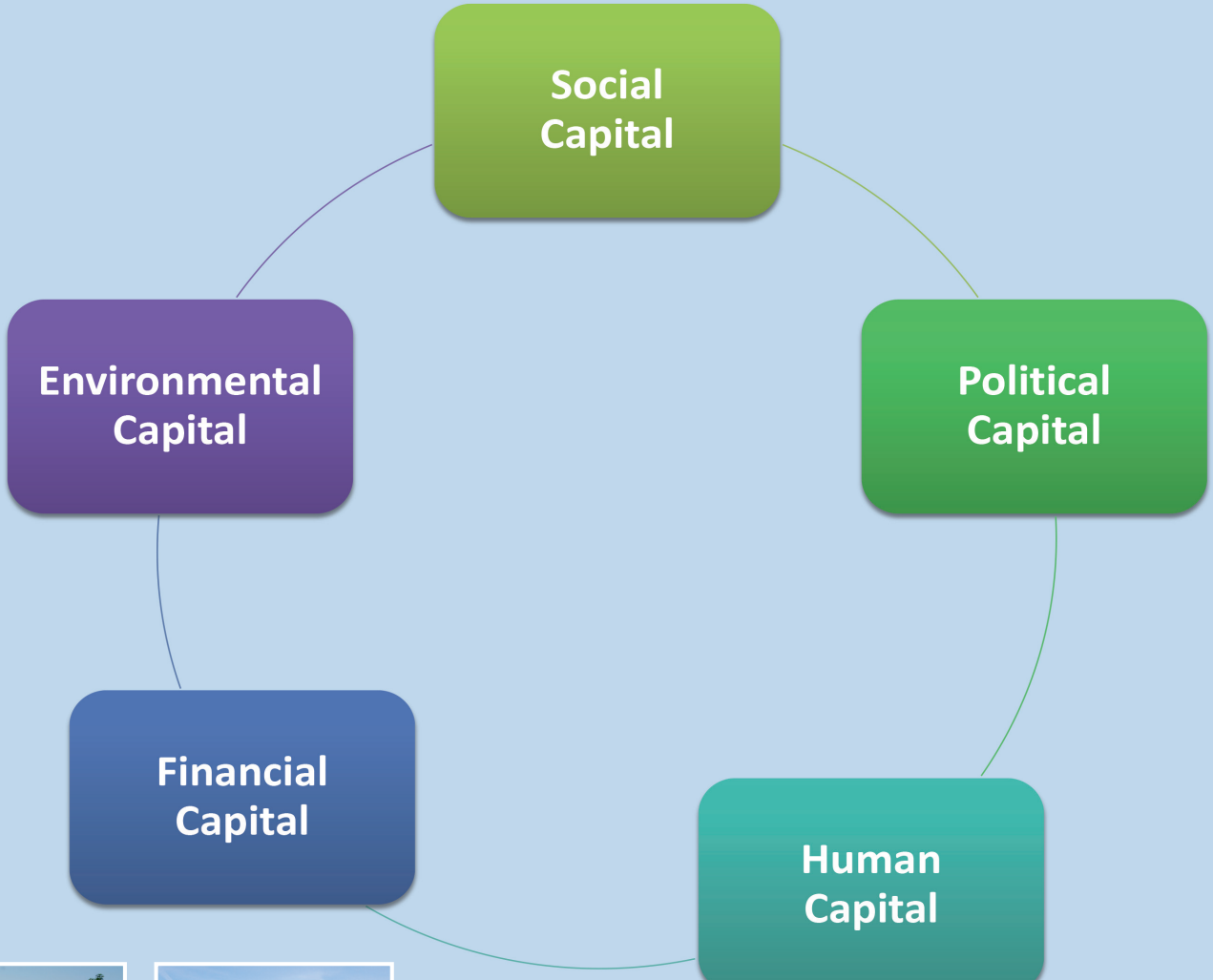
Report 20

Assessing governance performance



Climate Service Center Germany
An institution of Helmholtz-Zentrum Geesthacht

Citation:
M. Máñez, M. Carmona and B. Gerkensmeier (2014): Assessing governance performance,
Report 20, Climate Service Center, Germany

Assessing governance performance

Authors: Prof. Dr. María Máñez, María Carmona, Birgit Gerkensmeier

Department “Economics and Policy at the Climate Service Center, Hamburg

Collaborations: Kira Gee (HZG), Beate M.W. Ratter (HZG) and Jeroen Arts (IVM)

June 2014

This Report is also available online at www.climate-service-center.de.

Contents

List of figures

List of tables

Abstract

Risk management of natural hazards often includes the management of a multitude of impacts affecting the public and private sector and civil society. This circumstance demands for collaborative actions between actors from different sectors. These collaborative actions request for enhanced governance structures – away from single actors in risk management often performed in hierarchical modes towards collaborative processes between different actors in a network mode of governance.

In many case, history has shown that governmental structures are not able to react properly to particular risks. Therefore new governance structure as partnerships arise allowing society to form the capabilities to act effectively in the face of a risk. These partnerships have the strength of bringing together a range of partners, perspectives and resources to facilitate a better result that an organization or government alone.

In this report we present an analytical framework for assessing governance when dealing with natural hazards. This framework is based on the concept of the capital approach. The capital approach enables the authors to analyse the capacity and capability of a partnership to react to environmental hazards. We present two practical examples, where the capital approach has been applied. Both examples are related to case studies of the ENHANCE project – the first one on drought management in Jucar River Basin (Spain), the second on storm surge management along the North Sea Coast with a focus on handling risks and uncertainties in the trilateral Wadden Sea Region (Netherlands, Germany and Denmark). The findings highlight significant elements for good governance processes.

1 Introduction

The challenge of managing risks resulting from natural hazards has increased in the last few decades on a European as well as a global level. Closely related to challenges in risk management, it becomes increasingly obvious that these risks cannot be handled by either private sector of the government as single actors (Evans, 2012). Alliances of different partners to cope with the increasing impacts of risks in collaborative practices have become more and more important. These alliances (often consisting of public-private partnerships) are of main importance in managing risks resulting from natural hazards.

Governance processes shape the frame of formal and informal cooperative actions between stakeholders within a partnership and are crucial for the success of risk management partnerships. The aim is to use the presented conceptual framework to identify successful and unsuccessful Multi-Sector Partnerships (MSP). We argue that in some cases MSPs allow the improvement of adequate risk management strategies.

In section 2, we will introduce the concept of governance, as the theoretical basis for our analytical framework. We focus on partnerships as a governance structure that may favour the management of particular stakes. Taking into account that our focus lies on risk related to natural hazards, subsection 2.3 provides a literature review on risk governance, supporting the analysis of important key elements of risk governance approaches applied in different sectors and research fields. We will present in section 3 the definition of Multi-Sector Partnership and its characterisation.

In subsection 3.2 the concept of institutions is used to analyse the institutional fit and interplay between different partners. In section 4 and using the capital approach, we present a framework for analysing partnerships and (good) governance based on the classification of governance factors and indicators (Goodwin, 2003; Ostrom, 2005).

Finally, we present the two case studies: at the Jucar River Basin and the Wadden Sea Coast.

2 Governance

The concept of governance in general became a buzz term in recent years and is widely used especially in policy, planning and management contexts. Governance is culturally framed and as well defined differently within the various disciplinary fields. There is a need for a clear definition of governance for the ENHANCE research context and a specific objective of governance must be determined.

2.1 The concept of governance

The roots of the concept *governance* can be found in the 1980s, when it became necessary to explain the shift from state-centered and bureaucratic forms of administration to broader more inclusive forms in the context of international and domestic politics (comp. Harward and Vince 2006). At that point, the increasing activity of non-governmental actors and market instruments, as well as government overload and regulatory failure, made it clear that governing could no longer be perceived as the sole domain of governments (comp. Ostrom 1990).

Although a narrow definition of governance still refers to the efficient functioning of government, or the maintenance of a legal and regulatory framework, the term has taken on a broader meaning. Governance, here, is the act of governing; it is what a 'governing body' does, including consistent management, the processes involved and decision-making for a given area of responsibility. In its widest social science interpretation, governance is an umbrella term describing "…all forms and mechanisms of co-ordination between more or less autonomous actors whose actions are interdependent and which can therefore help or hinder one another" (Benz et al. 2007 p.9).

Mayntz (2004) distinguishes a broad definition of governance, in which the term describes different forms of co-ordinating action (encompassing civil society, hierarchy (political control) and market); in a closer definition, the term describes a form of participation by civil society; and a narrow definition describes governance as the opposite of hierarchical management (comp. Bruns 2010). Government, here, is understood as a sub-form of governance, which does not directly lead to the creation of "traditional" government infrastructure (comp. Young 1997), although government is still one of the most effective institutes implementing policy and ensuring compliance. Governance is particularly useful when seeking to capture those forms of control that are not strongly institutionalized, such as networks, round tables, regional conferences etc (comp. Fürst 2003).

The Commission on Global Governance defines governance as follows: "Governance is the sum of many ways individuals and institutions, public and private, manage their common affairs. It is a continuing process through which conflicting or diverse interests may be accommodated and co-operative action taken." (Commission on Global Governance, 1995 p.1)

For our analysis, governance thus means: ***"the control of the process of collective action, where actors/organizations are linked to one another and coordinated in their action in such a way that commonly held or developed aims and objectives can effectively be pursued"(Fürst 2003 p.252). "It is a form of self-organization, based on the interdependence and resource dependencies of actors which manifest themselves in political systems of action, supported by a system of rules, norms, conventions etc. which can be of formal or informal nature" (Rhodes 1997 p.15).***

Additionally for assessing governance we ought to bear in mind three levels: the local level, national level and global level, understood as the level of 'governing without government'. On the local scale, governance is focused in a geographical region or community and includes the actors in decision-making processes and the social and societal structures within these defined areas. At the national level, governance describes structures and processes for collective decision-making involving governmental and non-governmental actors (comp. Nye and Donahue 2000). At the third level, global governance in general terms, defined by James Rosenau (1992, p.7), is 'an order that lacks a centralized authority with the capacity to enforce

decisions on a global scale'. Governance has been understood by Rosenau primarily as intergovernmental relationships. However, we follow a broader concept of governance also involving non-governmental organizations (NGOs), citizens' movements, multinational corporations, and the global capital market (comp. Commission on Global Governance 1995). Especially problems on a broader scale, such as economic rises, increased activities of supranational institutions (e.g. the European Union), the spread of neo-liberal ideology, the diffusion of information technology, etc (comp. Bevir and Trentmann 2007) as well as new natural impacts including climate change and its cascading effects on a global scale, require new forms of governance. They cannot be managed only by national governments within national borders. There is a need for multi-actor processes and partnerships (comp. Watson 2009).

2.2 Key elements of governance

In political sciences there is a wide consensus that governance is not a (meta-)theory, but an analytical framework, allowing an explorative research perspective and the structuring of empirical material (comp. von Blumenthal 2005). Governance is a conceptual aid which can help to "make clear who does what, when and where in order to enable collective action"(Fürst 2003 p. 252).

Governance as an analytical framework

Governance thus includes structural and process-oriented elements, which need to be accounted for in analysis, as well as accountability, effectiveness and coherence. In the present report, we are searching for effective and successful risk governance through the establishment of governance indicators for successful Multi-Sector Partnerships.

Structurally, governance involves a wide range of actors and instruments including social norms, institutional arrangements and policies. Civil society plays a key role in achieving the objectives of good governance. Civil society can be defined as the domain of associational life above the individual and below the state (comp. Wapner 1997), consisting of linked networks (based on interest, ideology, family and culture) through which groups pursue goals. Issue and policy networks have been described as possible "engines of governance" (Rhodes 2008 p. 506/7).

In terms of process, governance could be described as constantly emerging, manifesting itself when societal members find they are interdependent and their actions impinge on one another (comp. Kannen et al. 2010). This can result in conflict or cooperation, with conflict occurring when goals are incompatible and cooperation taking place when "opportunities to increase social capital emerge by managing the relations and interactions of the group – essentially the sum is greater than the parts and actors can achieve their goals from cooperative approaches" (Kannen et al. 2010 p. 16). Social capital is understood for us as the relationships, networks and shared norms and values that qualify and quantify social interactions. In practice, the dynamics of governance are a mixture of both which come together around particular institutions, social contexts and scales. The higher level of interdependence among group members, the more complex collective action problems become because of power distribution issues or asymmetric information (Young 1997 quoted in Kannen et al. 2010 p. 16).

A governance regime describes the form of governance, in other words, the description of the institutional setting including the sets of rules, cultural and social norms that regulate its operation. It is useful to differentiate governance regimes according to their functional or territorial approach. Territorial approaches are characterized by their attempt to achieve integration for a pre-defined spatial unit (the term "regional governance" for example describes forms of self-governance emerging at a regional level). In reality though, functional approaches are more common which form around projects or specific tasks, such as forms of environmental governance (e.g. the implementation of the European Water Framework Directive, which focuses on good ecological status of water bodies) (comp. Bruns 2010). We assess governance

regimes, specifically partnerships, as the region-specific mix of market, hierarchy (political control) and (socio-emotional) associations as a prerequisite for regional adaptation (comp. Fürst 2004 p.9).

Multi-level governance is another relevant concept for the analysis of governance structures and potentials that we use. At a European level, it refers to a policy-creating process in which both authority and policy making influences are shared across multiple levels of government. Arguably, control has slipped away from national governments in EU policy making to supranational institutions, with individual state sovereignty diluted by collective decision-making among national governments and by the autonomous role of the European Parliament, the Commission, the European Court of Justice and the European Central Bank (comp. Treib et al. 2005). A similar argument is valid for the *governance* of multi-risk environments. National arenas remain important, but decision-making powers are shared by actors at different levels, supranational institutions have independent influence in policy making that cannot be derived from their role as agents of national executives, and political arenas are interconnected rather than nested (comp. Hooghe and Marks 2001 p.2-3).

In social and political sciences governance has been frequently criticized for its conceptual vagueness and the lack of clear boundaries. However, its strength lies in its ability to act as a transdisciplinary bridge between the social sciences, political sciences and law, as well as its practical applicability on every scale (European, regional and local). Analysing *g*overnance can give insights into different modes of societal self-governance and the many interdependencies and forms of interaction that exist between state, non-state and private, collective actors. The basic typology of governance modes (hierarchy, negotiation, networks and competition) (comp. Schuppert 2007 p. 491) is useful to analyse institutional setting within governance regimes.

3 Partnerships in risk management as a way of risk governance

The increased exposure of societies to multifaceted and complex risks from natural hazards is a key challenge in risk management. Risk in the field of natural hazards and disaster risk reduction research is usually defined as a function of hazard and vulnerability of the exposed system or element, including the probability of occurrence (UN/ISDR 2004). This mathematic-technical based school of thought is primarily represented by engineers and natural scientists. A second school of risk, which arises from the sociological perspective, defines risk as an inherent characteristic of decisions in the light of hazardous events (Renn 2008). From both of these schools of thought, definitions of risks vary significantly between different disciplines as well as between different research fields.

Impacts, perceptions and consequences resulting from natural hazards can be predominantly characterized as complex affecting different sectors in different ways. These trans-sector impacts and consequences are not manageable by a single actor, such as the government (Evans 2012). In this situation, the complexity of risks demands for new governance structures in risk management. In cases in which governmental structures are not able to react properly to particular changes, the creation of partnerships allows society to form the capabilities to act effectively. This change is referred to as a move from “government” to “governance”, or from a hierarchical to a network mode of governance. They evolve around the idea of “partnership”, the co-involvement, and cooperation, of the different interests or “players” or “stakeholders” in the governance and regulation of particular public (as well as private) domains (Faircloug, 2008). A partnership, in these cases, has the strength of bringing together a range of partners, ideas and resources to facilitate a better result together that an organization alone. The motivation behind the engagement in a partnership may be either the prospect of greater performance than what could be achieved by regulatory actions or economic policy instruments.

These new structures have to provide a basis to handle modified conditions in society to increase resilience of the society, secure stable political conditions and give consideration to economic goals (Evans 2012). In the case of risk management, the changing in governance processes is represented particularly by the implementation of partnerships between the government (public) and the private sector.

We understand ***partnerships as voluntary but enforceable commitments between public authorities, private enterprises and civil society organizations. They can be temporary or long-lasting. They will be founded on principles of sharing the same goal in order to reduce risks and gain mutual benefit. In some cases, as with our Romanian case study, they might be enforced by law. Partnerships involve a shift in governance structures and the implied acquisition of competencies typically derived from governmental structures.*** This implies usually the transfer of competencies or the holding up of regulatory discretion in exchange of voluntary commitments or performance.

Multi-Sector Partnership are thus these partnerships but shaped by different sectors. We understand by sector two aspects. On the one hand, sector understood as public or private organizations, included civil society. And on the other hand, sector understood as economic sectors (e.g. agricultural sector or industrial sector). The multitude of partners from the public, private and civil sectors requires a more detailed look of governance processes including the inter-sectorial and trans-sectorial activities. Only the comprehensive knowledge of governance processes, including the inter-sectorial and trans-sectorial activities, their institutional fit and their particularities can provide a framework to analyze successful governance processes within Multi-Sector risk management Partnerships

Important concepts for understanding partnerships are the cultures of risk management and stakeholder involvement. They will shape the capability of society to form partnerships. Introduction of governance regimes to the management of risks demands for an examination of the term “risks”. Especially with regard to the variety of definitions that exist between different disciplines and different research fields. In economics, risk is defined as the possibility that an event will occur, which will impact an organization's achievement of objectives. The sociological

perspective defines risk as an inherent characteristic of decisions in the light of hazardous events (Luhmann 2003, Renn 2008, Birkmann 2012).In risk management, risk is defined as a function of the probability or threat of quantifiable damage, injury, liability, loss, or any other negative occurrence that is caused by external or internal vulnerabilities, and that may be avoided through preemptive action (comp. Birkmann 2006, UN/ISDR 2004).). For us, it is important that risk is understood differently across people and sectors, as a result of different mental constructions that results from the perception of each affected person as well as their interpretations and responses which depend on social, political, economic and cultural contexts and judgments(comp. Luhmann 1993; IRGC 2005). Single actors as well as societies are involved in the process of perceiving risks. Hence, evaluation of risks is a process taking place within societies (Renn et al. 2011). Related to multiple differences in interpretation of risks and their impacts between different actors as well as between different sectors or institutions, it is important to include different points of view in the process of successful risk management processes.

Impacts and consequences resulting from natural hazards are the key elements of risk management strategies investigated here. These natural hazard risks can be predominantly characterized as complex and affecting different sectors. The complexity of risks and the high uncertainties of multi-layered risks demand new structures in risk management. These new structures have to provide a basis to handle modified conditions in societal and economic sectors to secure stable political conditions, give consideration to economic goals, especially in the context of increasing economic globalization, and increase resilience of the society (Evans 2012).

Resilience defined the capacity of a system, community or society to absorb internal and external disturbance and bouncing back these effects by resisting or changing in order to reach and maintain an acceptable level of functioning and structure (Holling 1973). This is determined by the degree to which the social system is capable of organizing itself to increase this capacity for learning from past disasters for better future protection and to improve risk reduction measures (UN/ISDR 2004). From the technical perspective on resilience, e.g. in engineering, the term resilience is used as a paradigm for safety management that focuses on how to help people cope with complexity under pressure to achieve success (Haimes 2009).

3.1 Risk governance

The existing scientific progress in the field of risk governance constitutes the term as a theoretical key concept for analysing governance processes in stakeholder partnerships for risk management. Existing approaches to risk governance can foster the discussion on new partnerships in risk management. The focus for us is on risk *governance* approaches. Thus, the comprehensive field of risk *management* is deliberately not touched by the authors.

There are two crucial risk governance schools valuable in the present report: integrative risk governance and risk governance in business management. The objective is to present important key elements for the establishment of significant governance indicators for successful governance practices in risk management partnerships based on a literature review.

Risk governance has been developed within the field of risk management, offering a systemic approach to frame decision-making processes due to natural, technical and financial risks. Risk is a mental construction. These constructions result from the perception, interpretations and responses of actors on the individual level and parties on the societal system's level due to expected exposure to hazard events and their potential consequences (Luhmann, 1993; IRGC, 2005; Ratter, 2012). Society is a dynamic and non-linear system, composed of single elements and constituted by relations between these composing elements and society can be considered as structured in a hierarchy of subsystems. In these (sub-)systems it is the iterate activity of interacting entities which influence the system's trajectory and therefore the handling of uncertainties. Dealing with risks requires a change in research perspectives from linear development to non-linear behavior. The required research objective is the translation of mechanisms of individual activity into divergent systems' trajectories and the

search for the reasons behind divergent planning cultures in different societies. “Linear thinking can be dangerous in a non-linear world. Emergent behavior and surprises have to be accepted as inherent to complex systems.” (Ratter, 2012, p.101).

On the basis of understanding risk as a construct of mental and social interpretations and responses, Walker et al. (2010) highlighted two primarily rationales that underline the development of risk governance: a crucial change in society and a modified challenge of risks. Risks as a mental construction are highly dependent on the state and on-going processes in society. Changes and shifts in public and societal procedures and behavior result in changes in perception, interpretation and handling of risks. A crucial change in public interests is marked by implementation of governance processes in public interests. This shift is characterized as turning away from solely governmental involvement (one-actor) and moving toward cooperative, multi-actor alliances of governmental and non-governmental partners taking place (Evans, 2012). In addition, Walker et al. (2010) mentioned a change in the understanding of risks to be important for the development of risk governance.

In general, the theoretical framework of risk governance includes core principles of governance and connects these approaches to risk-related decision-making (Renn, 2008). Risk governance can be understood as a comprehensive way of understanding and dealing with risks from different sources (e.g. natural risks, technical risks, financial risks, risks on health or food safety) (Wanczura et al., 2007), including all relevant actors and stakeholders, who have to deal with the effects and impacts of the respective risks (Greiving & Glade, 2013, p. 867). Furthermore, the concept involves “rules, conventions, processes, and mechanisms concerned with how relevant risk information is collected, analysed and communicated and management decision are taken.” (IRGC, 2005, p. 22)

Based on these characteristics, risk governance points at three major elements: risk assessment, risk management and risk communication (Aven & Renn, 2008; Lyall & Tait 2004; Birkmann, 2013). *Risk assessment* encompasses the process of risk identification and anticipating the consequences. Knowledge gained in a risk assessment process is used in *risk management* to handle the tasks of prevention, reduction and altering the consequences by choosing appropriate actions. Both risk assessment and risk management are theoretically embedded in the third component *risk communication*, which spans the field in which expert judgments, perception of population and actors about the risks, come together and demand an appropriate intermediation. It is the goal of risk communication processes to increase the capability of actors and stakeholders to make informed choices in the face of risks (Aven & Renn, 2008 after Morgan et al. 1992; Renn et al., 2002).

Practical implementation of risk governance takes place at different levels. On the one hand, the risk governance framework provide the theoretical background to develop risk governance approaches, which can be applied to handle specific risks and their consequences on regional or national level (e.g. droughts in a basin district). On the other hand, a risk governance framework provides a general concept to cope with increased risks and strengthen societal resilience on transnational level, e.g. the concept is used by the European Union within its *White Paper on European Governance* (2001). Related to this transnational risk governance initiative, different EU initiatives and strategies have been implemented and transferred to international, national and regional policies and practices (e.g. the European Environment and Health Strategy, implemented on a national level as e.g. in the German Environment and Health Program (Wanczura et al., 2007; Encyclopedia of Sustainability, 2012).

3.2 Integrative Risk Governance

According to the integrative risk governance approach of O. Renn (comp. Renn, 2008; Aven & Renn, 2008; IRGC, 2005), there is a need for improved risk analyses, recognizing that risks are more complex, increasingly uncertain and more ambiguous than expected (Aven & Renn, 2008). Following the theory of complexity, threats to human societies are dependent on the understanding of system’s behavior and need a change in perspective of linearity to non-linearity and from the planning imperative to a management hedging uncertainty and surprise

(Ratter, 2013). Many of the risks societies are facing today can be described as *systemic* risks. According to O. Renn (2008), risks have to be considered as composed of different factors with a non-linear dynamic behavior. His focus lies on “systemic risks” which are not predictable by a function of probability and effect. Systemic or complex risks require social choices and decisions and are characterized by the three major challenges: complexity, uncertainty and ambiguity (Renn et al., 2011; IRGC, 2005). Complexity in this context addresses the difficulties arising from the processes of identifying and quantifying causal links between a multitude of potential causal agents and the multitude of specific observed effects and impacts (Klinke & Renn, 2002, p. 1085; WBGU, 2000). For O. Renn (2008), uncertainty arises from the lack of past data that prohibits hard facts on risks (e.g. probability of occurrence). This absence of hard facts provides difficulties to decision-makers to make decisions on the factual background of possibility instead of probabilities. Ambiguity is considered to be the result from the fact that costs and benefits of risk decision-making cannot be clearly divided from each other. Differences between individual risk assessment and social group processes further influence this ambiguity. Important elements of different risk assessment can result, for example, from the degree of voluntariness, personal experience and degree of affectedness (WBGU, 2000; Wanczura et al., 2007).

Following O. Renn (comp. Renn, 2008; Aven & Renn, 2008; IRGC, 2005) increased complex and systemic risks call for an improvement of risk governance towards a more holistic approach because investigating systemic risks goes beyond the usual agent-consequence analysis (Aven & Renn, 2008, p. 234). The three classic components of risk analysis proved to be too narrowly focused on the characteristics of systemic risk and the variety of actors from public and private bodies in risk governance processes (Aven & Renn, 2008; Renn et al., 2011). A comprehensive work in order to handle these increased challenges in risk management was done by the International Risk Governance Council (IRGC), who presented a new *integrative risk governance framework* (IRGF) in 2006 (comp. IRGC, 2005) where O. Renn was a lead author. Application of this integrative framework has taken place in a multitude of research activities dealing with different risks. The main aim of the IRGF is to integrate the socio-cultural context of risk as well as a new categorization of risk-related knowledge through its integrative approach (IRGC, 2005). In particular, the focus of IRGF is on global or international level risks. Nevertheless, it is possible to transfer this approach to national, regional or local level.

From the perspective of O. Renn, risk governance provides a framework to analyse and cope with systemic risks. Systemic risks comprise compound risks resulting from non-linear interactions between a multitude of causal agents and a multitude of consequences. Due to these systemic risks, risk governance provides a framework to situate a multitude of actors and stakeholders in a multidimensional context (including socio-economic perspectives) with respect to comprehensive rules, norm and processes between these actors. Moreover, risk governance provides a setting where knowledge is produced and authority is exercised (Walter et al., 2010). According to Renn (2008; IRGC, 2005) successful practice of risk governance is dependent on the key factors of participation, trust between all actors and communication. Moreover, the importance of respect and tolerance with regard to different stakeholder positions is highlighted by the IRGF.

Both, respect and tolerance have major influence on phrasing the aim of (an) action(s) to increase resilience, and on the process to formulate a shared aim, which are important elements for a successful risk governance process. Additionally, these elements shape the basis for consensus about the existing risk(s) and their clear requirement. During the working processes, communication, trust, transparency, and efficiency are important to generate and disseminate knowledge about existing risks. Education, training programs etc. are successful instruments to generate, improve and disseminate knowledge between the multitudes of actors, and form the basis for successful cooperative processes.

3.3 Risk governance in business management

In economics, risk management can be described as a strategic way to handle risks in an organization or an enterprise, which reduces its likelihood to achieve one or more of its

objectives (van Daelen& van der Elst, 2010). Moreover, “enterprise risk management enables management to effectively deal with uncertainty and associated risk and opportunity, enhancing the capacity to build value.” (COSO, 2004, p. 1) In practice, the process of risk analyses had been transformed here into organizational processes where a set of performance activities has been developed, known as business control frameworks (van Daelen& van der Elst, 2010).

A series of high-profile business scandals and failures in the last years in Europe, increased the necessities for enterprises to strengthen resilience due to these complex risks (Drennan, 2004; COSO, 2004). Most of these enterprise risk management strategies include governance as an integral part of corporate governance processes. The concept of corporate governance refers to the processes and structures by which business and affairs of an institution are directed, managed and controlled (EDRM, 2011). The concept of corporate governance is well established in the financial sector.

Successful corporate governance processes in enterprise risk management are framed by well-defined basic conditions. The Integrated Framework on Enterprise Risk Management (IFERM) expresses the need of an internal control environment within an enterprise as a basic condition, in order to implement successful corporate governance processes. An internal control environment depends on formal procedures as well as control systems, which are integrated within the operating processes of an entity, in order to increase the stability and resilience of a company (Hewitt, 2012). Control systems can be represented e.g. by internal and/or external auditing. Furthermore, implementation of a risk management strategy as well as related laws and regulations are part of the internal control environment. These regulations and laws provide an assurance for achieving the entity’s objectives (IFC, 2010). Shareholder rights have to be considered in formal (as well as in informal) processes and regulations. Implementing an equitable treatment of all shareholders as well as providing them with rights to elect to, and be elected in, the governing bodies of the company avoid risks resulting from infringing shareholders rights (Hewitt, 2012). Integrating shareholder in discussion and decision-making processes can also affect the improvement of knowledge on specific risks, especially on national or local levels (Global Corporate Governance Forum, 2010).

Controlling is a marginal function of framing successful internal governance processes in economic entities. Controlling mechanisms support the setting of standards as well as supervising and measuring the actual processes. The latter increases the awareness and identification of possible modifications that could be made in order to strengthen and improve the applied activities (COSO, 2004). As a result, monitoring mechanisms in terms of adapting measures and objectives to these changed conditions can be created. Monitoring processes support an entity to reach its objectives and increase its resilience towards internal and external risks.

The willingness of a company to include supervision processes and approve the development and implementation of strategies to increase governance issues is crucial to achieve successful governance processes(Global Corporate Governance Forum, 2010; IFC, 2010). In alignment with the integrated risk governance concept of Renn, communication of relevant information to all partners (internal staff as well as shareholders) is a key element in economic risk governance processes. A successful communication process as well as the availability of relevant information is a basic support element for everybody who is involved in enterprise risk management processes (COSO, 2004). In connection with communication processes, open and transparence communication processes about information material and data are addressed by the IFC (2010). On the formal side, risk governance strategies suggest the implementation of boards of several directors as an effective tool to avoid risk resulting from a one-man dominated administration of a company (IFC, 2010; Hewitt, 2012).Aggregation of different skills and competencies in these boards helps to minimize the risk and damages related to bad decision-making. On the process side, continuous training and education programs (increased knowledge) increase the effectiveness of directors and owners of leading positions in decision-making processes and support communication processes (Global Corporate Governance Forum, 2010).

In addition to framing elements and influencing key factors presented above, several successful risk governance processes can be taken from the existing literature. The setting of

objectives shapes the processes of identification of potential events and risk (e.g. identifying potential financial losses of an entity related to the impacts of hazard events) and effects on the entity's achievements (e.g. take out insurances to avoid financial losses; applying risk management strategies etc.), which is an important process within enterprise risk management. These analyses on events and effects afford the background for a selection of risk responses. Risk responses, which can differ between avoidance, acceptance, reduction or sharing of risks, are selected by the management with the aim of being consistent with the risk tolerance and risk acceptance of the entity (Beasley et al., 2010; COSO, 2004).

3.4 Institutional fit

In risk governance several aspects and elements are taken into account, not only business management and human and environmental research activities, but also the stakeholders involved in the process. These stakeholders can be insurances, NGOs, the government, private enterprises, public administrations, etc. and all of them constitute a MSP. In natural hazard events, risk governance and multi-stakeholder involvement are central. But to effectively join the stakeholders and bridge their rules, there is a need for an analysis of their institutional fitness. In an ideal situation this fitness will support the desirable outcome of being more resilient to natural hazards.

Like all social institutions, governance systems that address human/environment-relations –commonly known as environmental or resource regimes – are dynamic. The term *institution* here refers to the rules and customs of a special group of similar interest. The study of an institution is quite valuable for understanding many social, political and economic behaviors. This understanding entails a process of learning. Broadly speaking, institutions are the prescriptions that humans use to organize all forms of repetitive and structured interactions (Ostrom, 2005 p. 3).

Institutions refer to the formal and informal rules governing the behavior of human beings. In other words, important for a governance regime is the relative strength of formal and informal institutions, respectively (Pahl-Wostl, 2009). Formal institutions are most effective when they reflect what is seen to be appropriate behavior and are well adapted to the underlying culture and ethics of a society (Haucap, 1998). Formal institutions include laws and regulations, formal organizational structures and formal procedures. They are assumed to be officially established in one way or another, often by governments. Informal institutions are understood as not officially established, but as practices commonly accepted throughout society. Informal institutions can be defined as socially shared rules, usually unwritten, which are created, communicated and enforced outside officially sanctioned channels (Helmke & Levitsky, 2004, quoted in Pahl-Wostl, 2007).

All behavior, including economic action, takes place in a network of interpersonal relations (Frances, 2004). For encouraging good governance in partnerships which faces the management of natural disasters, it is necessary to understand the partnerships' relevant institutions and to study their institutional fit. The challenge is to know enough about the structure of a situation to select the appropriate assumptions about human behavior that fit the type of situation under analysis (comp. Ostrom, 2005). Institutions denote rules governing the behavior of actors (North, 1990).

Institutions are only one of a large number of elements that affect behavior in any particular situation at a particular time and place. With the goal of fitting these rules and customs from the partners involved into their risk governance implementation, it is necessary to achieve a degree of compliance by the organization with the organizational form of structures, routines and systems prescribed by institutional norms (Kondra & Hinings, 1998). Therefore, institutional fit is closely related to the process of diagnostic analysis for identifying the governance arrangements. The concept of institutional fit supports the key idea that different environmental problems should be treated differently, and similar problems should be treated similarly (Young, 2002). We can incorporate the ideas formed by Young into our cases studies. We consider the

possibility of transferring what is working well in one particular area to another case with similar conditions/characteristics, with the aim of enhancing risk management in this specific area.

We deal with *formal institutions* – understood here as the rules, norms and behaviors of the relationship and cooperation of stakeholders constituting the MSPs in the selected cases study. These stakeholders are usually public administration, private enterprise, NGO's, etc. All of them display formal organizational structures with formal procedures. Therefore, we understand institutional fit as the process for fitting these rules on a common framework. This process is quite important in governance processes and thus in risk management partnerships.

4 Capital approach

Assessing governance structures, as partnerships, is of vital importance for 1) being able to maintain their capability to react to natural hazards, b) identifying the weak points that might need to be solve or improve and c) evaluating their performance over time. For doing so, we have chosen the capital approach (Sen, 1983, Bebbington, 1999, Godwin, 2003)

The capital approach comes from the 1990s and has its origin in the concepts of sustainable development and sustainability livelihood approach. Capital is then understood as the assets, capabilities, properties or other valuables which collectively will represent the good functioning of a partnership. The capital approach differentiate between five capitals: financial, social, human, natural (environmental) and man-made. For our purpose we have also included political capital as a capital to be taken into account when analysing public-private partnerships. Political capital refers to the capability of institutions to enact rules, laws or frameworks that might change the course of actions.

The aim of those capitals being stocks is their capacity to produce flows of economically desirable outputs (Bebbington, 1999, Goodwin, 2003, Sen, 1983, 2000). Sen's capability approach (1983) suggests that if partnerships are able to have a range of different resources and access to different capitals, those provide partnerships with the desirable output of being able to react to environmental hazards. This provides us with "the theoretical foundation for understanding such capabilities, has given rise to the "sustainable livelihoods approach," a set of methodological tools that are used to explore how households deploy "capital assets" to maintain livelihoods during shocks" (Scoones, 1998 cited by Fraser et al., 2011). These five capitals are vital for supporting the sustainability of partnerships and their functions in the face of environmental hazards. The capital approach can be used to analyse (un)successful partnerships by looking in detail at the five capitals of a partnership. We argue that the maintenance or enlargement of the five capitals will assure the capability of a partnership to react to environmental hazards.

In an ideal situation a sustainable partnership will focus on maintaining and/or enhancing its capitals:

- Social capital focus on relations (ships), networks and shared norms and values that qualify and quantify social interactions, which have an effect on the partnership productivity and well-being.
- Human capital is focused on individual skills and knowledge. It includes social und personal competencies, knowledge to be gathered from formal or informal learning, the ability to increase personal well-being and to produce economic value. In the case of partnership the human capital will be the addition of its individual skills and knowledge
- Political capital focus on the governmental processes, which are done/performed by politicians who have a political mandate (voted by the public) to enact policies. It also includes laws, rules and norms which are juristic outcome from policy work.
- Financial capital involves all types of wealth (funds, substitutions etc.) that are provided , as well as financial resources that are bounded in economic systems, production infrastructure as well as banking industries. Financial capital allows fast reactions in disasters.
- Environmental capital comprehends goods and values which are distinct from land, environment or natural resources.

This approach allows us to disentangle partnerships looking to the particular aspects of their governance structure, institutional arrangements, public-private capabilities, financial and natural resources. Using this approach we can also identify in which particular capital lays the weakness of a partnership and in this way act directly into the affected capital. For doing so we present in table 1 a list of factors and indicators that will allow us to study in detail partnerships.

4.1 Using the capital approach: developing indicators for (un)successful Multi-Sector Partnerships

To make the capital approach more tangible and operational for the purposes mentioned above, we develop factors that could allow us to identify the most important issues in every of the five capitals. Additionally for every factor, we suggest indicators that support the measurement of the performance of the capitals within every partnership. As mentioned previously the aim is to a) analyse the capability of partnerships to react to natural hazards, b) identify the weak point that might need to be solve or improve and c) evaluate the performance of partnerships over time.

Following we present the factors are defined pertaining to every capital:

1. Social capital

Equitable treatment of all partners includes an open process for all stakeholders during all stages of the process (in design, realization and assessment), also providing opportunity for the civil and economic sector to participate in decision-making processes.

Communication and information: Communication processes between all partners are essential for a successful governance process. Open access for all partners/actors within a collaborative process to all information that is used, applied and created in this collaboration is an important key element.

Participation is the ability to join a governance process and to act within it. For MSPs it is important to integrate partners from all different sectors that deal with (effects of) a risk in a specific risk area. A balanced share of partners from different sectors is the basis of a comprehensive participation process.

Knowledge is based on experiences as well as on cultural and historical contexts. Improved knowledge about risks can allow individuals as much as society to increase their resilience.

Trust (in stakeholder, other partners): “Trust helps to sustain a co-operative social climate, to facilitate collective behaviour and to encourage a regard for the public interest (European Social Survey, 2005)”.

Rules and norms of society: Formal and informal rules and norms in a society depend on the historical and cultural context. The extents to which actors have confidence in and abide by these formal and informal rules and norms are important key elements for successful cooperation processes.

2. Human capital

Skills and competencies: Skills, knowledge and experiences are closely connected to factors like risk awareness and preparedness. Preparedness includes knowledge about practical measures and how to act in the face of risk events.

3. Political capital

Transparency and trust in political actions: Trust and transparency in interaction processes between civil society/stakeholders and government is important for productive partnerships. Clear and comprehensive communication of aims and interests between the stakeholders implement trustful and democratic cooperation improving a successful participation process. Therefore, independence of media institutions from governmental structures is important to guarantee freedom of information.

Regulatory framework: formal rules and norms: Presence of qualitative regulatory framework(s), which attests the government's ability to implement sound policies with respect to permit and promote development especially in the private sector.

4. Financial capital

Disaster funds: Existence of disaster funds that provide short-time as well as long-term financial support to affected populations, industries and service providers. These funds help to keep up basic services as well as provide resources for reconstruction processes. An an important example is insurance systems. They are based on the principle of risk transfer and its related losses/damages from one entity to another in exchange for payment.

Risk of impoverishment: Losses and damages resulting from natural risk and hazards. Including losses of personal assets and economic losses (industry or tertiary sector) can have negative influences on the economic power as well as social structures of an area. In order to cope with these problems, adequate measures have to be implemented (e.g. insurance).

5. Environmental capital

Regeneration of environment: Actions taking by the society on regeneration of the environment, which has been affected by a natural hazard, could support the recreation process of the environment to recover the ecological status before the hazard event happens. Both, the environment as well as the society may benefit from these actions.

Management strategies and planning processes: Planning processes are important in implementing protection as well as management strategies from legal framework to action. The amount and quality of planning processes in risk management can provide an impression of the practical efforts. These planning processes also play an important role in terms of natural risk reduction measures, etc.

To measure the following indicators, it is underlined in colours (see last column) the answers that might be given. With this system of colours, we can observe easier if the governance of MSPs in the case studies is successful or unsuccessful. The scale runs from green to red (as a traffic light). If on the following list predominates the colour green, this provide us the basis for consider good governance processes in the specific MSP studied, that is, green demonstrates that the governance analysed is strong and on the opposite side if red stand out the governance structures it is because an improvement is needed.

Table 1 Governance indicators for (un)successful MSP (Y=yes, N=no)

Capitals	Factor	Indicators related to factors	Unit
Social capital	Equitable treatment of all partners	All members have an equal say in decision-making processes. There exist formal norms and rules to foster the democratic process.	Y/N
		(Equal) vote of all partnerships members in processes of formal voting	Y/N
	Communication and information	Extent of a transparent and established communication processes like periodic reports, meetings, etc. guaranties the flow of information	Y/N

Social capital		Existence of platforms, committees and networks where all representatives can join the process of information exchange	Y/N
		Information material on risk management e.g. presented on different information channels? Available in different languages?	Y/N
	Participation	Partners from each sectors (public, private, civil) within a collaboration	Y/N
		Amount of periodic formal meetings of stakeholders who are involved in continuous networking processes	meetings 1~4yearly 5~9yearly +10yearly
		Implementation of monitoring processes (e.g. internal or external audits)	Y/N
	Knowledge	Existence of educational programs for participating representatives and/or awareness campaigns for society at large	Y/N
		Percentage of trained individuals/institutions in relation to the target group of the specific program	**% in MSP**[1] +66% +33% -33%
		Existence of subjects in the curricula dealing with regional risk	Y/N
	Trust (in stakeholder, other partners)	Existence/knowledge about influences on trust/beliefs resulting from historic events or cultural behaviour existing in a risk area	Y/N
		Existence of longstanding cooperation between the same representatives which create trust between them – (medium duration of participation)	**Years** 1-4 5-9 +10
		Experiences of mutual (successful) conflict and problem solution	Y/N
	Rules and norms of society	Existence of informal boards/groups resulting from cultural-historic development	Y/N
		Existence of the registration of past events in the risk area/access to these registrations for all actors	Y/N
		Solidarity in society, e.g: - Amount of donations given from the society to a specific reason	**$**[2] +50%losses 50~25% losses -25%losses
		Mobilisation of volunteers in the face of risk	Y/N
Human capital	Skills and competencies	Level of education (could be given for example by PISA inform or degree of stakeholders)	High Medium Low
		Existence of practical measures taken in private households	Y/N

[1] Stakeholders trained in a MSP.

[2] Cover with donations the losses of a specific disaster

		Percentage of membership organised in non-governmental and governmental technical aid organisations (fire brigade, red cross, THW, etc)	**% in MSP** +66% +33% -33%
Political capital	Transparency and trust in political actions	Periodic submission of new laws or decrees in a public document	Y/N
		Percentage of population taking part in elections	**% in MSP** +66% +33% -33%
		Periodic statistical surveys published - reflecting the opinions of the population in regards to governmental work	Y/N
		Existence of comprehensive anti-corruption policy	Y/N
		Existence of laws/declarations, etc. in order to provide legal basis for the freedom of media	Y/N
	Regulatory framework: formal rules and norms	Permanency of risk related laws/regulations (time period)	Y/N
		Periodic revision and updates of laws and regulations concerning the protection against hazards and the management of disasters	Y/N
		Existence of emergency plans (level of detail)	Y/N
		Existence of obligation to obtain insurance	Y/N
		Existence of risk maps	Y/N
Financial capital	Disaster funds	Amount of disaster expenses of the total environmental budget	**%GDP**[3] +50% 50~25% -25%
		Amount of existing disaster funds related to goods and values that exist/are stored in the risk area	+66% +33% -33%
		Ratio of public and private investments on disaster funding	**$** +50%losses 50~25% losses -25%losses
		Percentage of households/institutions having insurance related to the specific threat in risk areas	+66% +33% -33%
		Percentage of damages that were covered by insurances during the last events.	+66% +33% -33%
	Risk of impoverishment	Number of enterprises with insurance related to the specific threat in risk areas	+66% +33% -33%
		Existence of rights of compensation (offered by the government); amount of these compensations	Y/N
		Quality of supply of public goods in general is e.g. HDI	**HDI**[4] High Medium Low

[3] Based on the GDP, determinate the percentage of budget destined to disasters.

[4] Classification of countries in the Human Development Index.

Environmental capital	Regeneration of environment	Percentage of ecologic compensation area per total area	+66% +33% -33%
		Number of post disaster local actions taken for environmental regeneration	+66% +33% -33%
	Management strategies and planning processes	Binding force of legal frameworks/regulation	Y/N
		Binding deadlines/schedules for implementation processes	Y/N
		Amount of environmental public investment in protection strategies	$[5] +10% -10%
		Percentage and share of different land use types within the risk area (in order to implement targeted strategies/actions)	+66% +33% -33%
		Amount of protected area within the total risk area	ha[6] +66% +33% -33%

[5] Percentage of protection strategies taking into account the total public investment in environment

[6] Number of hectare (expressed in %) destined to protected area within the total area in risk.

5 Operationalizing indicators in case studies

Drought management in Jucar River Basin

5.1 Drought management in Jucar River Basin (Spain)

The Jucar River Basin (JRB) is located at the east of Iberian Peninsula (see figure 1); specifically the area is comprised of all rivers flowing into the Mediterranean Sea from Cenia river to Segura river, the first one included. The larger ones are the Jucar River, which runs for approximately 509 km from its source until its mouth in Cullera (Valencia) and the neighbouring Turia River. The area is located between latitudes 38° and 40° north and enjoys a Mediterranean climate with hot-dry summers and mild winters. The annual average temperatures ranges from 9°C in the Northwest mountainous areas, to 18°C in the Southern coastal part of the basin (CHJ, 2005). Hence, several basins are included in Jucar Basin Agency territory (Confederación Hidrográfica del Júcar, CHJ) which manages the public hydraulic control and also constitutes a Multi-Sector Partnership. This MSP is shaped by governmental actors as well as private partnerships. Water is used mainly for urban water supply (including industry supply), irrigation, and hydropower generation. The main urban demands are the metropolitan area of Valencia, the city of Albacete and the city of Sagunto.

Since year 2000, Spanish water law requires the basin agencies to develop Special Drought Plans (SDP) in order to turn the traditional reactive crisis management approach into a proactive approach. The SDP for Jucar Basin district includes monitoring for early drought detection, drought stages definition, and the measures to be applied in each of the stages.

Since 2004, the JRB endures an important drought situation. Specifically during the years 2005 to 2008, it is when a severe drought was experienced in the area. It has been the most intense hydrological drought registered in the basin in the recorded history of hydrological flows (since 1940) (Andreu et al., 2009).

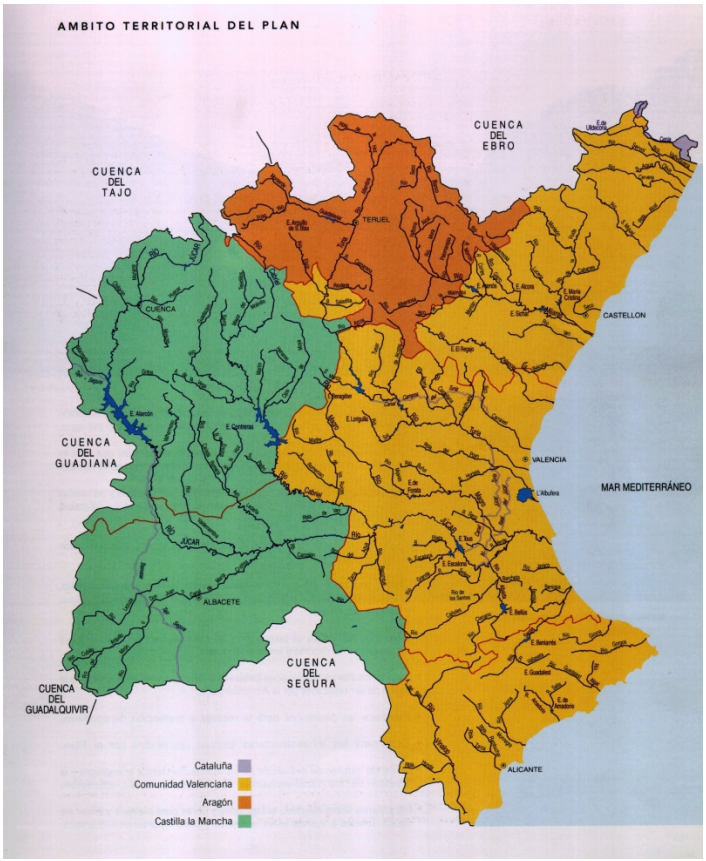


Figure 1: Júcar River Basin (source: ISIIMM, 2001)

Hence, the main focus of the case study is on drought. Droughts have a subsequent impact on other processes, goods and services such as urban water supply at risk; damage to water quality in rivers and aquifers; environmental damage to river ecosystems and wetlands; economic losses in agriculture; economic losses in industry; nuclear plant cooling at risk; trigger for desertification; and trigger for forest fires.

Due to the fact that drought is the main hazard underwent in the Jucar River Basin district, we focus our governance analysis on a specific MSP, which deals specially with drought. This MSP is named Permanent Drought Commission (PDC) and is born under the regulation of a Drought Special Plan (DSP) to create a commission to deal with the particular problems related to drought within the river basin. The PDC is shaped by a number of different actors from public and private organizations all of them stakeholders in the river basin.

Using the capital approach we went through all indicators for this case study (see table 2). Looking at the 45 indicators in the list, we can conclude that the governance structures in the Permanent Drought Commission are quite good and successful, having an amount of 31 indicators in colour green. The Political Capital represents the healthiest capital, with 80% of good governance. It should be only taken into account the existence of a comprehensive anti-corruption policy, due to the existence of corruption policies in the region is bigger. And also might be taken into consideration the obligation to obtain insurance, because could allow to be economically safe in the face of a risk event. Close to the Political Capital regarding good governance, it is the Social Capital. With regard to the Social Capital, we can affirm that the governance structures are successfully. But there are exceptions as we can see in the case of the factor *Equitable treatment of all partners,* specifically in the process of formal voting. This indicator might be enhanced allowing all members the right to vote. That would increase the participation in the decision making actions of representatives of NGOs or farmers associations among others. A weakness to be improved within the Social Capital it is also the availability of having information in different languages, due to the fact that the area is located in a place where every time more foreign people move in. Therefore, it could be useful to offer information in at least English to mobilise foreigners during extreme droughts. With regard to the factor of *Knowledge* a special point to remark would be the chance to implement a subject in the curricula of the schools in the area that might deal with the regional risk. It is also worth noting that no all the weakness depends on the MSP in itself. Some aspects are more focused on the society as for instance the solidarity issue within the factor *Rules and norms of the society*. For these features the way to strengthen them could be the implementations of programs to inform the broad public or campaigns to increase sensibility (normally managed in the area by means of the public institutions).

Nevertheless the analysis reflects that there are 5 items in colour yellow which need some careful attention, mainly in the Financial Capital, regarding insurances and rights of compensation. But Financial Capital as well as Environmental Capital have both a rate of 70% of good governance indicators.

With regard to the Human Capital, the most weakness capital in the governance processes of the Permanent Drought Commission, it might be enhanced the level of education of the stakeholders and the percentage of members in NGOs, which it is very low. We might say then that Human Capital in the governance structures of the MSP analysed is rather improvable.

Table 2: Governance indicators for (un)successful MSP in Jucar River Basin case study

JUCAR RIVER BASIN			
Capitals	**Factor**	**Indicators related to factors**	**Unit**
Social capital	Equitable treatment of all partners	All members have an equal say in decision-making processes. There exist formal norms and rules to foster the democratic process.	
		(Equal) vote of all partnerships members in processes of formal voting	
	Communication and information	Extent of a transparent and established communication processes like periodic reports, meetings, etc. guaranties the flow of information	
		Existence of platforms, committees and networks where all representatives can join the process of information exchange	
		Information material on risk management e.g. presented on different information channels? Available in different languages?	
	Participation	Partners from each sectors (public, private, civil) within a collaboration	
		Amount of periodic formal meetings of stakeholders who are involved in continuous networking processes	
		Implementation of monitoring processes (e.g. internal or external audits)	
	Knowledge	Existence of educational programs for participating representatives and/or awareness campaigns for society at large	
		Percentage of trained individuals/institutions in relation to the target group of the specific program	
		Existence of subjects in the curricula dealing with regional risk	
	Trust (in stakeholder, other partners)	Existence/knowledge about influences on trust/beliefs resulting from historic events or cultural behaviour existing in a risk area	
		Existence of longstanding cooperation between the same representatives which create trust between them – (medium duration of participation)	
		Experiences of mutual (successful) conflict and problem solution	
	Rules and norms of society	Existence of informal boards/groups resulting from cultural-historic development	
		Existence of the registration of past events in the risk area/access to these registrations for all actors	

		Solidarity in society, e.g: - Amount of donations given from the society to a specific reason	
		- Mobilisation of volunteers in the face of risk	
Human capital	Skills and competencies	Level of education (degree of stakeholders)	
		Existence of practical measures taken in private households	
		Percentage of membership organised in non-governmental and governmental technical aid organisations (fire brigade, red cross, THW, etc)	
Political capital	Transparency and trust in political actions	Periodic submission of new laws or decrees in a public document	
		Percentage of stakeholders taking part in the internal elections	
		Periodic statistical surveys published - reflecting the opinions of the stakeholders in regards to governmental work in the MSP	
		Existence of comprehensive anti-corruption policy	
		Existence of laws/declarations, etc. (in the State) in order to provide legal basis for the freedom of media	
	Regulatory framework: formal rules and norms	Permanency of risk related laws/regulations (time period)	
		Periodic revision and updates of laws and regulations concerning the protection against hazards and the management of disasters	
		Existence of emergency plans (level of detail)	
		Existence of obligation to obtain insurance	
		Existence of risk maps	
Financial capital	Disaster funds	Amount of disaster expenses of the total environmental budget	
		Amount of existing disaster funds related to goods and values that exist/are stored in the risk area	
		Ratio of public and private investments on disaster funding	
		Percentage of households/institutions having insurance related to the specific threat in risk areas	
		Percentage of damages that were covered by insurances during the last events.	
	Risk of impoverishment	Existence of rights of compensation (offered by the government); amount of these compensations	
		Quality of supply of public goods in general is e.g. HDI	

Environmental capital	Regeneration of environment	Percentage of ecologic compensation area per total area	
		Number of post disaster local actions taken for environmental regeneration	
	Management strategies and planning processes	Binding force of legal frameworks/regulation	
		Binding deadlines/schedules for implementation processes	
		Amount of public investment in protection strategies	
		Percentage and share of different land use types within the risk area (in order to implement targeted strategies/actions)	
		Amount of protected area within the total risk area	

Risk management of storm surges and sea level rise at the trilateral Wadden Sea coast

5.2 Storm surges and sea level rise at the trilateral Wadden Sea coast

The region of the Wadden Sea along the Dutch, German and Danish North Sea Coast is an area of profound transformative processes, resulting from natural forces as much as human activities (Enemark 2005). Regarding natural forces, storm surge events pose major risks to the Wadden Sea Region. Periodic storm surge water levels are caused by specific meteorological conditions (depression systems within the extra tropical west-wind-zone crossing the North Sea on specific tracks) above the North Sea and affect the shallow water areas as well as the river deltas along the coast. Beside this hazard, the Wadden Sea Region is additionally exposed to heavy storm and heavy rainfall events which can lead to flooding events in the hinterland. In terms of long-term developments which put risks on the Wadden Sea coast, especially sea level rise has threatened the coastline for centuries and will most probably increase due to climate change. Increased water levels will escalate the difficulties of coastal protection as well as draining the low-lying marshes behind the dykes.

The case study area of the Wadden Sea Region (WSR) includes the seaward areas of the Wadden Sea and the bordering North Sea. The ecosystem of the Wadden Sea represents, amongst other capacities, a buffer system for the storm surges (Kabat et al. 2008). For the landward limitation of the research area, the case study will follow the definition of the Wadden Sea Forum, encompassing the administrative units of municipalities/counties/provinces in Denmark, Germany and The Netherlands along the Wadden Sea coast. In administrative terms, the Dutch Wadden Sea provinces, the German counties of Niedersachsen and Schleswig-Holstein adjacent to the Wadden Sea and the four Danish Wadden Sea municipalities are part of the case study area (see figure 2).

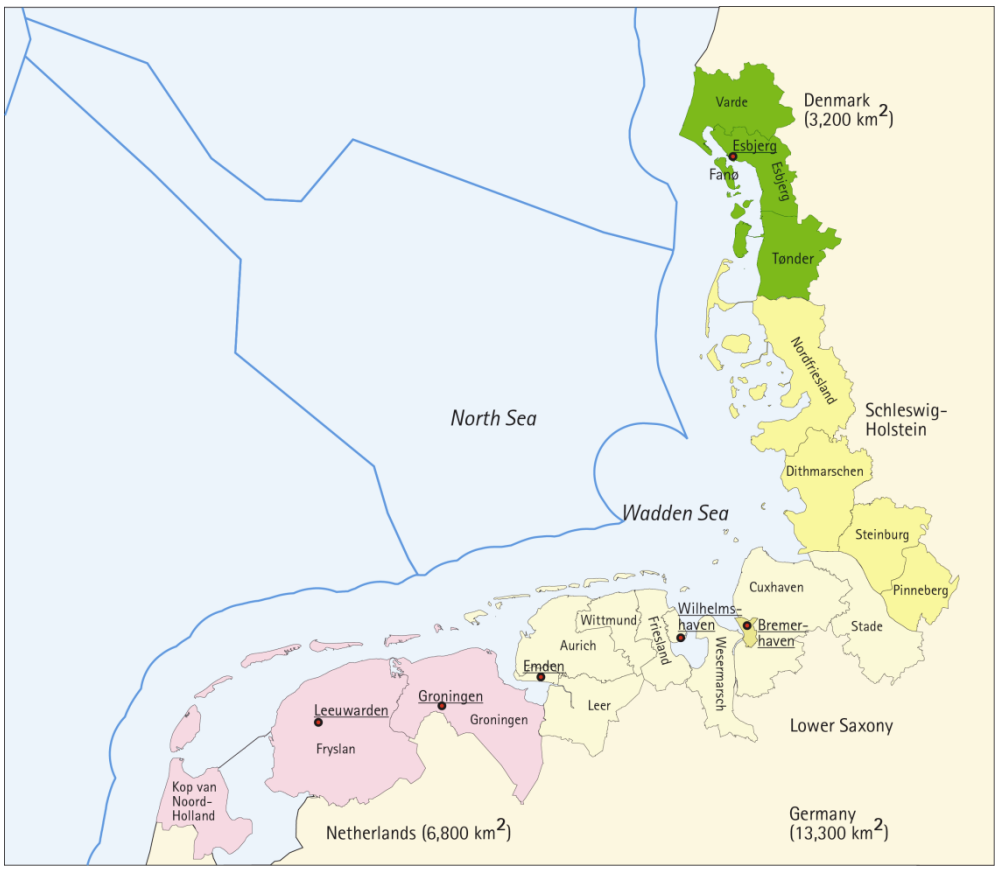


Figure 2: The Wadden Sea Region, as defined by the Wadden Sea Forum (source: Common Wadden Sea Secretariat (CWSS) EEZ: Exclusive Economic Zone)

Management of the risks and threats mentioned before, has played a strong role over centuries and represents an important issue with regard to the cultural-historic development of the Wadden Sea Region. The current state-of-the-art especially in storm surge management is characterized mainly by governmental top-down decision-making, as well as highly developed coastal engineering protection measures (comp. MLR 2001; MELUR-SH 2013; NLWKN 2007; Delta Programme 2013). Most of the risk management activities related to storm surges and sea level rise are restricted to the political sphere of the countries of the Netherlands, Germany and Denmark. Stakeholder and society are in general not included in the management of the WSR. Many of these risks are directly or indirectly connected with the existence of coastal protection facilities in the Wadden Sea Region – but in contrast to the constructive measures against storm surges and sea level rise, these risks to some extend need additional options and measures to be managed successfully.

The development of Multi-Sector-Partnerships (MSP) into the field of risk management for the Wadden Sea coast offers a sucessful governance approach to overcome obstacles and stimulate developments towards an increased integrative risk management. A special focus is given to the transnational perspective of risk management along the cross-national Wadden Sea Region. The trilateral perspective in coastal risk management constitutes a major advantage with regard to developing common risk management approaches for a coherent ecological system and a cultural entity as well as for a more homogeneous pattern of spatial development. The MSP would be unique in terms of collaborative transnational governance and measures in coastal risk management. The aim is to introduce the topic of integrative coastal risk management to the Wadden Sea Forum, an already existing multi-stakeholder forum in the Wadden Sea Region. The existing good experience of the longstanding international cooperation in the Trilateral Wadden Sea Cooperation on transboundary ecosystem-based collaboration in order to conserve a World Heritage site is the basis of the WSF (Wadden Sea Forum 2013.)

The capital approach is used in this case study to analyse the current status-quo of the MSP (=WSF) in the first step. The governance indicators help to estimate (i) the current constitution of the WSF with regard to its general, formal and informal constitution as well as (ii) existing fundamentals and potential activities already implied on the specific topic of risk management of storm surge events and sea level rise. Practical application and improvement of the presented governance indicators facilitate an assessment of the current effectiveness or health of the MSP and most of all highlights gaps and/or issues that have to be threatened.

Based on 54 single indicators, the current status of the MSP “Wadden Sea Forum”, with a specific focus on its potential in risk management for storm surges and sea level rise on a trilateral level, had been analysed. The analysis shows that social and human capitals of the MSP are in healthy condition. Both support the successful collaborative interactions between the stakeholder on a formal and informal level. The long lasting (> 10 years; CWSS 2010) and continuous (semi-annual meetings of the MSP) cooperation built a profound basis for the successful cooperation in the WSF. Some yellow indicators in the social and human capital underline the fact that information and knowledge about the risks of storm surges and sea level rise are available on national level, but this knowledge is not exchanged and synthesized between stakeholders on a transnational level.

With regard to the environmental capital the constitution of the MSP is quite positively rated, too. This development is primarily based on the long lasting cooperative processes in the trilateral Wadden Sea Region (especially with regard to the status of a world heritage site).

In the new, specific task of storm surge management and management of increased water level, major gaps become clear especially in the financial capital. Absence of insurances as well as permanent disaster funds in nearly all three countries as well as on trilateral level indicate a potential obstacle for a successful MSP on risk management of storm surges and sea level rise on a trilateral level in the WSR. Different strategies and regulations on national level e.g. for existing disaster funds which are partly available in Denmark but not available in the Netherlands and Germany, represent a major challenge for a collaborative risk management on

transnational level. In addition to that, economic instruments e.g. insurances are not available in an adequate extend.

The first baseline study that is presented here, gives an overview about the current healthiness of the existing MSP (Wadden Sea Forum). Regarding the new, potential task of the MSP to manage risks of storms surges and sea level rise, the first analyses especially highlights some major gaps and obstacles for a collaborative management on a trilateral level. These findings could be used as advice for further development of the MSP in the next period. It is recommended to reconsider the MSP at a later stage by using the capital approach again. Based on this procedure, improvements and further challenges could be emphasised.

Table 3 Governance indicators for the current state of status of the Wadden Sea Forum (=MSP), with a specific focus on its potential in risk management for storm surges and sea level rise on a trilateral level

WADDEN SEA COAST				
Capitals	**Factor**	**Indicators related to factors**		**Unit**
Social capital	Equitable treatment of all partners	All members have an equal say in decision-making processes. There exist formal norms and rules to foster the democratic process.		
		(Equal) vote of all official members (part of the Society) in processes of formal voting		
	Communication and information	Extent of a transparent and established communication processes like reports on meetings and activities of working groups, etc. guaranties the flow of information		
		Existence of platforms, committees and networks where all representatives can join the process of information exchange	Number of WSF working groups in total:	6
			Number of working Groups in risk management:	1
		Information material on risk management e.g. presented on different information channels? Available in different languages?	Information on national level done by singles countries / federal states or municipalities of the WSR	
			Information on risks and risk management on trilateral level	
	Participation	Partners from each sectors (public, private, civil) within a collaboration		
		Amount of periodic formal meetings of stakeholders who are involved in continuous networking processes		Semi-annual
	Knowledge	Existence of educational programs for participating representatives and/or awareness campaigns for society at large	On national, federal state or municipality level	
			On transnational level in the WSR	
		Existence of subjects in the curricula dealing with regional risk		

	Trust (in stakeholder, other partners)	Existence/knowledge about influences on trust/beliefs resulting from historic events or cultural behaviour existing in a risk area	
		Existence of longstanding cooperation between the same representatives which create trust between them (medium duration of participation)	**> 10 years**
		Experiences of mutual (successful) conflict and problem solution; e.g. in other collaborative management issues	
	Rules and norms of society	Existence of formal or informal boards/groups resulting from cultural-historic development	
		Existence of the registration of past events in the risk area/access to these registrations for all actors	
		Mobilisation of volunteers in the face of risk	
Human capital	Skills and competencies	Level of education of Stakeholder (degree of stakeholders)	
		Existence of practical measures taken in private households	
Political capital	Transparency and trust in political actions	Percentage of population taking part in national elections	
		Periodic statistical surveys published - reflecting the opinions of the population in regards to governmental work	
		Existence of comprehensive anti-corruption policy	
		Existence of laws/declarations, etc. in order to provide legal basis for the freedom of media	
	Regulatory framework: formal rules and norms	Periodic revision and updates of laws and regulations concerning the protection against hazards and the management of disasters	
		Existence of emergency plans	
		Existence of obligation to obtain insurance	
		Existence of risk maps (related to 2007|60|EG Directive)	
Financial capital	Disaster funds	Existence of permanent disaster funds (potential unit: amount of disaster expenses of the total environmental budge) — on national level	Denmark Germany Netherlands
		Existence of permanent disaster funds (potential unit: amount of disaster expenses of the total environmental budge) — On transnational level (WSR)	
		Amount of existing disaster funds related to goods and values that exist/are stored in the risk area	Denmark Germany Netherlands
		Ratio of public and private investments on disaster funding	

		Availability of insurance for households/institutions related to the specific threat in risk areas		
	Risk of impoverishment	Number of enterprises with insurance related to storm surges and impacts of sea level rise		
		Existence of rights of compensation (offered by the government); amount of these compensations		
		Quality of supply of public goods in general is e.g. HDI		
Environmental capital	Regeneration of environment	Percentage of ecologic compensation area per total area		
		Number of post disaster local actions taken for environmental regeneration		
	Management strategies and planning processes	Binding force of legal frameworks/regulation	- in nature conservation	
			- in world heritage issues	
			- Specifically on transnational level	
		Binding deadlines/schedules for implementation processes		
		Amount of environmental public investment in management strategies		
		share of different land use types within the risk area (in spatial and economic perspective)	- Agriculture	
			- Harbours / industry / shipping	
			- Tourism	
			- Fishery	
			- energy	
		Amount of protected area within the total risk area	- seaward	
			-landward	

6 Policy recommendations

The presented Capital Approach and its related governance indicators offer an analytical framework to analyse governance structures within Multi-Sector Partnerships. We argue that the maintenance or enlargement of the five capitals will assure the capability of a partnership to react to environmental hazards and increase society's resilience.

This framework allows analysing the performance of a MSP by looking in detail at the five capitals of a partnership and their factors. It provides an overview of the essential aspects to consider in the performance of successful governance processes. Furthermore, implementation of governance indicators provides a practical inventory of the current performance as well as guidance for further improvement of the MSP. Improvement and evaluation are performed by qualitative assessment. This qualitative assessment allows analysing governance processes and structures over time and during changed conditions. Moreover qualitative assessment allows adapting to specific conditions for MSP. The need of consensus of the consortium to this adaption supports an intense discourse within the MSP about existing governance structures and their potential improvement.

7 References

Andreu, J., Ferrer-Polo, J., Pérez, M.M. and Solera, A., 2009. “Decision Support System for Drought Planning and Management in the Jucar River Basin, Spain”. 18th World IMACS / MODSIM Congress, Cairns, Australia 13-17 July.

Aven, T., Renn, O. (2008). Risk Management and Governance. Risk, governance and Society Volume 16, Berlin.

Beasley, M. S., Branson, B. C., Hancock, B.V. (2010). Developing key risk indicators to strengthen enterprise risk management - How key risk Indicators can sharpen focus on emerging risks. Research commissioned by the Committee of Sponsoring Organizations of the Treadway Commission (COSO).

Bebbington, A. (1999). Capitals and capabilities: a framework for analyzing peasant viability, rural livelihoods and poverty. World Development 27:2021-2044.

Benz, A., Lutz, S., Schimank, U., Simonis, G. (2007). Handbuch Governance. Theoretische Grundlagen und empirische Anwendungsfelder. Wiesbaden.

Bevir, M. & Trentmann, F. (2007) Introduction: Consumption and citizenship in the new governance. IN Bevir M. & Trentmann, F. (Eds.) Governance, consumers and citizens: agency and reistance in contemporary politics. Palgrave Macmillan.

Blumenthal, von J. (2005). Governance : eine kritische Zwischenbilanz - Governance : a critical review, in Zeitschrift für Politikwissenschaft, 15. Jg. (4) 1149-1180.

Birkmann, J. (2013). Risk - In: Borowsky, T. (Ed.): Encyclopedia of natural hazards. Dordrecht, Heidelberg, New York, London, 856-862.

Bruns, A. (2010). Governance im Küstenraum: Europäische Umweltpolitik im Wandel – Die Umsetzung des Integrierten Küstenzonenmanagements und der Wasserrahmenrichtlinie an der Westküste Schleswig-Holsteins. Dissertation, Kiel.

CHJ. (2005). Provisional Art. 5 Report Pursuant to the Water Framework Directive: Confederación Hidrográfica del Júcar, Ministry of Environment, Spain.

Commission on Global Governance (1995). Our global neighbourhood. Oxford University Press chapter 1, 1-2.

Commission of the European Communities (2001). European Governance. A White Paper. 25.7.2001 COM (2001) 428, Brussels.

COSO; Committee of Sponsoring Organizations of the Treadway Commission (2004) Enterprise risk management – Integrated framework, executive summary.

CWSS; Common Wadden Sea Secretariat (2010), Sylt Declaration, Ministerial Council Declaration of the Eleventh Trilateral Governmental Conference on the Protection of the Wadden Sea, Common Wadden Sea Secretariat, Wilhelmshaven, Germany.

Daelen, van M., Elst, van der C. (Eds.) (2010). Risk management and corporate governance. Interconnections in laws, accounting and taxes. Cheltenham.

Delta Programme 2013; Ministry of Infrastructure and the Environment and the Ministry of Economic Affairs, Agriculture and Innovation (2012), Working on the Delta – the road towards the Delta Decisions, The Hague, Netherlands.

Drennan, L. T. (2004). Ethics, governance and risk management: Lessons from mirror group newspapers and barings bank, Journal of Business Ethics 52, 257–266.

EDRM; the Electronic Discovery Reference Model (EDRM) (2011). How the Information Governance Reference Model (IGRM) Complements ARMA International’s Generally Accepted Recordkeeping Principles (GARP®). St. Paul.

Encyclopaedia of Sustainability (2012). Federal Environment Agency: Action Program environment and health (APGU, in german). Aachener Stiftung Kathy Beys (Eds).http://www.nachhaltigkeit.info/artikel/apug_umwelt_und_gesundheit_831.htm; [Access Juli 2013]

Enemark, J. (2005), ‘The Wadden Sea protection and management scheme – towards an integrated coastal management approach?’, Ocean and Coastal management, 48, 996-1015.

Evans, J.P. (2012). Environmental governance. London.

Fairclough, N. (2005). Governance, partnership and participation: cooperation and conflict. Paper given at the Conference of the International Association for Dialogue Analysis, Bucharest, Romania.
Frances, J. (2004). Institutions, firms and economic growth, NZ Treasury Working Paper 04/19, New Zealand.
Fraser, E. D. G., Dougill, A. J., Hubacek, K., Quinn, C. H., Sendzimir, J., and Termansen, M. (2011). Assessing vulnerability to climate change in dryland livelihood systems: conceptual challenges and interdisciplinary solutions.Ecology and Society 16(3): 3.
Fürst, D. (2003). Regional Governance zwischen Wohlfahrtsstaat und neo-liberaler Marktwirtschaft. Katenhusen, I. and Lamping, W. (ed.): Demokratien in Europa. Berlin, 251-267.
Fürst, Dietrich (2004). Regional Governance. Benz, A. (ed): Governance - Regieren in komplexen Regelsystemen: Eine Einführung, Opladen, 45-64.
Global Corporate Governance Forum (2010). A supplement to the corporate governance board leadership to raining resources. Washington.
Goodwin, N. (2003). Five Kinds of Capital: Useful Concepts for Sustainable Development. Global development and environment institute. Working paper 03/07, Tufts University.
Greiving, S., Glade, T., (2013). Risk Governance. In: Borowsky, T. (Ed.): Encyclopedia of natural hazards. Dordrecht, Heidelberg, New York, London, 863-870.
Haward, M., Vince, J. (2006). Australian ocean governance: initiatives,challenges and opportunities. Australian Political Studies Association Conference. Newcastle, New South Wales: 25-27 September 2006, http://eprints.utas.edu.au/465.
Haucap, J. (1998). Institutions, development, and the human factor: The German 'miracle' in Senyo BSK Adjibolosooed International perspectives on the human factor in economic development. Westport CT, 11-28.
Hewitt, G. (2012). Governance Risk Indicators 2.0 – Technical document. Project of Institutional Shareholder Services Inc. pdf document.
Hooghe, L., Marks, G. (2001). Multi-level governance and European integration, Oxford.
IFC; International Finance Corporation Advisory Services in Central and Eastern Europe Azerbaijan Corporate Governance Project (2010). Corporate banking screening tools for banking organization. International Finance Corporation. Washington.
IRGC; International Risk Governance Council (2005). Risk governance: Towards an integrative approach. White paper No 1, Author O. Renn with Annex by P. Graham. Geneva.
ISIIMM (2001). The regions of the Hydrographic Confederation of the Júcar (Map). http://www.isiimm.agropolis.org/index.php?iddoc=146&page=abstract
Kabat, P., Bazelmans, J., Dijk, van J., Herman, P. M. J., Oijen, van T., Pejrup, M., Reise, K., Speelman, H. and W. J. Wolff (2012), 'The Wadden Sea Region: Towards a science for sustainable development', Ocean & Coastal Management, 68, 4-17.
Kannen, A., Busch, M., Gee, K., Knudsen, S., Potts, T., Varjopuro, R. (2010). Scoping report on WP 5 conceptual model and methodological frame for multilevel governance assessment. KnowSeas - Knowledge-based Sustainable Management for Europe's Seas Deliverable 5.1
Klinke, A, Renn, O. (2002). A new approach to risk evaluation and management: Risk-based, precaution-based and discourse-based management, Risk Analysis, 22 (6), 1071-1094.
Kondra, A., Hining, C. (1998). Organizational diversity and change in institutional theory. Organization Studies 19, 743.
Luhmann, N. (1993). Risk: A Sociological Theory. Berlin.
Lyall, c., Tait, J. (2004). Shifting policy debate and the implications for governance. In: Lyall, C. &Tait, C. (ed.): New Methods of Governance. Developing an Integrative Policy approach to Science, Aldersholt.Ashgate, 3-17.
Mayntz, R. (2004). Governance im modernen Staat. In: Arthur Benz (ed.) Governance - Regieren in komplexen Regelsystemen. Eine Einführung. Wiesbaden, 65-76.
MELUR-SH; Ministerium für Energiewende, Landwirtschaft, Umwelt und ländliche Räume des Landes Schleswig-Holstein (2013), Generalplan Küstenschutz des Landes Schleswig-Holstein – Fortschreibung 2012, Kiel, Germany.

MLR; Ministerium für ländliche Räume, Landesplanung, Landwirtschaft und Tourismus des Landes Schleswig (2001), Generalplan Küstenschutz – integriertes Küstenschutz-management in Schleswig-Holstein. Kiel, Germany

Morgan, M. G., Fischhoff, B., Bostrom, A., Lave, L., Atman, C. (1992). Communicating risk to the public, Environmental Science and Technology 26(11), 2049–2056.

North, D.C. (1990). Institutions, institutional change, and economic performance. Cambridge.

Nye, J.S. and Donahue, J.D (2000.). Governance in a Globalising World. Brookings Institution Press, Washington

Ostrom, E. (1990). Governing the commons: The evolution of institutions for collective action. Cambridge.

Ostrom, E. (2005) Understanding institutional diversity. Princeton University Press, New Yersey, 3

Pahl-Wostl, C., M. Craps, A. Dewulf, E. Mostert, D. Tabara, Taillieu, T. (2007). Social learning and water resources management. Ecology and Society 12 (2), 5.

Pahl-Wostl, C (2009) A conceptual framework for analysing adaptive capacity and multi-level learning processes in resource governance regimes. Global Environmental Change 19 (3), 354–365

Ratter, B.M.W. (2013). Surprise and uncertainty. Framing regional geohazards in the theory of complexity, Humanities 2(1), 1–19.

Ratter, B.M.W (2012). Complexity and emergence. Key concepts in non-linear dynamic systems. In: Glaser M, Krause G, Beate M.W. Ratter, Martin Welp (ed): Human-nature interactions in the anthropocene. Potentials of social-ecological systems analysis. New York, 90–104.

Renn, O., Kastenholz, H., Leiss, W. (2002). Guidance document on risk communication for chemical risk management. In: Series on Risk Management: Environment, Health and Safety Publications, 16, Paris.

Renn, O. (2008) Risk Governance: Coping with uncertainty in a complex world. London.Earthscan

Renn, O., Klinke, A., Asselt, van M. (2011). Coping with complexity, uncertainity and ambiguity in risk governance: A synthesis, AMBIO 40, 231-246.

Rhodes, R. A. W. (1997). Understanding governance: policy networks, governance, reflexivity and accountability. Buckingham.

Rhodes, R.W.A. (2008). Governance. In P. Cain and J. Conaghan (ed.): The New Oxford Companion to Law. Oxford, 506-507.

Rosenau, J. N. (1992). Governance without government. Order and change in world politics. Cambridge.

Sen, A. (1983). Poverty and famines. Claredon, Oxford, UK.

Sen, A. (2000). Development as freedom. Anchor, New York, New York, USA.

Schuppert, G.F. (2007). Politische Kultur. Baden-Baden.

Scoones, I. (1998). Sustainable rural livelihoods: a framework for analysis. Institute of Development Studies, Brighton, UK.

Treib, O., Bähr, H., Falkner, G. (2005) Modes of Governance: A Note Towards Conceptual Clarification, EUROGOV Working Papers N-05-02.

UNCED (1992). Nations of the earth report. Vols. I-III. United Nations, Geneva.

UN/ISDR; International Strategy for Disaster Reduction (2004). Living with Risk. A global review of disaster-reduction initiatives Volume II. New York, Geneva.

Wadden Sea Forum (2013), 'ICZM Strategy for the Wadden Sea Region', Wilhelmshaven.Walker, G; Whittle, R; Medd, W. Watson, N. (2010). Risk governance and natural hazards. CapHaz-Net WP2 Report. Lancaster (available at: http://caphaz-net.org/outcomes-results/CapHaz-Net_WP2_Risk-Governance.pdf).

Wanczura.S., Fleischhauer, M. , Greiving, S., Forman, M., Sucker, K., d'Andrea, A., D'Ulizia, A. (2007). Analysis of recent EU, international and national research and policy activities in the field of risk governance. Multidimensional Integrated Risk Governance project, Report Del. 1.1.

Wapner, P.(1997). Governance in global civil society, in Oran R. Young (ed.). Global Governance: Drawing Insights from the Environmental Experience, Cambridge, MA:MIT Press, 65.

Watson N, Deeming H and Treffency R (2009) Beyond Bureaucracy? Assessing Institutional Change in the Governance of Water in England, Water Alternatives, 2(3): 448-460

WBGU; German Advisory Council of Global Change (2000). World in transition: Strategies for managing global environmental risks. Heidelberg, New York.

Young, O. (2002) The institutional dimensions of environmental change: fit, interplay, and scale. MIT Press, Cambridge, Massachusetts, USA.

NLWKN; Niedersächsischer Landesbetrieb für Wasserwirtschaft, Küsten- und Naturschutz (2007), Generalplan Küstenschutz Niedersachsen/Bremen Festland, Norden, Germany.

Zmerli, S. and Newton, K. (2006). Social Trust and Attitudes Towards Democracy: A Close Association After All?. Paper prepared for the ESRC Research Methods Festival, St. Catherine's College, Oxford.

Acknowledgement

We acknowledge the case studies of the ENHANCE project of Italy, Spain, Iceland, Austria, Germany and Romania for their collaboration and contributions in the presented report, and the 7th Framework Programme ENHANCE project -Grant Agreement number 308438- funded by the European Commission.

Contact:
Climate Service Center 2.0
Chilehaus, Entrance B
Fischertwiete 1
20095 Hamburg
Germany

Phone +49(0)40-226 338-424
Fax +49(0)40-226 338-163

www.climate-service-center.de

ISSN 2199-4854