of the central role that nature conservation and biodiversity issues have traditionally played in the realm of European Environmental policy.

There are some studies that address some aspects of the mainstreaming of biodiversity considerations into the ERDF through OP programming and implementation (see for example Ekins and Medhurst, 2003; Ferry and Mendez, 2008; Hjerp et al. 2011). However, they do not address in a comprehensive way the topic of biodiversity and nature conservation nor the extent to which biodiversity concerns have been integrated across different regions, countries and typologies of OPs.

The Interreg IV C SURF-Nature 2 project was designed to address this gap, having as its main objective the improvement of regional policies and practices to promote and preserve natural heritage, biodiversity, and nature conservation. In turn, this was to be achieved by increasing the funding opportunities provided by ERDF OPs, and by improving both the identification by Member States (and/or regional governments of policy priorities), as well as policy development and implementation.

Section 4 of this paper presents the results of an empirical study of 46 ERDF-OPs that were the subject of the SURF Nature project. More specifically, the study seeks to answer three basic questions:

- Was the mainstreaming of biodiversity implemented in a systematic and comprehensive way in ERDF funds?

- What were the main differences between the various typologies of Operational Programmes?

- What are the main lessons to improve the mainstreaming of biodiversity for the next programming periods?

The results are discussed in Section 5.

However, before presenting the empirical study, basic methodological and analytical questions must be addressed. Thus, drawing on existing literature, sections 2 and 3 seek to construct an analytical framework that is capable of a) identifying a successful model of EPI in the context of ERDF OPs, and b) evaluating the existing experiences against this benchmark. To this end, we

[2] www.surf-nature.eu

identify four different typologies of the ERDP-OPs orientation: Cross-border cooperation, Transnational cooperation, Convergence and Regional competitiveness; and analyses them along four different dimensions: strategic, procedural, financial and organisational.

We argue that in order that to be successful, EPI should be both systematic and comprehensive, in the sense that its scope should encompass all relevant policy sectors and political arenas, and be present at all stages of the policy-making process.

Applying this framework to 46 ERDF-OPs, we show that even though biodiversity concerns are contemplated and integrated „on paper" from a strategic point of view into most of the programmes, the same cannot be said of the other components of analysis, namely, the procedural, financial and organisational ones. In general terms, this level of integration would correspond to a soft level of integration and would require the inclusion of biodiversity concerns also in the other components of analysis in a systematic and comprehensive way in order to be considered a successful EPI initiative (see, for example, Kivimaa and Mickvitz, 2006). Notwithstanding, there are substantial differences with regard the different typologies of programmes, and cross-border and transnational cooperation programmes offer better results and show more comprehensive and systematic integration than Regional Competitiveness and Convergence Programmes. The implications of such results are further analysed and developed.

1. Mainstreaming biodiversity into the EU Cohesion Policy

Historically, the response of the EU to the EPI challenge is evidenced in three main ways: Article 6 in the EU treaty, the „Cardiff process", and the EU sustainable development strategy (Persson, 2004). The 1992 Treaty on European Union („Maastricht Treaty") gave EPI a relatively prominent position, advanced in 1997 with the Treaty of Amsterdam, that listed the principle of EPI as a fundamental principle of the European Community, establishing that „environmental protection requirements must be integrated into the definition

and implementation of the Community policies and activities referred to in Article 3 in particular with a view to promoting sustainable development' (Article 6). The need for environmental integration in EU sectoral policies had already been articulated by the Third Environmental Action Programme (EAP) in 1983, and subsequently elaborated in both the Third, Fourth, Fifth, Sixth and Seventh EAPs. The other important pillar for EPI is the Cardiff Process launched in 1999, which can be considered as the implementing tool of Article 6, requiring each EU public policy to consider its own strategies for integrating environment and sustainable development into their respective policy areas. Finally, the EU Strategy for Sustainable Development adopted in June 2001 (European Commission, 2001: 6) gave a central role to sustainability policy integration in the strategy, stating that '[s]ustainable development should become the central objective of all sectors and policies' and that a 'more consistent approach to assessment of the full effects of a policy proposal' is needed, as well as better information (Persson, 2004).

All these developments have influenced the evolution of Regional Policy. During the period 1988-1993, the environment did not constitute a priority area within the Structural Funds and only a few national and regional programmes referred to it as a development objective (Lenschow, 2002). However, after 2000 (after the 1983-1990 Environmental Action Programme, the Treaties of Maastricht and Amsterdam and the beginnings of the Cardiff process), the Structural Funds sought to integrate environmental considerations into all aspects of their programme development and implementation, and to do so in a more systematic and comprehensive way. Finally, in the 2007-2013 period, concepts such as 'environmental protection' and 'sustainable development' were articulated as 'horizontal principles', and the environmental authorities were encouraged to take an active role in the full policy cycle of regional programmes design (Wilkinson, 2007).

Thus, it can be said that the mainstreaming environmental concerns across multiple policy domains has emerged as a potential and salient transformative narrative within the EU strategies (Nunan et al, 2012; Dalal-Clayton and Bass, 2009) and beyond. At the international level, for example, United Nations agencies, in an attempt to promote the effective adoption and implementation of

sustainable development goals, have sought to introduce a social-ecological approach into policy making3.

In practice, mainstreaming can be seen, for example in the case of the EU Structural Funds, where an increased environmental awareness by policy makers has resulted in greater amounts of investments directly devoted to environmental and sustainability projects, including the promotion of eco-industries and clean technologies, sustainable tourism activities, cleaner public transport, as well as the construction of large environmental infrastructure projects (Medarova-Bergstrom et al., 2010).

However, such examples are relatively rare, and despite the transformative potential of the concepts of EPI and environmental mainstreaming, in practice the promises of EPI have not been fulfilled, and there are only a few jurisdictions that have really made their strategies and/or plans operational in a coordinated and systematic manner (Jordan and Lenshow, 2010; Nilsson et al., 2009). With regards the conservation of biodiversity, it is still not among the core or priority areas currently being supported by the EU budget, with only 0.5 per cent of the total budget specifically earmarked for biodiversity under the EU funds during 2007-2013 (Kettunen et al., 2009). There is also evidence that some activities financed by the EU Regional Policy have caused negative impacts on ecosystems, particularly those associated with the introduction and extension of large-scale infrastructures, which fragment natural habitats and cause displacement of some vulnerable species (TEEB, 2009). This situation has led the Committee of the Regions and other European institutions to urge the EU 2020 Biodiversity strategy to address the current under-spending of structural funds on environment and biodiversity-related issues and promote the exchange of best practice to empower regional and local authorities for action on the ground (Committee of the Regions, 2010).

[3] See for example:

- the Millennium Development Goals http://www.undp.org/mdg/,
- the Plan of Implementation of the World Summit on Sustainable Development http://www.un.org/esa/sustdev/documents/WSSD_POI_PD/English/WSSD_PlanImpl.pdf
- the Environmental Mainstreaming Initiative www.environmental-mainstreaming.org

How, then, to explain the generalised failure of EPI? Clearly there are contextual factors that are specific to each case, but at a general level, there is a lack of knowledge regarding how to promote EPI and what factors might enhance or hinder the incorporation of environmental concerns into sectoral policies, all of which make it difficult to assess the level of success of a particular EPI initiative (Adelle and Russel, 2013; Brouwer et al, 2013). In fact, literature about EPI does not provide an adequate answer to the questions of what EPI strategies work, where and why. Indeed, it can be argued that there are no agreed criteria for recognizing when the promotion of EPI in a policy sector has been successful (Persson, 2004). What scientific knowledge does exist is largely fragmented and is found in isolated bodies of literature (RunhaaR et al, 2014). Thus, if we are to conduct an empirical analysis of Structural Fund OP EPI, to decide whether it has been successful or not, if it has been weak or strong, or if it is likely to contribute to better environmental or sustainability outcomes (Persson, 2004), first we must be clear about what we understand EPI to entail exactly. This is the subject of the following section.

2. Evaluation of EPIs: definition of an analytical framework applicable to ERDF OPs

2.1. Evaluating EPI

The European Environmental Agency (EEA) (2005;12) defines EPI as ‗moving environmental issues from the periphery to the centre of decision-making, whereby environmental issues are reflected in the very design and substance of sectoral policies'. While satisfying the criterion of definitional parsimony, we must necessarily go deeper and explore the full consequences of such a definition.

First, and in terms of the normative origins of the concept, Lenschow (2002) understands EPI as a key principle to implement and enhance the idea of sustainable development among various diverse institutions. Based on an analysis of the Brundtland Report, Lafferty and her colleagues (Lafferty and Hovden, 2003; Lafferty and Knudsen, 2007) argue that EPIs ‗mother concept' –

sustainable development – attributed ‗principled priority' to environmental objectives in the process of ‗balancing' economic, social and environmental concerns (Lafferty and Hovden, 2003:9). In this sense, Lafferty and Knudsen (2007) considered that policies should prioritize the environment. On the other hand, some authors search prefer to talk of synergies and ‗win–win' solutions (Collier, 1994: 36), without attributing ‗principled priority' to environmental objectives, which can be interpreted as weaker understandings of the concept.

Second, we must talk about the scope of EPI. On the one hand, in order to be effective, as already mentioned, environmental concerns must be reflected across a wide range of policy areas given the environmental consequences of these policy areas. On the other, mainstreaming operates, by definition, in a complex multi-level governmental context – not only vertically, but also horizontally, involving a diverse range of policy actors, trade-off decisions, and their vested interests operating at various levels of action (Jordan and Schout, 2005; Nikvist, 2008). Thus, mechanisms must exist for EPI to take place across all levels of government involved in a relevant policy area.

Finally, here, mainstreaming not only entails introducing environmental goals and activities into a particular policy or funding instrument, but also permeates all the stages of the policy-making process. Thus mainstreaming should influence the objectives of policy making ex ante, and be allocated sufficient financial resources; it should be reflected in multi-level and horizontal cooperation engagements among actors from different policy domains; and should be present in the monitoring and evaluating of the impacts of the instruments.

In this respect, Kivimaa and Mickvitz (2006) have developed a conceptual model of the policy cycle that can be used as a basis of evaluating policy integration. They distinguish four evaluation criteria related to the policy cycle: the mere ‗inclusion' of environmental aspects in a particular policy; the presence of some level of ‗consistency' of environmental aspects with regard to other aspects as a further integration step; the weighting of environmental aspects as having principled priority over other issues; and the need for establishing reporting mechanisms to gather feedback for policy consistency.

With regard to the factors that promote EPI, three broad categories of factors influencing the success of EPI have been identified by the literature: normative, organisational, and procedural (Lenschow and Zito, 1998). A tendency to emphasise normative factors would put the focus on aspects such as political commitment and leadership, as well as on the establishment of environmentally related objectives and actions on a strategic level in a particular public policy. An emphasis on organisational factors would look, for instance, at improving inter-departmental relationships, allocation of resources and ensuring that opinions and input from environmental departments and actors are taken into account in the formulation of other public policies. Finally, an emphasis on procedural means for EPI, such as monitoring systems and strategic assessment tools, suggests that the focus should be on decision-making processes and how they can be made more rational or more influenced by environmental concerns (Persson, 2004), for instance, through the elaboration and follow up of environmental indicators.

In this article, based on a development of the mentioned main categories that the literature on EPI has identified as encompassing the factors influencing the success of EPI, namely the normative procedural and organisational categories (Lenschow and Zito, 1998), it is argued that a successful mainstreaming approach needs to be both systematic and comprehensive (see also Persson, 2004). Such an approach requires the inclusion of components of each and all of the mentioned categories (comprehensive) in a balanced and interconnected way, following a previously established method that permeates all the stages of the policy cycle (systematic). This requires not only the incorporation of biodiversity goals and principles, but also a clear delineation of actions that pursue such goals, an adequate allocation of resources, the establishment of indicators to monitor the implementation of such actions and the necessary organisational rearrangements to ensure institutional support for biodiversity related goals.

In order to evaluate whether EPI has been promoted in a systematic and comprehensive manner in the ERDF OPs analysed here, following Lenschow and Zito (1998) we have developed and operationalized the categories, constructing an analytical framework adapted to the structure and particular

features of ERDF OPs. In this way, we are able to assess the degree of EPI components in the different stages of the policy-making process.

2.2. Analytical framework

Since the definition of Lenschow and Zito's categories of factors influencing the success of EPI in 1998, several authors have adapted and developed them to be applicable to different policy contexts, strategies, etc. For instance, Stead and Meijers (2009) have identified the following factors from the literature on policy integration, policy cooperation and policy coordination:

- Political factors (commitment, leadership, etc.);
- Iinstitutional and organizational factors (similarity of structures, central coordination, etc.);
- Economic and financial factors (e.g. perceived economies of scale);
- Process, management and instrumental factors (e.g. geographical proximity or open networks);
- Behavioural, cultural and personal factors (e.g. good relations or a willingness to cooperate).

Jacob et al. (2008) distinguish between communicative, procedural and organisational instruments, and substitute the term „normative' as used by Lenshow and Zito (1998) with „communicative'. They place the emphasis more on the incorporation of environmental or sustainable development principles and objectives in other policy sector documents and strategies than on other factors, such as political commitment or leadership, that are very difficult to operationalize through the analysis of documents and strategies. As noted, the categories used by Jacob et al. (2008) range from communicative instruments, which represent a „relatively-easy challenge' as they do not directly require significant change to existing structures or routines, to organisational instruments, which require effective rearrangements of the involved actors. Hjerp et al. (2011) have adapted this approach to assess the level of the integration of sustainable development concerns in general into Cohesion

Policy, renaming the categories as strategic, procedural and organizational. This approach is the one that adapts best to the object of analysis of this article, since the OPs, whose main task is to specify a territorial development path by defining the fields of action and temporal and spatial priorities, present a common approach based on the following elements related to HJERP et al's categorisation (Kasza, 2009; Klasik, 2002; Suske et al, 2011):

- Analysis of the strengths, weaknesses, threats and opportunities of the territory -SWOT analysis (strategic);
- Specification of thematic options and strategic priorities -objectives- (strategic);
- Step-by-step order of activities (strategic);
- Evaluation (procedural);
- Fnancial engineering and allocation decisions (organisational);
- Implementation of institutional procedures and instruments (organisational).

For the purposes of our analysis, in order to adapt such categories to the specificities of the analysis of ERDF OPs, we have added an additional category, a financial one, due to the importance given to the amount of resources allocated to biodiversity activities in each OP. Thus, our analysis uses the following categories:

1. **Strategic**: includes those instruments or tools that foresee the inclusion of biodiversity objectives into OPs, enhance the consistency with previous analysis, foster coherence with overarching strategies and policies, and procure for an appropriate weighting of environmental objectives and activities against economic and social ones (Hjerp et al., 2011). In order to operationalise the assessment related to this category, we have analysed the inclusion of biodiversity and nature conservation references in a SWOT analysis (Strengths, Weaknesses, Opportunities and Threats), in OPs objectives and in OP activities.

2. **Procedural**: covers those instruments focused on strengthening common procedures, routines and practices seeking to modify the decision making process in terms of ensuring a higher incorporation of biodiversity considerations (Hjerp et al., 2011). We have assessed indicators in each OP as the key tool to ensure that the programme is consistently monitored and evaluated. The assessment of other procedural instruments such as Strategic Environmental Assessment (SEA) or Environmental Impact Assessment (EIA) has not been covered by this research since their use is either compulsory for all OP (SEA), or compulsory when some standard conditions are met (EIA). Hence, analysis would not provide any additional information useful to the context of this research.

3. **Financial:** includes the tools necessary to ensure the allocation of adequate financial resources for biodiversity integration. Each OP budget should be defined according to the ‗Codes by Dimension', a list of 86 priority themes to be funded through the programmes. For the purposes of this article, special attention needs to be given to the ‗code 51' which represents a direct funding category for the promotion of biodiversity and nature protection (including Natura 2000) (European Commission, 2006).

4. **Organisational:** refers to mechanisms which facilitate broader institutional or organizational changes related to the enforcement of the partnership principle, seeking to integrate environmental interests in the OP programming and implementation phases via consultations or other mechanisms (Hjerp et al., 2011). They mainly include the presence of environmental actors on the Monitoring and Selection Committees[4], considered the most relevant boards within the OP organisational structure.

However, as said above, the four frames and categories – strategic, organisational, procedural and financial – are strongly interconnected, and the application of only one type of measures will be unlikely to produce satisfactory

[4] The Monitoring Committee is in charge of the definition of project selection criteria, of examining the results of the Operational Programs interventions and approving the annual and final reports, while the Selection Committee has as its main task to decide on which project proposals will be funded.

results in terms of biodiversity integration. In fact, in order to consider that a particular OP has mainstreamed biodiversity concerns in a systematic and comprehensive way, different types of integration instruments should be present in all and each of the OP sections (SWOT analysis, objectives, activities, budget, etc.), and should reinforce each other in a complementary and coherent way.

3. Methodology

3.1. A participatory survey design

The methodology discussed in this article is based on the work carried out within the framework of the SURF-Nature project with regard to the analysis of ERDF OPs (Suske et al, 2011). The SURF-Nature project partnership involved 14 public bodies from 10 countries in the EU, which are responsible for the implementation of ERDF funding or have experience in using them[5].

The analysis of the OPs is based on an evaluation questionnaire created by the SURF Nature team that included a mix of quantitative and qualitative indicators which were discussed throughout several quality control meetings between the EU SURF Nature partners experts team and validated by OP managers. For the purposes of this paper, only those questions directly related to the mainstreaming of biodiversity considerations into ERDF OPs have been incorporated (Table 3). These questions seek to analyse how biodiversity and nature conservation aspects are reflected in several aspects of the OP: in the SWOT analysis, in the objectives, in the activities, in the indicators, in the

[5] The SURF-Nature project partners were: Environment Agency Austria (Austria), Giurgiu County Council (Romania), Marshal Office of Warmia & Mazury Voivodship (Poland), Rieti Province (Italy), Municipal Enterprise For Planning & Development of Patras S.A. (Greece), Prefecture Preveza (Greece), DG Environmnet of the Region of Murcia (Spain), Forest Sciences Centre of Catalonia (Spain), Environment Agency Wales (United Kingdom), University Olomouc (Czech Republic), Austrian Federal Forests (Austria), Donau-Auen National Park (Austria), Côtes d'Armor General Council (France), Development Agency Savinja (Slovenia)

budget, and in the presence (or not) of environmental actors in the administrative bodies of the OPs.

In order to control the level of subjectivity of qualitative questions, several participatory meetings were organised. An initial meeting was held in March 2010 in Barcelona. This included a ‗training session' involving SURF Nature project partners and future ERDF OP evaluators to learn how to analyse OPs. In this session, a first version of the questionnaire was presented to the partners and discussed. The factors to classify and score the potential responses to each question resulted from estimating the value of the answers in relation to each other and were further discussed and decided between all project partners, with the input of an external consultancy company. Essentially, a higher score means greater integration of biodiversity concerns in each of the OP categories. Different score scales were used depending on the importance and relevance associated to each question. For example, budget allocation to biodiversity issues entailed a higher score than mentioning biodiversity in the SWOT analysis, since it was estimated that the former had much more practical implications in terms of mainstreaming biodiversity considerations than the latter. The final proposal was discussed again according to technical criteria but also considering the expertise of the selected OPs participants. Table 3 shows the possible responses that could be given to each question and their potential scores. Such a scoring system enables a basic quantitative assessment and comparison of qualitative responses in order to underpin a more robust analysis.

Table 3 Questions addressed and distribution of scores among possible answers

1.In which way is biodiversity reflected in the following 4 aspects of the programme?

Aspect 1: SWOT analysis		Scores
Possible answers	Clearly mentioned	6
	Can be interpreted	4
	Absent	0

Aspect 2: Objectives of priority axis		Scores
Possible answers	Clearly established	20
	Can be interpreted	10
	Absent	0

Aspect 3: Activities of priorities		Scores
Possible answers	Flexible interpretation	20
	Clearly defined, a variety of measures	18
	Isolated measures	10
	Absent	0

Aspect 4: Indicators		Scores
Possible answers	Clearly mentioned, very useable	10
	Clearly mentioned, moderately useable	7
	Can be interpreted	3
	Absent	0

2. Which is the proportion of the OP fundings allocated for nature conservation?		*Scores*
Possible answers	0%	0
	0,1 - 1%	6
	1,1 - 3%	14
	3,1 - 5%	22
	over 5%	28

3. Is nature conservation represented within the authorizing committee (e.g. Selection Committee)?		Scores
Possible answers	Yes, as a member or as guests who present the project	4
	In the course of written submissions	2
	No	0

4. Is nature conservation represented within the committee which evaluates the projects (e.g. Monitoring Committee)?		Scores
Possible answers	Yes, as a member	6
	In the course of written submissions	4
	No	0

3.2. Data collection and analysis

The SURF project partners analysed Regional Competitiveness and Convergence OPs from 11 Member States‘ cross border cooperation programs covering some of those 11 Member States and their border countries, and transnational programs covering most of the European geographical area, including the Mediterranean OP, Atlantic Area Transnational OP, North West Europe OP, Central Europe OP, South West Europe OP and the Alpine Space OP.

In total, 49 OPs were identified, 46 of which were included in the final results due to partner overlaps. The programs were classified according to the typologies of OPs described in Table 4, seeking a well-balanced distribution: 26% of the OPs were Regional Competitiveness and Employment, 31% Convergence, 26% Cross-Border and 17% Transnational (Suske et al, 2011).

Table 4 Typologies of OPs

Typology	Objective	Member States and Regions covered
Convergence	Speeding up the convergence of the least-developed Member States and regions[6]	Least developed Member States and regions
Regional Competitiveness and employment	Strengthening regions' competitiveness and attractiveness as well as employment by anticipating economic and social changes, including those linked to the opening of trade"[7]	Every region not covered by the Convergence Objective
Cross border cooperation	Develop cooperation strategies to reduce the negative effects of borders as administrative, legal and physical barriers	Adjacent regions from different Member States
Transnational	Developing transnational cooperation to solve joint or comparable problems (communication corridors, flood management, etc.)	Larger areas of cooperation including non-contiguous regions from different Member States

[6] Council Regulation (EC) No. 1083/2006 of 11 July 2006 laying down general provisions on the European Regional Development Fund, the European Social Fund and the Cohesion Fund and repealing Regulation (EC) No. 1260/1999, Article 3(a).

[7] Council Regulation (EC) No. 1083/2006 of 11 July 2006 laying down general provisions on the European Regional Development Fund, the European Social Fund and the Cohesion Fund and repealing Regulation (EC) No. 1260/1999, Article 3(6).

Each partner analysed the OPs operating in their country or working area and filled in the questionnaire. In some cases the partners were not able to answer all the questions of the questionnaire and therefore, the number (‗n') in some figures is different from the total number of 46 OPs considered in the final analysis (Suske et al, 2011). A second meeting took place in June 2010 in Olztyn, Poland, where the results of the first OPs analysed were presented to the SURF Nature team and further discussion took place in order to ensure consistency of the results.

The results have been treated in different ways as is shown in the following section. First a frequency analysis was developed for each question with regard the different OP typologies, which provides an initial overview of the internal distribution of each answer. Thus, in figure 1 only the percentage distribution of each given answer is presented, rather than the scores of the answers.

A second step involved the use of the scores to quantify the answers. Scores for the questions were normalised to the same scale of 0 – 1 by dividing the sum of the obtained scores (according to table 3) by the maximum possible sum of scores. This resulted in figure 2 where an overall indicator has been calculated through a linear combination.

During the course of the project, several follow-up meetings and workshops with external experts and key stakeholders were conducted to complement and assess the coherence and validity of the results.[8]

4. Results and discussion

4.1. Results

The results of the analysis are presented according to the categories described in section 2 and represented in figures 1 and 2.

[8] Nine interregional workshops and 9 training sessions were held in different European countries: Austria, Spain, Czech Republic, Greece, Wales, France, Italy, Poland, Slovenia, Romania and Belgium.

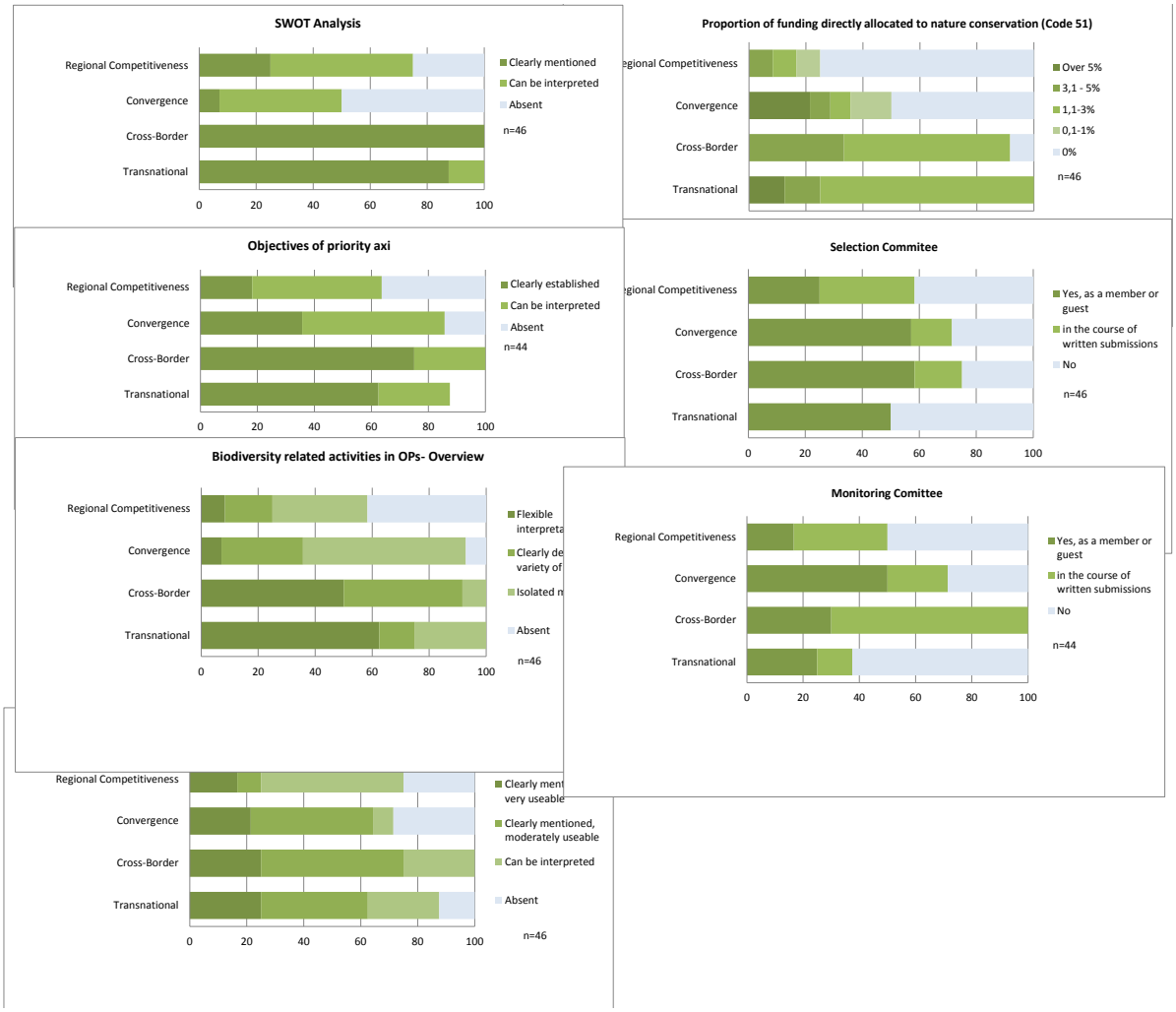

Figure 1 Frequency analysis of answers according to typologies of OPs

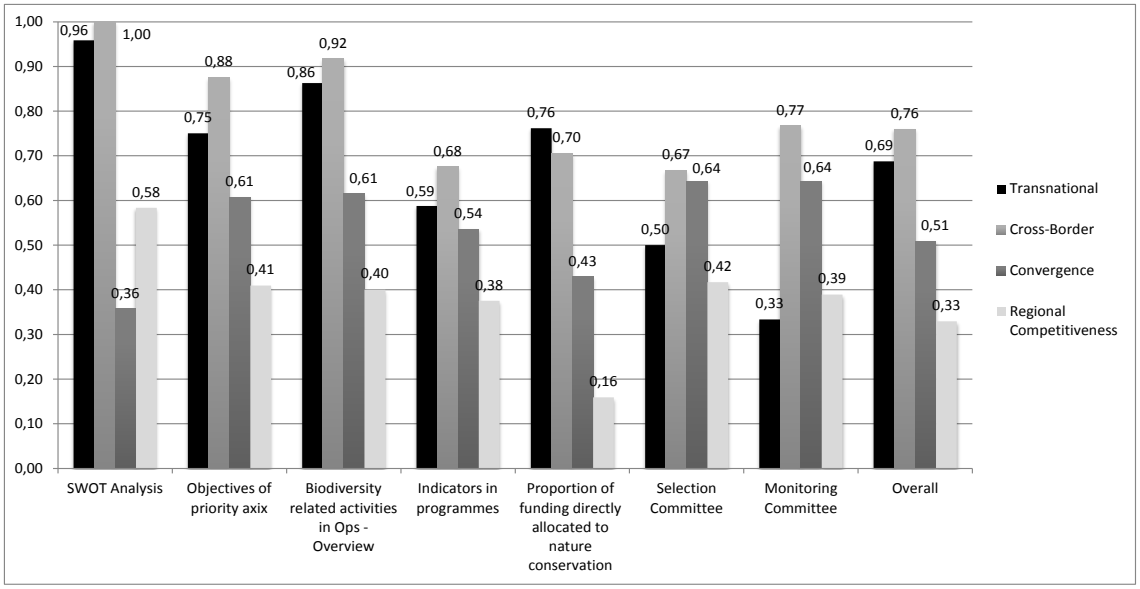

Figure 2 Final aggregated indicator.

Strategic instruments

The SWOT analysis, which is present and common in all ERDF OPs, constitutes the first section of the OPs to be analysed by the SURF-Nature team. In this section, the description of the natural environment and biodiversity aspects in terms of its strengths, weaknesses, opportunities and threats, provides an important baseline for further integration and interpretation of activities and measures for nature conservation (IEEP and MILIEU, 2013; Suske et al, 2011). The results of the analysis indicate that nature conservation and biodiversity considerations have been mainstreamed into the SWOT analysis in the majority of OPs (Suske et al, 2011). However, there is an important gap when comparing the results of cross border and transnational programmes, where nature conservation issues are mentioned in almost all of them, with the other two typologies of programmes, where mention is absent in more than 20% of the Regional Competitiveness Programmes and more than 45 % of the Convergence Programmes (see Figure 1).

With regard to the objectives, most of the OPs biodiversity concerns are also well reflected and incorporated in the priority axes, therefore sending a clear signal to potential project applicants (IEEP and MILIEU,2013; Suske et al, 2011). In fact, aspects related to biodiversity are included in 86% of the OPs objectives. However, while 75% of Cross-Border and more than 60 % of Transnational programmes (see Figure 1) have included biodiversity-related objectives, only approximately 20% Regional Competitiveness programmes and 40% of Convergence programmes doing so (Suske et al, 2011).

The majority of programmes have integrated biodiversity among their activities. For instance, in most of the Cross-Border and Transnational Programmes biodiversity activities are well covered either with high flexibility, which allows, in principle, to submit biodiversity and nature related project proposals in a broader spectrum of options; or by clearly defining it within a significant number of measures (Suske et al, 2011). However, more than 60% of Convergence Programmes and more than 75 % of Regional Competitiveness

Programmes have either isolated or completely absent nature conservation measures (see Figure 1).

Procedural instruments

In order to be useable, biodiversity indicators must be clear, unambiguous and relate directly to the programme objectives. In particular, result indicators should be able to capture the changes that the programme is intended to facilitate through its specific objectives (IEEP and MILIEU, 2013; Suske et al, 2011). Clear and applicable biodiversity-related indicators are only present in around 20% of the programmes, while more than 60% of the analysed programmes use biodiversity indicators which are of limited practical use (Suske et al, 2011). With regard to the typology of programmes, cross-border and transnational OPs again achieved the best results since more than 75% and 60% respectively of their OPs incorporated biodiversity or nature conservation indicators in a very useable or moderately useable way, while in Regional Competitiveness and Convergence Programmes such mention is absent in more than 25% and 30% of their OPs respectively (see Figure 1).

Financial instruments

In general terms, nearly two-thirds of those OPs analysed have allocated some budget for biodiversity measures through code 51. More than one half has allocated up to 5 % and one-tenth have allocated more than 5 %. It means that out of a total of 46 programmes that were analysed, only 4 have allocated more than 5% of their available budget to Code 51 (Suske et al, 2011). With regard to the typology of programmes, the OPs which have spent most money on biodiversity issues are the transnational ones, in which 100% have allocated at least 1.1 % of their budget to Code 51, followed by cross border cooperation ones, in which nearly all programmes have calculated some budget for biodiversity, and more than 30% have allocated between 3.1% and 5% of their total budget. On the other hand, only half of the Convergence Programmes, and less than 25% of Regional Competitiveness ones, have assigned a budget to address biodiversity (see Figure 1).

Organisational instruments

Taking biodiversity concerns into consideration requires the establishment of mechanisms to institutionalize the participation of environmental actors[9] in the OP programming and implementation phases. This implies that both Monitoring and Selection Committees ought to have environmental actors among its members to ensure that priority is given to environmentally-sound projects which foster both positive environmental and socio-economic impacts (IEEP and MILIEU, 2013; Suske et al, 2011). Our analysis indicated that one-third of the OPs have included nature conservation actors within the Monitoring Committees and half within the Selection Committees, while one third included their opinions via written submissions in the case of Monitoring Committees and 17% in that of Selection Committees. In both cases, there was no discussion or consultation with nature conservation actors at all in more than one-third of the OPs (Suske et al, 2011). Again, Cross-Border Programs were the typology of programs that most included the views of nature conservation actors, either through the presence of guests or as members in the Committees or in the course of written submissions.

4.2. Discussion

The analysis of the different components of OPs (Figure 1 and 2) shows that most of the OPs include references to biodiversity ‚on paper' in the SWOT analysis and the objectives with percentages that approximate to 80 and 90%, which would correspond to the ‚inclusion' or the first stage of the evaluation criteria as defined by Kivimaa and Mickvitz (2006). However, the percentages are much lower when we examine the other components of OPs, for instance: the activities subject to funding (54% of OPs include measures that provide a wide range of biodiversity activities); the indicators which will determine the

[9] For environmental actors it is understood any representative of public or private entities that have among its core objectives the protection of the environment in a general sense (environmental department, environmental NGOs, etc). It also includes any expert or specialist in the environmental field (academics, researchers, environmentalists, etc.).

capacity to monitor the achievement of OPs objectives (only 22% of the programs used clear and applicable indicators); the funds allocated to biodiversity (37% of the OPs did not have a budget in Code 51); and the presence of environmental actors in the Monitoring and Selection Committees (there was no discussion or consultation with environmental actors at all in more than one-third of the OPs)[10]. The final aggregated indicator, based on the chosen weighting, supports this description (see Figure 2). In other words, even though policy narratives in ERDF OPs include discourses and explanations that are coherent with promoting the integration of biodiversity concerns, such level of integration has not been achieved by the other OPs components. With this regard, nearly all the literature emphasises the need for going beyond the introduction of mere objectives and principles on paper to make EPI credible and an active aspiration (see for example Lenschow 2002, Lafferty 2002, OECD 2002, Jacob et al, 2008; Hjerp et al. 2011). Kivimaa and Mickvitz (2006) require additional integration efforts to fulfill the other evaluation criteria: consistency, weighting and reporting. In this sense, the incorporation of integration tools at the strategic level is important both for coordination purposes and to show that there is political commitment, but without the existence of other integration components that make applicable mainstreaming principles and goals, such instruments are almost inoperative or in the best case become mere legitimation discourses. In this sense, procedural components are needed to convert analysis and strategy goals into measurable targets and implementation timetables, making more rational and effective the whole decision-making process (Persson, 2004). At the same time, budgetary aspects are deemed crucial to give credibility and send a clear political message of the real political commitment beyond the announcement of integration objectives and principles, while it allows the operationalization of the government‘s priorities in very concrete and often quantitative ways (Peters, 1998). Finally, organisational components are necessary to avoid the problem of institutional fragmentation or departmental pluralism, which is the consequence of policy specialization. According to Jordan (2002), departmental pluralism has given rise to a

[10] All these data come from calculating the average of the percentages of the different typologies of OPs shown in Figure 1.

tendency towards competition between sector departments to realise their interests, which precedes any ‚rational' assessment of a new policy problem if the adequate organizational mechanisms are not put in place.

A potential explanation for these results is that the implementation of changes in the procedural, financial and organisational categories (specially in the last two) implies higher administrative and institutional costs than in the strategic category, since they demand explicit transformations in existing routines, practices or structures that go beyond the mere incorporation of narratives and discourses that favour the mainstreaming of biodiversity concerns. Therefore, such changes and reforms are likely to face higher political resistance and pose a greater challenge to decision makers (Jacob et al, 2008). Also there is often a lack of political will to give priority to environmental concerns (Lafferty and Knudsen, 2007) and lack of authority, power and resources of environmental governmental ministries and organizations to force EPI upon actors (Lafferty and Hovden, 2003). This is more relevant due to the traditionally low status (Weale and Williams, 1993; Lafferty, 2002) of the environmental portfolio, which has historic difficulties when inserting environmental objectives into the decision-making processes of other policies.

When considering the typology of programmes, it can be observed that Cross-Border programmes, compared with all other categories, exhibit the highest level of integration of biodiversity concerns. It is followed closely by the Transnational OPs, which have the highest score in the allocation of funding and the second score in most of the other indicators. It can also be noticed that there is an important gap with the other two typologies of programmes, even though the Convergence Programmes present much better results than Regional Competitiveness.

At this point, the question of why some typology of programs show better results than others arises. With this regard, there are many potential explanatory factors that range from economic, to political, organizational, managerial or even human and personal factors (Stead and Meijers, 2009). In this case, while

recognising the need to develop further research and analysis and acknowledging the potential importance of all these factors as explanatory elements, we believe that organizational factors play a more relevant role than the others and at the same time exercise influence over political, managerial and personal factors.

Whereas the projects implemented under the Convergence and Competitiveness objectives tend to be more locally oriented and driven, and operate under a framework of ‗business as usual' or ‗typical' institutional settings (Member States or regions governmental institutions), the projects implemented under the Cross-Border and Transnational strands of the Territorial Cooperation objective have an international dimension and operate under ‗ad-hoc' and ‗atypical' institutional settings created specifically to increase cross-border or transnational cooperation links (Euroregions, Working Communities, etc.) (See Table 4 column ‗member states and regions covered'). Without formal competencies and the lack of an administrative structure, such institutional arrangements are fully dependent on successful governance processes to coordinate and develop common activities and implement their policies together with other governmental levels (Cots et al, 2009; Perkmann, 2007; Sherer and Zumbush, 2011). Therefore, they have considerable potential for promoting and enhancing linkages between multi-scalar networks from different policy domains (Blatter, 2003), increasing opportunities to mainstream environmental and sustainable development considerations into territorial strategies and development policies (Cots et al, 2009; Mcevoy et al, 2010; Morata et al, 2008).

In fact, innovation is very unlikely to occur in mature systems (for instance, Member States or regional governmental institutions), since most actors are resistant to change and ‗prefer to maintain a stable and predictable environment constituted by the existing institutional context' (Westley et al, 2013). Therefore, such new governance structures suffer less the above-mentioned departmental pluralism problem, since they have a lower degree of functional differentiation and have created less inertias and unhealthy competition between their –if

existent- sectoral departments, thus being more capable to produce a more rational and integrated assessment of the policy problem.

As mentioned above, such organisational factors also influence other political, managerial and human factors, making such institutional arrangements less dependent on existing national and regional interests and inertias. From a political point of view, the newly-established and ad hoc cross border and transnational arrangements follow and pursue their own and separated objectives and interests, with a greater degree of autonomy from the ones established at national or regional level. This makes it more difficult for Member State and regional governments to exercise control over them. From the managerial point of view, the approaches adopted by ad hoc institutional structures use to have a more holistic and integrated view due to the lower status and authority of their sectoral departments, which have not yet accumulated the inherent powers and bureaucracy that national and regional ministries already have. Consequently, they are more oriented to solve specific ERDF „problems' and „situations', and less dependent on existing managerial structures and information flows focused on solving traditional national or regional „problems', covering a wide spectrum of issues that go far beyond the realm of ERDF OPs.

From the point of view of personnel, cross border and transnational arrangements usually have to hire new and specialized staff which will not need to remain loyal to former employees pursuing previously-established organisational interests, with more flexible recruitment policies usually applied.

In terms of economic factors, even though the allocation of budget is substantially different among the existent typologies of programmes, they cannot explain per se differences in the results since they are produced in percentages, not in absolute terms. However, while there is greater awareness of the possibilities for win-win strategies, final success depends on the availability to resources, the entrepreneurial capacities and the long-term commitment of local agents to mainstreaming the environment and sustainability goals across multiple policy domains.

Conclusions and policy implications

Mainstreaming biodiversity considerations into the Structural Funds and the ERDF Fund is a crucial element in achieving the objective as formulated in the Biodiversity Strategy of halting the loss of biodiversity and the degradation of ecosystem services in the EU by 2020, as it has been recognised by key European institutions (European Commission, 2011; Committee of the Regions, 2010).

The ERDF has evolved from a situation in which environmental objectives and activities were generally not integrated into the OPs, to one in which we see a progressive inclusion of environmental considerations, including the spending of important amounts of its budget on biodiversity issues. However, biodiversity is still not among the core areas currently supported by the EU budget. For example, the amount specifically earmarked for biodiversity under the EU funds in 2007-2013 forms only around 0.5 per cent of the total EU budget (Kettunen et al 2009). Conversely, a body of evidence is available that demonstrates the negative impacts of Cohesion Policy funding on biodiversity and ecosystem services (e.g. TEEB 2009).

Finding innovative ways to mainstream environmental concerns into policymaking is becoming even more urgent in the present situation of potential acceleration of climate change impacts, with pervasive effects also on biodiversity conservation, and the growing possibility of having to adapt to high-end future climate scenarios.[11]

To this end, building on the existing literature on the factors influencing the success of EPI (Lenshow and Zito, 1998; Jacob et al, 2008; Hjerp et al, 2011), we have adapted and developed an analytical framework which identifies 4 categories – strategic, procedural, financial and organisational –applicable to ERDF OPs, which present a common approach related to the mentioned categories. According to this framework, the level of success of an EPI initiative

[11] See www.impressions-project.eu

will depend on the extent into which biodiversity concerns have been integrated in a systematic and comprehensive manner on the different categories in a particular OP.

Applying this framework to 46 ERDF-OPs, the results suggest that even though ERDF-OPs policy narratives contemplate and integrate biodiversity concerns ‗on paper' from a strategic point of view, the other components of analysis - namely, in the procedural, financial and organisational categories – show less integration. Even though strategic instruments are essential to communicate high level political commitment and coordinate the other integration tools, they need to be complemented with other practical and implementation-oriented categories to achieve systematic and comprehensive integration. One lesson learnt is that Managing Authorities should seek to introduce and implement a mix of different types of instruments, understand them, and attempt to use them in a way which contributes to delivering policy environmental integration, hence identifying ways to complement and reinforce objectives.

In relation to the typology of programmes, cross-border cooperation is the type of programme that has mainstreamed biodiversity considerations to the greatest extent, followed closely by transnational programmes. Acknowledging the need for further data and research, in this article it is attributed mainly to organizational factors and particularly to the fact that such programmes operate under novel institutional settings created specifically to increase cross-border or transnational cooperation links (Euroregions, Working Communities, etc.), which suffer less the problem of departmental pluralism than other more mature systems –namely regional or Member State public administration- , which in principle are more resistant to change since they prefer to maintain a more stable and predictable environment. In this regard, additional research efforts would be needed to define the type of institutional settings that could enhance better the mainstreaming of biodiversity concerns; to evaluate whether they are likely to contribute to better environmental or sustainability outcomes; and to identify which particular institutional settings may determine the level of success of a EPI strategy in a particular OP.

On a final note, these preliminary results also indicate the need for further research on how to introduce more effective requirements or incentive structures from European regulations that ensure the mainstreaming of biodiversity considerations into ERDF OPs from a broader and systematic perspective. Currently, the allocation of these funds is primarily decided at national and regional levels (Suske et al, 2011) and the implementation deficit in these strategies has become obvious. In practical terms, this implies significant differences in the extent to which not only biodiversity but also other environmental concerns, including climate change, have been mainstreamed into OPs.

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Chapter 3. Cross-border organisations as an adaptive water management response to climate change. the case of the guadiana river basin

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Abstract

In this paper, the authors analyse the role played by cross-border organisations in the Guadiana river basin in Iberia, and the extent to which new emerging institutional arrangements carry on adaptive management practice as a response to mounting climate change risks in the river basin. Particular attention is paid to the new transboundary agencies, as promoted by the EU INTERREG programmes, and their potential for mainstreaming climate change considerations into Guadiana river basin development strategies. Results indicate that the penetration of climate change concerns into regional development policies requires a better integration of different policies and improved connectivity and coordination between multiple actors operating across sectors, and at different spatial scales. The authors argue that the emergence of new transboundary agencies capable of performing these bridging functions is a vital ingredient for building climate adaptive capacity in these cross-border regions.

Key words: adaptive water management, climate change, cross-border cooperation, regional development, policy entrepreneurship.

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Introduction

The hydrological systems of Europe are under increasing pressure to adopt new practices which are capable of coping with the dual pressures of 1) biophysical stressors; such as climate-related hazards, and 2) meeting societal demands for sustainable development. In terms of water stress, climate change scenarios for Europe suggest a significant increase in the vulnerability of communities in southern Europe and the Mediterranean region. Given the uncertainty inherent in these scenarios and the potential for extreme events and surprises (IPPC, 2007) a more decisive move towards greater flexibility in the form of adaptive governance systems has been advocated from various quarters (Folke et al. 2005, Pahl-Wostl 2007).

Adaptive water management is rapidly becoming an emergent paradigm used to counter the limitations of traditional technical approaches to resource management (Pahl-Wostl et al. 2008). The approach builds on the principles of social learning, proposing a transformation in management practice based on the integration of a plurality of sources of knowledge and perspectives. It presupposes a capacity to cope and respond to challenges so that it —reflects learning, flexibility to experiment and adopt novel options‖ (Walker et al, 2004). Bormann, (1994:1) defined —adaptive management as learning to manage by managing to learn‖ whereas Gleick (2003) suggests that adaptive management seeks to improve the capacity of the whole system to respond to change in a proactive way, replacing the paradigm of —management as control‖ by —management as learning‖. However, most current resource management policies and processes continue to be largely subject to the still-dominant paradigm of technical determinism and administrative decision making, though new concepts and institutional changes are being introduced as evidenced by new transitional modes of engagement in the way water regimes are now being restructured (Moberg and Galaz, 2005; Pahl Wostl, 2002). That said, important obstacles such as cultural resistance still remain (Galaz, 2005).

A move towards more flexible and adaptive management practices which are capable of dealing with uncertainty, integrating multiple perspectives (e.g.,

social and natural sciences, expert and non-expert), and taking account of actors and their activity at different levels (European, national, regional and local), will require changes to the design of institutional frameworks (Kallis et al, 2006; Pahl-Wostl et al. 2008). In particular, the way political institutions are designed, implement their policies, and interact with the public and private actors is critical in encouraging a move towards an integrated approach which is able to reduce the worst negative effects of climate change (Pahl-Wostl, 2002). Furthermore, it is argued that more effective institutional frameworks for river basin management will help to facilitate a reasoned response which has emerged from deliberation of an open range of options, with allocation of differentiated and clear responsibilities according to institutional and technical capacities among a multiple set of stakeholders. Ultimately, this entails the development of plural and open institutional structures (Kallis et al, 2006).

This said, it is also important to distinguish between institutions and organizations. As pointed by Oran Young (2008:13) the former relate to —clusters of rights rules, and decision-making procedures that give rise to social practices‖ whereas the latter refers to —material entities that typically have personnel, offices, equipment, financial resources and often legal personality‖. In the case of transboundary river basins, cross-border organizations can play a major coordinating role amongst complex national institutional structures -often involving various types of actors at different scales. These new arrangements would appear to be important mechanisms for not only improving coordination across spatial scales but also enhancing the local capacity of agents to respond to increasing climate change risks. Many of these new formal cross-border organisations, which have been attributed different nomenclatures (euroregions, euregios or working communities), are supported by the EU through the —INTERREG‖ funding initiative and the subsequent 2007-2013 Territorial Cooperation Objective. A core objective of these funding regimes is to foster regional integration and greater collaboration by overcoming the cultural, institutional and administrative barriers that arise from territorial borders.

In this paper, the authors set out to assess the capacity of these new cross-border organisations to promote adaptive water management practice in a

transboundary river basin in the face of global environmental change. The analysis specifically focuses on the case of the „Gabinete de Iniciativas Transfronterizas (GIT) Algarve-Alentejo-Andalucía" (Office of Cross-Border Initiatives Algarve-Alentejo-Andalucía), the operational unit of the Working Communities Andalusia/Algarve and Andalusia/Alentejo, which is located in the Lower Guadiana river basin. The evaluation process was based on a framework of success „criteria" as developed by Perkmans (2002b, 2007), with the concept of policy entrepreneurship[12] applied to a transboundary context. In addition to Perkmans's original criteria (organisational skills, horizontal and vertical networking), two further variables have been added to fit the specific purposes of this analysis: the presence of a strategic approach and the explicit integration of adaptive water management and climate change considerations into the development goals of the cross-border organisation. In essence, this enables the authors to consider the extent to which the organisation fulfils the success criteria, thereby reflecting its institutional capacity to effectively influence adaptive management practice in the transboundary river basin[13].

It is intended that the methodological approach and results from the analysis can be extended and/or adapted to other European transboundary contexts in which euroregions, euregios or working communities have been created. These transboundary agencies, supported or not by the EU Territorial Cooperation Objective, share similar institutional features.

[12] The literature on policy innovation defines policy entrepreneurs as protagonists within specific policy areas who are searching for possible problems for which they can offer a solution (see for example: Mintrom, 1997; Majone and Tame, 1996; Kingdon, 1984).

[13] The case study analysis has been conducted in the Lower Guadiana region (Spain and Portugal) and developed within the framework of the EU project ADAM (Adaptation and Mitigation Strategies for Europe, www.adamproject.eu).

1. Changing patterns of governance and transnational institutional arrangements

As argued by Huitema and Becker (2005) many European river basin management regimes are beginning to experience a shift from a technical management paradigm, primarily based on centralized planning and control and the building of hard physical infrastructure, towards more open, participatory and polycentric-designed management practices where greater emphasis is placed on social learning, building social-ecological resilience capacity, and creating conditions for agents' collaboration (ibid). A significant driver of this change has been the introduction of the Water Framework Directive (2000) into national legislation, with European member states now having to consider ecological and economic requirements, as well as ensuring the integration of stakeholder participation within water management and planning activities (van Ast, 2003; Vantanen, 2005). This new model for decision-makers seeks to bring previously fragmented policy interventions under a unifying governance structure (i.e. the river basin) and achieve a more deliberative approach to water resource management (EC, 2000). As previously stated, adaptive water management (based on the integration of multiple sources of knowledge and the concept of social learning) constitutes an alternative approach which can be used to address the limitations of the traditional paradigm of technical determinism and administrative decision making.

However, whilst greater attention has been paid to water regimes and the impacts associated with the application of the WFD, our understanding of the wider relationships between the development of capacities to deal effectively with water management and other resource and environmental policy issues, such as climate change, energy and sustainable development objectives, remains limited. This constitutes an important knowledge gap as different policy objectives are often dealt with by discrete institutions, administrative processes, and actors. Ultimately, improved integration will involve identifying the factors which influence the key interdependencies between multiple policy domains and administrative agencies in terms of both synergies and conflicts. Furthermore, trade-offs between differing objectives are common and new modes of agent

interaction, as well as new professional skills, will be needed in order to enhance integration, adaptive change, and to support learning processes. In this regard, Westley (2002) and Tompkins and Adger (2004) point out the need to design institutional settings that are capable of managing problems in different domains while linking multi-scalar networks in order to enhance the resilience of socio-ecological systems to global environmental change. The linking of networks is considered to facilitate learning and more adaptive responses to change (Folke et al, 2005), with innovative mechanisms that operate in the space between state and society helping to generate higher levels of social capital (Evans, 1996).

Building on the foundations established by INTERREG, transnational institutional arrangements now promoted under the EU Territorial Cooperation Objective (2007 – 2013) are said to have considerable potential for promoting and enhancing such linkages (Blatter, 2003). These new institutional mechanisms can potentially act as innovative platforms for cross-border relationships between citizens, politicians, institutions, economic forces, knowledge-holders, and other social and cultural agents (Gabbe et al, 2000), however these new structures are often dependent on the resources and decisions of traditional government bodies in order to implement their policies and visions. As such, it has been recognised that the mobilization of private and civil society actors through social networks may be critical for ensuring the effective governance of Euroregions and Working Communities (Perkmann, 2007, 2002a), and in many cases activities will need to be supported by the establishment of cooperative arrangements. This would suggest that the development of the necessary political and technical skills is very much dependent on leadership capacity and an exchange of cognitive resources to manage common public policies.

It is precisely through such interactive activity that policy entrepreneurs are said to develop and make ‗windows of opportunity' to appear and prosper, being able to deploy their resources with the aim of getting other actors –both governmental or non-governmental- to cooperate by providing them with common meanings and identities (see for example: Morata et al, 2008;

Fligstein, 1997; DiMaggio, 1988). The key characteristic of policy entrepreneurs is their ability to ‗marry' projects for change with the activities and interests of other key actors (both government and non-government actors can act as policy entrepreneurs when deploying strategies aimed at promoting their own agenda). In this way, their endeavours are thought to introduce new ideas, norms and values into existing social structures (Rao and Friedman, 2000). The authors of this paper suggest that this is synergistic with the integration objectives of transnational institutional arrangements.

2. Analytical framework

The authors have adopted, and further built upon, the criteria developed by Perkmann (2007, 2002b) in which he establishes a methodology for qualitatively assessing successful governance of cross-border organisations. This framework was chosen not only due to its cross-border focus but also its consideration of the ―policy entrepreneur‖ concept. We argue that this concept is a key variable which affects the effectiveness and adaptability of transnational institutional arrangements. The three dimensions (after Perkmann 2007, 2002b) are:

a) *The development by the secretariat or administrative unit of various organisational capacities that creates the conditions for a relative degree of autonomy.*

b) *The establishment and maintenance of horizontal networking in the local sphere.*

c) *The creation of vertical networking with higher-level authorities, especially the EC, and the central and regional authorities.*

Policy entrepreneurs have the ability to take advantage of windows of opportunity and act as important catalysts of change; whilst at the same time they increase the influence of their own organisation in their respective policy context. Research on EU policy formation has previously applied the concept of

policy entrepreneurship to the European Commission (Moravcsik, 1999; Laffan, 1997), with the Commission thought to act in an entrepreneurial mode by exploiting available resources and mobilising actors and ideas in order to generate new policies that are acceptable to various coalitions of actors.

The concept has also been extended to institutional structures for cross-border cooperation, such as Euroregions or Working Communities. Brouard (1996), for instance, analyses the construction of the Atlantic Arc Working Community, operating from the UK to Portugal, in the context of being a „political enterprise'. As strategic spaces for cooperation and mobilisation of resources, these structures are often dependent on resources and decisions taken at other governmental scales in order to implement their policies and visions. Due to this modus operandi, Euroregions and Working Communities can best develop their activities through active policy entrepreneurship, exploiting windows of opportunity, and fostering their influence through their own strategies and ideas (Perkmann, 2007). Therefore, policy entrepreneurship is dependent on the organisational, technical and communication skills of the transnational institutional arrangement and its ability to build coalitions of actors both vertically and horizontally. In particular, the technical capacity of its agents, its diligence in obtaining funds and fairness in sharing them out, its representativeness and parity composition are basic qualities informing the way it operates. As such, the attributes of a policy entrepreneur can be characterised by a constructive, problem-solving approach which aims to create a climate of consensus between different networks and individual actors in policy making processes.

On occasions, a policy entrepreneur may seek to achieve multiple, often conflicting, objectives. This is often the case for adaptive management practice in transboundary river basins, with conflict likely to increase in the context of global environmental change. For example, mainstreaming climate change and adaptive water management considerations involves the integration of different measures into regional development planning and sectoral decision-making. The effectiveness of such integration in the context of cross-border cooperation will depend on political will, as well as the activity of actors sensitive to those

multi-scalar considerations in the implementation of INTERREG and other transboundary projects. However, evidence suggests that to date the priorities of cross-border cooperation have been focused primarily on transport links and improving transport, industry and energy infrastructure (Gabbe et al., 2000). While these strategies may have an indirect impact in reducing the vulnerability of local populations to increasing climate risks (and to some extent can be seen as an adaptive strategy), this has obvious negative implications for mitigation efforts. If priorities are not balanced with other goals and integrated in a sustainable development vision for the region, the outcome of these processes may create a contradiction between the need to enhance the adaptive capacity of the system and the regional / local and short / mid-term demands for climate change adaptation and sustainable development.

The authors suggest that a more strategic inter-regional collaborative approach may contribute to more balanced decision-making, consensus building around different policy objectives, and joint consideration of wide-ranging sustainability issues. It is argued that cross-border institutional arrangements can improve the opportunities for establishing beneficial links between actors on both sides of the border, inform the prioritisation of local action, and ultimately convert independent and isolated projects into mutual programmes where synergies and win-win situations are exploited[14]. Moreover, advantage can be taken of the opportunity to mobilise actors from both sides of the border and put them in contact with each other, fostering links between them, and providing a solid and coherent basis for carrying out joint work and projects in the future (Gabbe et al., 2000). In support of this agenda, two additional elements were therefore added to our analytical framework:

a) *The adoption of a strategic approach.*

[14] Based on local experience, the Practical Guide on Cross Border Cooperation (2000) stresses the potential of joint preparation and production of strategies for reducing the border's typical barrier effect.

b) The integration of climate change and adaptive water management objectives into development goals, creating an overarching sustainability vision.

3. Cross-border cooperation in the Guadiana river basin

3.1. Description of the case study area

The Guadiana river basin lies between Spain and Portugal and constitutes one of the three main drainage units of the Iberian Peninsula. It has a total drainage area of 66,800 km2. Its climate is semi-arid with low irregular precipitation (440mm/year) and constitutes one of the Spanish river basins with the lowest fluvial input under natural conditions (CHG, 2000). Most of the river basin lies on the Spanish side (see figure 3).

Figure 3 Location of the Guadiana river basin.

Over the past four decades, considerable modification of the local hydrological regime, in the form of dams, illegal wells and increasing urbanization pressures, has caused mounting water scarcity problems along the Portuguese-Spanish border. According to the Portuguese SIAM Project (Santos et al. 2002), Sado and Guadiana stand out as the most vulnerable of the river basins to climate change. Currently, the main problems within the Guadiana river basin are the overexploitation of aquifers, especially significant extraction for agricultural use, agricultural contamination, and fragmentation of the river system by dams (Cosme et al. 2003). Growing water shortages,

summer droughts, and soil desertification will interact to make the management of all these problems more complex in the near future, reinforcing the need for comprehensive and holistic water management approaches.

The Portuguese part of the river basin houses some of the poorest municipalities in the country, severely affected by both an ageing population and chronic unemployment. Indeed, the Portuguese Authorities often associate the poor economic performance of the region with the lack of water availability (WWF, 2003). On the other side of the border, the economic structure and type of environmental problems faced differ slightly. For instance, in the Spanish upper Guadiana basin, exploitation of groundwater for development is regarded to have substantially increased the livelihoods of the people depending on agriculture in this area, but with important ecological costs that many of the local population do not recognize (Maestu and Costejà, 2005). Also, on the Spanish side, fast development processes previously concentrated in coastal areas are now being extended inland with the construction of large scale urbanization and tourism complexes, highly intensive in the use of water resources (e.g. green grounds and golf courses).

3.2. The governance context

In Spain, the management of water resources is mostly carried out by Hydrological Confederations (HCs) with additional jurisdiction falling on several Autonomous Communities (ACs). The Spanish part of the Guadiana river basin is covered by three ACs: Extremadura, Castilla-La Mancha and Andalucía; and three provinces, Badajoz, Ciudad Real and Huelva. In Portugal, the Plano de Bacia Hidrográfica do Rio Guadiana (PBHG) is the sole administrative unit, though its responsibilities are divided between the Alentejo and Algarve regions.

Hydrologic Confederations are responsible for river basin water plans (CAs having regional competence), the management and building of infrastructure, and the allocation of water among users. Traditionally, the main actors participating in the elaboration of river basin water plans consisted of a community formed by the Corps of Civil Engineers, the main agricultural

organizations, construction companies, electricity companies, and chief bodies of hydraulic administrations. However, new actors are beginning to challenge the status quo in an attempt to open and expand the borders of participation of this ‗closed' decision-making community. In particular, academics, local groups, regional communities, and environmental organizations have become increasingly vocal and active in their challenge to business as usual by calling for a transition in existing water regimes (Tàbara and Ilhan, 2008; Saurí and del Moral, 2001).

The Guadiana Water Plan was approved by the Spanish Government in 1998. Whilst the Plan introduced adaptation measures (for example, actions to combat the over-exploitation of aquifers) continuing conflict between groundwater irrigation development and aquatic ecosystems conservation highlights that measures have had limited impact. Although neither the Spanish Water Law nor the Guadiana Water Plan make any specific mention of climate change, the National Water Plan (Law 10/2001, 5th July) does account for potential climate-induced reductions in water availability, with an analysis of the effect of these reductions on resource management and planning.

In Portugal, water management is the responsibility of Central Government, particularly investment and the construction of water infrastructure. As such, the role of the Ministry of Planning is critical. Despite early plans, there are still no river basin authorities in Portugal; rather it is the Institute for Water (INAG) and the Regional Directorates together with the Ministry of Environment which have the responsibilities for the drafting and implementation of the 15 river basin plans for the Portuguese territory. The Portuguese Guadiana River Basin Plan (2001) explicitly acknowledges issues of water quantity / shortage. Critics argue that an integral approach is more efficient in the making of water resource management and regional development plans, specially in integrating climate change (WWF, 2003, Aquastress 2005). In spite of this, actions to counter the problem have mainly been hard engineering type measures i.e. the construction of dams, such as Alqueva, or other irrigation infrastructures.

Transboundary cooperation between Spanish and Portuguese water management regimes is being promoted through several institutional mechanisms, with an intensification of such cooperation evident over recent times. The —Convention on Cooperation for the Protection and Sustainable Use of the Portuguese-Spanish River Basinsǁ (1998), which constitutes the Commission for the Convention Development and Application (CDAC), is particularly worthy of mention. The Convention defines the framework for cooperation in protecting inland waters (both surface water and groundwater) and their dependent ecosystems, and seeks to ensure the sustainable use of water from shared river basins. The WFD, in particular, has been an important driver in this regard, though important obstacles remain.

At the transboundary regional level, the following institutional agreements have been adopted in an attempt to promote cross-border cooperation in the Guadiana river basin: 1) The Regional Development and Coordinating Commission of Alentejo (RDCC-Alentejo) and Extremadura Government (1992); 2) RDCC-Algarve and Andalucia Government (1995); and 3) RDCC-Algarve and Extremadura Government (1995). These agreements have resulted in three Working Communities which are intended to facilitate cooperation between contiguous territorial authorities, providing a space for interaction and knowledge exchange between different actors, rather than forming an additional tier of government. Although activities are cross-border in nature, most of the actions taken by the competent authorities are in accordance with their respective national laws and ultimately do not affect the distribution of existing sovereign powers.

Of particular note is the new organization operating in the Lower Guadiana within the Working Communities of Andalusia-Algarve and Andalusia-Alentejo, as articulated through the —Gabinete de Iniciativas Transfronterizas (GIT) Algarve-Alentejo-Andalucíaǁ (Office of Cross-Border Initiatives Algarve-Alentejo-Andalucía). This is the operational unit for both Working Communities and was initiated by a project approved within INTERREG IIIA Spain-Portugal in 2004. This initiative, despite being conceived as a single unit, is made up of three sections: General Secretariat of Foreign Action (Secretaría General de Acción

Exterior) of the Junta de Andalucía, the Algarve Commission of Coordination and Regional Development, and the Alentejo Commission of Coordination and Regional Development. The purpose of the GIT is to provide support to regional authorities in their implementation of cooperation policies.

3.3. Methodology

In order to evaluate the capacities of cross-border organisations to perform adaptive management practice in a river basin two complementary methodological processes were utilised. The first was a static analysis of theoretical and empirical bibliographic sources. This initial phase also involved a document review, including an evaluation of INTERREG projects from January 2004 to December 2008 (annual reports, technical data and associated documents and Working Communities‘ protocols were all examined). Grey material, such as press reports and local documents, were also reviewed in detail.

The second complementary social science approach involved different stakeholder engagement techniques: a workshop involving both experts and regional stakeholders, supported by a series of follow up, in-depth, interviews with key public and private actors. An initial workshop was held in Mertola in the Lower Guadiana region on the 15th and 16th of December 2006. This was hosted by Associaçao Defensa Patrimonio Mertola (ADPM) a non-profit organization active in the zone with involvement in several INTERREG projects. The meeting brought together representatives from the agricultural and tourism sectors, nature conservation, and actors on the regional governance stage with an interest in sectoral activity. Invited stakeholders were selected according to their field of activity, their organisation, as well as their geographical location in an attempt to ensure equal representation of stakeholders from both countries. The presence of representatives from Portuguese and Andalusian governments, NGOs, farmers‘ associations, and private tourism business managers, ensured that issues such as power, legitimacy and influence over adaptation processes were all considered. The methodological approach used for the selection of the stakeholders as the procedure was based on the general

ideas of Integrated Assessment focus groups (IA-fgs) and Sustainability Science (Kasemir et al. 2003). According to this approach, stakeholders' meetings aimed -and to a large extent successfully did so- a fair representativeness of the plurality of perspectives and the integration of plural sources of knowledge, both quantitative and qualitative[15].

The participatory workshop was intended primarily as a scoping exercise to better understand some of the key sustainability issues facing local communities on both sides of the border. A secondary aim was to explore the role of governance structures in supporting activity; in particular the role played by cross-border institutional arrangements, the interaction between local, regional and national governmental levels, the role of informal institutions, the participation of civil society in the planning and management of water resources, spill-over effects between sectors, regional strategies and the extent to which climate change is accounted for, and associated influences such as the implementation of INTERREG projects.

Informed by this initial diagnosis (literature review and workshop), in-depth interviews were then carried out during a secondary phase of research. The process of identifying suitable stakeholders for interview was carried out in collaboration with a set of preliminary local contacts actively involved in a variety of cross-border cooperation programs. These actors assisted in compiling a list of interviewees based on a wide representation of institutional and sectoral interests in the region, as well as ensuring representation from different geographical scales. A total of 20 stakeholders were selected from this first „snow-ball' process, resulting in interviews that covered different economic sectors (tourism, agriculture, water resources), social groups (environmental, civic, and leisure associations), research institutions, administrative authorities (local, regional administrations) and transboundary institutions. Actors from both Spain and Portugal were represented, some of whom had also participated in the workshop (for a full list of stakeholders, see Table 5).

[15] for further description on methods and composition of participant see ADAM 2006

The interviews were structured according to an open questionnaire format, and focused on trans-boundary cooperation programs, organisational functioning, the role of GIT, and institutional barriers and opportunities to change. The open interview process was the chosen methodology to allow for exploratory insights not anticipated by the researchers. Personal perspectives obtained through both the workshops and the interviews were recorded, transcribed, and the content analyzed inductively.

Table 5 List of engaged stakeholders

Type of stakeholder	**Affiliation**
Political	General Secretary of Sustainable Policies. Regional Environmental Department (Andalucia Government, Spain).
	General Directorate of Plans and Programmes. Regional Environment Department (Andalucia Government, Spain).
	Regional Tourism Department (Andalucia Government, Spain).
	Regional Directorate of Agriculture (Algarbe Government, Portugal)
	Punta Umbria Municipality (Spain)
	Direcçao Regional Agricultura do Algarbe (Portugal)
	Regional Agriculture Department (Andalucia Government, Spain).
	Natural Parc do Vale do Guadiana (Portugal)

	Confederación Hidrográfica Guadiana (Spain)
	Office of Foreign Affairs. GIT (Andalucia Government, Spain)
	Office of Foreign Affairs. GIT (Andalucia Government, Spain)
Economic	EGMASA (Spain)
	Tourism operator (Alentejo, Portugal)
	Tourism operator in Corte Gafo (Alentejo,Portugal)
	Federación Andaluza de Empresas Cooperativas Agrarias (FAECA, Spain)
	Agricultor Mertola area (Portugal)
Environmental/ Social	Greenpeace (Spain)
	Asociación Defensa Patrimonio Mértola (Portugal)
	Ecologistas en Acción (Spain)
	Pura Vida Fundation (Spain)
	Associação Almargem (Portugal)
Experts	Expert in Rural Development from Instituto de Estudios Sociales Avanzados de Andalucía (IESA), Consejo Superior de Investigaciones Científicas (Spain)

	Expert in Water Management and Cross Border Cooperation from Universidade Técnica de Lisboa (Portugal)
	Expert in International Environmental Law and Policy from Instituto Internacional de Derecho y Medio Ambiente (Spain)
	Expert in Water Management from Escola Superior de Tecnología, Universidad Algarbe. Fundação Nova Cultura da Água (Portugal)
	Expert in Governance and Cross Border Cooperation. Universidad de Huelva (Spain)

3.4. Evaluation and reflections

This section, based on the assessment framework described previously in the paper, draws on findings from the literature review, workshop, and interviews, to evaluate and comment on the capacity of cross-border organisations to improve and promote adaptive management practice in the Guadiana river basin. The discussion is structured according to the five assessment criteria discussed previously, highlighting some of the key findings arising from the engagement process (stakeholder comments are shown in italics).

1. *The development of organisational capacities by the secretariat.*

GIT, the operational unit of the respective Working Communities, Andalusia-Algarve and Andalusia-Alentejo, is in charge of coordinating INTERREG Programmes, as well as providing the necessary administrative support. Although seen as having considerable potential to facilitate cross-border interactions, several important constraints affecting the development of

organisational capacity have been recognised. In the first instance, GIT is itself financed by INTERREG and is therefore not a fully autonomous body, and ultimately "its continuity depends on the approval of the European Commission as any other INTERREG project". There are also concerns that funds under the 2007 – 2013 scheme destined for the zone are likely to be dramatically reduced, thus discouraging the generation of ideas and the mobilisation of actors and resources to achieve common objectives in the longer term. Furthermore, although embedded in the Office of Foreign Affairs of the Andalusian Government (Spain) and constituted by three sections (Andalusia, Alentejo and Algarve), operative staff work exclusively for the Andalusian Office of Foreign Affairs as "the Portuguese regions do not have staff contracted in their sections". Furthermore, the lack of capacity is reinforced by the "staff in the office sharing their work time between this project, other projects, and the other usual day to day activities of the Office of Foreign Affairs". In other words, the unit lacks the resources – in terms of capacity, time, and dedication - needed to tackle the multiple difficulties associated with cross-border integration. Similar limitations which directly impact on effective transboundary cooperation are also reported in the conclusions of a workshop on Spanish-Portuguese Cross Border Cooperation 2007-2013 (GIT, 2008).

Other underlying issues also act to hinder capacity building. Crucially, partners on both sides of the border do not perceive the value of the GIT Office either in terms of soliciting or implementing INTERREG projects. Central to this is a question of trust, evidenced by the fact that there is a lack of communication between INTERREG partners and the GIT organisation, an issue acknowledged by GIT staff - "we don't have a fluent relationship with NGOs and other associations, though the situation is different with local councils and regional administrations and departments, with whom we keep a more active cooperation", a situation attributed to the "recent creation of the project and the lack of time needed to establish mutual trust relationships". Taking all these factors into account, it is clear that there are significant barriers to the development of organisational capacity as defined by: parity and a representative nature, the technical quality of its agents, diligence in obtaining funds and fairness in allocation, a technocratic, problem-solving approach, and

an ability to mediate between, and reconcile, the different interests at stake (Perkmann, 2002b, 2007).

2. The establishment, and maintenance, of horizontal networking in a local context.

In the context of the Guadiana river basin, horizontal partnership is given special expression through the relationship between multiple actors in both countries. To be effective, not only is parity required but obstacles relating to funding and the differences between administrations and their respective power relationships need to be addressed. Whilst it was acknowledged by those interviewed that communication and cooperation on both sides has improved significantly over recent years, mainly due to the influence of European funding, parity issues remain problematic. Indeed, deficiencies in joint implementation are noticeable even within INTERREG projects. For example, those projects analyzed have a tendency towards differentiated execution on either side of the border, with each partner using the EU funds to pursue their own national or regional objectives, as exemplified by the comment that ‚*this is how the INTERREG projects works; cooperation is in the words, not in the facts*‖. This is further reinforced by the fact that data from the late 1990s highlighted that only 7.3 % of the resources available for cross-border initiatives between Spain and Portugal actually went into „genuine‘ cross-border activities under INTERREG I (Perkmann, 2002b). There are also concerns that there is a current over-dependence on European funding, with potential implications further down the line. This is reflected in the comments of one interviewee who suggested that ‚*the implementation of INTERREG projects in the area has been a learning experience, but some structures will not continue once European funds are cut*‖. GIT (2008) also cites the low degree of cooperation among different actors as an influencing factor that may hamper the progress of joint projects.

There is other evidence that cross-border „fertilization‘ remains in an early stage, even when it comes to the formulation of objectives. In the

case of the AMEU[16] project, for instance, the Portuguese remit was dedicated to a harbor's rehabilitation whilst Spanish colleagues focused on reforestation tasks. In this sense, according to the interviewees, the GIT (being influenced by the political will and interests of regional governments) still lacks the desired level of independence, autonomy and political vision to operate as a neutral, transboundary secretariat; one which encourages and ensures the application of 'genuine' cross-border activities, acting to mobilize the entire region, and making itself indispensable as a network facilitator or 'broker'.

A further, and important, institutional obstacle to achieving a greater level of cooperation is the relative difference in powers and competencies of regional government agencies in Spain and Portugal (GIT, 2008). Policy making entities in Portugal tend to be more dependent on central decision-making, which automatically reduces the degree of flexibility and capacity needed to implement projects locally (these, by definition, require significant horizontal cooperation). For instance, interviews suggested that a lack of instruments, resources and decision-making powers affects Portuguese administrative units to a much greater degree than their Andalusian counterparts. This was considered one of the main obstacles for advancing cross-border integration as *'Portuguese regions have strong difficulties to implement adopted decisions due to their minor powers and resources'*. From a Portuguese perspective *'there is the perception that Spanish private partners are more supported by their public administrations than the Portuguese ones in the formulation and implementation of the projects'*. This can be attributed, in part, due to their greater regional competences, powers, autonomy and budget.

As a final point, it is important to acknowledge the role of informal networks in the Guadiana situation. Whilst the differences of the regional administrative structures may constitute a very real barrier to effective transboundary cooperation, in reality much of the *'transboundary cooperation and links are more informal than institutionalised'*. However,

[16] Adecuación y mejora de entornos urbanos (AMEU). INTERREG III-A (2004-2006)

difficulties can also arise in knowing ―who the contacts are at the other site of the border to carry out common projects. Some other barriers are the lack of political continuity, the lack of a strategic approach, reciprocal mistrusts and lack of entrepreneurship‖.

3. The creation of vertical networking with higher-level authorities, especially the EC.

According to Perkmann (2002b), the success of Euroregions can be judged within the overall context of cross-border strategies, and the strength of cooperation which has developed between different actors and their activities. This is reflected in the case of the EUREGIO, for instance, which has acted as a genuine policy entrepreneur, exploiting the advantages of its position, and establishing excellent vertical and horizontal relations with other actors operating at different levels. This has enabled it to position itself strategically, mobilise actors and resources effectively, and establish and maintain a special relationship with the European Commission, one based on mutual interest and networking (*ibid*). In Perkmans's words (2002b: 13), ―the EUREGIO actors not only opportunistically exploited windows of opportunities but actively shaped the institutional space in which it was acting. In particular, this concerns the long-term alignment of the EUREGIO to the parameters of EU Cohesion Policy, thereby positioning itself as perfect policy addressee for EU cross border cooperation measures‖.

GIT (2008) acknowledged deficiencies in multi-level institutional cooperation in the area, calling for more involvement of local, regional and national administrations and greater cross-border integration. Several issues contribute to this institutional deficit. Firstly, GIT has not had active involvement with the development of many INTERREG projects, and as such ―*the implementation of each project has been conducted mainly by the Steering and Monitoring Committees of the project itself, with no interference from GIT or other coordinative bodies*‖. In response, GIT staff counter that ―*their role is not to assume such a leadership, but to carry on coordinative tasks and administrative support*‖, arguing that being an INTERREG project, and not an autonomous

organisation, the relationship with other projects is one of equality or *inter pares*'. Though it can be argued that its recent creation in 2004 influences the limited extent of vertical integration, and a general lack of involvement with the implementation of transboundary projects, it is problematic that some partners of INTERREG projects were not even aware of the existence of the GIT Office. Furthermore, there was general consensus amongst key actors that GIT has only made a limited contribution to vertical integration between the supra-national, national and local levels (though there was recognition that *'there is fluent cooperation between GIT and other sectoral departments of the Government*'). The lack of integration was also identified by research carried out which failed to detect cooperation with other national level transboundary organisations.

4. Adoption of a strategic approach

The lack of a strategic approach to collaborative working between different actors has had important repercussions in the way projects have been executed and the way they have performed. Coherence is seen as one of the major problems with *'INTERREG projects being executed by partners without connection among them and by pursuing their own objectives*'. Synergy is also an issue, one highlighted by the majority of stakeholders, with some projects being *'oriented to nature conservation and the recovery of water bodies, while others had an opposite effect, for example promoting models of intensive tourism based on golf courses*'. According to a Portuguese perspective, *'cooperation mechanisms between partners at both sites of the border have been mainly informal, according to the will and personal relationships of technicians involved in the projects. Coordination with other INTERREG projects, or any strategic approach with an integrated view of the projects, does not exist*'. Additional comments suggest that *'it is also lacking an assessment of results from each project, even though there is a general perception of satisfaction among the partners*'.

GIT has recognised the need for improvements in institutional process and, according to the interviews done in July 2007, there is an organisational will to set up and lead a participative process that is conducive to the development of an integrated transboundary strategy (Spanish-Portugal Operational Programme on Cross Border Cooperation 2007-2013[17]). The workshop organised by GIT on Spanish-Portuguese Cross Border Cooperation 2007-2013 and held in Seville in July 2008 constitutes an important step towards the definition of such a strategy. It is intended that this will encompass several domains (including regional development, energy, environment, transport and rural development), providing a more comprehensive and integrated overview, and ultimately improved coherence and direction to all the transboundary projects operating in the zone. Within this context, ADAM research continues to appraise participative and social learning process in terms of adaptive water management and adaptation to climate change. At the time of writing however, GIT has made limited progress with the formulation of this integrated transboundary strategy.

5. Integration of climate change and adaptive water management considerations with regional development goals

To date, evidence for the integration of climate change and adaptive water management considerations into cross-border activities in Lower Guadiana remains elusive. According to the interviewees carried out, there were three main INTERREG III-A projects in the last period (2003-2008) which were tasked with environmental conservation: FAJA (Environment restoration and sustainable development of the Faja Pirítica Ibérica), AMEU (Improvement and Recovery of urban environments), and SUSTER21 (Development of Agenda 21 in municipalities of Lower Guadiana). None of these projects explicitly addresses the issues of water management and climate change. It is

17 http://www.dgfc.sgpg.meh.es/aplweb/pdf/DescargasFondosComunitarios/(341)PO_EP_2007_2013.pdf

also worth pointing out that the "Environment, Heritage and Risk Prevention" section of the GIT documentation (2008) also makes no mention to climate change or water management.

The lack of integration, and apparent insensitivity of regional actors to these issues, was also highlighted by the participants at the Mertola workshop in 2006. The authors suggest that this lack of integration can be attributed, at least in part, to two key institutional barriers. The first of these is the absence of strategic political direction in the form of an overarching sustainable development strategy for the river basin. The second, and of critical importance, is the perception (and reality in terms of implementation) that regional development is of paramount concern at the current time. This is reflected by the stakeholder comments: "*climate change is not seen at all as a priority for the main stakeholders in the area, who perceive they have to attend other immediate problems such us unemployment or infrastructure development*", and more frivolously "*climate change is for penguins*".

Conclusions

Consensus is building amongst both research and policy communities that more flexible, and inclusive, adaptive responses will be needed to effectively address the complex and uncertain threats associated with future global environmental change. This is especially important in circumstances where socio-ecological interactions take place in a transboundary context (as is the case with many European river basins). Having unique institutional frameworks which are capable of bringing together multiple actors, introducing and discussing new ideas, and reshaping political processes according to territorial needs, the evolution of new cross-border organisations (Euroregions, Euregions, Working Communities, etc.) is considered to be a valuable contribution to building adaptive capacity at the regional scale. By definition, their area of influence is shared by at least two countries, they enjoy a flexible structure based on networks of both public and private actors, and their capacity to intervene in several spheres of activity and regulatory areas is relatively high. From this perspective, these new institutional arrangements can also be considered particularly suitable for mainstreaming climate change and adaptive water management considerations into regional development strategies, and seeking to steer progress towards a more sustainable pathway in the longer term.

This article seeks to shed light and contribute to provide research criteria for assessing the capacities European cross border organisations have when facing the challenge of performing adaptive management practice in the face of global change in transboundary river basins. To assess this ‗enabling' capacity in reality, this paper has commented on research which has analysed the adaptive management role of Working Communities Andalusia/Algarve and Andalusia/Alentejo as experienced by its operational unit, the GIT. In order to do that, we have applied to GIT a framework of success ‗criteria' as developed by Perkmans (2002b, 2007), based on the concept of policy entrepreneurship. Ultimately, we argue that the promotion of adaptive water management practice in cross border organisations depends on the implementation of policy entrepreneurship criteria (organisational skills, horizontal and vertical

networking), combined with two further variables: the presence of a strategic approach and the explicit integration of adaptive water management and climate change considerations into the development goals of the cross-border organisation.

The results of this operation have highlighted several deficiencies affecting the performance of the GIT and its weak interaction with multiple actors on both sides of the border. As a consequence, the authors argue that cross border organisations such as these require additional resources and dedicated effort in order to improve the design of current institutional arrangements and the organisational capacities which are ultimately needed for effective, and collaborative, adaptive management. Limitations of GIT activity can be attributed to associated inequalities of power distribution on the two sides of the border, differences in administrative rules, a lack of vertical and horizontal institutional cooperation, a lack of NGO and private actor involvement, as well as its current organizational structure. Importantly, the GIT has not yet been constituted as a stable and autonomous organization, but rather as an INTERREG funded project outcome which is subject to periodic reformulations, uncertainties about its future continuity, and a remaining dependence on the political will of regional administrations. This situation (combined with its relatively recent creation and a lack of time to establish mutual trust relationships) restricts its capacity for assuming leadership among regional networks of public and private actors, and appropriating cross-border activities in the area. These factors indicate a low level of entrepreneurship, translating into limited potential for influencing adaptive management practice. The authors also contend that the absence of an overarching and long-term integrative strategy with a clear sustainability vision has resulted in a proliferation of EU-funded projects in the region with little coherence or connection, even to the extent that projects may actually pursue contradictory objectives.

However, on a final note, there are promising signs indicating that some of these institutional issues have been identified and there is at least an expressed political desire to attempt to address and overcome obstacles. This has been noted as an important development by regional actors particularly in light of the

next INTERREG funding period (2007-2013). Responding to this agenda, GIT is now planning to elaborate on, and implement, a transboundary and participatory strategy for the period 2007-2013. If successful, it is likely that the GIT will play an increasingly more central and entrepreneurial role in developing institutional and social capacity in the river basin, consolidating its position as an organization capable of leading a more transition-focused process that both mobilizes civil society actors and coordinates activity across governmental jurisdictions. By linking different domains and networks, whilst taking into account cross-sectoral issues and new opportunities derived from climate change discourse and practice, this is a progressive step towards more sustainable development in the Guadiana region.

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Chapter 4. Adapting to water scarcity in a changing climate: the role of institutions in transboundary settings

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Abstract

Global climate change scenarios indicate an increase in drought-affected areas over the coming decades, with arid and semi-arid areas considered particularly vulnerable. This chapter focuses on the transboundary Guadiana River Basin, where the river acts as a natural border between the neighbouring Mediterranean countries of Spain and Portugal. This case study represents a typical semi-arid region where human activity and modification of the hydrological regime over previous decades have led to increasing water scarcity and the identification of water shortage as a ‗structural characteristic' of the system. Future climate change will act to amplify existing water stress, with important consequences for the availability and distribution of water between different land uses. Addressing water scarcity as an outcome of complex socio-ecological interactions, this chapter reflects on possible conflicts and convergences between different sectors and the role of institutions in pursuing multiple-goal strategies in a transborder context. This evaluation will be informed by consideration of the institutional settings conducive to adaptation, as well as a critical appraisal of horizontal, vertical and transborder policy frameworks, and their enabling role in promoting adaptation activity.

Introduction

This chapter draws from research being carried out for the EC-funded ADAM project (Adaptation and Mitigation Strategies: Supporting European Climate Policy18). This is a large-scale integrated project involving research institutes from across the EU which aims to address one of the main threats facing future societies – climate change. An increasingly consensual view, promoted through the collaborative efforts of the international scientific community, is that climate change is happening, and importantly, that human activity is making a discernible contribution to this change (IPCC, 2007). Although mitigation continues to be the prime focus for policy makers (for example, the Kyoto Protocol came into force in 2005), the mid to late 1990s witnessed a shift in emphasis, with the international scientific community becoming increasingly concerned about the risks associated with a changing climate and the need for nations and communities to adapt (McEvoy et al, 2006). In response, the ADAM project (2006 – 2009) is not only researching the reduction of greenhouse gas emissions i.e. the mitigation agenda, but is also jointly considering how to adapt to change that is unavoidable. This dual focus is based on the understanding that much of the change in climate over the next 40 years or so is already pre-determined by past emissions.

Climate change is likely to bring both opportunities and challenges - for instance, the European Environment Agency (EEA, 2006) documented the wide ranging impacts of climate change for Europe. For some (particularly in Northern Europe), the opportunities will result from warmer summers and milder winters, though for others the challenges associated with flooding, droughts, heat extremes, and storm events are likely to be much more substantial. For those arid and semi-arid regions located in Southern Europe climate change is likely to make droughts an increasingly common occurrence. The predicted increase in both the frequency and severity of weather-related extreme events will result in impacts that will cascade through social and economic domains. This recognition, that climate change is not only an environmental issue but will also have very important social and economic implications, was given an

[18] http://www.adamproject.eu/

important public airing by the Stern Review, 2006, and is partly responsible for reinforcing the heightened profile of the climate change issue and its recent rise up many national policy agendas. Indeed, this is not only a distant threat – an increase in climate variability and extreme events are already being observed, as evidenced by the 2003 heat wave which affected many cities across Europe, resulting in tens of thousands of heat-related deaths, and the outbreak of forest fires, following a long drought period, across the Mediterranean region in the summer of 2007. Notably at the same time, another part of Europe, Northern England, was experiencing widespread and devastating flooding. Increasing scientific consensus suggests that these types of extreme events will become even more commonplace in a future, warmer, climate (IPCC, 2007).

Although human responses to environmental stresses are not new, nor even a new subject of scientific enquiry, adaptation to climate change is an evolving area of interest to both research and policy communities, though it is important to note it is one still very much in its infancy. Indeed, the scale, complexity, and global nature of climate change pose significant challenges. —Climate change represents a classic multi-scale global change problem in that it is characterised by infinitely diverse actors, multiple stressors and time scalesǁ (Adger, 2006: p.273). Furthermore, despite human systems having some degree of capacity for self-adjustment it is increasingly recognised that the likely pace and intensity of climate change will be such that planned adaptation will be needed to reduce vulnerability and / or exposure to a range of different climate-related hazards.

The crosscutting nature of possible adaptation responses adds further complexity to this already complicated mix. Conceptually, a definition of adaptation commonly used is the ‗adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities' (IPCC, 2001). As our understanding of what adaptation actually involves has improved over time, it has been recognised that planned adaptation can: 1) focus on either managing the impacts of the climate-related hazard, reducing exposure to the hazard, or reducing the vulnerability of elements at risk (though in reality responses may sometimes overlap in their categorisation); 2) involve a range of actors

throughout society from Governments down to individuals; and 3) manifest itself in many forms (the Stern Review, for instance, highlighted differences according to whether measures were anticipatory or reactive, private or public etc).

Recent attempts to make the concept operational, and hence more relevant for practitioners, have also found that distinguishing between process (building adaptive capacity) and outcome (the delivery of actual adaptation measures) can be useful (UKCIP, cited in Tompkins et al., 2005). This is reinforced by the academic work of Smit & Wandel (2006) who noted that in the context of human dimensions, adaptation refers to a process, action or outcome in a system which is aimed at adjusting to some changing condition, stress, hazard, risk or opportunity; as well as Stern (2006) who distinguishes two levels of adaptation: a) building adaptive capacity, and b) delivering adaptation action. The distinction between process and outcome has also proved to be a useful method for framing ADAM research activity.

1. ADAM case studies as 'learning examples'

Adopting a bottom-up, actor-based, perspective, ADAM research carried out to date has involved the elicitation of expert knowledge from those largely responsible for adaptation in practice (although influenced by multi-level processes, the operationalization of adaptation is primarily local in scale, with measures needing to be suited to the local situation – accounting for hazard, exposure, vulnerability - in order to be effective). Of special interest is how organisations develop their understanding of climate risks, and then move beyond this to the implementation of adaptation measures i.e. the process of enabling adaptation to take place.

The research programme was specifically designed to ensure that engagement with stakeholders played a key role in the learning process, with interaction occurring through interviews, questionnaires, and stakeholder workshops. As well as holding important information on adaptation at the scale of implementation, these actors can also often act as „gatekeepers' to valuable

anecdotal evidence and unpublished reports (Tompkins et al, 2005). This is backed up by the ADAM experience which has discovered that although many interesting things are being done, in many cases these are not ‗badged' as adaptation or even disseminated as such. It was intended that an actor-based approach such as this will provide a valuable perspective on institutional adaptive management, the determinants of adaptive capacity, as well as highlighting those mechanisms needed for delivering adaptation. This was considered important as ‗research focussing on specific adaptation options rarely investigates the processes through which adaptation measures are undertaken' (Brooks, 2003).

Engaging with experts and other key stakeholders in the learning examples was originally perceived as a process involving several cycles of learning: starting with a definition of the research questions, planning the stakeholder engagement process, engaging then reflecting on the responses before developing new questions to delve deeper into existing issues or to explore new ones through further rounds of engagement. By interacting with key actors in this way the research team hoped to uncover valuable information on some of the key drivers for change, identifying what supports effective adaptation decision-making in different institutional settings (as well as what barriers to learning and information sharing exist), and how individuals and organisations interact in ways that either enhance or impede this. This iterative approach, where the output of one engagement informs the focus and questions for the next round, enables the research team to be open to emerging ideas and themes that may not have been obvious at the start, allowing for more genuine learning (and the possibility for surprise and unexpected connections). Ultimately, the overall aim of the learning examples is to better understand how successful adaptation is managed by different organisations and within different institutional settings (McEvoy et al., 2008).

The selection of ADAM learning examples (involving different sectors, themes, and landscape types) were chosen to ensure representation of a range of different characteristics and circumstances, including differences in geographical location and vulnerability, levels of awareness and perception of

risk, institutional presence, decision-making cultures, and the roles and motivations of public bodies and private interests (as well as relationships between them). This chapter reflects on the process of adaptation (in particular institutional adaptive management and the building of adaptive capacity) and is based on scoping analysis carried out for the lower Guadiana River Basin, in particular a series of interviews and stakeholder workshops held in 2006 and 2009 (note: the ADAM project has three regional case studies – Guadiana focusing on water scarcity, flooding issues in the Tisza region in Hungary, and an international case study, Inner Mongolia, which focuses on issues surrounding desertification). That said, discussion in this chapter is also grounded in the work carried out across the full suite of ADAM learning examples.

2. The institutional context

The research team embraced a broad definition of institutions i.e. being a —system of rules, decision making procedures, and programs that give rise to social practices, assign roles to participants in these practices, and guide interactions among the occupants of relevant roles‖ (as used by IHDP, amongst others). Up front, it is important to distinguish between organisations (stakeholders or actors) and institutions (the system of rules which influence actor behaviour and determine the character of their practices). Institutions can be said to enable or constrain behaviour, operate at multiple scales, and have a certain level of permanence (Bakker, 1999), and can also be either formal or informal. Formal institutions are created explicitly; though informal institutions can also arise as process of social self-organization and through social order reflecting culture, habits and customs (Scott, 1995).

For the ADAM project, it was envisaged at the outset that the latter category would be an important focus of the research process in recognition that the degree of shock caused by an extreme event can be ‗positively correlated with the degree of informal arrangements set up to mitigate it' (SIRCH, undated). Institutions were also to be investigated according to a number of perspectives

(see for example: Pelling and High, 2005): structural (social, economic and political), agency-centred (examining the importance of power and access to power between different actors) and adaptive capacity (particularly the role of learning as embedded in social relationships).

Looking back over recent history, whilst vertically integrated hierarchies were once seen as an appropriate institutional order, the 1980s and 1990s saw a challenge to the idealised model of democratic government, with political science literature characterising a ‗hollowing out' of functional governance (Pierre and Guy Peters, 2000). It is now postulated that the governing state has been replaced by an enabling state, and that there has been a discernible shift from ‗government' to ‗governance' with a greater emphasis on coordination and facilitation. An important outcome of this ‗re-scaling' of state functions has been the rise of broader and more dissolute local governance which extends beyond the formal agencies of local government, and it is argued that politics is increasingly conducted outside traditional institutions. Further evidence suggests a blurring of boundaries between public and private spheres, and a transnationalisation of politics (Kenis and Schneider, 1991).

During this period there has also been an increasing emphasis on environmental concerns and a desire to more closely align societal activity within the limits of natural capital (working with rather than against nature). This change of perspective has combined with a trend towards the decentralisation of environmental policy, acting to create new regulatory and political dilemmas at the local level, dilemmas that are said to necessitate new coordinated governance structures (Gibbs and Jonas, 1998). This is reflected in the move towards new forms of governance in water resource management, with a shift from a technical management paradigm (and a reliance on rigid functions and hierarchies) towards more flexible ‗adaptive management' of shared resources. This new management approach is based on more open and inclusive processes where social learning, changes to organisational management practice, and the integration of information and a plurality of perspectives, are all considered important attributes (Pahl-Wohl, 2007) i.e. the ultimate aim is to achieve a balanced and flexible system of decision-making with an explicit

consideration of many different points of view. The emergence of institutional diversity (as described by Ostrom, 2005, for example), and the linking of public and private actors to achieve shared objectives, has heightened the importance of networks, and other similar mechanisms, which act to support collaboration, learning, and the building of adaptive capacity. Such platforms are considered critical for achieving iterative and decentralised solutions which are specifically tailored to local circumstances *(ibid*).

Informal interaction is often cited as particularly important for enabling ‗context rich learning' amongst local actors e.g. the space of informal interaction that lies outside of, but interacts with, formal institutions and relationships has been characterised a ‗shadow system' (Stacey, 1996; as cited in Pelling and High, 2005). It is important to realise that these informal institutions are not meant to replace existing formal entities per se rather they can provide valuable space for reflection, an exchange of perspectives, and potential cooperation between different stakeholders and interests' i.e. to complement those formal institutions which are based on more vertical lines of command.

In the EU policy domain, cross-border initiatives have been part of European thinking since the early days of the supra-national process. This is evidenced by the Association of European Border Regions (AEBR) which was established in 1971 in order to stimulate cross-border cooperation (in keeping with the spirit of enhancing economic harmony between neighbouring countries). A further boost to this agenda was the introduction of the INTERREG funding programme in 1988, which sought to actively promote cross-border initiatives i.e. working together on common projects to develop new solutions to economic, social and environmental challenges. This mechanism has recently been succeeded by the 2007-2013 Territorial Cooperation Objective, which has similar objectives, seeking to foster integration and overcome barriers to collaborative activity and the pursuance of sustainable development (Cots et al., 2007). Elsewhere, the inclusion of stakeholders in a meaningful way was promoted by the White Paper on European Governance (2001) which emphasised five key principles: openness, participation, accountability, effectiveness and coherence. Launched in 2000, these principles were also embraced by the Water Framework

Directive (WFD). Introduced in an attempt to combat fragmented policy intervention, the WFD designates the river basin as the primary unit for governance and emphasises the integration of stakeholder participation into planning and management activity, including meeting sustainable development obligations. This piece of legislation is considered to be the major driver for achieving sustainable management of water resources in EU Member States for the foreseeable future.

It is within this evolving institutional context that the authors now reflect on the institutional response to climate change in the transborder Guadiana River Basin.

3. The Guadiana river basin: past, present and future

The Guadiana River Basin is one of the three main drainage units of the Iberian Peninsula (Duoro and Tejo being the others). It has its source in Spain (which has the largest storage capacity of the two countries) before flowing into Portugal and then, in its lower reaches, acting as a natural border between the two countries (see: Figure 3). Subject to a semi-arid climate regime, the water balance is particularly fragile in the river basin with water shortage considered a structural characteristic of the system (Cots et al., 2007). This historic problem has worsened in recent times with analysis conducted for Portugal highlighting decreases in both precipitation and stream flow. The SIAM project report published in 2001 indicated that precipitation data (1931-2000) shows a generalised but weak decreasing trend that has become much more pronounced after 1976. Recent trends also include a shorter rainy season, an increasing number of consecutive dry days, and an increase in the frequency of severe and extreme droughts, particularly in the southern region, over the last ten years (SIAM, 2001). This evidence is emphasised by the drought of 2004-05 which was the most severe recorded since the 1940s (INAG, 2005: as cited in Kilsby et al., 2007). Furthermore, of the three main river basins, the Guadiana river basin has the lowest fluvial flow under naturalconditions (according to the

National Plan the average annual precipitation is about 960mm/year, though the Guadiana basin recives much less a mere 570mm/year).

Figure 4 Location of Guadiana River (source: Encarta)

Although obviously a key factor, the decrease in precipitation is not the sole variable affecting river flow and water availability. Another important stressor is significant human modification of the hydrologic regime that has taken place over the past forty years, with the Guadiana River now having highly controlled flows (primarily as a result of the increasing use of dams to store water in order to satisfy the substantial demand from agriculture and other economic sectors). Other stressors that further compound the water scarcity problem include illegal wells to extract groundwater and increasing urbanisation (Cots et al., 2007). This combination of factors has led to a certain degree of cross-border tension between the two countries, with intensive extraction on the Spanish side leading to a progressive decrease in the quantity and quality of river flow downstream

(the low flows are such that salt water intrusion is also becoming an issue in the lowest reaches), raising Portuguese concerns about reduced and irregular river flows (Maia, 2000). It is also possible to view these transboundary issues through an economic lens, with the intensive use of water resources helping to support the livelihoods of people in the Upper Guadiana basin, though the cumulative effects downstream, as well as the indirect ecological costs, remain largely unrecognised (ADAM, 2007). In stark contrast, some of the poorest municipalities in Portugal can be found across the border, with problems relating to an ageing population, long-term unemployment, and the trend for an out-migration of young people. Indeed, Portuguese Authorities often link these state of internal affairs to the water shortage situation (WWF, 2003).

Potential conflict is not only confined to different geographical entities but also extends to competing sectors due to a strong differentiation of land use in the river basin. In the lower reaches, tourism is dominant on the Portuguese side with the Algarve a popular coastal destination (the richness of natural heritage in the area is also important as an alternative tourism offer – for example, about 100 wetlands have been linked together to form the La Mancha Húmeda Biosphere Reserve), whereas on the Spanish side, tourism competes for land and water resources with intensive agriculture (the Costa del Sol region). The middle zone is hilly and forested on both sides of the divide, harbouring a unique ecosystem called dehesa (Spanish) or montado (Portuguese). Supporting a mix of extensive agriculture, forestry (particularly cork and common oak), and cattle breeding, the ecosystem is considered to have a high landscape value and is defended as part of the region‘s cultural heritage. The upper reaches are dominated by large-scale agriculture, with crops including cereals, wine, olives, and citrus, though the share of irrigated land is expected to change with the operation of the new Alqueva dam on the Portuguese side (ADAM, 2007). Newly created, it is intended that the dam will bring security of supply benefits, though water allocation remains uncertain and there are concerns about a tendency to disproportionately favour larger sectors and organisations (industry, intensive agriculture etc.) to the detriment of other aspects of regional development [e.g. to make Alentejo the „garden‘ of Portugal] and issues such as nature conservation (ibid).

As a semi-arid zone, it can be seen that the combination of irregularity and intensity of rainfall, significant variability in year-by-year rainfall and temperature, and an over-exploitation of existing water resources, all interact to influence the availability of water in the Guadiana. However, as we look to the future, it is vital that changes to the climate are also factored into all planning and development decision-making processes. The two most important climate impacts for this river basin, as cited by Siam (2001), include a rise in temperature (by 2100, most global circulation models estimate that the Iberian Peninsula will experience an increase of between 4-7 degrees Celsius) and a reduction in rainfall (an annual decrease in rainfall of around 100mm/year is likely, though it is important to note that there will be significant seasonal variability with the months of spring set to be worst impacted). Other recent research corroborates this evidence, with a study by the Spanish ECCE Project (2005) highlighting that water shortages, summer droughts and desertification are very likely to increase in the future, and the impact assessment carried out by Kilsby et al (2007) projecting a major reduction in flows caused by both a reduction in rainfall and an increase in potential evapo-transpiration (PET). The frequency and intensity of extreme events, such as droughts, will therefore become increasingly problematic for the Guadiana region.

A changing climate will have important direct and indirect consequences for economic activity in the region. For instance, a dominant agricultural sector will be subject to decreased precipitation during the growing seasons (spring and summer) with increased irrigation requirements at a time of low water availability, ultimately adding to existing conditions of water stress. Furthermore, the system is also likely to be impacted by ‗multiple-stressors' (see for example: O'Brien et al, 2004), including: threats from new pests and diseases, a worsening of erosion and desertification, a loss of fertility, and a greater incidence of forest fires. Changes to climatic conditions also enhance other risks to forest resources, especially through increased tree mortality and land degradation (SIAM, 2001). This is particularly unfortunate as the rise in temperatures will increase the demand for outdoor recreation, with forests and woodland areas having the potential to provide suitable conditions and micro-

climates for a range of activities (this highlights one obvious link between leisure / tourism and the natural environment).

It is likely that tourism in the region will also be impacted negatively, both directly and indirectly. The indirect impacts on tourism activity relate to climate change increasing the vulnerability of attractive local landscapes (for instance in terms of forest fires), with important implications for the ‗carrying capacity' of the area (McEvoy et al, 2008b; Garrigos Simon et al, 2004). More directly, many studies have suggested that Mediterranean region will become less attractive (and competitive) under climate change though much of this analysis is based on increased temperatures e.g. a northwards shift in tourism patterns in Europe as the appeal of the Mediterranean deteriorates, in contrast to more northerly European Union (EU) destinations which may potentially benefit from hotter summers (McEvoy et al, 2006b; Amelung and Viner, 2006; Agnew and Palutikof, 2001). Here again, other issues may also come to the fore, including increased incidence of disease, water shortages, desertification etc, as temperatures rise.

However, there is another hypothesis to consider. This is that decreasing water availability in the region may act as a significant barrier to long-term sustainable tourism, and lead to competition between the tourism and agricultural sectors not only in terms of land but also more and more in terms of access to water. Although water availability is not a major focus of the majority of climate change and tourism studies particularly at a macro-scale, it is evident that the projected impacts for the region are serious, even potentially threatening the bipartite water treaties signed between Spain and Portugal, with the supply of water to both urban and rural regions of Portugal of major concern (Kilsby et al, 2007). The transboundary tensions are encapsulated in the Portuguese demand for 6 million Euros in compensation from its Spanish neighbour after flows in the Duoro River fell below limits agreed by a bilateral agreement during the recent severe drought event (*ibid*).

As a final point, it needs to be re-emphasised that climate change is only one of a set of multiple stressors; though it will act to intensify existing problems in

the river basin system, as well as introducing new uncertainties. In light of these new emerging climate-related risks (see Table 6 for a summary of risks and adaptation options), the authors argue that new transboundary institutional structures will be needed to enable effective adaptation responses, ensure that a balanced ‗multiple-goal' strategy is in place, and ultimately, promote regional development pathways in both countries that are sustainable in the longer term.

Table 6 Climate risks and adaptation: Guadiana (adapted from Tàbara et al., 2009)

Climate risks		**Adaptation**	
Recent trends and signals	***Main impacts***	***Drivers***	***Some potential responses***
Increased temperature	Agriculture	Economic globalisation of local farm products (e.g. olive oil).	Agricultural and economic diversification.
Increased desertification	Tourism	European, national and regional climate change, water management and rural development policies.	Increase scale of farm markets, by concentrating on certain products
Erratic rainfall.	Water availability	European funds	Dry crop irrigation and water reuse.
Impact on local biodiversity	Water quality problems.	Pressure of NGO s and civil society movements.	Promotion of rural tourism, local handcrafts and products.
Impact on traditional landscapes such as the ‗dehesa' (formed out of cork oaks, and other adapted species)	. Increased risk of forest fires.	Some new transboundary institutional regional arrangements triggered and supported by EU regional and rural development	Promoting and modernising the traditional dehesa ecosystem.

		policies, such as INTERREG, leading to ‗re-regionalisation'	
Depopulation.	Migration of endemic species.		Identify and plant drought and heat tolerant crops & management systems.
Increase of forest fires	Sea level rise (impacts on tourism, erosion of the coast, etc.)		New transboundary institutional arrangements linked to regional and rural development policies.

4. Institutional adaptive management in the Guadiana River Basin

As discussed, water resource management issues in the Guadiana basin are complex and multi-faceted, with responsibilities shared between countries and across spatial scales and different sectors. As such, there has been a long tradition of cooperation between Spain and Portugal over their shared resources, though it is becoming increasingly evident that the design of new cross-border institutional arrangements is needed to ensure a comprehensive and effective adaptive management response to the mounting environmental threats that will be amplified by climate change, in particular that of water scarcity and potential future conflicts between different countries, sectors, and actors. Although the WFD has undoubtedly given impetus to the restructuring of water regimes across the EU, and in this case study intensified levels of cooperation between the two countries, it is apparent from ADAM scoping activity that many obstacles to sustainable resource management and environmental protection still remain in this particular transboundary context. This viewpoint is reinforced by feedback at the ADAM stakeholder workshops

(Mertola, Portugal, 2006 and Seville, Spain, 2009) which highlighted a few isolated initiatives and the lack of an integrated approach as deficiencies of the current situation. As a result, a key recommendation coming out from this engagement process was an urgent need for improved coordination of water resource management activity in the region.

First taking the two countries as separate entities, Spain has designated responsibility for the development and implementation of regional water plans to hydrologic confederations. Although welcome advances have been made under this new regime, including the approval of a Guadiana Water Plan in 1998 which sets out to correct overexploitation of wells and groundwater on the Spanish side of the basin, voices remain critical of the closed nature of the decision-making community and there is ongoing pressure to expand the community beyond the ‗usual suspects' of engineers, agricultural organisations, construction and energy companies etc (Cots et al., 2007). Portugal does not escape criticism in relation to institutional shortcomings. Despite early plans, the country has yet to introduce authorities that have specific responsibility for the river basin, instead allocating responsibility for river planning to the national Institute for Water (INAG), regional directorates, and the Ministry of Environment. Although there are signs of some degree of institutional change being embraced in both these national cases, progress has not been as rapid or as far reaching as many stakeholders in the region would have liked, with policy making and management decisions continuing to be informed by the dominant paradigm of technical determinism (ibid). Indeed, there are concerns that an over-reliance on centralised planning may be counterproductive in the longer term, limiting flexibility and capacity to adapt under new conditions of uncertainty.

On a more upbeat note, the emergence of new transboundary arrangements in recent times has acted as a stimulus for greater cross-border cooperation and represents considerable potential for enhanced collaborative activity in the future. The first example is the bipartite treaty ‗Convention on cooperation for the protection and sustainable use of the Portuguese – Spanish river basins'. This formal treaty has resulted in the establishment of the Commission for the

Convention Development and Application (CDAC) as a coordinating / cooperation mechanism, though critical analysis suggests that although there has been some success in terms of knowledge sharing and cooperation, the goal of joint management remains elusive (Maia, 2001). The second example which attempts to support transboundary initiatives is Gabinete de Iniciativis Transfronterizas (GIT). This organisation was set up following funding from the INTERREG programme in order to lead a process of participation aimed at informing an integrated transboundary strategy for the period 2007 – 2013. In light of the arguments put forward in this chapter, the authors consider this organisation an especially important asset for the river basin. Not only does it operate as an implementation authority for INTERREG, it also acts as a bridging organisation between the countries, attempting to integrate many sectors and themes as well as mobilising and fostering links between different actors. As planning for climate change will benefit considerably from a more flexible and adaptive paradigm (in order to deal with uncertainties and the consideration of multiple stakeholder perspectives) the role of GIT in providing networking capacity, championing the transition process, enhancing the coordination of activity operating at different scales, and linking across sectors and policy domains, will be an invaluable resource for promoting regional sustainable development.

Beyond the institutional dimension, and in more practical terms, adapting to climate change on the ground needs to be underpinned by a better understanding of context specific climate risks. Assessment tools are needed not only to evaluate anticipated climate-related hazards but also to determine the vulnerability of different ‗elements at risk' in the Guadiana river basin. The heterogeneous stakeholder dimension will also need to be accounted for. Whilst the generation of such knowledge is obviously important for risk management and decision-making it can be argued that its subsequent transfer and integration within local management activity is just as critical, if not more so. The need for knowledge transfer, awareness raising, and education is best illustrated by a comment made at the ADAM stakeholder workshop – *climate change is for penguins*. Although an ‗off-the-cuff' remark by one of the attendees, it does reflect a disconnection that many people feel from the

enormity and timescale of the climate change issue and a common perspective that it is either not a problem to be personally concerned about, or alternatively that its problem structure is so complicated there is little that ordinary people can do about it. However, when discussions are reframed in a local community context or according to issues important to day-to-day activity, then personal experience and anecdotes of increasing water stress, periods of drought, fire outbreaks etc begin to emerge. Hence, engaging with different stakeholder communities, and raising awareness that extreme weather-related events will likely increase in both their frequency and intensity under a changing climate, is an important component of the process of adaptation.

When considering and evaluating potential adaptation options in the Guadiana river basin it will be important to consider the inter-linkages, as well as potential spill-over effects, between different sectors. Scenarios indicate that water resources will be significantly impacted by climate change in the future, however there is a need to move beyond a purely hydrological focus to consider the portfolio of inter-linked resource management issues within a broader socio-ecological framework. Examples of important considerations for regional decision-making include: the impacts of land use policy on water availability (agriculture and tourism sectors as drivers of demand), the socio-economic conditions present in different areas, and even the role of economic diversification as a potential adaptation strategy e.g. promoting the combination of extensive agriculture with sustainable forms of tourism (although not introduced to address climate change specifically the value of diversification has already been recognised by the European Commission through its attempts to encourage the combination of agriculture and tourism by means of specific directives, and the promotion and enhancement of rural development). In particular, decision-makers need to identify the inter-dependencies between multiple policy domains (agriculture, irrigation, sustainable water management, tourism, and rural development are all closely intertwined) in order to better understand trade-offs, synergies and conflicts between different agendas. These dependencies will be fundamental issues in the challenges posed by climate change to the region.

In summary, research findings suggest that although formal institutional arrangements in the Guadiana river basin are evolving, significant barriers still need to be overcome. These derive either from the transboundary setting (inequalities of power, and differences in language, culture, and administrative rules) or from inherent deficiencies in the transitional institutional framework (restricted participation opportunities, communication and knowledge transfer). Furthermore, what appears to be lacking at the current time is the presence of effective informal institutions and adequate spaces for interaction between different actors in the river basin. The authors contend that flexible modes of interaction are extremely important in enhancing integration between actors, enabling an appreciation of the perspectives of different stakeholders, building local adaptive capacity, and supporting learning processes (informal communities of practice operating as vehicles for peer-peer learning for example). Developing institutional capacity, encouraging flexibility, and actively promoting interactions that are conducive to local innovation and learning, can all enhance the ability to alter and improve management practice as problem structures change. These will be vital responses to the uncertainty, shocks and surprises likely to be brought about by future climate change.

Concluding remarks

As research into the ADAM learning examples has progressed it has become increasingly apparent that enabling institutional processes are vital cogs in the adaptation ‗machinery', and that understanding institutional adaptive management (and the determinants of adaptive capacity) is vital in any study of adaptation to climate change and variability. As has been discussed earlier in the chapter, drought events are likely to become even more common in many arid and semi-arid regions of the world in the future, and will require improvements to water resource management and possible trade-offs between different types of land use as currently practiced.

In the case of the Guadiana River Basin, a Mediterranean case study taken as representative of transborder regions at risk from increasing water scarcity, analysis has shown that both Spanish and Portuguese national policies have identified an increase in water storage capacity and inter-basin water transfers as the main options in order to deal with the problem of water availability (Cots et al., 2007). However, reliance on technical or hard engineering solutions can only be a partial solution, particularly when factoring in the climate change dimension and the myriad of transboundary issues and competing sectoral interests that also need to be considered in order to address the problem of strongly erratic flow and its adverse consequences (for instance, decisions taken in a sectoral arena can have significant repercussions for water demand). Even without considering in climate change, water scarcity is already an existing and acute problem in the transboundary region – this will intensify over time. As most programmes covering regional development (or even specific sectors such as agriculture, tourism etc) tend to be either national or regional in scope, nested and multi-level strategies and policies will ultimately be needed to ensure the sustainable use of water resources in the longer term. Ultimately, any adaptation framework will need to consider and balance a range of different supply, conservation and other land use management options, with clear responsibilities designated across many different stakeholders.

For semi-arid regions such as Guadiana, water scarcity will become even more acute in the future – a result of complex socio-ecological interactions which include socio-economic and cultural influences as well as biophysical variables (Kallis, 2006). As such, it has been argued in this chapter that a more informed multiple goal response is possible by recognising the value of flexible and inclusive institutions which build on the plurality of different local perspectives and enable the exchange of knowledge and resources between different actors and communities of practice. These valuable forms of social capital can help to build local adaptive capacity and spread the risks associated with drought, ultimately helping to support livelihoods. Specifically in a transboundary context, bridging organisations that facilitate communication and learning across territories, scales, sectors and the public / private divide, can serve as innovative platforms for multi-scalar cooperation and the coming together of actors to exchange knowledge, refine practice, and ultimately work together towards solving common environmental and resource management problems (i.e. a move from management as control to more adaptive management in a learning environment). In this regard, new institutions in the Guadiana region, the activities of GIT for instance, hold promise for enabling a better understanding of political and economic processes in the two different countries, for encouraging a process of ‗learning to adapt' within a transboundary context, and acting as catalysts of informed change.

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Chapter 5. Exploring institutional transformations to address high-end climate change in Iberia.

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Abstract

Either meeting the UNFCCC Paris agreement to limit global average warming below, or going beyond, the 2º C threshold entails huge challenges in terms of institutional innovation and transformation. This research describes an integrated research process aimed at exploring the options, opportunities, needed capacities and implications for institutional cooperation and innovation in the Iberian Peninsula. Using in-depth interviews and a participatory appraisal approach, four different integrated scenario narratives about the future of Iberia have been identified using Shared Socio-economic Pathways (SSPs) under High-End Climate Change (HECC). Special attention is given knowledge needs and policy options to implement cross-border organisational changes and cooperation mechanisms that would support the Integrated Climate Governance of the Tagus and Guadiana river basins. We show that a wealth of institutional innovation opportunity pathways and concrete options and solutions exist not only to reduce GHG emissions (mitigation) and the negative impacts of climate change (adaptation), but above all, generate new forms of social-ecological system interactions aligned with sustainability (transformation). In particular, and depending on which different scenario contexts the future of Iberia may unfold, different kinds of institutional and governance capacities may be needed.

Introduction

Either meeting the UNFCC Paris agreement of staying below the 2º C target of global warming (while aiming at 1.5ºC) with respect to preindustrial times or exceeding it poses great challenges to the reconfiguration of current institutions. Present greenhouse gas (GHG) emissions trend, and the weakening of the actual Paris accord after the US exit, indicate that, unless urgent action is taken a local and regional level, trajectories characterised by high-end climate change (HECC, Berry et al. 2017) will become increasingly plausible outcomes[19]. In this context, anticipating which kinds of institutional options and capacities will be most conducive to support transformative solutions aimed at dealing with the new climate futures is becoming increasing urgent (Miller et al, 2013; Nalau 2015, Patterson et al. 2016).

In this paper we assess the knowledge needs, alternative futures and capacities of regional organizations and agents to promote institutional innovations able to respond to the new challenges posed by HECC (Berman et al., 2012, Tàbara et al. 2017). First, our exploration starts with the examination of the kinds of institutional arrangements that exist both in Portugal and Spain with regard to climate policy. In particular, we look at the kinds of knowledge needs of the transboundary river basin and cross-border Euroregions of Algarve-Alentejo-Andalucia (Lower Guadiana river basin), and Extremadura-Alentejo Centro (Lower Tagus and Guadiana river basin). Second, our analysis focuses on the participative identification of the implications in terms of institutional options and opportunities for Iberia under four different scenarios. On the one hand, four explorative scenarios were developed using a participatory appraisal approach congruent with a combined set of Shared Socio-economic Pathways (SSPs; O'Neill et al. 2014) and Representative Concentrated Pathways (RCPs; Van Vuuren, 2011). Furthermore, and in order to trigger transformative thinking and appraisal (Tàbara et al 2008, Weaver et al., 2006) a normative future was formulated in a participative way in the form of a vision. The aim of the latter was next to identifying where Iberia could be (in

[19] http://highendclimateresearch.eu/

the scenarios), but where key agents and actors involved in climate action would like to be in the face of HECC.

Given the fast changing socio-climatic conditions, especially for transboundary and regional development organisations, it is now clear that a more agile, attentive and adaptive approach to policy and governance is required. The implementation of the different EU and national environmental and cohesion policies acting upon the same cross-border territories in Portugal and Spain needs to take the new socio-economic and climate landscape. Different kinds of institutional synergies as well as possible trade-offs must be explored despite the large uncertainties derived from a world going beyond 2ºC. In the case of transboundary river basins, cross-border organizations can play a major role in coordinating complex national and regional institutional structures which often involve various types of actors at different scales. This is why, cross-border organizations – including Euroregions, and Working Communities (WC) – have long been considered to have an important transformative power (Blatter, 2003), with the potential not only for improving coordination across spatial scales but also enhancing the local capacity of agents to better respond to increasing climate change risks (McEvoy, 2010).

Traditionally policy science literature (Lafferty 2003) have distinguished between horizontal, vertical and spatially integration (or socio-ecologically fit). These different dimensions of policy integration are relevant in the case of HECC. The first dimension relates to the ‗mainstreaming' of sustainability and environmental considerations into overarching policy documents, sectors and local government policies, as well as strategic plans and budgets and are formalised around the concepts of Environmental Policy Integration (EPI); and in our case, also under the notions ‗climate policy integration' (Nunan et al., 2012, Urwin and Jordan, 2008, Mickwitz et al, 2009). The second dimension refers to the need to deploy suitable vertical cooperation and control mechanisms between various levels of governance. Multilevel interaction and the existence of multiple sources of incentives and sanctions are decisive to guarantee the adequate governance of complex issues that relate to environmental change and sustainability. But a third and crucial component

relates to the fact that environmental problems do not necessarily coincide spatially with political jurisdictions. In our case, it is absolutely becomes necessary to build cross-border or trans-national institutional capacities able of managing common environmental problems, such as those related to climate change. This is why, we have also tried to look at the potential existing agents to promote transformability in concrete organisational arrangements (Feola 2015, Westley et al. 2013, Brown et al., 2013, O'Brian 2012, Crona 2010; Walker et al. 2004).

Hence a more complex challenge is about how develop new forms institutional arrangements aimed aligned with Integrated Climate Governance (ICG), and most importantly in designing opportunity pathways and concrete options and solutions for transformation. IGC can be understood as an explicit mode of coordinated collective action explicitly aimed at supporting transformation (Tàbara 2011). This perspective is based on the need to support new forms of public engagement, policy instruments and transformative research able not only to inform, but in turn, to create new institutional designs in a social learning mode. Hence, IGC is not only about assessing risks, impacts and vulnerabilities, but also and most important, also about designing opportunity pathways and concrete options and solutions for transformation. Through implementing concrete capacities for IGC, it should be possible to facilitate a transdisciplinary process for the exchange, integration and outreach of networks among multiple knowledge-holders (Ernston 2011). This requires a robust representation of relevant knowledge systems and networks ready to coordinate and implement multiple solutions according to different emerging socio-economic situations.

1. High-end Climate Change in Iberia

1.1. Social-ecological and political context

The Tagus and the Guadiana river basins are two of the five international river basins shared between Portugal and Spain in the Iberian Peninsula, which

accounts for some of Europe‘s river basins most likely to be affected negatively by HECC. Increasing problems affecting these river basins include the growing persistence of droughts and water shortages, with their impact on water quality, as well as conflicts derived from multiple uses – e.g. agriculture and urban demands versus ecological system restoration – and impacts on tourism, and rural depopulation and land abandonment (Berry et al 2017).

Both Spain and Portugal have set up administrative systems for water management based on shared hydrological basin boundaries according to the EU Water Framework Directive (WFD). Each country has their own separate basin authorities responsible for the management of the water resources in the basin: in Portugal, the Tagus Hydrographical Region Administration and the Guadiana Hydrographical Region Administration, and in Spain, the Tagus Basin Authority and the Guadiana Basin Authority. Each hydrographical region has implemented their hydrological river basin plans. However, in Spain, the central government but also Autonomous Communities (ACs) play a relevant role with regard water management, while in Portugal that these competences are mainly shared between the central government and the above-mentioned Hydrographical Regional Administrations.

The Basin Councils and the Council of Users in Portugal and Spain have been the main participatory instruments to involve key stakeholders within the general national strategies prepared by their respective National Water Councils. The latter are made up of representatives from all relevant ministries, sectoral users, NGOs, regional authorities and technical bodies at national level. Besides traditional actors, such as main agricultural organisations, electricity companies and hydraulic confederation, other groups have adopted a more active role in the last decades, such as academics, local groups, regional communities, and environmental organizations (Tàbara and Ilhan 2008)

With regard cross-border relations, in 1998 the Albufeira Convention was signed by Portugal and Spain20, the main objectives of which are to promote the good ecological status of the waters in the Portuguese and Spanish river basins; to promote the sustainable use of those waters; and to mitigate effects from floods, droughts and water scarcity. This Convention also created the Conference of the Parts the main actor in transboundary water management, together with a number of governmental and departmental transnational working groups. In fact, in both basins, their plans and latest reviews were prepared in a collaborative and consensual way following the requirement of the WFD. However, there are still some cultural, administrative and political resistances to be overcome if full cooperation between both countries is to be achieved (Neto, 2011)

In terms of sub-state regional cooperation, cross-border ties between Spanish Autonomous ACs and Portuguese regions at both sites of the border were initiated at the beginning of the 1990s. They were institutionalized as a result of the ‗Protocols of Cross-border Cooperation' (CCDR) endorsed by the regional government of Extremadura and the CCDR Alentejo (1992) and CCDR - Central Portugal (1995), and by the Andalusian government and CCDR - Alentejo (1995) and CCDR - Algarve (2001). Starting practically from scratch these four Working Communities initiated a productive first stage of cooperation. The first projects and results began to take shape more recently under the protection of the successive INTERREG programs and the Spanish-Portuguese Cross-border Cooperation Operational Programme (POCTEP). The growing interest and positive achievements of these institutional arrangements of these five regions in broadening their cooperation led to the signing of two single cooperation agreements (2009 and 2010) and the fusion of the four former Working Communities into two: (1) the Euroregion Alentejo -Alentejo - Andalucia (EUROAAA) and (2) Euroregion Alentejo - Centre - Extremadura (EUROACE), which helped to operationalise their administrative structures and

[20] The full name of the agreement is: 'Agreement on Cooperation for the Protection and Sustainable Use of Spanish and Portuguese Transboundary Basins'.

to promote a new opportunity space of cooperation between these regions21. However, there are still several deficiencies in the way they operate (see Consens et al., 2014). The first and probably most important common limitation is their institutional structure, which is too dependent on regional governments and lacks the necessary level of autonomy and institutional stability to become a key knowledge and policy action broker in this domain. Indeed, the secretariats or operational units of both EUROAAA and EUROACE are inserted in the institutional frameworks of the Spanish and Portuguese regional governments, therefore lacking the autonomy to operate and to take decisions based purely on cross border interests. Furthermore, there is an excessive dependence on European funds as they are projects financed by the European Union and consequently subject to periodic decisions about their funding and existence. Second, these operational units clearly lack a number of both human and organizational resources needed to tackle the multiple difficulties associated with cross-border integration. Third, there is an asymmetry in power relations within the respective Spanish and Portuguese institutional settings, including the limited interaction and coordination among national, regional and local entities. Finally, we have detected a notable absence of a strategic sustainability approach for these regions in a way that clearly incorporate the precautionary principle and a broader ecosystem-based approach as key elements fostering policies in this area (Gillard, et al 2016). This is reflected by the failure to incorporate climate change scenarios into those strategies.

1.2. Research process

The present research is part of the EU project IMPRESSIONS (www.impressions-project.eu; Impacts and Risks from High-End Scenarios: Strategies For Innovative Solutions) which in Iberia had the main objectives: (1) To improve scientific understanding of the implications of High-End climate and socio-economic change; (2) To develop together with relevant stakeholders a series storylines on future socio-economic developments in Iberia under these conditions; (3) Work jointly with decision-makers to explore the development and implementation of innovative solutions to HECC in Iberia based on different

[21] www.euro-ace.eu and www.euroaaa.eu

plausible scenarios; and (4) Focus on the innovative integrated resource management of the Tagus and Guadiana transboundary river basins under the potential of high-end climate scenarios.

A first task in the research process was to identify the knowledge needs of key policy makers both in Portugal and Spain regarding the potential implications of HECC in Iberia. For this purpose, the knowledge uses, the organisational capacities of the secretariats, and the establishment of horizontal and vertical collaborative institutional networks were examined. In addition, the level of integration of climate change knowledge and adaptive water management objectives of the Tagus and Guadiana river basins into regional development under HECC was examined. To this aim total number of 26 interviews were conducted both in Portugal as Spain (Capela Lourenço et al. 2015, Dzebo,et al, 2015).

Secondly, a participatory process was carried out entailing a series of professionally facilitated workshops with key stakeholders in Spain and Portugal (Hegger et al. 2012). Invited stakeholders were identified via a Stakeholder Mapping exercise using several categories of stakeholders (e.g., sectors, gender and age), minimum quota for each category and fitting of each individual in the categories (see Gramberger et al. 2015 for more detail). The stakeholder mapping exercise resulted in the inclusion of actors from Portuguese, Spanish, Andalusia and Extremadura governments, as well as non-governmental organisations, business associations, research institutes and transboundary institutions (from both Euroregion AAA and Euroregion ACE).

1.3. Institutional knowledge needs to confront HECC

Regarding the knowledge and information that is currently required by Portuguese and Spanish decision-makers when facing the potential implications of HECC in Iberia, interviews on both sides of the border revealed both barriers and limitations in using climate and socio-economic information, including scenarios about HECC (Capela Lourenço et al. 2015; Dzebo et al. 2015). For example, results from the Spanish interviews point towards the need to clearly

differentiate between the information and knowledge required to elaborate general policy programming objectives that specifically address climate change or land use planning from those programmes or policies that do not. Examples of the former are the Andalusia and Extremadura climate adaptation plans as well as the Tagus and Guadiana river basins hydrological plans. In parallel, about half of the Portuguese participants (58%) indicated that they do not systematically make use of future climate change information (HEEC or otherwise) or detailed climate impact model output in their decision-making processes. However, they acknowledged that climate change and impact scenarios are applied to the elaboration of specific plans (e.g. Tagus Basin hydrological plans) even if detailed quantitative data is not readily available for all specific variables of interest. They additionally reported the more widespread use of socio-economic trends, socio-economic projections and scenarios (Dzebo et al. 2015). On the Spanish side the same picture emerged regarding climate scenarios, these playing a less relevant role in relation to other programmes and policies in which climate knowledge could have an impact such as collaborative actions between cross-border organisations. Public authorities recognized that the first step in setting policy objective takes little consideration for previous available analysis of climate data, models or similar tools. This was the case of the development of the cross-border strategy for the Algarve-Alentejo-Andalucía Euroregion.

In relation to the information content, the most common reported sources of climate change information, both in Portugal and Spain are products from national research projects and the IPCC reports. Additionally, interviewees recognized that most regional processes have some sort of integrative participation of experts and representatives of civil society. But also pointed out the lack of salient data. When questioned about the existing limitations to the use of climate change (HECC or otherwise) information for decision-making. They also mentioned that the key issue was not so much the uncertainty about data related to HECC, but the actual lack of such information. Last but not least, both Portuguese and Spanish agents alike reported a low usage of HECC information pointing out towards the interest on having that sort of data available and contextualised at both local and regional levels, albeit noting that

this availability would not necessarily translate directly in its use for policy development or programming of different land use objectives.

1.4. The HECC participatory integrated assessment process

1.4.1 General Design

The engagement process was divided in three workshops following a sequence of tasks aimed at: (1) Creating a series of plausible futures for Iberia in the form of narratives (Miller et al. 2015), using a process of participatory downscaling of the global Shared Socio-economic Pathways (SSPs; O'Neill et al 2013) linked to high-end climate scenarios (beyond 2ºCº by the end of century; Jordan 2013) based on Representative Concentrated Pathways (RCPs; Van Vuuren et al. 2011) (2) Developing a common vision on where Iberian stakeholders would like to be by the end of the century, based on the different possible outlooks created by combinations of SSPs and RCPs, (3) Providing alternative pathways of solutions to achieve that vision and prevent HECC, and (4) Assessing such solutions and pathways to identify those with more transformative and institutional innovation potential (figure 5). Out of a set of plausible future outlooks, the stakeholders developed four socio-economic scenarios about what could happen, then a vision and, lastly, strategies and actions included in pathways to reach the vision in the context of integrated climate and socio-economic scenarios. In-between the workshops, scientists aimed at iterating their analyses with stakeholders to ensure legitimacy and saliency.

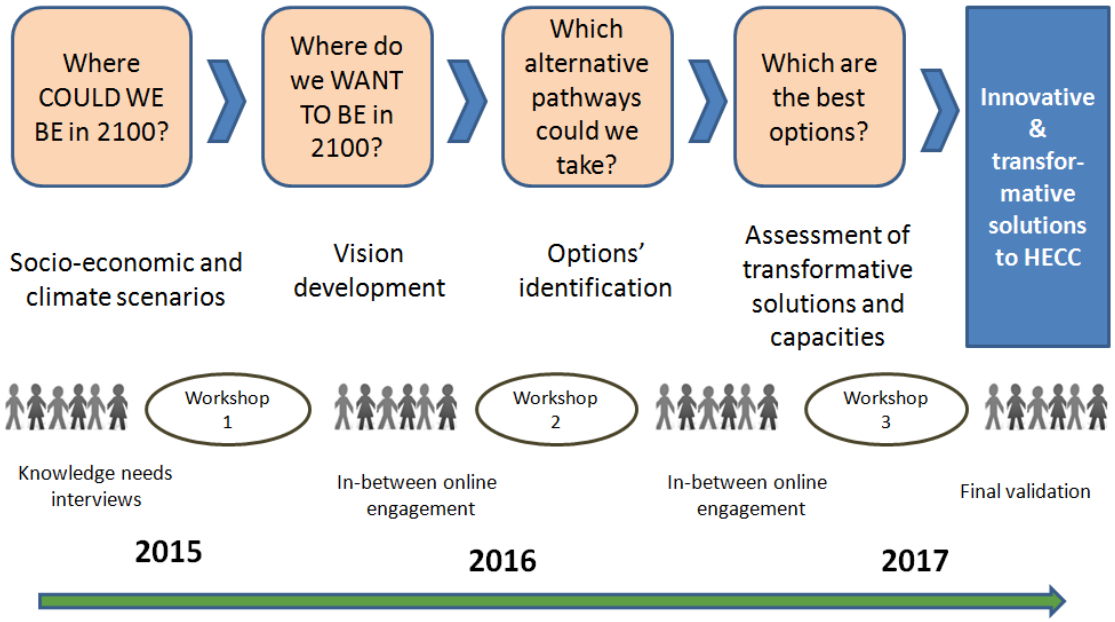

Figure 5 Process of stakeholder engagement in Iberia: from the development of socioeconomic and climate scenarios to identifying innovative solutions to HECC

The combination of exploratory scenarios, models, pathways, visions, and solutions, co-produced in a participatory setting, is one of the novel and original contributions of this approach and the overall methodology improved the set of final solutions that emerged. However, such approach is not free of difficulties, not only derived from the downscaling of global and European SSP into a regional level but also other more operational ones such as bringing Spanish and Portuguese stakeholders together, which introduces additional obstacles that are not necessarily related to language or culture but rather to specific issues and preferences in the topics addressed.

1.4.2 Socio-economic and Climate Scenarios.

The stakeholders thus helped developing four socio-economic scenarios coupled to high-end climate scenarios. In particular, narratives and tabular overviews of key elements were presented to stakeholders as starting point for socio-economic scenario development for Iberia. Quantitative model variables (e.g. population and GDP) were used as model input. RCPs served as input to global and European climate models. Climate change impacts were calculated by combining socio-economic and climate scenarios. SSPs were downscaled from global and European scenarios, and models used both sources to project

future climate change impacts. In the first workshop, stakeholders determined the content of four exploratory socio-economic scenarios in the region, i.e. structuring four plausible scenario narratives in answer to the question —What could happen in Iberia from now to 2100ll (Figure 5). The facilitated co-production process (Gramberger et al., 2015, Kok et al in prep) ensured that the scenarios were embedded in a broader global and European context shaped by the SSP x RCPs narratives and datasets (Van Vuuren et al., 2011). The European SSPs provided the context along the main uncertainties inequality and and carbon intensity (Figure 2) which are consistent with the global SSPs uncertainties on challenges to adaptation and mitigation scenarios (O`Neill et al 2015) in the context of the broader uncertainties related to sustainability (Kok et al in prep). In this research we focus on socio-economic scenarios given that we understand that such future contexts frame the conditions and driving forces from which various climate futures may emerge. The resulting socio-economic scenarios are sketched in Figure 6 (Kok & Pedde 2016).

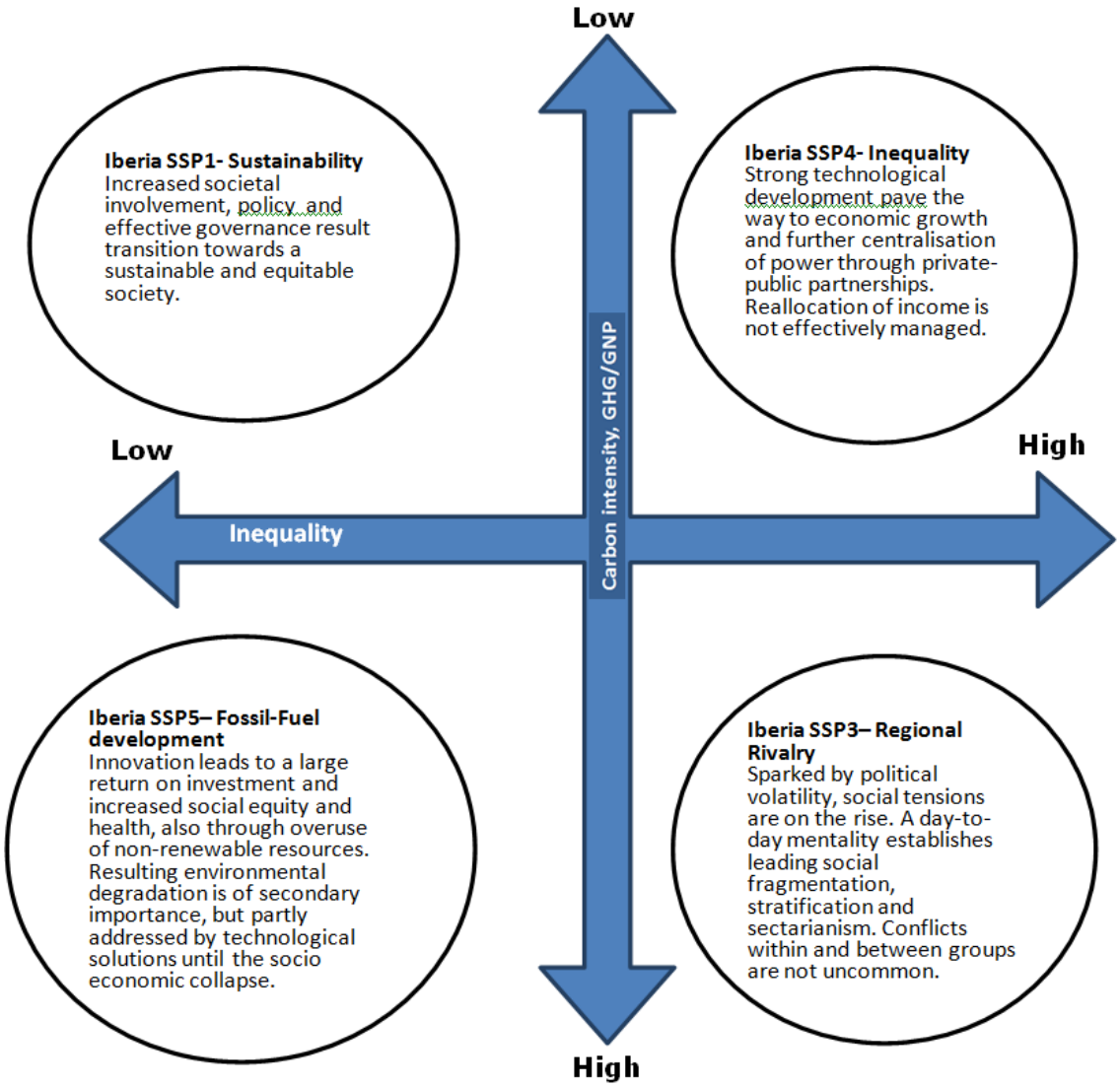

Figure 6 Sketch of four Iberian socioeconomic scenarios (SSPs) positioned along the uncertainties on inequality and carbon intensity (based on Kok et al., in prep and O'Neill 2015)

The Iberian narratives were co-constructed based on the stakeholders input and researchers interpretation, later validated by the stakeholders themselves, as follows:

- *Iberia SSP1 - Sustainability*

Triggered by continuing and growing social participation in environmental, social, and economic issues and fuelled by a European social-oriented political framework, Iberia embraces a path towards a new development model. Initially at slow pace, but increasing rapidly and supported by socially and

environmentally sustainable policy making, a fundamental change is achieved towards boosting education, innovation, job opportunities in the green sectors (renewables and reuse of materials), and eventually green technologies. Because of the strengthening of the democratic governance structures, globalisation is no longer opposed to local sustainability, but on the contrary, positive sustainable development synergies are being created. This leads also to an economic shift in many sectors, whereby technology development and high-value exports become the new backbone of the Iberian economy. By 2100, the new decision-making culture and practice culminates in the new development model for the Iberian countries. This model encourages broad public participation, institutional collaboration and includes a harmonic integration of health, social, economic, political and environmental sectors.

Table 7 Iberia SSP1 - Sustainability

Key elements	Iberia SSP1 - Sustainability
Decision-making level	International – both bottom-up and top-down
International cooperation	Strong, EU important player
Net migration- low in-migration	Moderate immigration
Economic development	Gradual
Mobility	No barriers, but movements are limited
Social cohesion	High
Technology development	High – focus on renewable and re-use
Quality of Governance	High – focus on sustainability
Human health investments	High

Education investments	High
Environmental respect	High

- *Iberia SSP3 - Regional Rivalry*

Short-lived governments leads to a fragmentation of the social and economic fabric in Iberia. In 2030 Catalonia gains independence, which is later followed by other regions both in Iberia and in other Mediterranean countries. To counteract economic crises, the Southern countries unite in a separate Union, the ‚Club Med'. Continued environmental and economic problems increase social tensions and social inequalities, which in turn negatively affect tourism. By the 2060s four countries have come to exist in Iberia: Portugal, Spain, Catalonia and the Basc Country, with strong borders between them. Over time, conflicts escalate although war over water and other scarce resources is prevented. By 2100, a deserted and desertified inland rural Iberia remains and this produces a large divide even further than with the rest of Europe. Continuous conflicts across multiple countries which experiment such similar disintegration processes occur elsewhere and this limit cooperation within Club Med and with other international power blocs.

Table 8 Iberia SSP3 - Regional Rivalry

Key elements	**Iberia SSP3 - Regional Rivalry**
Decision-making level	National/Local+ fragmentation
International cooperation	Weak
Net migration- low in-migration	Outmigration
Economic development	Low

Mobility	Low
Social cohesion	Low within and across Iberia
Technology development	Low
Quality of Governance	Low and ineffective
Human health investments	Low
Education investments	Low
Environmental respect	Low

- *Iberia SSP4 - Inequality*

Economic challenges and environmental accidents are exacerbated by new European and global crises, which leads to an increased migration from Northern Africa and the Middle East. In Iberia, unemployment rises to record levels, this eventually results in social unrest and massive protests. Social stratification intensifies with strong high-income elites and a divided large lower class, bringing about strong tensions within and between social classes. This unstable social situation escalates in the 2040s, and lead to a shift in the political system. New governments establish an oligarchical system with power and money gradually centralised and controlled by an elite of a few companies and central governments. The political and industrial elite successfully implements a strategy of —subtle‖ enforcement of inequality through education and keeping people busy on low skilled tasks, with low future expectations. To their benefit, the elite invests in solar and wind energy, eventually becoming a market leader.

Table 9 Iberia SSP4 - Inequality

Key elements	Iberia SSP4 - Inequality
Decision-making level	International / Europe
International cooperation	Strong , Iberia strong player in EU
Net migration- low in-migration	First high immigration, then controlled
Economic development	High
Mobility	High
Social cohesion	Low
Technology development	High in some areas; low in labour intensive areas
Quality of Governance	High and effective
Human health investments	High for elites
Education investments	High for elites
Environmental respect	High in pockets

- *Iberia SSP5 - Fossil-fuelled Development*

The burst of the financial bubble increases the need for social aid and subsidies for Iberia, which is facilitated by an increasing economic surplus in the north of Europe. Crucial is the establishment of a connection of electricity

networks that increase access to external (fossil) resources. Iberia is part of this network and located strategically in the energy nexus. Iberia also starts exploiting its own resources, while intensifying agriculture and forestry. In the 2040s, environmental problems occur that are combatted with successful technological solutions. The accompanying environmental destruction goes by unnoticed as most people live in the cities, where water, food, and energy supply are secured. By 2060, Iberia totally depends on technology, fossil fuels, and investments of large companies. Ultimately, a number of environmental disasters lead to an increased awareness across Iberia that technology can no longer sustain agricultural production. The outlook is uncertain as the fossil-fuel based development model collapses and business opportunities decrease.

Table 10 Iberia SSP5 - Fossil-fuelled Development

Key elements	**Iberia SSP5 - Fossil-fuelled Development**
Decision-making level	International/EU not a leader on the global scale
International cooperation	Strong (trade)
Net migration- low in-migration	High to cities and from poorer countries
Economic development	High, until collapse
Mobility	High
Social cohesion	Medium
Technology development	Strong and crucial

Quality of Governance	Focus on businesses
Human health investments	High (private), then low
Education investments	High (private), then low
Environmental respect	Low

1.4.3 Vision development

A normative future was created in a participative way in the form of a vision, by asking stakeholders ‗where do we want to be in Iberia 2100?'

In contrast to the four exploratory scenario narratives of ―the future we could have‖, the vision showed an explicitly normative depiction of ―the future we want‖. The vision was thus developed to trigger thinking on long-term target setting and guide short-term and mid-term action and strategies (Wiek and Iwaniec 2014, Miller et al. 2015). The vision was created through an iterative participatory process. First, the stakeholders were asked in a survey to describe elements of their ―vision for Iberia in 2100‖. Sixteen contributions were collected, which were then sorted and categorised into common vision themes to structure the input as well as identify possible disagreements and missing elements. In a next step, the stakeholder input was combined into a vision narrative. A shorter version of the vision was visualised in a poster (Figure 3). Both the narrative and the poster were presented at the second stakeholder workshop to verify and enrich the vision, which resulted in an updated version of the vision.

The following vision components were identified:

―Iberia in 2100‖:

- "Iberia supports greater global cooperation and solidarity, with respect for human rights and distinct identities of people" (Cooperation and identity).

- "Iberia is a coherent, diverse and peaceful territory coordinated by transparent Iberian governmental institutions and a highly politically engaged society" (Governance).

- "All people in Iberia have access to public services and social support, engage in sustainable, community-based lifestyles aligned to context-specific needs and opportunities (Health, wellbeing and sustainable lifestyles).

- "Sustainable natural resource management and resource protection is ensured through strict policies"; (Protecting the environment).

- "Cities are smaller, energy self-sufficient provide space for social activities and promote sustainability also of the region" (Sustainable urban planning and land use).

- "The use of Iberian natural resources yields minimum impact on natural ecosystems and is balanced with the maximum reuse, recycling and recirculation of materials" (A sustainable and local economy).

- "Sustainable food and water management and 100% renewable energy production go hand-in-hand with more conscious consumption and access to quality food and water"; (Food, water and energy).

- "There is a guaranteed access to education that supports professional, social and practical skills and technological innovation, as well as full employment and fair income distribution" (Income, education and jobs).

- "Adaptation plans and quick response strategies have been deployed to cope to climate change and extreme events" (Resilience).

And thus, regarding to governance, it was stressed that one possibility to improve capacities to move to a better-off socio-economic situation -and in turn improve potential capacities to cope with HECC- would be the creation of a kind of unified Iberian government to articulate common actions and interests while respecting the rich cultural diversity of the Iberian Peninsula.

Figure 7 A vision for Iberia in 2100

1.4.4 Solutions and pathways

After the vision formulation, the stakeholders were asked to identify innovative solutions that would enable achieving their long-term vision in the context of the different exploratory integrated scenarios. The formulated solutions were clustered according to themes identified by the stakeholders

(e.g., education, water management, agriculture) and time-stamped from the present to 2100. In this way, a suit of pathways consisting of time-dependent strategies was generated that lead to different elements of the vision (e.g. equity, sustainable resource management, carbon neutrality).

In this paper, we focused on those pathways related to water and ecosystems management and institutional change with special attention to cross-border governance and cooperation. Our results showed that pathways in all scenarios stressed the need to support integrated water management (Bielsa et al., 2015; Palh-Wostl, Conca et al. 2013) in a way that that builds on collaborative and transboundary governance institutions, policies and regulations. This is supported by other pathways that promote shifts towards sustainable lifestyles, including a socially responsible attitude towards water, and strong environmental policies also for other sectors, especially agriculture, infrastructure modernisation and technology innovation.

However, the implications on transboundary collaboration of water and development policies differs across the various pathways for the scenarios, some more focusing on mitigation, adaptation or more broadly, in societal transformation and institutional innovation. Within the ‗Sustainability' scenario (SSP1) and the ―Fossil-fuelled Development‖ scenario (SSP5), the opportunities and capacities from strong governance institutions are being utilised to implement new water monitoring systems, introduce water taxes and fiscal measures. In this scenario subsidies to reduce water use and education initiatives to promote awareness about responsible water use are implemented. In the ‗Inequality' scenario (SSP4), a central element to achieve integrated water management are the strengthening of collaboration and coordination processes through trade agreements and protocols between Portugal and Spain – which are to be regularly reviewed and updated – and common agencies to monitor and protect water resources. The strengthening of transboundary collaboration with an overseeing transboundary organisation that coordinates the agreements and protocols was also proposed. In the ‗Regional Rivalry' scenario (SSP3), the focus of the pathways was on minimising the institutional and social fragmentation in Iberia. In this future outlook, and to

ensure and coordinate cooperative water and river basin management, a transboundary policy platform is set up for actors from the different governments and the public to share knowledge and decide on joint policies to protect water from a cross-sectoral perspective.

Solutions promoted in each scenario are slightly different among each other. For example, the pathways for SSP4 consider water in relation to land-use planning and emphasise an equitable distribution of water resources. Solutions to achieve this include the implementation of conservation policies for natural areas to protect water resources, instantaneous flow measuring as well as the implementation of policies promoting equality; both in SSP1 and SSP3 solutions tend to focus on local levels with a special attention in SSP in putting in place modernised water infrastructure while in s in SSP3 stated solutions include the increase water storage, water re-use and desalination and adapting crops to changing local conditions. This notwithstanding, and as a robust result from the participatory process, the pathways in all socio-economic scenarios support strategies and solutions towards an integrated, transboundary and cross-scale management of water resources that is supported by enhanced Iberian institutional cooperation. What differs among them is that each scenario contexts imply different types of institutional and governance capacities, e.g., more top-down and strategic in SSP3 and more bottom-up and local in SSP4, or more or less integrated with science, research and technology development.

2. Discussion

The increasing scale, intensity and complexity of environmental problems reveal the limitations of existing governance institutions, both at national and regional levels, to address the new social-ecological situation posed by HECC. The urgent challenges posed by climate change require the speedy design and implementation of institutional settings capable of making use of the best available and fit-for-purpose knowledge to support the management of complex problems emerging, often in an interlinked mode, from different domains. Attaining such knowledge may require to build multi-scalar social action

networks – rather than just data bases, or information pools – in order to enhance the actual resilience and anticipatory capacities of social-ecological systems (Westley, 2013; Tompkins and Adger, 2004; Folke 2010) This is considered to favour institutional learning and more adaptive or, in our context, more transformative responses to fast environmental change (Olsson et al, 2006, Pahl-Wostl, Becker et al. 2013; Fleming 2012, Michaels 2006).

Cross-border organisations have a large potential for enhancing transformations and for mainstreaming climate change and sustainability concerns into national and regional policies, plans and programmes (Cots et al 2009, McEvoy et al 2010; Marshall et al. 2012). They enable new agent capacities and skills -including those of policy reneurship (see Perkmann 2007, Huitema et al. 2010)- that focus on addressing common environmental problems at both sides of the border, ‗taking benefits from complementary assets, using synergies and critical masses to improve their competitive advantages as well as on coordination and integration objectives or coalition building' (Sherer and Zumbush, 2011). Due to their (spatial) proximities, such governance structures may contribute in a decisive way to join the forces of adjacent countries to combat common environmental issues in river basins (Sherer and Zumbush, 2011). In the EU transboundary areas, new policy networks have appeared which no longer fit with the traditional divisions of nation-states, but are now created for attaining new cooperation goals and functional purposes. In addressing climate, water, energy, biodiversity or land use challenges, both political and non-political actors have sought to create new forms of policy arrangements able to address multiple domains in a synergetic manner. The current commitment of the UNFCCC in Paris to stay below 2ºC average (while aiming at 1.5ºC) global warming by the end of the century has pushed this demand for knowledge, cross-sectoral and institutional integration even further. However, little is known about its practical implications, and pathways of solutions to achieve that target, at the regional and organisational levels. Based on the exploration of key institutional challenges and our results in terms of solution pathways, we can pinpoint several ways forward for successfully building institutional capacities and implementing transformative solutions to face HECC in Iberia.

Conclusion: Integrated Climate Governance under High-end Climate Change in Iberia

This paper have sought to show a concrete example of plural knowledge integration and elicitation of innovative solutions and strategies which could help to support the Integrated Climate Governance (ICG) of transboundary river basins and cross-border regions in Europe under conditions of high-end climate change (HECC). In particular, we have demonstrated that unveiling different future socio-economic conditions, which in our case have depicted using various SSPs, can help anticipate the different capacities and policy options required to cope with HECC. For example, the potential risks and vulnerabilities in Iberia derived from a world beyond 2ºC are likely to be more difficult to tackle, or will have to be dealt in rather different ways, in a more institutionally fragmented, un-coordinated future depicted in the SSP3 scenario. In contrast, the capacities already deployed in a world which has already moved towards a more environmentally friendly and socially integrated common Iberian future, as represented by SSP1, may be not only more resilient to potential impacts derived from a high-end warming world, but also more likely to achieve a common vision aligned with sustainability and its required positive social-ecological transformations.

Therefore, both for research and policy action, a crucial challenge relates to how to develop new forms institutional arrangements aligned with ICG in different plausible future situations. That is, and more specifically under HECC, to design opportunity pathways and concrete options and solutions for transformation. Understanding and identifying possible options and pathways of solutions, according to different future socio-climatic scenarios, can improve the knowledge requirements and anticipate the required capacities for developing new forms institutional arrangements better suited to address high-end climate change. Because in this research we have taken a whole Iberian perspective, our focus has been placed at looking at the implications to concrete organisations and agents already working within the two transboundary river basins of the Tagus and Guadiana and the cross-border EUROAAA and EUROACE Euroregions. On the one hand, the participatory appraisal process

showed that all the pathways in the socio-economic scenarios supported the integrated, transboundary and cross-scale management of water resources as well as the strengthening institutional cooperation; and on the other, our results also pointed out that depending on which different scenario contexts the future of Iberia may unfold, different kinds of institutional and governance capacities may be needed to cope with a high-end climate world.

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Conclusions

Environmental and sustainability problems do not stop at national borders. Ecological linkages are complex and international, some of them taking place globally and some others regionally and locally. On the other hand, levels of government and administration typically do not fit the environmentally relevant scales, creating inefficiencies and additional hurdles. Therefore, institutions as they are conceived nowadays face growing difficulties in grasping effectively the full complexity of the ecosystems under their governance due to mismatching spatial relations between biophysical processes, administrative structures and procedures. This situation has provoked that new policy networks have appeared which no longer fit with the traditional divisions of nation-states, but are now created for other new cooperation goals and functional purposes. In addressing climate, water, energy, biodiversity or land use challenges, political and non-political actors have sought to create new forms of institutions and policy arrangements that seek to overcome the territorial limits of national and subnational administrative bodies (states, regions, departments, provinces, etc.), which would be able to address multiple domains of action at the same time. For instance, the EU has required its member states to designate Special Protection Areas (Birds Directive) and Special Areas of Conservation (Habitats Directive), and has enhanced the river basin as the unit upon which resource governance may better achieve sustainability objectives. All these areas do not necessarily fit inside a single national boundary and these initiatives are related to each other through the idea that ecological components should be taken into account in the territorialisation of public policies, hence contributing to the coupling of the nature and the scale of the environmental dynamics with the appropriate political institutions dynamics (Debarbieux et al, 2013).

From a functional and managerial viewpoint, Euroregions can be either associations of local and regional authorities, either cross-border associations with full-time secretariat and technical-administrative staff benefiting proper resources. The general purpose of Euroregions is to create an integrated space through specific policies of town and country planning in various areas: local

economy, social networks, cultural activities, school institutions, environment (Sanguin, 2013),

From this perspective, Euroregions and other type of cross border political structures represent and opportunity in the process of ecological territorialisation of EU policies, specially in those areas that the geographical limits of the Euroregions match with the limits of the existing natural resources (examples of the Pyrenees, Lake Constanza, etc.), since the new created political arena may fit better with the dimension of the managed natural resources. For instance, Perkmann (2007) interprets the creation of Euroregions as the construction of new territorial scales. According to him, this process "involves the establishment of governance functions at a scale that is different from where they were previously situated" and "each re-scaling process can be said to involve the institutionalization of governance institutions at a new scalar level" (Perkmann, 2007:256). On the other hand, Jessop points out that "the construction of cross-border regions as an example of microregionalism is best related to the more general rescaling of economic, political, and social processes (Jessop, 2003). In general, scholars have applied the notions of rescaling and reterritorialization for the study of cross-border regions (e.g. Jessop, 2003; Johnson, 2008, 2009; Perkmann, 2007, 2007b; Popescu, 2008). According to Blatter's terminology (Blatter, 2003), euroregions would be considered first 'spaces of place' (territorially based governance) than spaces of flows' (functional governance involving networks of governance institutions in thematic issues of common interest)

However, it has been widely accepted that region-building across borders has largely fallen below expectations and, for instance, cross-border spatial plans, until now at least, seem unable to foster the integration of physical structures and spatial patterns across the border. In the case of Euroregions, it seems not evident at all whether and to what extent they can be considered as a meaningful territorial scale (Johnson, 2009; Popescu, 2008). To cite Perkmann: "[e]ven in those cases where cross-border agency has been successfully institutionalised, it appears premature to attribute the characteristics of a 'region' to these entities. Although they assume pseudo-territorial features, and engage in strategies of cross-border identity building,

invoking territorial imaginaries, their relative dimensions in terms of organisational size and resource control are still small compared with the established public authorities on either side of the borderll (Perkmann, 2007b:876).

These reflections have implications when responding to the main research questions formulated in this thesis. On the one hand, we have sought to look to what extent EU cross-border cooperation policy initiatives are able to establish effective collaborative partnerships between adjacent local public bodies subject to different national legal systems in the domains of climate, biodiversity and regional development in ways that contribute to sustainability. And on the other, we have explored to what extent sustainable development concerns have been mainstreamed in these three domains in a coherent manner and do actually contribute to strengthening the coping and to some extent transformative capacities of agents to deal with societal and environmental changes at cross-border regional level. In order to respond to these questions, we have focused on the analysis of the institutional elements of Euroregions in order to determine to which extent they can favour, or on the contrary, represent a barrier for a better integration of environmental and sustainable development considerations in a particular cross border area.

As a starting point, this thesis underlines the potential that Euroregions and other type of cross border structure have to enhance the integration of environmental and sustainable development considerations into regional policies from an institutional perspective. The analysis suggests that, *a priori*, these structures are particularly suitable for mainstreaming environmental considerations into regional development strategies. Indeed, Euroregions and Working Communities constitute institutional mechanisms that seek to foster integration and overcome cultural, institutional and administrative barriers derived from existing boundary divisions. Due to the lack of an own administrative structure, these structures are often dependent on resources and decisions of other governmental scales and instances to implement their policies and visions. Their activities need to be translated to the regional contexts through the establishment of cooperative arrangements and the development of political and technical skills very much dependent on the

leadership capacity and exchange of cognitive resources to manage cooperation under common public policies (Perkmann, 2007; Perkmann, 2003; Sherer and Zumbush., 2011). Apart from the involvement of other governmental levels in a coordinated fashion, the mobilization of private and civil society actors through social networks becomes crucial in terms of advancing in the effective governance of the Euroregions and Working Communities (Morata et al, 2008). They also may serve to catalyse change facilitating multi-level interactions due to its capacity to operate at different scales with some degree of flexibility with different actors and environments in the framework of transboundary strategic processes. Therefore, an organization in charge of leading those processes in the intersection between state and society linking different networks and domains may constitute the right instrument to mobilize public and private actors and resources to achieve shared objectives.

Such initiatives can also be understood as a new form of „atypical" organisation, in which both formal and non-formal networks, operating at different levels and also across different institutional borders are constituted to meet the new regional challenges posed by growing economic globalisation and also a changing political and natural environment. This type of organisation can be seen as an adaptive response to social-ecological changes that demand for new forms of institutional cooperation and agent collaboration. Therefore, these „atypical" institutions - not totally governmental nor totally non-governmental but constituted by both - may constitute a unique framework to introduce ideas and policy considerations that shape political processes because of their territorial scope, their flexible structure based on networks and their capacity to intervene in several fields of action and regulatory areas. By establishing horizontal links among different domains (for instance, economic and regional development, energy, environmental protection, tourism and leisure, agriculture, to name a few) through participative transboundary actions, new capacities in both sides of the borders can be built.

Therefore, they have considerable potential for promoting and enhancing linkages between multi-scalar networks from different policy domains, increasing opportunities to mainstream environmental and sustainable development considerations into territorial strategies and development policies

(Mcevoy et al, 2010; Morata et al, 2008; Cots et al, 2009), or contributing to enhance the implementation of the more overarching concept of Integrated Climate Governance, which includes public participation and integrated assessment processes aimed at supporting climate policy options (Tabara, 2011).

In particular, as has been seen, the institutional capacities that need to be developed in order to achieve effective governance for the Euroregions are similar to the institutional capacities required for advancing in the transition towards sustainable development. Both processes overlap and reinforce each other. This translates into actions based on:

- The partnership or horizontal and vertical cooperation principle;
- The subsidiarity principle;
- The participation of actors from the private-sector and civil society through cross-border networks;
- The drawing up of a long-term cross-border/sustainable development strategy; and
- The setting up of a common structure – the Secretariat - with political support and technical and organisational capacities (regarding negotiation, conflict resolution, consensus building and expertise).

In fact, innovation is more likely to occur in novel than in mature systems since in the later most actors are resistant to change and prefer to maintain a stable environment (Westley,2013). Therefore, Euroregions may be the adequate instrument to disrupt existing institutions and provide the room and the fuel for innovation. In this regard, transboundary cooperation governance structures offer a context with a substantially high degree of institutional complexity which arises from the fact that various political agents, levels and policy fields get involved in solving cross-border environmental problems - often in a redundant but also complementary way. For instance, Popescu interprets cross-border regions as the result of nation-states trying –to find innovative ways to redefine their relationships with spacell (Popescu, 2008:419).

In the article ―Mainstreaming biodiversity considerations into European Cohesion Policy: evidence from the European Regional Development Fund Operational Programmes‖ (2016) we also provided empirical evidence to support the potential that cross border cooperation institutional arrangements have in this sense. Indeed, the results of the research show that Cross-Border programmes, compared with all other categories of programmes (transnational, regional competitiveness and Convergence), exhibit the highest level of integration of biodiversity concerns. To draw this conclusion, we have analysed to which extent biodiversity concerns were mainstreamed in a systematic and comprehensive manner in each OP; namely adopting biodiversity protection objectives, including biodiversity activities subject to funding and biodiversity indicators, allocating a relevant percentage of funds to biodiversity and nature protection, and counting with environmental actors in the Monitoring and Selection Committees of the Programme. These results are attributed partially to the abovementioned organizational and institutional features related to cross border organizations (innovative nature, dependence on cooperation arrangements, flexibility, etc.) even though other political, economic, managerial or even human resources explanatory factors should not be underestimated.

However, despite the potential of cross border organisations in this sense, in order to be successful in such endeavour they also need to enhance the necessary political competences and technical skills. And these, as identified by Westley et al (2013), may very much be dependent on leadership capacity and an exchange of cognitive resources with other stakeholders to manage common public concerns. These are also precisely the capacities that policy entrepreneurs must put in practice by playing key roles in networks and mobilizing social capital, taking advantage of the available political openings to mobilise resources and opportunities, changing beliefs and providing other actors with common meanings and identities that seek to shift and ‗transform' dominant social norms and rules (Fligstein and Mara-Drita 1996, Zimmerman and Zeitz 2002, DiMaggio, 1988), institutional logics and structures of power and resources (Creed et al. 2002, Garud et al. 2002, Suddaby and Greenwood 2005, Lawrence 1999).

In order to develop this potential, such Euroregions should seek to apply and enhance the criteria suggested in the following evaluation framework:

a) The development by the secretariat or administrative unit of various organizational capacities that create the conditions for a relative degree of autonomy, including: the technical capacity of its agents; its diligence in obtaining funds and fairness in sharing them out; the representativeness and parity composition; and the presence of sufficient human and monetary resources allocated to cooperation.

b) The establishment and maintenance of horizontal networking in the local sphere, with the necessary support and involvement of the relevant administrative bodies that lead to genuine cross border activities and routine (rather than occasional) cooperation across local, regional and national boundaries.

c) The creation of vertical networking with higher level authorities – regional, national and especially the EC; an adequate flow of information from the European to the local authority and back again; and the establishment of mechanisms that allow the general public and key stakeholders to take a participative and inclusive role

d) The adoption of a sustainable development strategic approach, based on the precautionary principle and the ecosystem approach, which mainstreams climate change and adaptive water management objectives into development goals, and takes into consideration situations of extreme/High-End climate scenarios in the Euroregion context.

In order to elucidate to which extent these additional challenges have been met, we have looked at particular case studies in Southern Europe, the Euroregions AAA and EURO ACE in the Spanish Portuguese border.

The article —Cross border organisations as an adaptive water management response to climate change. The case of the Guadiana River Basin‖ (2009) has commented on research which has analysed the adaptive management role of the current Euroregion AAA (former Working Communities Andalusia/Algarve and Andalusia/Alentejo) as experienced by its operational unit, the GIT.

The article —Adapting to Water Scarcity in a Changing Climate: The role of institutions in Transborder Settings‖ (2010), shares some of the research findings of the former article, suggesting that although informal institutional arrangements in the Guadiana basin are evolving, significant barriers still need to overcome.

Finally, in the last article —Exploring institutional transformation to address High-End climate change in Iberia‖ (2017), we describe a participative process aimed at exploring the implications for institutional innovation, learning and solutions implementation derived from various socio-economic and climate scenarios. In particular we show that a wealth of institutional innovation opportunity pathways and concrete options and solutions exist not only to reduce GHG emissions (mitigation) and the negative impacts of climate change (adaptation), but above all, generate new forms of social-ecological system interactions aligned with sustainability (transformation). In this respect, we have also looked at the potential of existing agents to promote transformability in the context of transboundary river basins, namely Euroregions AAA and EURO ACE, understanding transformability as the anticipatory and proactive capacities of agents to create a fundamentally new system when ecological, economic, or social structures make the existing system untenable (Walker et al. 2004, Westley et al. 2013). The results show that pathways in all scenarios stressed the need to support integrated water management in a way that builds on collaborative and transboundary governance institutions, policies and regulations. What differs is rather that the scenario contexts imply different types of capacities. For example, a more top-down and strategic approach is needed in the Regional Rivalry (the worst case scenario) and a more bottom-up and local approach is recommended in the „Inequality Scenario‘,for the proposed solutions to be viable in the different scenario contexts.

In summary, these articles show that, whilst institutional cooperation mechanisms at the transboundary cross-regional and river-basin levels based on international treaties between Spain and Portugal (the Albufeira Convention) are perceived by the main stakeholders as operative and functional (although with differing levels of satisfaction), cooperation in other areas such as climate change, nature protection and agriculture remains elusive. In this regard, the

stakeholders consulted share the view that the scope of the Euroregion AAA and EUROACE would be appropriate to address these cooperation challenges due to their institutional features (more flexible and innovative) and due to their cross border nature, more adapted to the geographical dimension of the managed nature resources (in this case river basins), but they still suggest several deficiencies in the way they operate, which are even more remarkable in the case of the Euroregion AAA.

The first and probably most important limitation is related to their institutional structure, which is too dependent on regional governments and lacks the necessary level of autonomy and institutional stability to become a key broker in the area. Second, these operational units clearly lack a number of key resources - capacity, time, and dedication - needed to tackle the multiple difficulties associated with cross-border integration. Third, there is an asymmetry in power relations within the respective Spanish and Portuguese institutional settings and a reduced level of interaction and coordination among national, regional and local entities. Fourth, there is excessive dependence on European funds. Finally, despite clear improvements have been produced with regard the previous financing period 2007-2013, we have detected a notable absence of a strategic sustainable development approach for the regions that clearly incorporates the precautionary principle and the ecosystem approach as key elements. This is reflected by the failure to incorporate climate change scenarios into those strategies. Therefore, results suggest that good intentions need to be transformed yet into clear institutional, monitoring and budget mechanisms that support the achievement of the goals established in these strategies.

That said, perceptions among interviewed stakeholders about the EURO AAA and EUROACE role in terms of its policy entrepreneurship capacities and its ability to integrate sustainability considerations are quite different. The operational unit of EUROACE has more years of experience (since 1993) of promoting cross border relationships, while most stakeholders recognise its role as a network facilitator capable of boosting and coordinating a significant number of structural projects that are perceived as successful in terms of environmental performance. On the other hand, Euroregion AAA was created

in 2004 and its operational unit has not created yet the relationships and networks needed to become a key broker in the area while some of their structural environmental projects display implementation deficits and reveal a lack of coordination among different governmental levels.

Therefore, we should differentiate in a very clear way the potential that Euroregions have from a normative point of view, and the extent to which this potential has been manifested in reality in the analysed more qualitative case studies, basically Euroregions AAA and EURO ACE.

From a normative point of view, Euroregions could be viewed as political transnational spaces situated beyond the territorial logic of either the nation states or the supranational organizations, with a great potential to integrate sustainability considerations due to their flexible and innovative nature.

However, from a more analytical point of view, despite differences among them, the Euroregions object of study indicate a low level of entrepreneurship, translating into limited potential for influencing adaptive and transformative management practices in a sustainable fashion and appropriating cross border activities in the cross border area. To some extent, their cross-border cooperation networks present themselves in political-territorial terms, making use of visual and symbolic representations, but they remain powerless precisely with regard their political-territorial perspective, lacking the adequate level of political mobilization, governance building and strategic unification (see evaluation framework above). This analysis leads us to conclude they have not developed the independent political capacity and that political action in these cross-border spaces continues to be dominated by traditional governments (Nelles and Durand, 2012). According to our research, they function more as forums for discussion and consensus building, but lack the sphere of action that enables them to be transformative agents, which constitutes a very relevant handicap in terms of integrating in reality sustainability considerations in the daily decision making process, no matter how much potential they have.

In fact, as this thesis demonstrates, establishing effective collaborative partnerships in cross border areas subject to different national legal systems in the domains of climate, biodiversity and regional development in ways that contribute to sustainability is an ambitious and complex project that requires the

coordination of policies at multiple scales and across institutionally diverse territories. This demands reorientation of political attention and political space in a way that transforms the current influence of traditional hierarchies and a strong focus of the actors involved on sustainability oriented policies. At the time being, even though the cross border political space has been created, it lacks the sphere of action and the level of entrepreneurship needed for that to happen, in order to strengthen the coping capacities of cross border agents to deal with societal and environmental changes at cross-border regional level.

In sum, environmental sustainability challenges can be mostly understood as institutional capacity building challenges. However, little has been researched to understand what this means in practice on the ground and in particular with regard to institutional innovation, learning and cooperation in cross-border settings. This Phd dissertation has contributed to operationalise and review the criteria, requirements as well as opportunities and barriers to address such dual sustainability and institutional challenges

These results open up new research areas and questions related to the consequences of the development of Euroregions in terms of the effects they produce in governance procedures and practices and the role they may play in the transition towards a more sustainable future: Can we extrapolate these results to other Euroregions? Do Euroregions represent a new territorial scale? How will the dichotomy nationalism/globalization affect the development of Euroregions in the future? Do the answers to the former questions have implications with regard the management of transboundary natural resources and other cross border environmental problems? Are there examples of Euroregions that constitute an adequate instrument to promote sustainable development policies replicable to other contexts? Do their institutional structure favour or hinder the mainstreaming of sustainable development concerns into regional policies? Are cross border institutional settings better suited compared with other institutional structures to generate spill-over effects in national and regional policies related to climate, biodiversity and regional development in ways that contribute to sustainability? Does the allocation and distribution of funds in the Territorial Objective of the ERDF effectively contribute to a better sustainable future for cross border regions? Which requirements should be

taken into account by the regulators of the ERDF and other European funds when financing these instruments and policies in order to enhance sustainability?

Another important line of research is how relevant stakeholders perceive the future of Euroregions. Can we identify different institutional pathways for Euroregions depending on different socioeconomic and climatic scenarios? Which role will they play and which institutional structure will they have in a future where environmental awareness and the implementation of green policies are the general rule and not the exception? Or, on the contrary, how will they emerge in a future characterized by high levels of pollution, inequality, territorial disintegration and chaos?

At this point, the limitations of the thesis emerge in a more notorious way. To answer these questions we should apply the research to a more significant number of Euroregions. This should enable us to determine how other Euroregions operate and engage in terms of political mobilization, governance building and strategic unification towards sustainability. The results should confirm whether the discourse about cross border cooperation is only a policy narrative dominated by nation states that has crystallized in the EU funding debate, but with non or little effect on the ground or, on the contrary, if Euroregions constitute emerging governance instruments with a tremendous transformational power in terms of sustainability and climate performance, even though they have not manifested all their potential yet. Finally, our preliminary explorations on socioeconomic and climatic scenarios and associated pathways could be further developed in order to elucidate, imagine and refine in a participatory fashion what Euroregions would look like under different socioeconomic scenarios (stronger or softer sustainability policies, higher or lower levels of inequality), which capacities they should have, what role they would play, how they would engage with neighbouring countries, and relate and reflect these range of possibilities with a set of participatory elaborated potential visions or desired future outcomes.

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APPENDIX: Other publications related with the topic of the dissertation

Common Frame of Reference to support the understanding of adaptation decision-making under high-end scenarios

Deliverable D1.1

December 2015

Tiago Capela Lourenço[1], Maria João Cruz[1], Henrik Carlsen[2], Adis Dzebo[2], J. David Tàbara, Francesc Cots, John Haslett[3] and Paula Harrison[4]

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[4]*Environmental Change Institute, University of Oxford, UK*

IMPRESSIONS – Impacts and Risks from High-End Scenarios: Strategies for Innovative Solutions (www.impressions-project.eu)

Prepared under contract from the European Commission

Contract n° 603416
Collaborative project
FP7 Environment

Project acronym:	**IMPRESSIONS**
Project full title:	**Impacts and Risks from High-end Scenarios: Strategies for Innovative Solutions**
Start of the project:	01 November 2013
Duration:	60 months
Project coordinator:	University of Oxford
Project website	www.impressions-project.eu
Deliverable title:	Common Frame of Reference
Deliverable n°:	D1.1
Nature of the deliverable:	Report
Dissemination level:	Public
WP responsible:	WP1
Lead beneficiary:	FFCUL
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Decision-maker needs assessment:
Assessment of decision-makers' needs and capacities, drivers and barriers for using scenarios, modelling and pathways analysis

Deliverable 1.2

December 2015

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IMPRESSIONS – Impacts and Risks from High-End Scenarios: Strategies for Innovative Solutions (www.impressions-project.eu)

Prepared under contract from the European Commission

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Project acronym:	**IMPRESSIONS**
Project full title:	**Impacts and Risks from High-end Scenarios: Strategies for Innovative Solutions**
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9

Mainstreaming adaptation in regional land use and water management

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Summary

This chapter examines the constraints and opportunities for mainstreaming adaptation to climate change in land use and water management in three study regions of the ADAM project: the Guadiana River Basin in Spain and Portugal, the Tisza River Basin in Hungary and the Alxa region in western Inner Mongolia, China. We analyse the conditions that either facilitate or limit adaptation according to six analytical dimensions: biophysical, technical, financial, institutional, social and cognitive (the latter including informational aspects). Our research suggests that all six aspects are needed to capitalise on opportunities for successfully planning and implementing adaptation. Institutional and cognitive aspects have been identified as particularly important, but the relative weight of each aspect depends on location and will vary over time. Furthermore, we argue that, in the long term, building capacity to adapt to climate change will depend on the extent to which climate concerns are integrated into the planning and implementation of land use and water management. Based on our empirical findings, we provide recommendations that could facilitate such climate mainstreaming. We find that adaptation is enhanced by (i) adaptation pilot projects that test and debate a diverse set of new ideas in a collaboration of civil society, policy and science; (ii) open and easy access to information on climate impacts, policy and adaptation options; (iii) integration of (traditional) agro-environmental land use systems that regulate climate impacts at the local and regional scale, with new technologies, policies, organisational responsibilities and financial instruments; and (iv) flexible financial instruments that facilitate benefit and burden sharing, social learning and support a diverse set of potentially better-adapted new activities rather than compensate for climate impacts on existing activities.

Making Climate Change Work for Us: European Perspectives on Adaptation and Mitigation Strategies, ed. Mike Hulme and Henry Neufeldt. Published by Cambridge University Press © Cambridge University Press 2010.

Chapter 40
Opportunities and Constraints for Climate Adaptation in Regional Water and Land Use Planning

Saskia E. Werners, Jennifer West, Rik Leemans, J. David Tàbara, Xingang Dai, Zsuzsanna Flachner, Francesc Cots, Henry Neufeldt, Darryn McEvoy, and Giacomo Trombi

Abstract Whereas the literature on adaptation is rich in detail on the impacts of, vulnerability to, and constraints of climate adaptation, less is known about the conditions that facilitate adaptation in practice. We examined the constraints and opportunities for adaptation in water and land use planning in three regions: the Guadiana River Basin in Spain and Portugal, the Tisza River Basin in Hungary and western Inner Mongolia in China. We analysed the conditions that either facilitate or constrain adaptation in relation to (1) adaptation actors, (2) adaptation strategies, and (3) adaptation objectives. Many adaptation assessments concentrate on climate impacts and the potential of adaptation strategies. The conditions that enable people to act on adaptation are less studied. Yet these have been identified as particularly important for successfully implementing adaptation. We find that adaptation is enhanced by pilot projects that test and debate new ideas through collaboration between recognized actors from civil society, policy, and science. Promising for adaptation is the integration of (traditional) agro-environmental land use systems that regulate regional climate impacts with new technologies, organizational responsibilities and financial instruments. A key challenge is to create flexible and equitable financial instruments that facilitate benefit and burden sharing, social learning, and that support a diverse set of potentially better adapted new activities rather than compensate for climate impacts on existing activities.

Keywords Adaptation assessment · China · Climate adaptation · Europe · Hungary · Land use management · Portugal · Regional water and land use planning · Spain · Water management

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Walter Leal Filho & Franziska Mannke (Eds.)
Interdisciplinary Aspects of Climate Change (2009)
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Pages 121-181.

Social learning on climate change among regional agents. Insights from China, Eastern Europe and Iberia.

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Key Words:

Regional climate change, social learning, Inner Mongolia, Guadiana river basin, Tisza river basin.

UNA ESTRATEGIA DE DESARROLLO SOSTENIBLE PARA LA EURORREGION PIRINEOS-MEDITERRÁNEO

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Palabras Clave: Eurorregión Pirineos-Mediterráneo, Desarrollo Sostenible, Gobernanza, Requisitos Institucionales, Partenariado.

1. Introducción

⏩ Este artículo pretende definir los requisitos necesarios para elaborar una estrategia de desarrollo sostenible en la Eurorregión Pirineos-Mediterráneo (EPM). Ésta es un proyecto de cooperación regional transfronteriza impulsado por el ex Presidente de la Generalitat de Catalunya, Pasqual Maragall, y que incluye, además de Catalunya, a Aragón, las Illes Balears, Midi-Pyrénées y Languedoc-Roussillon.

El fenómeno de las eurorregiones es la principal expresión actual de la cooperación transfronteriza. El Consejo de Europa impulsó este tipo de estructuras en los años 60 con el objetivo de contribuir al establecimiento de vínculos de cooperación entre territorios objeto de viejas disputas entre Francia y Alemania y entre áreas fronterizas de estos dos países con sus vecinos (Bélgica, Luxemburgo y Holanda). Por lo tanto, desde sus comienzos, la cooperación transfronteriza tiene una carga simbólica muy fuerte.