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Transboundary governance of marine protected areas
A comparison of the North Adriatic and Wadden Sea case studies

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Abstract

International agreements like the Convention on Biodiversity are soliciting the development of transboundary networks of Marine Protected Areas (MPAs) in order to improve the protection of natural resources and the individual ecological relevance of MPAs.

Together with ecosystem based criteria, environmental governance plays a key role in the management of marine and coastal areas in particularly at transboundary scale.

Therefore, this research focuses on two study cases relevant for transboundary governance for MPAs. The first case study is the North Adriatic, regarding the analysis of a network of MPAs managers and other relevant stakeholders in the North Adriatic Sea at a transboundary level among Italy, Slovenia and Croatia.

The second case study regards the analysis of the transboundary governance of the Wadden sea among the Netherlands, Germany and Denmark that started back in 1978.

One of the objectives that guided the governance analysis was the identification of the figure of the policy entrepreneur and the strategies used to bring about a policy change in the marine and coastal resources conservation and management in the two case studies. Policy entrepreneurs are defined as those individuals or organisations that thanks to their perseverance, ingenuity, and willingness to spend time and resources for an idea, can help bringing about a policy change. The policy change regards in this case a shift in the management of the marine and coastal resources that can be detected through a change in ideas, discourse, framing and rules.

This work aimed also at analysing the policy change process in the two case studies in order to understand whether the change was led by a top-down or a bottom-up approach.

Moreover, in the North Adriatic case, the research applied the social network analysis method to identify the main actors involved (e.g. managers of MPAs, NGOs, governmental agencies and other actors relevant for MPAs), their roles and relations within the system of governance of MPAs in the North Adriatic. The Social Network Analysis allowed to understand how MPA stakeholders are communicating and collaborating one with another on MPA issues. Focus interviews were also used to investigates possible ways to improve the efficiency of MPAs and understand the existing constraints that could slow down the process of establishing a network of MPA at transboundary level.

In the North Adriatic case, the analysed process is still ongoing and regards a time span of less than 5 years, while in the Wadden Sea the time span considered is of about 40 years and regarded different policy change moments.

From the analysis of the role of policy entrepreneurs, in both case studies these figures were found among organizations out of the government. In both cases, individual stakeholders were supported by a staff, an organization or a company and they applied a number of strategies such as the so called “window of opportunity” and “venue shopping”.

In the North Adriatic case the analysis of the governance of MPAs let emerge the need to enhance collaboration among MPAs in order to exchange expertises, increase the protection of the coastal and marine resources and gain more political influence in order to cope with the lack of interest of national governments towards the issue.

1 Introduction to Marine Protected Areas

This chapter is aimed at providing an overview regarding the role of Marine Protected Areas in the context of coastal and marine areas conservation with a special focus on the network of MPAs. The need of conservation of marine and coastal zone ask for a more and more strong governance not only at national level but also at transboundary scale. In the last 50 years, international agreements and regulations have grown in the direction of promoting environmental collaboration among different economic and governmental stakeholders.

1.1 The governance system for coastal and marine protection

1.1.1 The need of enhancing coastal and marine conservation

Coastal areas and oceans worldwide are not just intrinsically relevant, but from a very anthropocentric point of view, they are crucially important for humankind. They provide food, livelihoods, resources, cultural services. Coastal areas host more than the 50% of the world population. Oceans are the largest carbon sink on the planet (Toropova et al., 2010).

Ocean and coastal zone represent functional ecosystems that provide people benefits defined as ecosystem services, as described in the 2005 Millennium Ecosystem assessment (MEA).

There are three typologies of ecosystem services provided by ocean and coastal areas. The first category is the *provisioning services*, also called "ecosystems goods". These services include all those products such as marine food (e.g. fish, reptiles, shellfish, crustaceans, sea urchins, seaweed and marine mammals) fuels (e.g. petroleum and natural gas), ornamentation (e.g. shell for jewelry) and other resources as biochemicals, natural medicines.

Marine ecosystems provide also cultural services, second category defined in the MEA as "the non-material benefits people obtain from ecosystems through spiritual enrichment, cognitive development, reflection, recreation, and aesthetic experiences…" (MEA, 2005a). Therefore oceans, seas and coastal areas represent cultural, educational, inspirational and aesthetic values beside being the most popular destination of tourism.

The third category of ecosystems services provided by ocean and coastal zones are called *regulating services* and they are particularly relevant for air quality maintenance, climate

regulation, storm control; coastal areas and their ecosystems contribute to the erosion control and storm protection (e.g. mangroves, coral reefs).

The last ecosystem services category is represented by the *supporting services*. Within this category the MEA considers those ecosystems services that are "necessary for the production of all other ecosystem services" but that are "either indirect or occur over a very long time". As about 96,5% of world's water supply is stored in the ocean and since marine phytoplankton produce half of world's atmospheric oxygen, oceans cover a leading role in providing supporting services.

The MEA clearly demonstrates that, despite all the services provided by coastal ocean ecosystems and their relevance in the human society, the tremendous increase of the exploitation of these resources have lead to a huge loss and damage of coastal and sea ecosystems.

Coastal development and urbanization first, and the increasing territorialisation process (Vallega, 1985) of the sea by means of exploitation of its resources through fisheries, transportation, tourism, energy infrastructures have lead to increasing impacts in these ecosystems.

Pollution is one of the main impact regarding the sea. When the pollution is land based, it can be of different typologies: nutrient pollution, toxic pollution, marine litter.

Nutrient pollution (often due to agriculture fertilizers) can cause eutrophication and a consequent creation of so-called "dead zones" with hypoxic conditions that make large areas of sea and oceans uninhabitable by marine animals.

Several toxic pollutants reach the sea from land based industrial activities: mercury and its component for instance, reach the sea and are bioaccumulated in several marine organisms. Other persistent organic pollutants (POPs) as polychlorinated biphenylis (PCBs) are accumulated in the fatty tissues of several fishes and cetaceans.

Marine litter is an emerging problem that is mainly caused by plastic litter, that accounts for 60 to 80 % of marine debris. Due to their density they can float on marine water and be transported for thousands of kilometers. Various marine animals can become physically entangled in large forms of plastic debris and also due to their ingestion, they can cause injury, dismemberment, death (Craig, 2012).

Among the main threats towards marine biodiversity, overfishing plays a leading role, especially when fishing methods also destroy habitats, like blast fishing and ocean trawling (MEA, 2005b). The lack of an effective regulation regarding international sea water has lead to the depletion of

the fish stocks that for the 30% of the global fish stock meant the collapse, meant as the reduction down to 10% or less of their original potential (UNEP, 2010).

Marine transport both for trading and tourism and exploitation of resources like offshore oil drilling, have raised during last decades with a consequent increase of accidents and disasters that have threatened the integrity of ecosystems: just to recall two recent dramatic ones: the 2010 Deepwater Horizon oil spill in the Gulf of Mexico and the 2012 cruise ship Costa Concordia tragedy in the Italian side of the Pelagos Sanctuary for Mediterranean Marine Mammals.

All the above described stressors do not only affect coastal and ocean ecosystems individually but they damage them in a cumulative way. Moreover, climate change impacts like the increasing of sea water temperature, the change of ocean currents, the increase of extreme events like storms and hurricanes, the increase of sea water level, the acidification of the seas, will exacerbate the severity of current anthropogenic impacts in the long term.

The "tragedy of the commons" (Hardin, 1968) has brought several scientists and politicians to seek for solutions to govern and conserve those common resources like the sea and coastal zones, whose management responsibilities are not clearly defined. Albeit revised during the last years, Hardin's warning is still a living matter: as stated by Dietz et al. (2003), increasing impacts and pressure due to human activities are threatening especially those natural resources and the environment lacking of effective governance institutions at the appropriate scale.

The sea perfectly embodies this condition: during the last 4 centuries the marine realm has been considered a never-ending resource – following the conception of the sea as promoted by Hugo Grotius in his "Mare Liberum" at the beginning of XVII century - with no need of laws to limit and regulate the out take or the management of the activities, a dump where disposing of every kind of material and substances.

Until the second part of the 20th century, the sea and the coastal zone have been suffering from an undefined recognition with no special laws, nor institutions meant to protect and manage those two environments from human impacts.

Therefore, during the last half of the 20th century, the international community recognized the need to establish agreements to coordinate at international level activities to protect and manage marine and coastal area ecosystems. The management of the sea and the coastal zone - like many other environmental realms- has experienced during the last decades a progressive shift from

sectoral approach - whose responsible were specific governmental agencies- to a broaden of competences linked to different policy and society domains.

In the following paragraph this shift from a government for the environment to an environmental governance is described.

1.1.3 From the government for the environment to the environmental governance

The emerging in the last decades of concepts like 'sustainability', 'integrated assessment', 'ecosystem based approach' and 'climate change impacts' reflects a discursive turn in environmental policies (Leroy and Arts, 2006). Since a substantial change has occurred in the definition of the environmental problems, in their naming and framing an in the way to cope with them, the responsible bodies in charge of solving these problems has changed as well. Indeed environmental problems have been increasingly linked to other field of societal concern, turning the environment into a crosscutting issue involving social, economical and technological issues. Therefore there has been a shift from the government for environment (e.g. a specific environmental policy department and/or agency) to a governance for the environment, involving different fields and policy domains - and not only at governmental level - requiring coordination, collaboration and exchange of information among agencies, representing governmental bodies, market agencies and civil society organizations.

The term Governance can indeed be defined as "the whole of public as well as private interaction taken to solve societal problems and create societal opportunities. It includes the formulation and application of principles guiding those interactions and care for institutions that enable them." (Kooiman et al. 2005, p. 17)

Complex systems like coastal zones and marine areas therefore need a governance system to be govern: the presence of several stakeholders claiming for the use of resources, the need to maintain the capability of the environment to provide ecosystem services, normative issues concerning borders and rights in the sea are just some of the challenges regarding the management of these areas. Conservation and protection of biodiversity and natural resources in the coastal and sea areas is an issue that - beside regarding different agencies for their management - requires often the need of a transboundary cooperation among bordering countries.

The main international conventions and programs for the protection and conservation of marine and coastal biodiversity and natural resources are described in the following paragraphs starting from a global level down to the regional level of the Mediterranean basin and European coasts and seas.

1.2 Agreements for the protection of coastal and sea zones: from global level to the European context

The first international attempts to cope with the protection of coastal and ocean resources were not traditionally aimed at biodiversity in general but at individual species. Indeed, in order to prevent over-exploitation, specific species were the subject of a series of convention to regulate their catches, such as the 1911 North Pacific fur seal treaty, the 1946 International Convention for the regulation of whaling, the 1966 International Convention for the Conservation of Atlantic Tuna (Craig, 2012). However, the focus on individual species resulted as ineffective at addressing the impacts of overfishing on non-target species, as well as at protecting habitat and marine ecosystems.

Further early international efforts regarding the protection of ocean and coastal realm were addressed towards marine pollution. The International Convention for the Safety of Life at Sea (SOLAS) started in 1914 (and then amended several times during the century) and the International Convention for the Prevention of Pollution of the Sea by Oil that came into force in 1958.

Only in the 1970s' programs and conventions started to consider in a broader way the protection of the sea and coastal environment. In that decade three important global instruments were established to define geographic areas for special protection even though were considering only marine areas within the 12 nautical miles, therefore excluding international waters.

- The **Ramsar Convention**, signed in 1971, is considered the first global convention on habitat protection. The convention aims at developing and maintaining an international network of wetlands relevant both for the conservation of biological diversity and for the human life through the ecological and hydrological functions they perform. The convention is relevant for coastal and marine areas because it considers also coastal wetlands, critical component in marine conservation that include mangroves, seagrass beds, coral reefs, intertidal zones, and estuaries that link freshwater and marine systems (Kimball, 2001).

Examples of marine Ramsar sites in Europe are the Wadden Sea (among Netherlands, Germany and Denmark) and the Mont St. Michel (France)[1].

- The **Convention Concerning the Protection of the World Cultural and Natural Heritage** also known as the World Heritage Convention, which was adopted in 1972 (in force since 1975), aims at preservation and conservation of both natural and cultural areas of outstanding value.

  As of January 2014, 981 sites have been designated under the Convention in the 160 countries that are parties to the Convention[2]. While at its start the World Heritage Convention did not specifically target marine sites, currently 46 of the total sites are marine and coordinated by a specific UNESCO program[3]. The Great Barrier Reef in Australia, the Galapagos Islands in Ecuador and the transboundary site of the Wadden Sea are all marine sites under this Convention.

- The **Man and Biosphere Programme** (MAB), established by UNESCO in 1971, aims at promoting interdisciplinary approaches to management, research and education in ecosystem conservation and sustainable use of natural resources. A site can be considered a MAB reserve when in the management of the area is balancing conservation with sustainable use of resources. Since 2012, the World Network of Island and Coastal Biosphere Reserves was established in order to study, implement and share strategies to preserve biodiversity and heritage, promote sustainable development, adapt to and mitigate the effects of climate change[4] in these particular sites.

After these experiences addressing the designation and management of marine areas in need of protection, during the 80s and the 90s significant effort was made in the development of international legislation and programs: environmental governance was gaining an increasing momentum (Queffelec, 2009). Two conventions have set the main legal framework for coastal and sea protection: the United Nation Convention on the Law Of the Sea (UNCLOS) and the Convention on Biodiversity (CBD).

[1] www.ramsar.org
[2] http://whc.unesco.org
[3] http://whc.unesco.org/en/marine-programme
[4] http://www.unesco.org/new/en/natural-sciences/environment/ecological-sciences/man-and-biosphere-programme/networks/world-network-of-island-biosphere-reserves/

The **United Nation Convention on the Law Of the Sea** (UNCLOS III) of 1982 is the resulting treaty after three series of conferences started back in 1958. UNCLOS III regulates the use of the sea and ocean defining rights and responsibilities of nations in their use of oceans. The Convention of the Law of the Sea defines the size of different areas of the sea where nations can claim different rights. This convention has finally put an end to the "freedom of the sea" concept (from the jurist and philosopher Grotius in the XVII century) that was in fact leaving without any regulation regime the sea outside the 3 nautical miles belt (defined by the cannon shot rule by the Dutch jurist Cornelius van Bynkershoek and the Italian Ferdinand Galiami) extending from nation's coastlines that were under national jurisdiction (Craig, 2012).

The main innovation of UNCLOS III is the definition of the extension of the territorial sea up to 12 nautical miles, a contiguous zone up to 24 nautical miles and an Exclusive Economic Zone (EEZ) up to 200 nautical miles.

Among the duties of the nations towards the sea, a number of articles are dedicated to protect the environment and prevent pollution both in high and national seas. Parties are asked "to protect and preserve the marine environment" (Article 192), also in compliance with domestic environmental policies (Article 193). Moreover the conventions ask to prevent, reduce and control both pollution from any source (Article 194) and the introduction of alien species in the marine environment (Article 196); to cooperate on global and regional bases for the environment protection (Article 197); to develop contingency plans for pollution events (Article 198); to adopt laws and regulations to prevent and control pollution of the sea from land-base sources (Article 207). Conservation measures have to be adopted to regulate fishery in order to set a sustainable yield limit both in the territorial sea and in the EEZ. Transboundary cooperation covers a relevant position in the convention for what concerns the conservation of living resources in the high seas (Articles 117 and 118) and among states bordering enclosed or semi-enclosed seas (Article 123).

A fundamental effort for the protection of marine realm was taken during the United Nation Conference on Environment and Development (UNCED) in 1992. This convention lead to the adoption of two relevant documents for the environment: Agenda 21 and the Convention on Biological Diversity.

Within Agenda 21, the action plan for the XXI century, a whole chapter is dedicated to ocean and coastal areas preservation. Chapter 17 is indeed addressed to "the protection of the oceans, all

kinds of seas, including enclosed and semi-enclosed seas, and coastal areas, and the protection and rational use and development of their living resources"[5].

In 1992, participants to the UNCED also adopted the **Convention on Biological diversity (CBD)**, an international legally binding treaty. Its main objective is to develop national strategies for the conservation and sustainable use of biological diversity. Although the CBD asks states to establish a network of protected areas at the national level to ensure special protection, only in the 1995 through the COP 2 Decision II/10 (known also as the Jakarta Mandate)[6] the biodiversity goals of the convention were expressly extended to marine and coastal environment. The Jakarta mandate focuses on five thematic areas:

- Integrated marine and coastal area management;
- marine and coastal protected areas;
- sustainable use of marine and coastal living resources;
- mariculture; and
- alien species.

For what concerns marine protected areas, the 2010 Conference of Parties of 2010 in Nagoya, Japan, postponed to 2020 the target proposed for marine protected areas, whose development through ecological networks was expected to cover at least 10% of the seas by 2012; currently, according to Bertzky et al., (2012), less than 2% of sea is currently under protection.

CBD and UNCLOS III are the two pillars addressing coastal nations in the development of regulation and policies for coastal marine resources protection and management. These two international laws also deal with transboundary environmental governance among countries, asking for cooperation in the establishment of marine protected areas (as suggested by CBD) and in marine pollution control (mainly addressed by UNCLOS III). In order to describe some environmental transboundary governance experiences for the coast and the sea, the following paragraph describes the legislation and strategies related to the protection of coastal and marine areas in Europe and in the Mediterranean region.

[5] From UNEP website:http://www.unep.org/Documents.Multilingual/Default.asp?DocumentID=52&ArticleID=65&l=en
[6] Convention on Biological Diversity website: https://www.cbd.int/decision/cop/default.shtml?id=7083

1.2.1 EU Legislation and Strategies relating to marine and coastal protection

The European Union has embraced the principles and objectives of the main international convention and agreement on the conservation of marine and coastal resource (i.e UNCLOS III and CBD) by developing a set of regulations and strategies aimed at conserving and protecting coastal and marine areas through the establishment of a network of marine protected areas and the promotion of the development of an integrated maritime and coastal zone management. Since 2007, the EU is promoting an Integrated Maritime Policy. This approach is also driven by the recognition that the intense use of the oceans and seas by sectors such as shipping, energy, tourism or fisheries, combined with climate change, have increased the pressure on the marine environment; due to complex interdependence of the several sectors that are interested in the sea and coastal areas, a holistic and integrated approach at every level is considered a basic tool for policy-making[7].

One of the three main goals of the CBD is the conservation of biological diversity, with an emphasis on protection of habitats and ecosystems as well as species themselves. Europe responded to this global agreement with amendments to its Regional Sea Conventions and by adopting the Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora, the so called **Habitat Directive**. This Directive seeks to guarantee the protection of species and habitats through the establishment of the Natura 2000 network. This network consists of Special Areas of Conservation (SACs for habitat and endangered species) and Special Protection Areas (SPAs, for migratory birds protection) across Europe (EEA, 2012). Among the 26444 Natura 2000 sites in Europe, 2360 are coastal and marine (with at least 5% of the surface covered by sea), corresponding to about the 11% of the total number of Natura sites (Sundseth,2013).

For what concerns the protection of marine species, The **Common Fisheries Policy** (CFP) Regulation (2371/2002) provides for the establishment of zones and periods in which fishing activities are limited or prohibited as well as specific measures to reduce environmental impacts of fishing. CFP does not specifically require Member States to develop Marine Protected Areas,

[7] (Com/2008/0395 final) Communication from the Commission to the Council, the European Parliament, the European Economic and Social Committee and the Committee of the Regions - Guidelines for an integrated approach to maritime policy: towards best practice in integrated maritime governance and stakeholder consultation

but rather puts in place a legal framework through which they could be established. The CFP is currently under a reform process.

Another effort toward the protection of the marine realm is represented by the **Marine Strategy Framework Directive** (MSFD, 2008/56/EC); this directive establishes a framework through which Member States shall take the necessary measures to "achieve or maintain good environmental status" in the marine environment by the year 2020. The MSFD is the first Community framework instrument aimed specifically at protecting and preserving the marine environment as a whole, and the first attempt by the EU to implement an ecosystem-based management in the marine environment (EEA, 2012). The directive focuses on protection, preservation, and restoration of marine environments as well as on the reduction of the inputs in the marine environment. One specific policy tool adopted to achieve these aims is the establishment of a coherent and representative network of MPAs (Art. 13(4)).

European Union recommended coastal states members to set a proper national strategy for coastal zones wherein develop their protection and conservation measures. In 2002 the **Recommendation on Integrated Coastal zone management** (ICZM; EU 2002/413) was released with the aim of developing domestic coastal strategies in order to overcome the sectoral management that had impeded a sustainable use and protection of the coastal zone. Following the Recommendation, marine protected areas should be planned and managed within the context of ICZM: MPAs alone can indeed do little to shield a protected ecosystem from stressors originated outside their borders, such as land based water pollution and climate change impacts (Rosenberg and Sandifer, 2009). According to the latter progress Report of 2011 (Thetis, 2011), only 4 countries (namely Germany, Portugal, Romania and United Kingdom) have developed an ICZM national strategy.

1.2.2 Marine protected areas within European marine regions

European marine waters are divided into four broad regions (Figure 1): the North-East Atlantic Ocean, the Mediterranean Sea, the Black Sea and the Baltic Sea, and Mediterranean Sea.

Each of these region follows the Regional Seas Programme, launched in 1974 in the wake of the 1972 United Nations Conference on the Human Environment held in Stockholm[8] . Regional Seas Agreements, have promoted environmental cooperation, although initially more focused on focus on pollution prevention than on conservation. Today UNEP Regional see programmes cover 18 regional seas around the world and address conservation issues as well (Global Transboundary Conservation Network, 2011[9])

Figure 1 European Regional seas (source www.news.bbc.co.uk)

The Regional Seas Programme aims to address regional seas in coping with the degradation of their marine and coastal areas through the sustainable management and resources; the UNEP program ask neighbouring countries to cooperate in comprehensive and specific actions to protect their shared marine environment.

Each of the four European marine regions is covered by a Regional Sea Convention as summarized in the Table 1. In the next paragraph the Regional sea Programme for the Mediterranean is described focusing the attention on the two protocol of the convention that more than others are relevant for the protection and conservation of biodiversity in the sea: the SPA-BD protocol and the ICZM Protocol.

[8] UNEP website: http://www.unep.org/regionalseas/about/default.asp
[9] http://www.tbpa.net/page.php?ndx=49 (last accessed: 28.01.2014)

Table 1 European Regional seas convention (modified from http://ec.europa.eu/environment/marine/international-cooperation/regional-sea-conventions/index_en.htm)

Regional Sea	Convention for the Protection of the Marine environment	Adoption year	Description	Priorities
Baltic Sea	Helsinki Convention (**HELCOM**)	1992 (further to earlier version of 1974)	the Convention covers the whole of the Baltic Sea area, including inland waters as well as the water of the sea itself and the sea-bed. Measures are also taken in the whole catchment area of the Baltic Sea to reduce land-based pollution	-Eutrophication -Hazardous substances –Biodiversity -maritime activities carried out in an environmental friendly way
North East Atlantic	Oslo and Paris Conventions for the protection of the marine environment of the North-East Atlantic (**OSPAR**)	1992 (further to earlier versions of 1972 and 1974)	It is a legal instrument guiding international cooperation on the protection of the marine environment of the North-East Atlantic	-Biodiversity and Ecosystem Strategy -Eutrophication Strategy -Hazardous Substances Strategy -Offshore Industry Strategy -Radioactive Substances Strategy -Strategy for the Joint Assessment and Monitoring Programme
Mediterranean Sea	Convention for the Protection of the Mediterranean Sea against Pollution (**Barcelona Convention**)	1995 (further to the earlier version of 1976)	The Convention, whose contracting Parties are 22 aims to protect the Mediterranean marine and coastal environment while promoting regional and national plans to achieve sustainable development	-Marine pollution; -hazardous waste; -ICZM; -integration of the environment in social and economic development; -protection of natural and cultural heritage; -prevention and emergency management -improvement of the quality of life.
Black sea	Convention on the Protection of the Black Sea against Pollution (**Bucharest Convention**)	1992	The Convention, whose contracting parties are the 6 countries bordering the Black Sea, focuses mainly on Pollution management and prevention.	-Control of land-based sources of pollution; -dumping of waste; -joint action in the case of accidents (e.g. oil spills)

1.2.3 The Mediterranean strategy for coastal and sea protection

The Mediterranean basin represents one of the most important eco-regions worldwide. Although it represents only 0.82% of the total ocean surface, it hosts between 4 and 18% of the global marine biodiversity (Coll et al., 2010).

Mediterranean marine waters and coastal zones are increasingly threatened by pressure both land based like industrial pollution, urban sprawl, coastal artificialisation and tourism as well as marine based like overfishing, cruise shipping and alien species invasion. Concerning climate change, the Mediterranean is considered an hotspot at global scale (The MerMex Group, 2011; Giorgi e Lionello, 2008). In particular, more than other seas, the Mediterranean region is expected to be exposed to acidification processes and biodiversity loss (Lejeusne et al., 2009), a decrease of wetlands and an increasing of extreme events (Magnan et al., 2009) leading to an worsening of coastal erosion. Despite its limited extension, waters of *Mare Nostrum* receive about the 30% of the global boat traffic at global level (UNEP/MAP, 2009).

The need of conservation and preservation of natural species and ecosystems has lead Mediterranean countries to collaborate together in order to cope with the threats for biodiversity in the basin. Since 1975, Mediterranean countries have embarked, through the Barcelona Convention and its related Protocols, on a series of cooperation and coordination processes aimed at protecting Mediterranean natural resources, conserve biological diversity and combat pollution (Romani, 2013). The Convention- first edited in 1976 and revised in 1995- is composed by 7 protocols, encompassing several coastal and marine issues as summarized in Table 2.

Table 2 The 7 Protocols of the Barcelona convention (source: Scovazzi, 2011; UNEP-MAP website[10]

N.	Protocol name	Objective	In force date
1	Prevention and Elimination of Pollution of the Mediterranean Sea by Dumping from Ships and Aircraft or Incineration at Sea	It applies to any deliberate disposal of wastes or other matter from ships or aircraft.	9 July 2004
2	Cooperation in Preventing Pollution from Ships and, in Cases of Emergency, Combating Pollution of the Mediterranean Sea	It applies to all kind of pollution from ships.	10 June 1995 (amendments are yet not in force)
3	Protection of the Mediterranean Sea against Pollution from Land-Based Sources and Activities	It applies to discharges originating from land-based points and diffuse sources and activities.	11May 2008
4	Specially Protected Areas (SPA) and Biological	It provides for the establishment of a	12 December

[10] http://www.unepmap.org/index.php?module=content2&catid=001001004 (last access 25.01.14)

	Diversity (BD) in the Mediterranean	List of specially protected areas of Mediterranean importance (SPAMIs).	1999
5	Pollution Resulting from Exploration and Exploitation of the Continental Shelf, the Seabed and its Subsoil	It relates to pollution resulting from exploration and exploitation of the seabed and its subsoil.	24 March 2011
6	Prevention of Pollution of the Mediterranean Sea by Transboundary Movements of Hazardous Wastes and their Disposal	It relates to the transportation of hazardous wastes through different territorial seas.	18 December 2007
7	Integrated Coastal Zone Management in the Mediterranean	It provides principles and needs for the development of a strategy for a sustainable use and management of the coastal zone.	24 March 2011

Two protocols of the Barcelona Convention are particularly relevant for the protection and conservation of biodiversity, especially for what concern the identification, establishment and management of coastal and marine areas to be protected: these are the Protocol on ICZM in the Mediterranean and the SPA/BD protocol.

The **SPA/BD protocol** provides for the designation by the Mediterranean riparian countries of Specially Protected Areas of Mediterranean Importance (SPAMIs). According to SPA/RAC[11], in order to be designated as SPAMI, a coastal and/or marine area should:

- be of importance for conserving the components of biological diversity in the Mediterranean;
- contain ecosystems specific to the Mediterranean area or the habitats of endangered species;
- be of special interest at the scientific, aesthetic, cultural or educational levels.

SPAMIs can also be designated in areas beyond national jurisdiction (ABNJ). Very often national jurisdiction is limited within 12 nm from the coast; to date, only Algeria, Cyprus, Egypt, France, Italy Malta, Monaco, Morocco, Spain, Syria and Tunisia have claimed up a contiguous zone extended to 24 nm (MRAG et al., 2013). Mediterranean countries are still in a early stage of defining their Exclusive Economic Zone (EEZ)[12] due to the need of agreements between adjacent or opposite countries. However, if all coastal countries would proclaim an exclusive economic zone, the high seas would disappear in the Mediterranean, as no point in this semi-enclosed sea is located more than 200 nm from the nearest land or island (Scovazzi, 2011).

[11] The Regional Activity Center for Specially Protected Areas (http://www.rac-spa.org/spami)
[12] France and Spain have declaread a 200 nm EEZ, while other countries like Morocco, Egypt and Croatia have just taken preliminary steps (UNEP-WCMC, 2008)

As highlighted in the "Mediterranean Integrated Marine Policy Communication", 'the large proportion of marine space made up of high seas makes it difficult for coastal States to plan, organize and regulate activities that directly affect their territorial seas and coasts'[13] , including the transboundary issue of environmental protection.

The establishment of EEZs and its subcategories [14] - with consequent disappear of high seas in the Mediterranean- would have significant positive impacts as far as environmental protection measures are concerned, particularly as regards the establishment of MPAs; the limitations due to the need to rely only on flag State enforcement are indeed obviated if MPAs, including SPAMIs, are established within EEZs or its subcategories (MRAG et al., 2013).

By 2012 there were 32 SPAMIs in the Mediterranean, of which just the Pelagos Sanctuary for the conservation of marine mammals includes high sea waters and is managed at transboundary scale. At the moment the existing SPAMIs do not function as a network: they are not synergistic, not ecologically connected nor they achieve representativeness of the full range of ecosystems within the Mediterranean, or replication of ecological features (Portman et al.,2013). Moreover due to the lack of monitoring systems for these protected areas, little is known whether the established SPAMIs are achieving their designated level of protection (Portman et al.,2012).

This is not a problem just related to SPAMIs: even considering all the 677 MPAs[15] in the Mediterranean (some of which are also recognized as SPAMIs) mapped by SPA/RAC in 2012 (i.e. MPAs with a legal national and/or international designation, including Pelagos Sanctuary and Natura 2000) the 4.56% of the Mediterranean emerge to be under a protected status, and the percentage goes down to 1.08% excluding Pelagos. MPAs distribution is uneven in the basin: without considering Natura 2000 sites, the 84% of MPAs are located in the northern basin; MPAs are all distributed in the coastal zone (only Pelagos extends offshore), and large portions of the South-eastern coast of the Mediterranean have no MPAs. Moreover habitats are not adequately represented, especially concerning deep sea benthic habitats. More specifically, only Posidonia oceanica meadows -and only in the Western Mediterranean- is adequately represented among MPAs. Finally the results of the SPA/RAC analysis shows that generally the MPAs connectivity is not sufficient among MPAs.

[13] COM(2009) 466 final, Brussels, 11.9.2009

[14] fishery zones', 'fisheries protection zones', 'ecological protection zones' and 'ecological and fishery protection zones' are all subcategories of Exclusive Economic Zones with a focus on the protection of specific resources.

[15] According to a study conducted by RAC/SPA in 2012 (Gabrié et al., 2012)

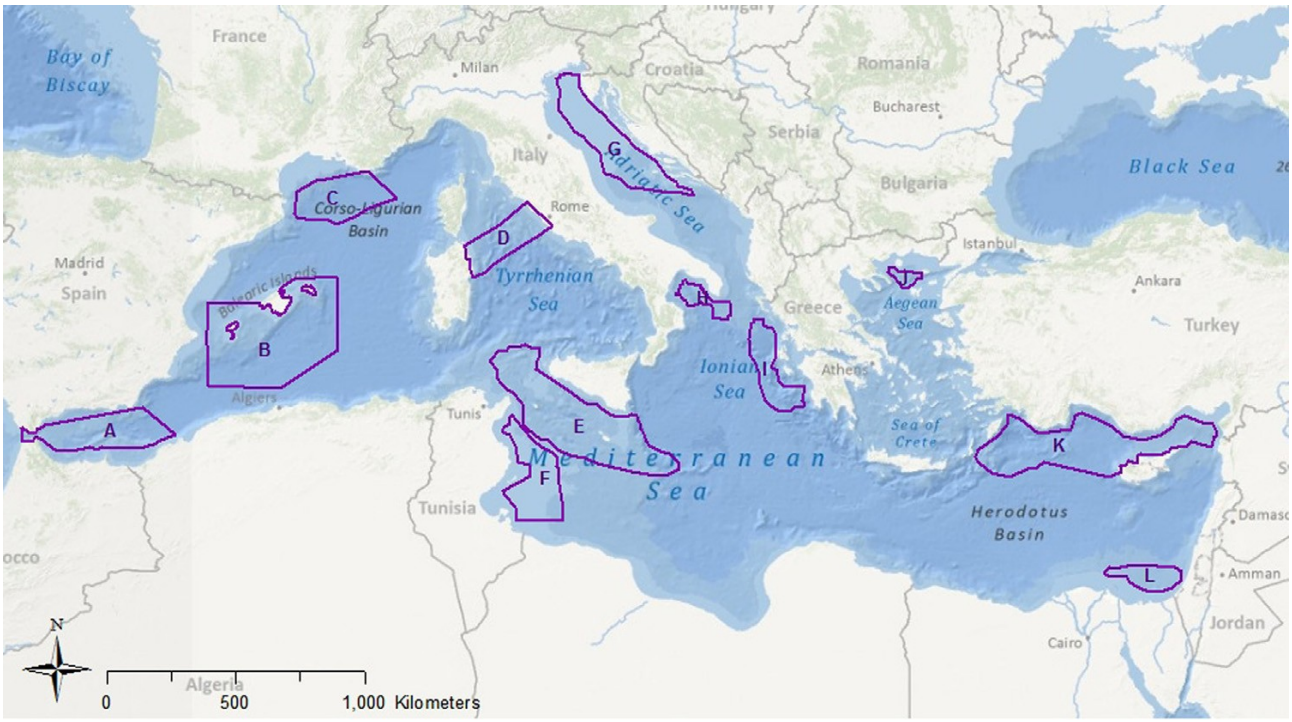

Figure 2 The 11 Priority conservation areas in the open seas, including the deep sea, containing sites that could be candidates for the SPAMI list (from Portman, 2013). A, Alborán Seamounts; B, Southern Balearic; C, Gulf of Lions shelf and slope; Central Tyrrhenian; E, Northern Strait of Sicily (including Adventure and nearby banks); F, Southern Strait of Sicily; G, Northern and Central Adriatic; H, Gulf of Taranto to Santa Maria di Leuca; I, North-eastern Ionian; J, Thracian Sea; K, North-eastern Levantine Sea and Rhodes Gyre; L, Nile Delta Region

In order to overcome the lack of a proper ecologically representative network of MPAs especially in the water beyond national jurisdiction (i.e. beyond 12 nm) in the Mediterranean, the United Nations Environment Programme's Mediterranean Action Plan(UNEP/MAP) started a process in 2009 in cooperation with the European Commission. The effort consisted of a three-stage hierarchical planning approach that led to the identification of a set of large Ecologically or Biologically Significant marine Areas (EBSAs) distributed throughout the basin (Notabartolo di Sciara and Agardy, 2010). First the waters of the Mediterranean were ideally divided in 8 sub regions[16] . In a second stage, a group of expert oceanographers, marine biologists and ecologists identified EBSAs within each sub-region using the criteria provided by the Convention of Biological Diversity. A parallel process involved maximizing overlaying between thematic polygons (e.g. habitat for threatened species, feeding areas, nursery areas) for each subregion. The result, as shown in Figure 2, are 11 areas identified around the Mediterranean basin.

[16] Mediterranean sub-regions as proposed in Notarbartolo di Sciara and Agardy (2010): Alborán Sea,Algero-Provencal Basin, Tyrrhenian Sea, Tunisian Plateau/ Gulf of Sidra, Adriatic Sea, Ionian Sea, Aegean Sea, Levantine Sea.

The third stage of the process, currently under implementation, aims to identify new SPAMIs within each identified EBSAs and the socio-economic, legal, administrative and political actions necessary for the formal establishment of the MPAs (Portman, 2013).

As described, SPAMIs, both within and beyond national jurisdictions, are regulated by the SPAMI/BD protocol. However, MPAs alone cannot cope with those impacts coming from outside its territory (Agardy et al., 2011). The management of protected areas requires a more holistic and integrated approach that is able to consider the interactions between the designed protected areas and the other activities and economic sectors that regard the surrounding marine and coastal areas. The Integrated Coastal Zone Management (ICZM), defined as "a dynamic and iterative process for the sustainable management and use of coastal zones, taking into account at the same time environmental, economic, social, cultural and recreational objectives" (UNEP-MAP, 2008) is a strategy that strives for harmonizing the needs of environmental protection with other economic sectors and societal needs.

The **ICZM Protocol for the Mediterranean**, in force since 2011, is the Protocol of the Barcelona Convention that requires signatory parties to implement a national strategy for the integrated management of coastal areas; specifically to marine protected areas it requires the protection of specific coastal ecosystems (i.e. wetlands and estuaries, marine habitats, dunes), islands and coastal landscapes and cultural heritage (art.10,11.12, 13 of the Protocol).

In the following paragraphs, the concept of marine protected areas will be defined, providing a description on how the environmental protection related to marine and coastal zone grew and developed during the 20th century leading to the current effort to foster networks of MPAs all around the oceans and seas of the world.

1.3 From MPAs to networks of MPAs

1.3.1 MPAs definition, classification and distribution around the world

Conservation and protection of biodiversity and ecosystems requires different strategies like ICZM and Ecosystem based management, and diverse tools among which marine protected areas are broadly recognized as pivotal ones.

The need of conserving and protecting the sea and its resources emerged a long time after the one reserved to the land. Indeed, it was only during the First World Conference on National parks in 1962, that concern about the need of protection of the sea and coastal areas finally raised; the overexploitation of the fish stocks, the vulnerability of coastlines, the threats posed by the new recreational activities in the sea were recognized as urgent problems to be solved by means of a better management (with some connections to an ante litteram ICZM approach) and through the designation of marine reserves and parks (Carleton, 1962).

This trend was further developed at the 1975 Conference on Marine Parks and Reserves held in Tokyo, where the issue of critical habitats and management of protected areas were introduced (IUCN, 2010; De Fontaubert, et al. 1996). It was finally the third World Congress on National Parks in 1982 to call for the incorporation of marine, coastal and freshwater sites into a broad network of marine protected areas (IUCN, 1987).

The effort made in the transposition of the protection regime from land to the sea and coastal areas has brought to light those specific characteristics of the marine realms that are often uncommon on land (Carr, 2003;Dudley, 2008, Kearney, 2013):

- MPAs are designated in a fluid three-dimensional environment; in some conditions, the management of the vertical dimension requires some forms of zoning at different depths in the water column;
- Comparing to the terrestrial areas, there is still a poor knowledge regarding taxonomy, and ecosystems distributions in the marine realm;
- there are usually multidirectional flows (e.g., tides, currents);
- while the concept of tenure is common in the management of the land, it is rarely applicable in the marine environment, where usually marine areas are considered to be “the commons” to which all users have a right to both use and access;

- reproduction and dispersal of marine species usually encompass broader areas than terrestrial ones;
- a full protection regime in a marine environment may only be necessary at certain times of the year to protect breeding sites for fish or marine mammals;
- entries and activities control in the marine environment are difficult to regulate or enforce;
- MPAs are subject to external influences and impact that are not easily controllable or limited;
- marine connectivity often regards very large scales.

Considering these characteristics, the definition of what is intended for a marine protected area has evolved through time trying to integrate the concept of the protection – which previous definitions were focusing on - with those related to the management and presence of human activities.

The current definition given by IUCN (Dudley, 2008) describe a marine protected area as "a clearly defined geographical space, recognised, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values". While this definition is general – indeed it covers all protected areas whether marine or terrestrial - it overcomes the problem of definition that occurs when an MPA spans both land and sea.

Not all kind of MPAs are meant to provide a full environmental and species protection. According to their objective and purposes, IUCN categorized MPAs in six main categories as shown in Table 3.

Table 3 MPAs categories (adapted from Dudley 2008)

Category	Typology of MPA	Objectives	Human activities
Ia	-**Strictly protected areas:** No-take areas/marine reserves -They may comprise a whole MPA or just a separate zone within a multiple-use MPA	**Preservation of the biodiversity and other values** -To protect fish breeding and spawning areas -To provide scientific baseline areas that are as undisturbed as possible	*Forbidden:* removal of marine species and modification, extraction or collection of marine resources (e.g., through fishing, harvesting, dredging, mining or drilling *Allowed*: Scientific research, human visitation (limited)
Ib	**Areas in the marine environment of relatively undisturbed seascape**, significantly free of human disturbance, works or facilities and capable of remaining so through	Preserving undisturbed seascape	*Allowed*: motorized access.

	effective management.		
II	**National Park with provision for visitors, recreational activities and nature tourism.**	Ecosystem protection without substantial active management or habitat manipulation.	*Forbidden*: in marine environments extractive use of living or dead material (including fishing)
III	**Natural monuments or features within marine environments** e.g. flooded historical/archaeological landscapes.	Protection of natural monuments of features with relevant conservation, cultural and recreational values	-
IV	**Managed areas for Habitat/species protection** They can incorporate breeding areas, spawning areas, feeding/foraging areas) e.g. whale sanctuaries, seasonal fishing bans, protection of turtle nesting beaches during the breeding season.	protection of particular species or habitats, often with active management intervention (e.g., protection of key benthic habitats from trawling or dredging).	Forbidden: fishing
V	**Seascape protected area,** usually in coastal areas.	Protection of seascape areas and preservation of the interaction of people and nature over time.	*Allowed*: long-term and sustainable local fishing practices or sustainable coral reef harvesting
VI	**Managed resource protected area** with predominantly natural habitats that allow the sustainable use of resources	Protection of natural habitats together with the sustainable use of local resources.	*Allowed*: collection of particular elements, such as particular food species or small amounts of coral or shells for the tourist trade

Within the definition of "Marine Protected Areas" (MPA) a plethora of specific terms describing different marine areas are included, ranging from reserves (e.g. fishery, marine, ecological, biosphere) to parks (e.g. national marine, coastal parks), to areas (marine conservation and marine wilderness areas) to sanctuary (Agardy, 2003). What makes these areas considered as "marine protected areas" is the main objective of their existence: this has to be conservation (Agardy, 1997); other areas set aside for other purposes and accidentally protecting an habitat or a species should not be considered as Marine Protected Areas. However, the ongoing debate related to what should or not be considered a MPA highlights the complexity in setting and identify the exact number and extension of MPAs around the world. This is well shown by the different web Atlas presenting different ways of considering MPAs for the same areas: some example of mapping are given at global level by IUCN and UNEP (http://www.protectedplanet.net), and Waitt Foundation (http://www.mpatlas.org (IUCN and UNEP, 2010; US MPA Center, 2012), MPA GLOBAL database (Wood, 2007; http://mpaglobal.org); at European level by the European Atlas of the Sea

(http://ec.europa.eu/maritimeaffairs/atlas/maritime_atlas) and at Mediterranean level by MedPan (http://www.mapamed.org/).

However, even applying a more inclusive criteria in the identification of MPAs, this would not significantly change the poor picture concerning the protection status of oceans and seas. According to UNEP, in 2012 around 1.6% of the global ocean was protected, and marine protection was still concentrated in the near-coastal areas within the first 12 nautical miles from land (Bertzky et al., 2012), where 7.2% of the total area is protected (UN, 2012). Considering the total marine areas under national jurisdiction within the limit of the Exclusive Economic Zone (EEZ) of 200 nautical miles, the amount of MPAs decreases to 4%. Despite the percentage rate of the overall MPAs extension has been increasing during the last years (a growth of about 80% between 2006 and 2010 according to Spalding (2010)), there is still a long way ahead to reach the Aichi target of 10% postponed to 2020 during the 10th Conference of the Parties of the Convention on Biodiversity in Nagoya[17]: between now and 2020, countries are expected to establish more MPAs than what done in the last 50 years.

1.3.2 From MPAs to network of MPAs: state of the art and main experiences.

In order to meet the Aichi target for 2020, several conventions and meeting of the scientific and policy makers community -such as the 2002 World Summit on Sustainable Development (UN, 2002)- have shown significant interest in ''scaling up'' MPA practices, by creating networks of MPAs with linkages (both ecological and social) among them. Individual MPAs may indeed not be sufficient for conserving biodiversity considering that ecosystem dimension, environmental issues and relevant marine species migration routes exceed the fix limits of the single protected areas.

To ensure the development of juveniles in order to replenish an sustain a population of marine organisms, the area of protection of an MPA should be very large. However, in many regions (like the Mediterranean) sociopolitical and economic constraints can impede the development of such extended areas. This is not the case of Peace parks (Sandwith, 2001), whose function, on the contrary, is often precisely to overcome sociopolitical conflicts between bordering countries by

[17] Aichi Biodiversity Target 11 of the 1Oth COP of CBD held in Nagoya in 2010 A: By 2020, at least 17 per cent of terrestrial and inland water areas and 10 per cent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well-connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscape and seascape.

means of the establishment of a common area devoted to the protection and maintenance of biological diversity, and natural and cultural resources. Example of experiences of transboundary marine peace parks can be found in the 1994 experience between Israel and Jordan, and between North and South Korea in 2005.

Defining large MPAs is often a challenge also due to the need of guarantee the demands of the coastal and marine economic sectors. Therefore, establishing networks of small sized MPAs may help to reduce socioeconomic impacts, granting at the same time conservation and fisheries benefits (PISCO, 2007). If well planned, MPA networks can provide important spatial links needed to maintain ecosystem processes and connectivity, and improve resilience in case of local disasters or other impacts (Agardy, 2011; IUCN –WCPA, 2008). For these reasons, networks of MPAs are advocated as a needed tool to protect biodiversity. According to UNEP (2008), a network of MPAs is ‘‘a collection of individual MPAs or reserves operating cooperatively and synergistically, at various spatial scales, and with a range of protection levels that are designed to meet objectives that a single reserve cannot achieve’’.

Different guidelines exist to support countries in the establishment of efficient ecological MPAs networks provided both by IUCN and the UNEP (IUCN –WCPA, 2008; Olsen, 2013; PISCO[18]; UNEP-MAP, 2009;UNEP-WCMC, 2008,). According to these guidelines, in order to be effective in protecting biodiversity and ecosystems, a network of MPAs should be based on four criteria: adequacy, representativeness, resilience and connectivity (IUCN –WCPA, 2008;UNEP-WCMC, 2008) as described below.

Representativenes: according to ecosystems they are located in, the network must include one or more MPAs representing each example of biological diversity (from genes to ecosystems) and the typologies of coastal, marine and oceanographic environment.

Adequacy: This criteria refers to the need to ensure that each MPA in the network owns a sufficient size and appropriate shape and distribution to maintain the ecological viability and integrity of populations and species.

[18] http://www.piscoweb.org/policy/marine-protected-areas/marine-protected-area-design [Accessed on 28.01.2014]

Resilience: this criteria describes the ability of an MPA network, to survive natural catastrophes and major impacts. Redundancy and replication of represented ecosystems can increase resilience.

Connectivity: This refers to the linkages among sites in a network. The connectivity can be ensured for larval dispersal, migration of organisms, hydrodynamics and other physical aspects. The ideal distance among MPAs varies for each considered criteria considered, but according to IUCN should not exceed the 100 km. This aspect is not always conveniently taken into account: at European level, despite its name, the marine sites of Natura 2000 network is indeed not a real 'network' of MPAs, but rather a set of independent and rather isolated sites. Therefore, in the establishment of a network of protected sites, research is needed for the design, monitoring, and adaptive management of real networks of MPA (Olsen, 2013).

In order to guarantee that MPAs can satisfy the aforementioned criteria, other management and planning tools such as zoning, Marine Spatial Planning (MSP) and ICZM are needed. As suggested by the CBD Programme of Work for the protection of marine biodiversity, at national level, a network of MPAs should be composed by three levels of spatial planning for MPAs within a country (UNEP-WCMC, 2008):

- A core system of No Take Areas within a large MPA.
- A larger system of multiple-use MPAs, including fishery management areas.
- A national MPA system planned within a national integrated coastal management programme and overall management framework for the EEZ.

At national level, several examples of network of MPAs can be found around the world: some of them already in place since decades like in Australia (Fernandes et al., 2005), in California (Saarman, 2013), UK (Jones, 2012) and many others in the phase of proposing, identifying and designing the network like the Canada experience (Government of Canada, 2011; UNEP-WCMC, 2008).

Australia currently owns the world's largest network of Marine Protected Areas. Revised in 2012, Australia National Representative Network of MPAs covers now 1/3 of its territorial waters and

30% of the protected areas are now No-take areas[19]. This impressive network, covering 2.3 million square kilometers of oceans, is mainly distributed out of the territorial sea of Commonwealth marine reserves but still within the 200 nm under Australian jurisdiction. In order to avoid conflicts with other economic sectors, 90% of Australian waters within 100 km of the shore remain open to recreational fishing and less than 1% of the commercial fishing industry is affected by the protected areas[20].

In Canada, the MPAs system is under a shared responsibility of Fisheries and Oceans Canada, Environment Canada and the Parks Canada Agency, all of which have mandates for creating MPAs (Government of Canada. 2011).

The 2011 National Framework for Canada's Network of MPAs provides strategic direction, including guiding principles and design recommendations for a national network of MPAs that will be composed of bioregional networks. At the moment the Canadian government is still in the process of planning and establishing marine protected areas in the 13 bioregions identified (Office of the Auditor General of Canada, 2012).

If created at the ecosystem or ecoregion[21] level, MPAs are likely to straddle maritime national boundaries and therefore necessitate international cooperation (Guerreiro et al. 2010). Therefore, a transboundary network of MPAs straddles international maritime boundaries even if the individual MPAs within the network may extend entirely within one single state national waters. Globally there are several experiences of transboundary network of MPAs (Gladstone et al. , 2003; Guerreiro et al., 2010; Guerriero et al., 2012; Van Lavieren et al., 2012; UNEP-WCMC, 2008).

Transboundary management for MPAs are developed through different typologies:

[19] Australian Government. Common Wealth Marine Reserves. Available at http://www.environment.gov.au/marinereserves/ [Accessed on 28.01.2014]

[20] Project Aware. Marine Parks and Sharks. Available at http://www.projectaware.org/project/marine-parks-and-sharks[Accessed on 28.01.2014]

[21] Spalding et al., (2007) defines Ecoregions as follow: "Areas of relatively homogeneous species composition, clearly distinct from adjacent systems. The species composition is likely to be determined by the predominance of a small number of ecosystems and/or a distinct suite of oceanographic or topographic features. The dominant biogeographic forcing agents defining the ecoregions vary from location to location but may include isolation, upwelling, nutrient inputs, freshwater influx, temperature regimes, ice regimes, exposure, sediments, currents, and bathymetric or coastal complexity"

a) it could be related to a single transboundary MPA jointly managed by the countries involved (e.g. Pelagos sanctuary among Italy, Monaco and France; the Wadden Sea);
b) another typology is made by a transboundary network of MPAs that can be individually established and managed nationally by each referring country according to their jurisdiction (e.g. Baltic Sea).
c) Third, transboundary management can regard MPAs situated beyond national jurisdiction (e.g. OSPAR MPAs).

Regardless the typology of transboundary MPA, all the involved countries should share a common understanding of the conservation or sustainable use goals to be pursued in these protected areas (Guerreiro et al., 2010). Following, for each one of the aforementioned typology of transboundary management of MPAs an existing example is supplied.

1.3.2.1 A single transboundary MPA jointly managed by the countries involved

The international sanctuary for Mediterranean marine mammals is a relevant case of a single transboundary MPA, encompassing both territorial seas of three countries (namely Italy, Monaco and France) and the high sea.

Come into force in February 2002, the Pelagos Sanctuary extends between South-Eastern France, Monaco, Northern-West Italy and Northern Sardinia, and surrounding covering 87500 squared kilometers in the North Western Mediterranean sea. In November 2001 the Sanctuary was recognized by the Parties to the Barcelona Convention as a Specially Protected Area of Mediterranean Importance (SPAMI).

The sanctuary was established to protect, study and raise awareness about the important population of cetaceans in the area. Moreover the need for such an area was given by the lack of legal instruments to protect the Mediterranean high seas beyond the 12 nautical miles buffer provided by the national territorial seas where the habitats of the cetacean populations is more likely to be found (Notarbartolo di Sciara *et al.*, 2008). However, the negotiations for the borders of the area among the three countries lead political considerations prevailing on ecological ones. As a consequence, zones with low cetacean density were included (e.g. between Corsica and Italian mainland) whereas a large portion of important pelagic cetacean habitat, to the west of Corsica, was left outside (Agardy, 2011).

Despite the high value of such an initiative of transboundary collaboration for the protection of the sea and its resources, after more than 10 years since its establishment, the Pelagos sanctuary has not succeed in addressing the threats for cetaceans (e.g. fisheries, maritime traffic, military exercises, whale watching) mainly due to a lack of a proper management of the area. The existing Agreement Secretariat is currently undermanned and lacks sufficient power and means to carry our proper and effective prevention and control activities (Notarbartolo et al., 2009, Olsen, 2013).
Another example of common MPA jointly managed by more countries is given by the Wadden Sea experience: Since 1978, the Trilateral Wadden Sea Cooperation[22] (TWSC) between Denmark, Germany and The Netherlands has been dealing with the joint protection of the Wadden Sea ecosystem. This example is extensively described in chapter 6 of this work.

1.3.2.2 Transboundary MPAs networks within national jurisdiction of different countries

In order to apply an ecosystem based approach, coastal and marine protection often needs to be applied at larger scale than the national one, thus involving multiple countries and boundaries. Since the establishment of the 18 Regional seas following the UNEP Regional Seas Agreements environmental cooperation at transboundary scale has been increasingly adopted.
Among the Regional seas experiences, in 1994 HELCOM[23] in the Baltic sea started a common plan with the aim of establishing a coherent ecological network of Baltic Sea Protected Areas (BSPAs). Tools and guidelines for marine spatial planning in The Baltic Sea were developed and criteria and methods for assessing and identifying MPAs were prepared. Using Marxan[24], an option was selected for a representative MPA network in the Baltic Sea meant to cover at least 20% of each of marine landscape, 60% of all seal hauling out sites, and 100% of deepwater coral reefs (Olsen, 2013). If in 1994 62 sites were initially nominated as BSPAs, by June 2013, there were 163 established MPAs, covering 11,7% of the total marine area of the Baltic sea (Borg et al., 2013). Most BSPAs (139 of 163) are located within territorial waters, while 9 can be found within the Exclusive Economic Zone (EEZ) and 18 cover areas encompass both territorial waters and the EEZ. 65% of sites owns a management plan (Borg et al., 2013).

[22] Wadden Sea Secretariat website: http://www.waddensea-secretariat.org
[23] HELCOM (Baltic Marine Environment Protection Commission – Helsinki Commission) is the governing body of the Convention on the Protection of the Marine Environment of the Baltic Sea Area, known as the Helsinki Convention.
[24] Marxan (Watts et al. 2009) is a software program used to support the design of marine and terrestrial reserves worldwide. It is maintained by the University of Queensland in Australia. http://www.pacmara.org/tikiwiki/tiki-index.php?page=Marxan+Resources+and+Training

1.3.2.3 Transboundary MPAs networks beyond national jurisdictions

This typology of transboundary management is a new emerging case. It regards the development of MPAs in the high seas, waters not regulated by any specific country. These typologies of areas are named Areas Beyond National Jurisdiction (ABNJ). The establishment of these areas is really challenging: the scientific data about the ecosystems is still poor and at the same time there is a lack of a jurisdiction that can enforce the establishment of a protection regime in the high seas.

The first example of MPAs established in an ABNJ was developed within the Regional Sea programme for the North East Atlantic, known also as OSPAR, in 2010 (O'Leary, 2012). Six MPAs were declared, covering together 286,200 squared kilometers of the North East Atlantic: some of them cover entirely seas beyond national jurisdiction.

In order to give birth to a protection regime in the high seas, OSPAR is promoting the cooperation with various relevant international Competent Authorities responsible for the management of specific human activities in ABNJ, including the North East Atlantic Fisheries Organisation (NEAFC), the International Seabed Authority (ISA), and the International Maritime Organization (IMO) (OSPAR, 2012). Since there is currently no mechanism for MPA creation under UNCLOS (O'Learly, 2012), a long term cooperation among these partners is essential to cope with the weakness of governace at global level for the establishment and management of ABNJ.

1.3.2.4 Social networks for MPAs

Ecological criteria are recognized as fundamental for the establishment of a network of MPAs (Olsen et al., 2013); however, social networks represent a relevant aspect of the environmental governance (Bodin and Crona, 2009; Caveen et al., 2013) of MPAs. In order to be efficient, an MPA network should be indeed coordinated not only at biological level but also at the management one, considering, finance, administration and monitoring issues. The communication process, the exchange of information and the collaboration level among marine protected areas managers, agencies, institutions, researchers, experts and other relevant stakeholders dealing with the coastal and marine protection, represent an important aspect in the establishment of an efficient network of marine protected areas.

By linking MPA managers and other relevant stakeholders, social networks can facilitate learning and coordination of all those activities linked to research and management level (White et al. 2006). The social network provides a rationale for individual MPA stakeholders or communities in the coordination and sharing of experience and expertise with each other. Moreover, social and learning networks can be considered as the start to develop and facilitate the development of networks of MPAs relevant at ecological level (UNEP-WCMC, 2008).

A number of social networks have been established at different level around the world. Under the umbrella of World Commission on Protected Areas (WCPA) there can be found the Locally Managed Marine Area (LMMA) network in the Pacific, the Caribbean MPA Managers Network and Forum (CaMPAM[25]), the national social networks in the Philippines and Vietnam, the Marine Protected Areas in the Atlantic arc (MAIA[26]), the regional network of MPAs in West Africa (RAMPAO[27]) and the Mediterranean Protected Area Network (MedPAN).

MedPAN, in particular, is a network of managers of MPAs created in 1991 whose aim is to facilitate exchange of best practices and development of tools for management of Mediterranean MPAs. MedPAN also contributes to the establishment of a representative and coherent ecological network of MPAs. More than 30 MPAs are currently part of the network.

1.3.3 Links between MPAs and tools for management and planning of coastal and marine zones

In this section of the chapter the existing links between MPAS and the two main planning and management tools for coastal (ICZM) and marine zone (Marine Spatial Planning) will be described.

[25] The network and forum of Carribean marine protected areas (CaMPAM) is a regional initiative to improve communication and skills in the Carribean region founded in. Since then, the network has received the support of governments, foundations and experts. The initiative brings together MPA researchers, authorities, managers and academics. CaMPAM website: http://campam.gcfi.org/campam.php

[26] MAIA is a European cooperation project (ended in 2012) with the aim of creating a network of MPA managers and stakeholders in 4 countries (UK, France, Spain and Portugal,). MAIA website: http://www.maia-network.org

[27] The regional network of MPAs in West Africa, RAMPAO, was officially created in April 2007 by the 6 coastal countries of Cape Verde, Gambia, Guinea, Guinea Bissau, Mauritania and Senegal, involving 15 MPAs. www.rampao.org

1.3.3.1 MPAs and ICZM

Marine Protected Areas are peculiar realities: they can control and plan activities within their territory, often encompassing portion of coastal zone and seas; however, at the same time MPAs are islands of protection surrounded by a context that represent a continuous source of impacts for the resources meant to be protected. Being settled in a water environment, drivers of impacts (e.g. pollution, overfishing, destruction of habitats, alien species invasion) can easily affect MPAs from outside (Agardy et al., 2011;Cicin-Sain and Belfiore, 2005). Integrated Coastal Zone Management is therefore a needed strategy to guarantee the efficiency and protection of MPAs while preventing surrounding economic activities to determine impacts on these areas. ICZM can provide an "appropriate framework for incorporation of protected areas into a larger system of protection and a method of consensus building for their support" (Salm et.al., 2000).
MPAs need to strengthen their linkages with the outer coastal and marine areas through a series principles as suggested by Cicin-Sain and Belfiore (2005):

- Connectivity (at ecological, socioeconomic, cultural and institutional level) between MPAs and the surrounding coastal and marine area should be recognized and maintained;
- MPA management should be based on the best available knowledge and scientific information, that should be shared with and also draw from the surrounding context;
- governance arrangement should be taken into account in order to incorporate MPAs management into a broader ICZM;
- sectoral Institutions, (e.g. fishery, tourism, maritime transportation), governmental representatives and local stakeholders should be involved in the management of the MPA and the MPA managers should be involved in the broader coastal management process as a relevant stakeholder;
- fostering implementation of MPAs through enhanced policy and management tools: MPAs management and their role within ICZM requires human and financial resources, tools, guidelines and periodic assessment;
- ecosystem based approach should be at the core of the identification and management of new MPAs and at the base of the ICZM.

It is therefore apparent that all governance aspects are fundamental for a successful management of MPAs (Jentoft, 2007) . Governance can be defined in this context as "[t]he interactions among structures, processes and traditions that determine how power is exercised, how decisions are taken, and how citizens or other stakeholdershave their say" (Graham et al.,2003).

Especially during a period of global financial crisis where resources are always less available, MPAs need to relate with other stakeholders outside their boundaries, establishing networks with other MPAs that beyond ecological aspects can be relevant to share expertises, skills and resources; MPAs need to enhance awareness among the general public and institutions, trying to stress the needs and the benefits of their existences. Moreover, a dialogue with all potential conflicting sectors operating outside the MPAs, from fisheries to tourism and transportation has to be strengthen: MPAs cannot allow themselves to remain a closed box and all the activities within and outside the protected areas should be harmonized to attain social, environmental and economic benefits.

The protocol of ICZM (UNEP-MAP, 2008) pay serious attention to MPAs: as described before in this chapter, the Protocol asks contracting parties for the protection of specific coastal ecosystems (namely wetlands and estuaries, marine habitats, dunes), islands and coastal landscapes and cultural heritage (art.10, 11, 12 and 13 of the Protocol); beside this specific focus on protection, integration of all existing sectors and activities, collaboration among stakeholders both public and private are all pivotal pillars of Integrated Coastal Zone Management.

Therefore it is should be reminded that not only MPAs should be planned and management within the framework of ICZM, but at the same time, the management of MPAs and network of MPAs should incorporate the principles of ICZM expressed by the specific UNEP-MAP Protocol. For what concerns governance aspects, the development of a MPAs and related networks requires indeed communication and coordination among MPAs managers, exchange of good practices, collaboration at different levels concerning training, research and other common activities, involvement of all those bodies and organization that are influenced by or influencing the activities of MPAs. There are several ICZM protocol articles addressing these issues: art. 7 (Coordination), art. 14 (Participation), art. 15 (Awareness-raising, training, education and research), art. 16 (Monitoring and observation mechanism and network), art. 25 (Training and research), art. 27 (Exchange of information and activities of common interest) and art. 28 (Transboundary cooperation). These articles can easily be adapted in the management of MPAs and MPAs network in order to guarantee their efficiency.

1.3.3.4 MPAs and Marine Spatial Planning

Marine Spatial Planning and Marine Protected Areas are strictly related: this planning tool was indeed first applied to improve the management of MPAs. One of the best known example is the Great Barrier Reef Marine Park in Australia. Spatial planning and zoning in the protected area of the Marine Park was needed to permit multiple human activities such fishery and tourism while ensuring an high protection of the area.

Even in small marine protected areas, zoning is a fundamental tool to provide different ranges of protection in the areas.

At the same time MSP is necessary also as a framework wherein identify one or more MPAs in order to adopt ecosystem based criteria and to harmonize all the other uses of the sea from the other economic sectors. MSP is essential to guarantee ecological connectivity among MPAs especially at large scale. While ICZM is often applied considering both inner land and coastal seas (usually within the 12 nm), MSP is often applied within the national jurisdiction of the Exclusive Economic Zone (200 nm from coastline). As yet, the application of MSP in the high seas is still at an early stage (OSPAR areas beyond national jurisdiction set up in 2012 are the first example at global level).

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Chapter 2: Positioning the research

The theoretical framework applied in this research is based on the branch of policy science and social science literature devoted to the analysis of the process of change in the environmental policy. Therefore, this chapter of the thesis will provide a literacy review related to policy change and its main components under study. The policy science literature is inspired by a large variety of approaches and theories. Because the focus of this research is on the role of the policy entrepreneur and the strategies applied in policy change, the following review includes first an introduction on the concept of policy change and on the main components that are influencing the change such as institutions, discourse and framing; moreover a selection of theoretical policy frameworks are briefly described. Then the figure of policy entrepreneur is discussed providing a selection of strategies that can help him/her in bringing about a policy change. Furthermore the different typologies of coalitions and networks are described.

Finally, the second part of the chapter is focusing on the analytical framework applied in the research, providing the grounding hypothesis and the consequent research questions.

2.1 Policy change

Understanding the meaning of policy change requires first the concept of policy stability.

Policy domains usually tend to stability because there are groups of actors sharing an interest in maintaining the status quo; policy stability is guaranteed by these groups that avoid new ideas to prevails on policies and policy programmes (Meijerink and Huitema, 2009a). Understanding a policy process through time implies the analysis of the changes that can occur in the policy system shifting from a status quo to a new set of new policy ideas.

A **policy change** happens when a set of new policy ideas challenges that status quo. A change in the policies can be the results of different processes and events and there are several theories explaining the mechanisms, the role of actors and their strategies implied to bring about policy change. First of all, policy change requires a **social learning** that can be defined as a "deliberate attempt to adjust the goals or techniques of policy in response to past experience and new information" (Hall, 1993). We talk about "learning" when the result of this process is a change in policy.

There are 3 orders of policy change: the first two are processes that adjust policy without changing the structure of a given policy paradigm. The third order change regards instead a very different process, leading to radical changes in the overarching terms of policy discourse. Only some kinds of social learning can take place inside the State itself: frequently this process is influenced by society and the political arena, especially for what concerns a change in the policy paradigm. This sheds light on the shift from government to a governance system for what concerns the influence and ideas that can lead to a policy change. The interaction among government and society (e.g. NGOs, experts, private sector and the public) is nowadays fundamental in the process of bringing about a change in the policy agenda.

In the literature those new ideas that can lead to a policy change can be considered as part of a new policy core belief (Sabatier, 1993), a new policy discourse (Hajer, 1995), a new policy image (Baumgartner and Jones, 2002), or as a new policy frame (Schon and Rein, 1994).
Changes in beliefs can occur at different levels. According to the Advocacy Coalition Framework[28] (ACF), one of the frameworks used to explain policy change, at the broadest level of these belief system there are the *deep core beliefs*, which regard normative and ontological assumptions, regarding values like equality and liberty. These beliefs are largely the product of childhood socialization and are thus quite difficult to change. The second component of the ACF's belief system is *policy core beliefs* that tend to be subsystem-wide in scope and are basis for forming coalitions, establishing alliances, and coordinating activities among subsystem members. Even though policy core beliefs are resistant to change, they are more susceptible to modification than deep core beliefs. The final level consists of *secondary beliefs*, relatively narrow in scope and more empirically based. Due to these characteristics, secondary beliefs (e.g. details rules, budgetary decisions) are the components of the belief system more likely to change over time due to new information and learning. According to ACF, a major policy change regards a change in the policy core aspects of a policy subsystem while a minor policy change regards the secondary aspects of a policy subsystem.

The study of the policy change requires a set of concepts and frameworks needed to better understand the context wherein the change take place. Institutions, discourse, framing and the

[28] See the paragraph "2.1.4 Theoretical frameworks to describe policy change" for further info on this Policy framework

problem construction are pivotal elements in a policy system, because they all play a role in shaping, influencing and determining ideas and changes in ideas. Since policy changes can occur in different policy systems, context and modality, theoretical policy frameworks are relevant to interpret how change occurs.

Theoretical frameworks to describe policy change

In the last decades a number of theoretical frameworks have been developed to describe policy change. According to Sabatier (2007) a framework should be able to identify causal drivers, give rise to falsifiable hypotheses and it must be fairly broad in scope; it should address conflicting values and interests, information flows, institutional arrangements. Following three of the main theoretical policy frameworks are briefly described.

- The **Multiple-Streams Framework** developed by Kingdom (1995) considers the policy process as made of three streams of actors and processes: a problem stream (consisting of data about various problems and their proponents); a policy stream (involving policy solutions and their proponents); and a politics stream (consisting of public officials and elections). These three streams usually operate independently except during "windows of opportunities[29]" when some or all of the streams may couple and in successful cases bring about a substantial policy change.
- **Punctuated-Equilibrium Framework** by Baumgartner and Jones (1993) claims that policy process is characterized by long periods of incremental change punctuated by short periods of major policy change. Policy change comes about when opponents manage to give shape to a new "policy image or images" and exploit the multiple available policy venues.
- The **Advocacy Coalition Framework (ACF)** (Sabatier, 1993; Sabatier and Weible, 2007) considers the interaction of advocacy coalitions (2 or more groups of actors sharing a set of policy beliefs). Policy change occurs when one of the advocacy coalitions succeed in transforming the core of the policy beliefs of a subsystem. ACF, created by Sabatier and Jenkins-Smith in the late 1980s, is used to deal with problems involving substantial goal conflicts, relevant technical disputes, and multiple actors from all levels of government, but

[29] Particular moments in time (e.g. l disasters, elections) that raise public awareness and thus also increases political attention to specific problem (Kingdon, 1995).

also includes consultants, scientists, and members of the media. The change is detected in a time perspective of at least 10 years and regards the policy subsystem (defined by policy topic, geographic scope, and influencing actors) is the primary unit of analysis. In this framework, scientific and technical knowledge hold central role in supplying information regarding causes, magnitude and impacts of different choices in the policy process. Influence of actors over time can be mapped through the implementation of Policies and programs that incorporate beliefs and objectives. ACF has been largely applied to explain and analyze policy development and change in the field of natural resources and environmental policy studies (Sotirov and Memmler, 2012).

The figure of the policy entrepreneur is a key element in the policy change process. He/she owns a plethora of personal skills and strategies that can lead to a successful change in policy.
Therefore, in the following sections of this chapter, all the aforementioned policy change components will be described.

2.1.1 Institutional settings

As many other terms that are used by different disciplines, "institutions" is an ambiguous term, hard to be univocally definable.
A major confusion exists between the interpretation of "institutions" as an organizational entity (e.g. an EU agency, a political party) and as the system of rights, rules, and decision-making procedures (Young et al., 2008). In this context we will use 'Institutions' in the latter sense. Institutions are also intended as rules, norms and shared strategies (Crawford and Ostrom, 1995).
As described by Ostrom (2007) rules are intended as shared prescriptions (must, must not, or may) mutually understood and enforced (i.e. laws) . Norms are meant as shared prescriptions that tend to be enforced by the participants themselves. Finally, strategies are intended as "regularized plans that individuals make within the structure of incentives produced by rules, norms, and expectations of the likely behaviour of others in a situation affected by relevant physical and material conditions" (Ostrom, 2007). Institutions play a role both in causing and addressing problems related to the interaction between human and environment (Young et al., 2008).

Boundaries of institutions depend on the theoretical question of interest, on the time scale considered , and the pragmatics of a research project (Crawford and Ostrom, 1995).

2.1.2 Discourse

Discourse is a key component of policy arrangements because it represents the way people portray their personal way of reflecting the world, identities and social relations (Runhaar_2009). One of the basic assumptions of discourse theory is that language plays an active role in creating and changing aspects of the world. Therefore Discourse analysis is meant to explore how (groups of) actors give meaning to a particular issue.

Since there is no single accepted definition of 'discourse', the following definitions in Table 1 can help describing their common content.

Table1 Different definitions of Discourse (Adapted from Runhaar_2009)

Discourse can be defined as	Source
"An ensemble of ideas, concepts, and categories through which meaning is given to social and physical realities or phenomena, and which is produced and reproduced through an identifiable set of practices".	(Hajer, 1995; Hajer and Versteeg, 2005);
"The frames of reference and systems of meaning with which ideas and arguments are articulated. Issues are raised, analysed and debated not just as specific problems and policy ideas. Each problem and idea makes sense only within a particular system of meaning".	(Healey, 1997);
"A particular way of talking about and understanding (aspects of) the world".	(Jørgensen and Phillips, 2002);
"A particular regularity that can be found in discussions or debates".	(Hajer and Versteeg, 2005).

"the bundle of exchanges that give shape through metaphors and practices to a particular policy-making process or debate".	(Sharp and Richardson, 2001)
"in terms of its content, […] a set of policy ideas and values, and in terms of its usage,[…] a process of interaction focused on policy formulation and communication"	(Shmidt, 2000)

Discourse can be seen as an "interrelated set of storylines" (Gelicich et al, 2005) which offer an interpretation of the world, deeply rooted in social institutions and agendas.

In this sense, discourse is meant to create meaning and validate action, to mobilize action and to define alternatives. By redefining interests, discourse has the capability non only to reflect them but also to exert a causal influence on policy change (Schmidt, 2001).

In order to extract the needed information from a discourse related to the way of portraying a situation or an idea, a suitable analysis is needed. There are two forms of discourse analysis that can be distinguished (Runhaar et al., 2006):

- A tradition more focused on language and what language is used for in particular on text analysis (Georgakopoulou and Goutsos, 1997).
- The 'argumentative discourse analysis' linking discourses to related practices, structures, and institutions (Hajer, 2005).

In this work we will focus more on the "argumentative discourse analysis" as described in Chapter 3.

When becomes subject of discourses, the environment results in the public policy sphere as the outcome of the interaction of scientific disciplines such as biology and ecology, popular books (e.g. Silent Spring by Rachel Carson) and the messages spread by environmental activists (Herndl and Brown, 1996).

Scholars have attempt to organise the analysis of environmental discourse. For instance, Herndl and Brown (1996) elaborated a "rhetorical model for environmental discourse" that includes three typologies of discourse: regulatory discourse, scientific discourse, poetic discourse.

- *Regulatory discourse* is disseminated by powerful institutions that are competent in environmental policy. In this category nature is treated as a resource and the discourse is used to negotiate environmental policies against a broad range of social interests.
- *Scientific discourse* represents the specialized discourse of environmental sciences. Within this category nature is intended as an object of knowledge constructed through a scientific method. Policy makers usually draw from this category for technical data and expert testimony to ground their decisions.
- Finally, *poetic discourse* refers to the language used to discuss nature emphasizing its perception from the point of view of its beauty, spirituality and emotions.

According to Herndl and Brown model, these three different environmental discourses are not mutually exclusive or pure and often end up being mixed together.

2.1.3 Framing and problem construction

Framing is considered as the process by which (groups of) individuals identify, interpret and express a social and political complaint (Taylor, 2000).

A central aspect of the framing process is the identification of problems and the imputation of responsibility or causality.

In the environmental field, Framing is an important feature of the policy change: from environmental activists to the policy makers, from businesses to politicians, all these actors establish frames of references while perceiving, contextualizing and battling over environmental issues (Taylor,2000).

In literature, framing is intended mainly in two ways: as framing in communication and as framing in thought (Druckman, 2001).

- *Framing in communication* refers to the words, images, phrases, and presentation styles that a speaker uses when passing information to another (Cappella and Jamieson, 1997, p. 39; Gitlin, 1980, p. 6; Iyengar, 1991, p. 11) The frame can also provide "a central organizing idea or story line that provides meaning to an unfolding strip of events, weaving a connection among them. The frames suggest what the controversy is about, the essence of

the issue" (Gamson and Modigliani, 1987, p. 143). Therefore the frame implied by the speaker may reveal the considered relevance given to particular topic.

- *Framing in thought* describes the perception of a situation and it does not regard communication. This kind of frame reveals what an individual sees as relevant in the process of understanding of a situation (Goffman, 1974 ;Sweetser and Fauconnier, 1996, p.5; Tverskyand Kahneman, 1981, p. 453)

Both the two frames are similar for what concerns the focus on the attribution of emphasis and importance to particular issues or aspects of realty. However, while Framing in communication focuses on what a speaker says, therefore the way an individual portrays his message, Framing in thought focuses on what an individual is thinking. Often, frames in communication have the power for shape frames in thought (Druckman, 2001)

2.2 The policy entrepreneur

To bring about policy change requires individuals or a group of people motivated in doing so. Individuals who seek to change policy, involved in the process of developing and translating into policy a new idea, that are keen to take risks, to invest time and resources and that own social networking abilities, are defined policy entrepreneurs (Brower, 2008).

This term, initially borrowed from economy (entrepreneur as businessman) was then gradually adapted to the public sector (de Leon 1996). According to Kingdon (1995), one of the first scholars to apply the term entrepreneurs to the public sector, policy entrepreneurs could be defined as "advocates for proposals or for the prominence of ideas."

Individual policy entrepreneurs can be found anywhere, not only within government agencies but also within political parties, NGOs, expert communities (Kingdon 1995). That is why, entrepreneurs are primarily recognizable "by the actions they take, rather than by the positions they hold" (Brower and Biermann, 2011).

These individuals are characterized by some personal qualities that are relevant in the success of bringing about a change in policy. Policy entrepreneurs are indeed willing to invest their resources (e.g. time, reputation, knowledge) in a particular idea or proposal for policy change and they own good networking skills. One of the most valuable personal skills is perseverance: policy entrepreneurs often have invested a significant part of their career to contribute to the development and implementation of an idea (Meijerink and Huitema, 2009a).

2.2.1 Policy entrepreneur strategies

Policy entrepreneurs need to exploit their personal skills within some policy strategies in order to reach their objective of policy change. According to the literature(Brower ;2008;Brower and Biermann;2011,Huitema and Meijerink 2010,Meijerink and Huitema, 2009a; Mintrom and Norman, 2009) there are several strategies and sub-strategies employed by policy entrepreneurs.

We propose here two macro strategies that are related to the skills and capabilities of the policy entrepreneurs that we have called "attention drawing on the idea" and "networking and coalition building". These strategies are described and linked to the objectives and actions to be applied in

the process of policy change. These personal strategies have been then related to another strategy category defined by Brower and Biermann (2011) as "arena strategies" because they are linked to the policy arena, that is the dimension wherein a problem definition and policy ideas are turned into policy decisions. The arena strategies can focus on time (window of opportunity) and place (venue shopping).

Finally Table 2 summarises the description of the two strategy typologies.

Attention drawing on the idea

Policy entrepreneurs do not necessarily need to develop a new idea to bring about a policy change; they can also recur to a series of old ideas, reformulating and combining them with others (Kingdon,1995, Mintrom 2000). Instead they need to be able to draw attention on the proposed alternative idea or approach by connecting it to an existing significant problem. Therefore policy entrepreneurs have to be able to turn a specific condition recognisable as a problem to be solved. Given the fact that policy problems are social constructions, language and more specific rhetoric persuasion are powerful means to influence the problem and the solution stream (Brower, 2008).

In order to be successful, policy entrepreneurs should recognise and exploit particular moments wherein present and promote their ideas. This is considered a strategy called **Window of opportunity** (Kingdon, 1995).These windows are particular moments in time (e.g. an environmental disaster, an accident, elections) that raise public awareness and thus also increase political attention to a specific problem; this time window offers opportunities for policy entrepreneurs to propose a new idea and gaining support for new policy proposals. Windows of opportunity last just for a short time, therefore is fundamental for policy entrepreneurs to recognize and exploit those moments appropriately (Kingdon,1995; Huitema and Meijerink, 2010).

Networking and coalition building

Few actors can manage policy change on their own. It can be expected that policy entrepreneurs are willing to invest time and energy to build or maintain good relations by both formally and informally talking with and listening to a broad set of actors engaged in a certain domain (Brower and Biermann, 2011). One of the needed skills of a policy entrepreneur is indeed the capability of building coalitions and broader networks. Networking is needed because it helps policy entrepreneurs discovering opportunities and enable them to collect reliable information in a more

easy and efficient manner (Brower, 2008). Moreover, by means of coalitions and networks, policy entrepreneurs gain resources, money and support (Brower and Biermann, 2011).

Networks are broader than coalitions because regards relations not only with parties that are directly necessary, but also with those not directly needed in order to reach certain goals. Policy networks represent a new form of governance characterized by the predominance of informal, decentralized, and horizontal relations (Kenis and Schneider, 1991).

Maintaining efficient relations within coalitions and networks requires a delicate process of trust building: this has to be another skill of the policy entrepreneur.

Networking requires also the capability by the policy entrepreneur to understand which venue (e.g. a particular workshop, congress, meeting) can better fit the objectives of the policy change process. This strategy is called **Venue shopping** and describes the behavior associated with the choice between the various possible venues where an individual or group can try to effect change. Actors can try to exploit venues for putting forward arguments that were not originally intended in a specific agenda of a meeting, therefore trying to manipulate the nature of a venue. Moreover policy entrepreneurs may try to alter the participant list of the venue in order to have their own coalition members represented (Baumgartner and Jones 1991, p. 1045). Finally policy entrepreneurs can deliberately create a new venue specifically intended to gain support and to present their idea (Huitema and Meijerink, 2010).

Table 2 Policy entrepreneurs and Arena Strategies

Policy entrepreneurs Strategies	Objective	Element of the strategies	Personal skills required	Arena Strategies applied
Attention drawing on the idea	-To demonstrate the significance of a problem -to connect existing ideas to problems and participants	-Turning a condition into a problem -Using an idea (even an old one) at the right time	-rhetoric persuasion	Windows of opportunity
Networking and coalition building	-To gain knowledge, information, resources and support	-To listen, talk and collaborate with people within and outside an	-Social and relational skills -negotiation	Venue shopping

	organisation or group - Building relationships of trust -Choosing the most suitable venue to get in contact with people and share ideas

2.3 Coalitions

Policy change is a process that usually does not regard a single person only (e.g. the policy entrepreneur) but includes several people that gain together because they share the same interests and objectives and because together they can more easily reach a common target. Coalitions and alliances are common to gain support, resources, information and knowledge in the process of spreading new policy ideas. Therefore building coalitions is an important strategy for policy entrepreneurs and according to objectives and needs the built coalitions can be of different typologies such as Advocacy coalitions (Sabatier, 1993), epistemic communities (Haas, 1992), strategic alliance (Meijerink 2005) resource dependency, shadow networks (Olsson et al., 2006). Following, each coalition is briefly described and in Table 3 all the mentioned strategies characteristics are resumed.

Advocacy coalitions

Advocacy coalitions, are composed by those who share the same or very similar ideas, beliefs and values (Meijerink and Huitema, 2010; Sabatier, 1993). Each of these coalitions can be composed by individuals or groups belonging to the government or non-governmental organizations representing different institutional affiliations and levels of government; Advocacy coalitions do not only share policy beliefs but also resources as information and financial resources. These typology of coalitions belong to the Policy Framework called Advocacy Coalition Framework: in this context these coalitions are at least two each one sharing different policy beliefs.

Epistemic community

When a policy entrepreneur turns to a network of professionals with recognised expertise and competence in a particular domain to bring about a policy change, this network can be defined as an epistemic community (Haas, 1992).

Members of an epistemic community can consist of professionals from diverse disciplines and background that share a set of beliefs, values and techniques.

Strategic Alliance

Another typology of coalition is defined as strategic alliance (Meijerink 2005) and regards a coalition where components, even if they do not share same policy beliefs, values and ideas, they have a common interest in realizing a particular sort of policy change.

Resource dependency coalition

A resource dependency coalition regards those parties who neither share ideas and beliefs or perceptions but they gain together because they need each other to realize their divergent objectives. A "resource dependency" coalition, since involves parties with so different priorities and issues, often entails process of compromise and bargaining.

Shadows networks

Shadow networks are formed by actors operating on the fringes or outside the formal circuits of power (Meierink and Huitema, 2010). The member of this network are really relevant in the policy change process because they develop and test new ideas in the shadow of policy arenas; they need to develop connections with formal decision networks to successfully challenge a dominant policy paradigm (Olsson, 2006).

Since the members of these networks can avoid the scrutiny or the obligations of their agencies, they have more freedom in developing alternative policies, and develop a creative thinking addressed to resolve resource problems.

Table 3 Relevant coalitions for policy change

Coalitions	Main feature	Do they share beliefs and values?
Advocacy coalitions	They share policy beliefs but also resources as information and financial resources	Yes
Epistemic community	network of professionals with recognised expertise and competence in a particular domain	Yes
Strategic alliance	A common interest in realizing a particular sort of policy change	Not necessarily
Resource dependency coalition	members need each other to realize their different divergent objectives	No
Shadows network	Members operating on the fringes or outside the formal circuits of power	Not necessarily

2.4 Analytical framework and Research Questions

This work aims at indentifying the role of policy entrepreneurs in the process of environmental policy change; in particular the policy change in this work is related to the creation of a transboundary network of marine protected areas in the North Adriatic sea.

To achieve this objective, this research will rely on the policy science theory related to the policy change and policy entrepreneur. In particular in order to be able to identify the figure of policy entrepreneur, we will use the theory related to the personal skills and strategies policy entrepreneurs can rely on to bring about a policy change in a particular context. We will also use the literature related the plethora of coalitions and network that a policy entrepreneurs can create to bring about policy change.

Moreover in this work we will resort to social science literature related to discourse analysis to better understand how people frame a problem and to what they give priority regarding a chosen issue.

This work will be used to test some previous findings of Mejerink and Huitema (2009b) that will be considered our set of hypothesis.

In their work, Mejerink and Huitema made an analysis on water policy transitions, policy entrepreneurs and change in strategies water policy in 15 countries, focusing on the role of the policy entrepreneur and the strategies applied.

Among their results, there is a list of 12 findings emerged from the analysis of the considered case studies. We have considered 4 of their findings as the main hypothesis of our research: one related to the policy entrepreneur (hypothesis n. 1) and the other their strategies (hypothesis n. 2,3 and 4). The chosen hypothesis are the following:

1. Policy entrepreneurs can be found anywhere, but what they have in common is a good reputation within their respective communities, good networking skills and perseverance.
2. A combination of bottom-up and top-down strategies makes most transitions happen, and their relative importance depends largely on the particular institutional context or opportunity structure.
3. Successful policy entrepreneurs anticipate windows of opportunity by developing and testing attractive policy alternatives and demonstrating their feasibility.
4. Successful policy entrepreneurs employ strategies of venue manipulation and venue shopping and/or create new venues to be able to insert new ideas into decision-making processes.

The 4 hypothesis were then used to set an overall questions and 5 more detailed research questions. As it can be seen in the Table 4 below the research aims at identifying the figure of the policy entrepreneur in the context of the North Adriatic, trying to detect whether a top down or a bottom up process is leading this change. This work will try to detect the policy alternatives proposed by the policy entrepreneurs and the strategies that they use to promote this alternatives.

Finally, since this work will be also the result of the comparison between the North Adriatic case and the Wadden Sea for what concern the policy change, the final research question will try to shed a light on the lessons learnt from the Wadden sea experience concerning policy change and policy entrepreneurs' strategies. The comparison highlight the differences in the policy change process of the two transboundary cooperation processes and show some good practices of the Wadden sea that could be possibly applied in the context of the North Adriatic sea.

Table 4 The research questions derived from the 4 hypothesis

Research questions	
Overall question: **How policy entrepreneurs achieve policy change in the North Adriatic?**	
1	Where can policy entrepreneurs be found in the North Adriatic?
2	Is the change lead by a bottom up or a top down process?
3	Which are the successful policy alternatives developed by the policy entrepreneurs?
4	Which have been the strategies related to the choice of the venues made by policy entrepreneurs?
5	What can be learnt from the Wadden sea experience about the role of policy entrepreneurs in the case of a successful transboundary experience?

In order to answer to the aforementioned research questions in this work will rely on some research methodology and methods that will be described in Chapter 3.

The research will be based on the case study comparison method (Yin, 2009) and we will resort on methods as social network analysis (Faust and Wasserman, 1994) for what concern the study of the policy entrepreneur network; and the content analysis (Silverman, 2006) for what concerns the analysis of the data collected through a series of direct interviews carried out in both the case studies. The data will be also collected through secondary analysis of inherent literature.

Chapter 2 References

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3 Research methodology and data

This chapter focuses on the Research design of the work. Starting from the Research questions, the overall method applied to the case study is described. Moreover, the way in which data were collected (i.e. focused interviews and secondary analysis) are presented and the methods applied for data analysis (i.e. the social network analysis (SNA) and content analysis) are portrayed.

The Research design of this thesis is based on the Case study Research method of Yin (2009). A case study is a descriptive, exploratory or explanatory analysis of a real-life event determined by a person, group or event. (Yin, 2009). A Case study is a preferred method to other ones (e.g. experiment, survey, archival analysis) when the object of a research relies on contemporary events and do not require control of behavioral events. The case study relies on sources of evidence like direct observation of the events under study and interviews of the persons involved in the events.

The design of a case study method is based on 4 phases (modified from Yin, 2009):

1. Defining study's questions;

2. defining the unites of analysis;

3. Collecting Case Study evidence

4. Analysing Case Study evidence

In this research, two case studies were considered: the “North Adriatic” and the “Wadden Sea” cases. Following each step of the above research outline, for each Case study a description of the research method is provided.

3.1 Defining Study’s questions

The study’s questions are related to the research questions described in chapter 2 that are deriving from the set of chosen hypothesis. The first 4 questions are addressed to both the two cases, namely the North Adriatic and Wadden Sea. Finally the last question regards a comparison

between the two experiences about the transboundary cooperation in the management of marine protected areas.

Table 2 Research questions applied in the Research design

Research questions	
Overall question: **How policy entrepreneurs achieve policy change in the case study?**	
1	Where can policy entrepreneurs be found in the case?
2	Is the change lead by a bottom up or a top down process?
3	Which are the successful policy alternatives developed by the policy entrepreneurs?
4	Which have been the strategies (like the one related to the choice of the venues) adopted by policy entrepreneurs?
5	What can be learnt from the Wadden sea experience about the role of policy entrepreneurs in the case of a successful transboundary experience?

In the North Adriatic Case, beside the mentioned research questions, other ones were related to the explorative study of the network of stakeholders involved in the issue of MPAs. In particular the objectives of this study were meant to analyse:

- the level of communication and collaboration among the stakeholders;
- the perception of the advantages of and obstacles for the establishment of a transboundary network of mpas.

3.2 The unites of analysis

The unit of the analysis is always a challenging issue to determine because it requires to set the boundaries of the analysis. The considered unit can encompass a geographical or virtual space that involves one or more actors. According to the objectives set by the research questions and according to the specificity of the sites, for each one of the two cases the unit of analysis was identified as follow.

North Adriatic Case

For what concerns the case study of the North Adriatic, geographically this includes the North Adriatic basin bordering the coast of Italy, Slovenia and Croatia southwards bordered by the

imaginary line linking the Italian city of Ancona to the Croatian city of Zadar. The unit of analysis is composed by representatives of governmental agencies, public institution, an NGOs that due to their competence, mission and/or responsibility are related to the issue of marine protected areas in the North Adriatic.

The Case study description of the North Adriatic is provided in a comprehensive way in chapter 4

Wadden Sea Case

For what concerns the Wadden Sea Case, geographically it involves a tidal wetland, extending along the North Sea coast of the Netherlands, Germany and Denmark. The Wadden Sea represents a successful case of cooperation in the management of marine protected areas at transboundary level, that is a result of the process started in the 60's of the last century. In this case the focus is on the recognition of individuals and organizations as policy entrepreneurs in two selected policy change processes occurred in the past; they both include a shift in the management of the Wadden Sea area. The research questions mentioned above will be use to better understand which have been the strategies used by the identified policy entrepreneurs.

The Case study description of the Wadden Sea is provided in a comprehensive way in chapter 6.

3.3 Collecting Case Study evidence

According to the research questions, the Case study research outline requires to collect the needed data suitable to answer the selected questions.
According to Yin (2009) in a Case Study evidence can come from six sources: documents, archival records, interviews, direct observation, participant-observation, and physical artifacts.
For each one of the two considered Case studies, specific sources were selected as described below.

North Adriatic Case

In the North Adriatic Case the main source of evidence is represented by focused interviews (Merton, Fiske,& Kendall, 1990) that were addressed to a group of selected stakeholders identified

first with a “event based” technique and then with a “Snowball sampling” technique. The snowball sampling technique consists of individuals - selected in a first screening- identifying new stakeholders and contacts (Reed, 2009).

Focused interviews are characterized by the fact that are open ended interviews carried out in a conversational manner, but more likely to be following a certain set of questions derived from the case study protocol (Yin, 2009).

Interviews followed a semi-structured format: six were carried out face-to-face and twelve carried out over the phone or by internet calls from January to May 2013. The interviews addressed 11 questions to all the stakeholders. The average length of the interviews was 40 minutes. All interviews were recorded.

Another source of data that was used is the category called **document**. Documents are composed both by formal and informal documents, private and public such as agendas, announcements and minutes of meetings, and other written reports of events; documents are also formal studies or evaluations of the same case previously studied.

Wadden Sea Case

In the Wadden Sea Case, since it deals with the analysis of processes happened in the past, the collection of proper data could rely not only on the source of interviews but also on documents source. The policy science literature on policy change offers indeed some analysis not directly focused on the figure of policy entrepreneur but that provides useful information in order to address the selected research questions. Documents, together with key stakeholders direct interviews, helped answering the selected research questions.

The focused interviews (Merton, Fiske, & Kendall, 1990) were focused on a set of specific questions regarding policy change, policy entrepreneurs and their strategies. The interviews were carried out during the month of July 2013 and their average length was of about 45 minutes.

3.4 Analysing Case Study evidence

In order to analyse the collected data of the case studies, several methods are available. In this research two main methods were applied: social network analysis (Faust and Wasserman, 1994) and a content analysis (Silverman, 2006).

3.4.1 The Social Network Analysis

Social network analysis (SNA) is a sociological method used for studying social relations (Faust and Wasserman, 1994: Freeman, 2004); this method focuses on relationships among actors (e.g. individuals or organizations) and on the existing patterns and implication of these relations. Actors are linked to one another by social ties. In this work communication and collaboration flows will be considered. Ties are represented by arrows that can be mono directional (A→B, where A recognizes a relation with B, but B does not) or bidirectional (A←→B where both A and B recognise a mutual relation) according to the acknowledged relation by each actor (see Fig. 1 for an example of visualisation of the result of a network analysis).

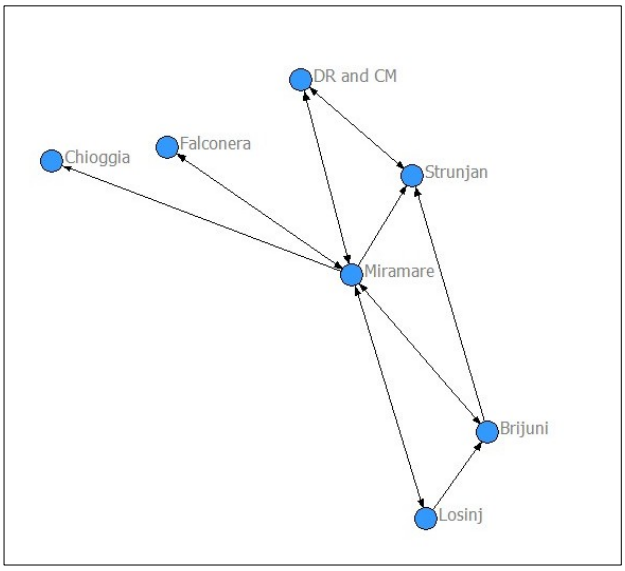

Fig. 1 An example of visualization of the result of a network analysis: communication flows among MPAs in the North Adriatic Sea.

SNA is emergently being applied to the natural resource management context in order to analyse existing environmental governance relations (Bodin and Prell, 2011). In particular, SNA was applied to the North Adriatic Case only, in order to explore the existing relationships within a selected group of stakeholders related to Marine Protected Areas (MPAs). SNA was applied in order to understand how the selected stakeholders are linked one to another, with whom they collaborate with and which are the common projects and venues they took part to. The data was gathered by means of some particular questions during the focused interviews described in paragraph 3.3. In table 2, the specific questions used to collect the data for the Social Network Analysis are reported describing their application in the SNA.

The analysis of the existing relations among the stakeholders interested in Marine Protected Areas in the North Adriatic sea was done using the UCINET software (Borgatti et al., 2002). The software allowed the analysis of statistical measurements related to the Centrality: the degree (indegree and outdegree), the closeness and the betwenness rate (Faust and Wasserman and, 1994).

Tabella 3 Question and specific data treatment and elaboration in the SNA method.

Questions	Typology of data	SNA Data elaboration
Who do you communicate with about MPAs issues?	inflow and outflow ties	Degree, centrality, betweeness
Which are the public bodies and other organization you collaborate the most with on MPAs issues? (These could be MPAs, ministries, administrative bodies or NGOs)	inflow and outflow ties	Degree, centrality, betweeness
Who is the public body or other kind of organization you collaborate the most with?	Inflow and outflow	Ego network

These measures allow to identify the actors more relevant in a network are for what concerns the communication and collaboration flows and those more isolated or clustered with some specific stakeholders. For the visualization of the analysis, NetDraw software was used (Borgatti, 2002). SNA is a useful tool in policy science to investigate the existence of one or more policy entrepreneurs within a policy network. Indeed, the network position that an actor has attained is important for his ability to access resources and it is crucial in understanding how individuals in natural resource governance setting are successful in bringing about a change in the system within they operate (Bodin and Prell, 2011).

Network analysis provides a number of different ways in which actors can be categorized, based on features of the network, encompassing measures like degree, betweenness, eigenvector centrality (Faust and Wasserman and, 1994). Indeed, within a network, a node (representing an actor) owning a high number of ties linking him to the other nodes; that stands in between other high linked nodes and that has a low number of ties separating him from other nodes, it owns some important characteristics that can let him recognizable as a policy entrepreneur.

3.4.2 The Content Analysis

The content of transcribed interviews is a typology of qualitative data dealing with different topics. One of the methods for the analysis of this kind of data is Content Analysis (Silverman, 2006). This method allows textual investigation by establishing a set of categories and then counting the number of instances that fall into each category.

According to (Selltiz et al., 1964), the following are the possible topics addressed through the questions of an interview:

1. Facts: statements from informed sources about the structures, policies and action of organization.
2. Beliefs about facts: beliefs or attitudes that do not require an interpersonal cross-checking.
3. Feelings and motives: emotional responses.
4. Standard of action: these relates to what people think should or could be done about certain stated situation. This topics refers to the answers that will be considered with the discourse analysis.
5. Present or past behavior: questions regarding the actual rather than hypothetical situations.
6. Conscious reasons for beliefs, feelings, policies, or behavior.

The chosen unit for the content analysis in this research was the phrase (Weber, 1990). Before proceeding with the Interviews content analysis, a categorization scheme should be designed according to Elo and Kyngas (2008). Since the typologies of questions in the two study cases were different, a specific content analysis was defined for each of the two cases.

North Adriatic

In the North Adriatic Case, Content Analysis was applied to answers related to those questions investigating perceptions and opinion about the establishment of a network of MPAs in the North Adriatic.

According to Selltiz et al. (1964), the typologies of questions about perceptions and opinion as shown in Table 3 are related to the categories of **Beliefs about facts** (beliefs or attitudes that do not require an interpersonal cross-checking) and **Standard of action** (what people think should or could be done about certain stated situation). The resulting scheme, modified ad developed in sub categories according to the analysis of the answers is shown in Table 3.

Content Analysis was applied to questions (shown in the first row in Table 3) related to perceptions and opinion about the establishment of a network MPAs in the North Adriatic.

Chapter 4 will supply the results of these questions and related analysis.

Questions	Typology of data	categorisation scheme for the answers
Why do you think it should be important to strength the relationship among marine protected areas in the North Adriatic?	Belief about facts	CONSERVATION a) improvement of the ecosystem quality b) achieving a more efficient monitoring KNOWLEDGE a) exchange of expertises and/or good practices RESOURCES a) getting more easily funds for projects POLITICAL RELEVANCE a) getting higher influence at the political level
In your opinion, what it is currently missing to efficiently protect coastal and marine resources in the North Adriatic Sea?	Standard of action	INTEREST a) Lack of political interest towards the issue AWARENESS a) Lack of awareness in the general public RESOURCES a) Lack of funding to carry on a proper management in the MPAs b) Lack of funding to establish new MPAs COMMUNICATION a) Lack of communication and/or coordination among different management levels b) Lack of communication and/or coordination among different countries MONITORING a) Lack of monitoring PROTECTION a) Lack of MPAs and protected areas
What do you suggest in order to improve the efficiency of marine protected areas in the North Adriatic in conserving the marine and coastal resources?	Standard of action	COLLABORATION a) Enhancing collaboration among marine protected areas b) Enhancing coordination among different management levels MONITORING a) Enhancing monitoring POLITICAL RELEVANCE a) getting higher influence at the political level AUTONOMY IN MANAGEMENT a) Enhancing funds toMPAs to make them more independent BIOLOGICAL RESEARCH a) identify ecological relevant areas to be protected

What could be the constraints that could slow down the establishment of a transboundary network of marine protected areas among Italy, Slovenia and Croatia?	Beliefs about facts	POLITICAL a) Lack of interest from Governments b) Lack of transboundary collaboration due to existing conflicts among countries TIME a) Lack of time RESOURCES a) Lack of funding COMPETING SECTORS a) Resource conflicts with other economy sectors.

Table 3 Question and specific data treatment and elaboration in the content analysis method.

Wadden Sea

In the Wadden Sea Case, Content Analysis was applied to the answers related to those questions investigating facts and opinion about the need of a policy change in the environmental management of the Wadden Sea and the strategies adopted by Policy Entrepreneurs. In this case, hypothesis related to possible policy entrepreneurs were tested through a series of questions in order to confirm the role of a specific individual and or an agency in bringing about a policy change.

In particular the questions focused on the following issue related to the role of the policy entrepreneur his strategies:

-idea development

-networking

-coalition building

-venue shopping

-window of opportunity.

In Chapter 6 the analysis of the interviews will be provided in order to discuss the starting hypothesis on the policy entrepreneur and related strategies.

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4 Case study description: The North Adriatic

This chapter aims at describing the case study of the North Adriatic for what concerns the governance of Marine Protected Areas (MPAs).

In order to structure the description of all the aspects taken into account in this analysis, an analytical framework was adopted to structure the information collected based on the one applied by Dore et al. (2012) in the description of a transnational water governance scheme applied in the Mekong region.

As shown in Fig. 1 below The adapted Governance framework portrays the importance of, and connections between: context, arenas and drivers.

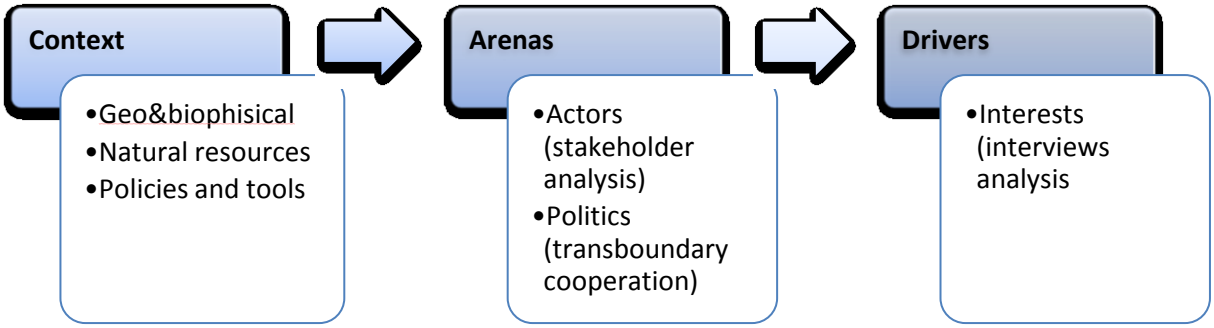

Figure 1 The Case study analytical framework

The **context** describes the natural and biophysical characteristics of the area, the coastal issues, the coastal and marine protection measures and policies and the relative tools adopted.

Arenas represents the context wherein *Actors* and *Politics* interact together. *Politics* includes ‘‘the whole area of power relations during the identification of a problem and possible solutions, the consultation and decision making processes that follow and further on into the public action phase’’ (Dore, 2012)

In the North Adriatic case study, *politics* are intended as the transboundary experience of cooperation on coastal and marine areas protection.

With the term *Actors* are intended all those individuals or organizations that are relevant in the protection and management of marine and coastal zones, in particular Marine Protected Areas.

Within the **Drivers**, *Interests* provide insight into needs, wants, desires, concerns, hopes, fears and values. All actors have a variety of interests which is what can make water governance so socially complex. Different interests manifest themselves within and between different categories of actors. Moreover interests are entwined and change through time. *Discourse* is also a component of the Drivers representing the way people portray their personal way of reflecting the world, identities and social relations (Runhaar_2009). However, discourse needs time to develop, spread and become recognisable. In the North Adriatic context, the policy change is still in process and the time span is not enough to provide an analysis about this object.

In the Marine Protected Areas governance system of the North Adriatic, interests analysis will be the result of a part of the interviews analysis.

4.1 The context: North Adriatic characteristics and protection policies

In this section the North Adriatic case study is described according to their main geographical characteristics, focusing on ecological aspects; moreover the protection policies and tools at national, European and international level are supplied.

4.1.1 North Adriatic Biophysical characteristics and ecosystems

The North Adriatic sea is the upper basin of the Adriatic sea, a subregional system of the Mediterranean sea[30], linked to it through the Strait of Otranto. The Northern Adriatic is bordered by the coast of Italy, Slovenia and Croatia and its southwards limit is represented by the fictitious line linking the Italian city of Ancona and the Croatian city of Zadar.

As regards the definition of territorial seas, as most of Mediterranean states, North Adriatic countries have established a 12-miles limit. Due to political and geographical reasons, in the Northern Adriatic the definition of the maritime borders still represent a crucial issue among the North Adriatic riparian states.

[30] See also Art. 4(2)(b) of the EU Marine Strategy Framework Directive (Directive 2008/56/EC of the European Parliament and of the Council, of 17 June 2008, establishing a framework for community action in the field of marine environmental policy, Official Journal of the European Union, L 164, 25 June 2008, p. 19).

Bilateral agreements and treaties for the delimitation of the territorial sea have been signed between Italy and Yugoslavia (1975 - Gulf of Trieste) while the definition of maritime borders between Slovenia and Croatia is still pending (Mackelworth et al., 2013).

The definition of Exclusive Economic Zone and their sub categories even declared, they are not recognized by bordering countries. These zones incorporate a number of specific topics like fisheries and ecological protection. In 2003, Croatia established an Ecological and Fishery Protection Zone (EFPZ) with the aim of mitigating the negative impacts on marine resources; however due to the lack of an agreement among EU contries the Croatian EFPZ it is only applied by non-EU members (MRAG et al., 2013;Policy Research Corporation, 2011).

In 2005, Slovenia established an Ecological Protection Zone (EPZ). However, due mainly to the unsolved borders problems with Croatia, delimitation agreements with neighboring coastal States are still pending.

Italy announced an Ecological Protection Zone for the Adriatic in 2006. Since no agreement has been so far achieved with bordering countries, no EPZs have been established.

For what concerns biophysical aspects, in the North Adriatic there is a clear difference between the geomorphology of its western part, characterized by sandy, flat and uniform coasts interrupted by lagoons, and the eastern part, with rocky steep coasts, channels, numerous small islands, promontories and bays.

The north-western part of the basin is very shallow, starting with a depth of about 15 m along the Venice –Trieste coastline, increasing slowly southward and then sharply reaching about 270 m in the Middle Adriatic Pit.

The Northern Adriatic is a relatively shallow ecosystem with a depth not exceeding 100 m. Of particular relevance in the north western part of the basin are some submarine rocky substrates scattered in the sandy or muddy seabed which can be found until approximately 29 m depth and 20 km from the coast. These rocky outcrops are characterized by extraordinary benthonic biocenosis (Camuffo et al., 2010). Currently the most credited hypothesis on their origin proposes that the rocky cores of Tegnùe have been formed over the centuries as a result of the cementing of muddy sandy sediments, by the precipitation of carbonates on beach sediments (Stefanon and Zuppi, 2000). Thanks to their irregular profile, Tegnùe result unsuitable to trawl fishing: this peculiarity has allowed to preserve the habitat of many marine invertebrates and to act as nursery for many species of fishes.

The small volume of North Adriatic waters receives about 77% of its freshwater input through rivers, 46% of which comes from the Po (Marson, 1996). Due to this amount of river runoff and oceanographic conditions, the Adriatic exhibits decreasing nutrients concentration and primary production from north to south and west to east (Zavatarelli and et al.,1998). Therefore, although the Adriatic is considered an oligotrophic sea, its northern part is one of the most productive parts of Mediterranean (Notarbartolo et al., 2008; Pérès and Gamulin-Brida, 1973). Accordingly, rivers discharge are responsible at the same time for the high biodiversity and for the pollution and eutrophication of the North Adriatic. Despite anthropogenic impacts, the Northern Adriatic hosts a very valuable marine biodiversity and ecosystems relevant for their ecological, economic, aesthetic and cultural values. The North Adriatic represents one of highest fish-producing areas in the entire Mediterranean (Vidas, 2009) and harbors several marine mammals like bottle dolphins (Bearzi et al. 2004) and monk seals; the estuarine areas and lagoons represent a nursery ground for many fishery species relevant also for the economic sector like Solea solea, Platichthys flesus, Mugil spp., Dicentrarchus labrax, Sparus aurata and Sepia officinalis (Turk and Odorico, 2009).

According to an analysis of the UNEP-MAP for the identification of Ecologically or Biologically Significant marine Areas (EBSAs), a group of expert oceanographers, marine biologists and ecologists identified 4 different ecological significant areas that are at least partially covering the Norht Adriatic sea (Notarbartolo et al.,2010), as shown in Fig. 2. This portion of the Adriatic has a high natural productivity that supports an extensive food web, including loggerhead sea turtles and several shark species (e.g. Squalus acanthias, Prionace glauca, Scyliorhinus canicula). The shallow waters are also important spawning grounds for sardines and anchovies but also for numerous demersal species. Despite being one of the most productive areas of the Mediterranean, and one of the major fishing grounds in Southern Europe, the North as the whole Adriatic have experienced a general decline of marine resources since the 1970s. Currently, the

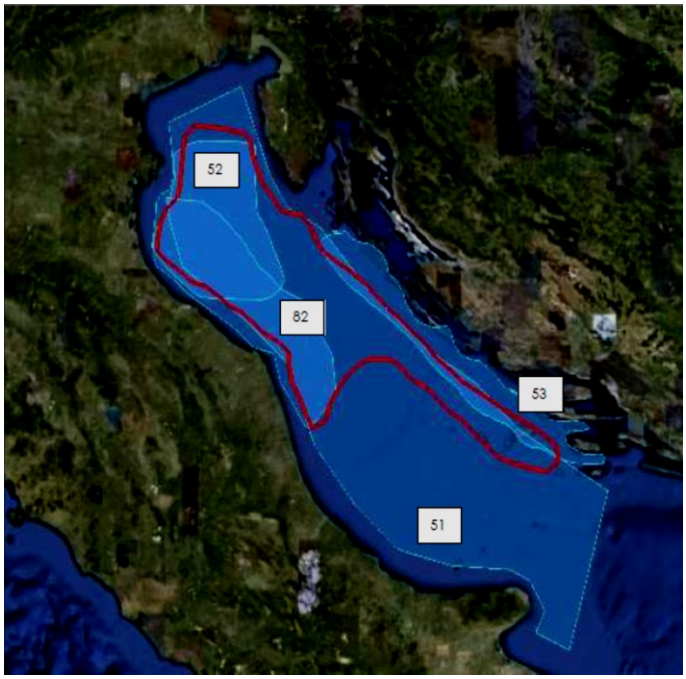

Figure 2 Northern Adriatic Sea Ecological significant areas (Notarbartolo et al., 2010)
51: Loggerhead turtle feeding habitat; 52: Squalus acanthias, Prionace glauca nursery area;53: Scyliorhinus canicula nursery area; 82: Important suitable habitat for small pelagics (sardines and/or anchovies)

Adriatic Sea is the local basin in Europe with the highest proportion of overfished stocks (EEA, 2010). As shown in Fig. 3 More than 75% of the fish stock in the Adriatic stand now outside safe biological limits. This loss has been caused both by a dramatic expansion of marine capture fisheries and by a decreasing of the habitats conditions (Fouzai et al., 2012; Lotze et al., 2011). As a consequence, mammals species as the monk seal (Monachus monachus), fishes as the European anchovy (Engraulis encrasicolus) and the European sardine (Sardina pilchardus stocks), bluefin tuna, swordfish, European hake, are now overfished.

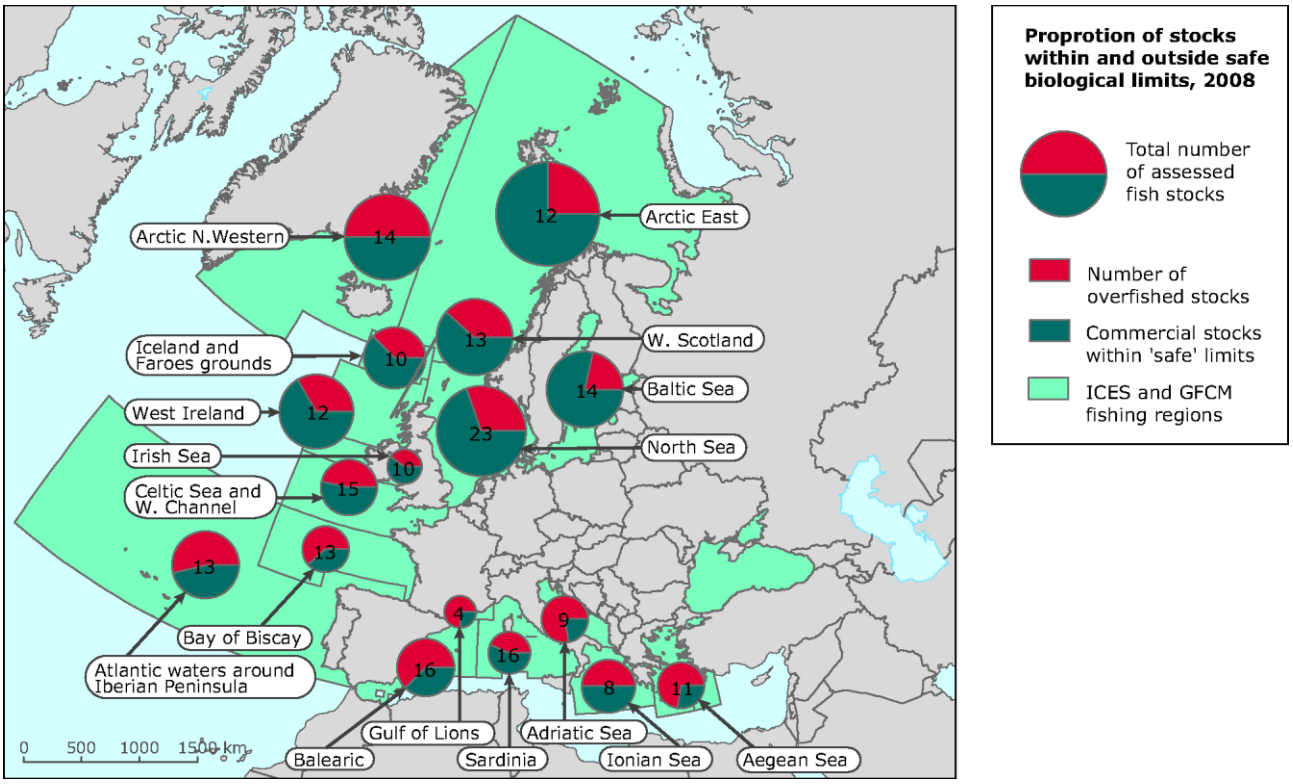

Figure 3 Proportion of fish stocks within and outside safe biological limits. The numbers in the circles indicate the number of stocks assessed within the given region. The size of the circles is proportional to the magnitude of the regional catch. (Source EEA, 2010[31])

4.1.2 Environmental policies and tools for the biodiversity protection of the sea and coastal areas at national level.

[31] Permanent link to the latest version of the chart: EF3931F2-B95D-43FD-89BB-FB6C8E1F1A66

The three countries considered in the case study (namely Italy, Slovenia and Croatia) are all part of the European Union and members of the UNEP MAP. Therefore, beside those at international level like the Convention on Biodiversity, all the policies adopted at the European level (Habitat Directive (92/43/CEE), "Birds" directive (79/409/CEE)) and at Mediterranean level (Barcelona protocol and specific protocols like ICZM and SPA/BD) described in chapter 1 are applied by each one of the considered countries. In the specific, the national strategies and policies related to the protection of coastal and sea areas are described, focusing on Marine Protected Areas.

Italy

There are several policies and tools adopted in Italy to preserve biodiversity of coastal and marine areas. Marine Protected Areas (MPAs) are a fundamental tool for biodiversity protection applied since 1982 (Law n. 979 of 1982 and Law n. 394 of 1991). The marine protected areas include a marine environment characterized by relevant interest from a natural, geomorphological, physical, biochemical point of view, with particular regard to coastal and marine flora and fauna. As yet the Italian Adriatic sea is really poor for what regards MPAs in the Adriatic Sea: along the Adriatic Italian coast, there are just 3 MPAs: the natural marine reserve of Miramare (Friuli Venezia Giulia), the Tremiti Islands (Puglia) and the Torre Guaceto area (Puglia). Miramare is the only Italian MPA in the North Adriatic. Beyond MPAs, other protection measures specifically oriented to the protection of biological resources exist and established at regional level, named as Biological resources Protection Areas (BPAs)).

Italy has also established an "Ecological Protection Zone (EPZ)" beyond the outer limit of the territorial sea (Law no. 61/2006) but as most of the others typologies of EEZ, it has not been recognized yet.

For what concern the strategies for coastal and sea management, Italy has not implemented yet an Integrated Maritime Policy nor a Maritime Spatial Planning nor and Integrated Coastal Zone Management national strategy. Sea and coastal areas and related uses are still managed in a fragmented manner by different administration levels and through sectoral policies.

Despite this legislative void at national level, at subnational level several initiatives have been carried out by several Italian Regions. For what concerns the North Adriatic, the most notable ICZM experience is represented by Emilia Romagna, the first Italian Region to set regional guidelines for ICZM in 2005, now extended to the marine field. The integrated approach of the

management of the coastal area in Emilia Romagna regards mainly the physical protection of the coast from threats like erosion and subsidence and the safeguard of the natural resources.
Several other legislative actions for biodiversity protection are now under responsibility of coastal Regions (Thetis, 2013) like the approval of technical procedures for the implementation of the Management Plans, the adoption of specific measures for the safeguard and the protection of beaches and maritime-coastal habitats; the regulation of dredging activities in ports; intervention to address the protection and the development of the coastal area and the creation of wildlife protection areas (e.g. Biological Resources Protection Areas).

Slovenia

In Slovenia, the implementation of what is considered equivalent to an ICZM strategy is still ongoing. Since the coastal length of Slovenia is just 40 km, ICZM issues are incorporated into the Regional Development Strategy for South Primorska, firstly developed in 2002 and then revised in 2007 and also in the Coastal Area Management Programme Slovenia (CAMP Slovenia). Several spatial planning legal instruments (e.g. 2011 Spatial Planning Act, 2002 Waters Act) are in force concerning the coastal waters even though a "Maritime Spatial Plan" has not yet been drawn up. As yet some spatial uses of the sea have been defined without applying a formal spatial planning framework: among the zoning there can be found areas of nature protection and cultural heritage, fishing reserves and waterway corridors. For what concerns the nature protection, in Slovenia there can be found 3 MPAs (a natural park, namely Strunjan, and two natural monuments - Rt Madona and Debeli rtič) that are regulated by the Nature Conservation Act adopted in 1999. While Areas of Conservation Interest are encompassing not only marine and coastal protected areas but also other sites relevant for their nature features, only in the case of MPAs concrete conservation measures are included in the legal act linked to the the single protected area Vidmar and Turk, 2011).

Croatia

At present, Croatia has not developed any ICZM strategy or a similar specific legal framework regulating coastal zone management nor Marine Spatial Plannning (Thetis, 2013): several laws

and regulations sectorally deal with coastal zone management (e.g. Nature Protection Act, the Environmental Protection Act, the Maritime Domain and Seaports Act).

For what concerns MPAs, in Croatia these are regulated by the Law on protection of nature (70/05). Marine environment in Croatia is mainly protected under three main categories: national parks, natural parks and special reserves in the sea. Laws for national and natural parks are proclaimed by the Parliament, and special reserves in the sea by County assembly. National parks were originally designated for their terrestrial natural characteristics, mostly due to "attractive landscapes"(Rochette du Puy and Montbrun, 2012). These include Brjuni islands, Kornati islands and island of Mljet. Recently, national park boundaries were extended to include surrounding marine areas. A Special reserve in the sea is an area in which one or more undisturbed natural characteristics are evident, and are of special scientific importance and purpose.

In 2006, two additional marine protected areas are established in Croatia: Lastovo – nature Park and Lošinj – Dolphin Reserve. However, Lošinj has currently lost is legally recognition as a nature Park (Mackelworth, 2013).

According to MedPan website, currently in Croatia there are 10 MPAs (national and natural parks and Natural reserves). However just two of them fall within the Case study area of the North Adriatic (Brijuni and Lim bay) and just Brijuni has both a coastal and marine component and a dedicated management authority.

4.1.3 Protection regimes of the Adriatic

Beside national efforts in the protection of the national and coastal areas under their jurisdiction, there are different initiative that have recognized the North Adriatic as a whole or as a subarea of the Adriatic in need of protection:

- **Marine Reserve for the Mediterranean**

  In 2006, Greenpeace prepared the report "Marine Reserves for the Mediterranean", which discusses the urgent need to establish a network of Marine Reserves in the Mediterranean. As a result, a total of 32 large-scale areas were proposed in the high seas and in the coastal area. Among these areas, Greenpeace identified the upper Adriatic due to its role as spawning area for pilchards and anchovy. This basin also hosts a high diversity of fish

species including tuna, swordfish and sharks, and seagrass meadows along the Croatian and Italian coasts (Oceana, 2011).

- **Particular Sensitive Sea Areas**

  The Adriatic-Ionian Initiative (see paragraph 4.2.1) is currently supporting the recognition of the Adriatic Sea as a Particularly Sensitive Sea Area (PSSA); a PSSA is an area that due to recognized ecological and/or socio-economic or scientific reasons, combined with its vulnerability, needs special protection through action by the International Maritime Organization in order to limit and/or forbid shipping in the area.

- **SPAMI ABNJ**

  The UNEP-MAP started a process in 2009 in cooperation with the European Commission that led to the identification of a set of 11 large Ecologically or Biologically Significant marine Areas (EBSAs) distributed throughout the basin (Notabartolo di Sciara and Agardy, 2010). The North Adriatic was designated as one of them (see paragraph 1.2.3 for further details).

4.2 The Arenas

In this section, the transboundary experiences of cooperation on coastal and marine areas protection in the North Adriatic are presented. Furthermore the actors considered in the analysis of the Case Study are presented.

4.2.1 Politics: Transboundary cooperation in the North Adriatic Sea.

Transboundary collaboration among North Adriatic countries goes back to the 1970s and since then has been growing and reinforced. Now several initiatives are in place, involving more and more Adriatic countries into the direction of establishing a collaboration that can finally involve all the countries of the basin.

The European Union has promoted transboundary collaboration in the Adriatic by means of initiatives like INTERREG, a programme started In 1989 regarding cooperation on several issues like social and economic development and environmental protection. Following, the IPA (Instrument of Pre-Accession Assistance) funds has financed in the 2007-2013 a series of collaboration project among EU and pre accession countries in the Adriatic. Below the most relevant cooperation initiatives regarding the upper as well the whole Adriatic are presented.

Commission on Cooperation for the protection of the Adriatic sea waters and coastal areas (also known as "Trilateral Commission")

Birth in the 1974 as a bilateral commission between Italy and Yugoslavia, the Commission turned into "trilateral" in 1992 when it was re-launched including Slovenia. Currently Montenegro has become a member of the initiative. The Commission is mainly constituted by Ministries of Foreigner Affairs and of the Environment. The initial goal of the Trilateral Commission was the protection of the Adriatic Sea and coastal areas against pollution. Lately the Trilateral Commission has considered broader coastal and marine issues and policies like ICZM and MSP and Ecosystem Approach. The Commission is meant to study issues related to the environmental problems of the Adriatic sea and coastal areas in order to supply propositions and recommendations to address the government research needs; consequently, the Trilateral Commission is believed to be the instrument to come to a common vision, with regard to cross-border Maritime Spatial Planning and ICZM in the Northern Adriatic.

Main topics dealt by the Commission are:

- Ballast water management in the Adriatic Sea;
- implementation of the Sub-Regional Intervention Plan for Cases of Sudden Adriatic Sea Pollution;
- EU Marine Strategy Framework Directive;
- the integrated management of coastal areas and safe harbors.

The Adriatic-Ionian Initiative

The Adriatic and Ionian Initiative (AII) was launched at the Summit on Development and Security on the Adriatic and Ionian Seas, held in Ancona (Italy) on 19th/20th May 2000.

The Adriatic-Ionian Council was established at the ministerial level for cross-border/international cooperation and today it includes representatives of Albania, Bosnia and Herzegovina, Croatia, Greece, Italy, Montenegro, Serbia and Slovenia.

The AII aims to promote shared solutions to common problems of the basin, especially related to security and stability in the region (e.g. good neighborly relations, economic development, land transport connections, battle against crime, technical assistance, health and cultural co-operation, tourism development and maritime co-operation) but also to the environmental protection of the Adriatic and the Ionian basin.

The Adriatic-Ionian Initiative dealt and deals with among others (Thetis, 2013):

- the Adriatic Action Plan, adopted in 2003;
- contingency plan for the Adriatic, including a Sub-regional Contingency Plan for the Northern Adriatic (Slovenia, Italy and Croatia), to be coordinated by the Regional Marine Pollution Emergency Response Centre for the Mediterranean Sea (REMPEC) issued in 2005;
- a proposal for the designation of the Adriatic Sea as a Particularly Sensitive Sea Area (PSSA);
- a strategic Environmental Assessment of Maritime Activities including Ballast Water Issue.
- the EU Strategy for the Adriatic-Ionian Macro-Region.

For what concerns the elaboration of the EU Strategy for the Adriatic-Ionian Macro Region, during year 2012, 4 stakeholders meetings were organized in Athens, Triest, Portoroz and Zagreb in order to set the basis for the "Communication on a Maritime Strategy for the Adriatic Ionian Seas" by DG MARE adopted on December 3rd, 2012. The second pillar of this Communication focused on a healthier marine environment where marine protected areas are explicitly mentioned.

Adriatic Ionian Euroregion

The Adriatic Ionian Euroregion (AE) was founded in 2006 in Pula in Croatia in order to promote transnational and interregional cooperation between regions of the Adriatic coastline. This institutional framework consists of 26 members - Regional and local governments- from Italy,

Slovenia, Croatia, Bosnia and Herzegovina, Montenegro and Albania. The aims of the AE are the following:

- forming an area of peace, stability and co-operation;
- protection of the cultural heritage;
- protection of the environment;
- sustainable economic development, in particular of tourism, fishery and agriculture;
- solution of transport and other infrastructure issues.

In particular, the protection of the environment is responsibility of a specific commission aimed to promote policies dealing with the protection of the environment and sustainable development in the Adriatic area. The Commission is supporting:

- the realization of concrete actions for the exchange of knowledge and best practices in the field of ICZM, water quality, eutrophication and climate change;
- data collection and monitoring activities regarding the maritime environment in order to strengthen the regional networks and research institutes;
- The definition of strategies in line with the EU policy context;
- Start-up of studies and researches in the environmental field.

4.2.2. Actors in the North Adriatic Case

In the Case Study of the North Adriatic a set of stakeholders - whose competence and responsibility are related to Marine Protected Areas in the North Adriatic - was identified.

First, management body for MPAs were selected. However, within the definition of "Marine Protected Areas" a plethora of specific terms describing different marine areas are included, ranging from reserves (e.g. fishery, marine, ecological, biosphere) to parks (e.g. national marine, coastal parks), to areas (marine conservation and marine wilderness areas) to sanctuary (Agardy et al.,2003).

Several different classification where made in order to identify and map MPAs in the North Adriatic: some example of mapping are given by IUCN and UNEP (http://www.protectedplanet.net), MedPan (http://www.mapamed.org/) and the Waitt Foundation (http://www.mpatlas.org). Other examples of classification of MPAs are provided by Camuffo et al., (2011), Turk and Odorico (2009). However, due to the different criteria used, each

of the classification differs from another. As there are currently several ways to recognized an MPA, in this analysis three criteria were adopted:

- The presence of a marine side in the protected area;
- The existence of a management authority;
- Conservation as the main objective of the area.

Since in the North Adriatic a poor set of MPAs is currently in place, especially in the Italian North Adriatic coastline, it was decided to include in this analysis also two Biological resources Protection Areas (BPAs) that are managed at regional level. According to these criteria, 8 marine protected areas were identified in the North Adriatic (see Table 1 and Figure 4). 3 areas were selected on the Italian side: the marine reserve of Miramare and the two Biological resources Protection Areas (BPAs) of "Tegnúe di Chioggia" and "Porto Falconera". Italian laws (979/1982 and 394/1991) about BPAs do not prescribe any restrictions to the navigation and do not prohibit fishing completely. BPAs are not asked to carry out any form of active management, development of policies to promote sustainable tourism and local population involvement (Camuffo et al., 2011). However, both the two BPAs are running management activities, they promote sustainable tourism and they involve local stakeholders. The other selected MPAs are located in Slovenia, the Nature Monumentum of Debeli rtič and the two Nature reserves of Strunjan and Cape Madona; in Croatia the Natural Park of Brijuni and the Special marine reserve of Cres-losinj[32] were selected.

[32] Although the "preventive protection" status of the the Cres-losinj area granted by the Ministry of Culture expired on the 26th of July 2009, this area was the biggest in the whole Adriatic and in 2014 will be proposed again as a formally recognised MPA (Mackelworth_2013)

Table 4 The selected Marine Protected areas in the North Adriatic Case study

Country	MPA	Legal Status	Estension	Management body	Establishment year
Italy	Tegnúe di Chioggia	Biological resources Protection Area	24 km^2	NGO "Tegnuè di Chioggia"	2002
	Tegnúe di Porto Falconera	Biological resources Protection Area	6 km^2	NGO "Gruppo sommozzatori Caorle"	2005
	Miramare	Marine Reserve	1,2 km^2	WWF Italy	1987
Slovenia	Debeli rtič (DR)	Nature Monumentum	0,24 km^2	Institute of the Republic of Slovenia for Nature Conservation, Regional Unit Piran	1991
	Cape Madona (CM)	Nature Reserve	0,13 km^2	Institute of the Republic of Slovenia for Nature Conservation, Regional Unit Piran	1990
	Strunjan	Nature reserve	0,9 km^2	Public Institute Landscape Park Strunjan	1990
Croatia	Brijuni	Natural Park	26 km^2	"Brijuni National Park" Public Institution	1983
	Cres-losinj	Special marine reserve	526 km^2	Blue world Institute	2006

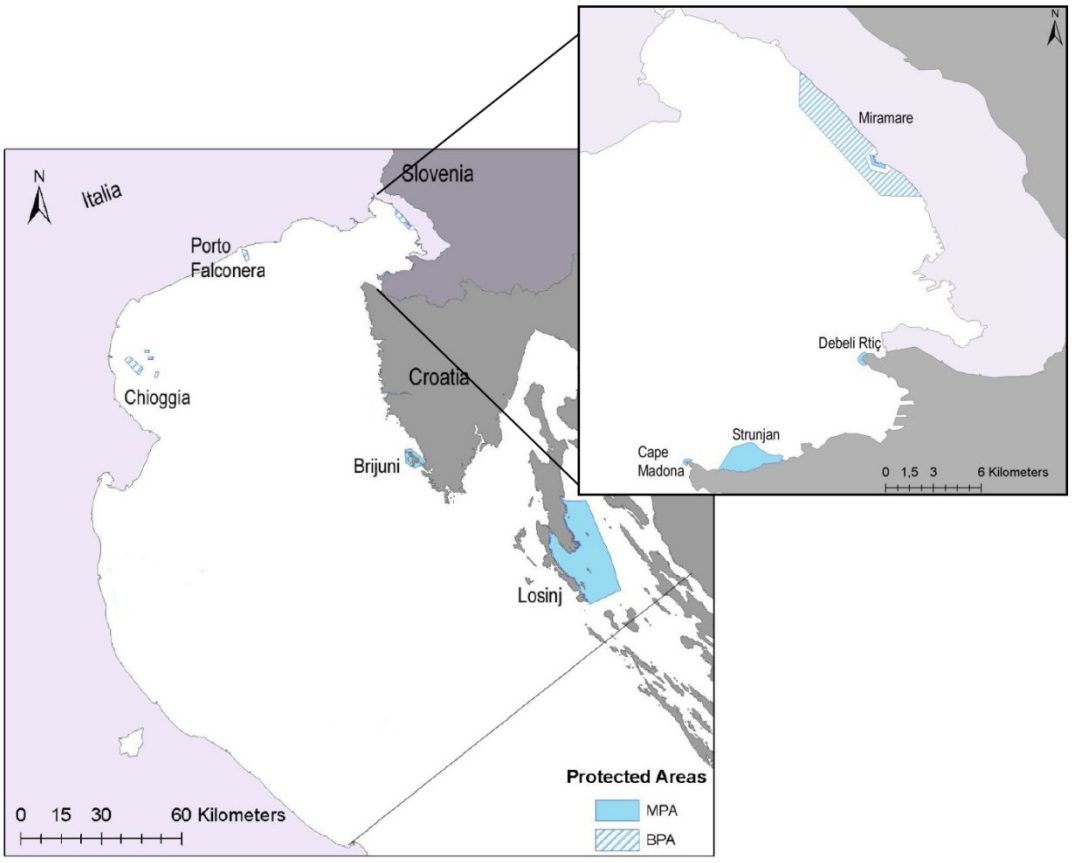

Figure 4 The selected 8 MPAs in the North Adriatic Case study

Beside MPAs, a number of other agencies, organizations, institutions are relevant in the designation, management, connectivity and governance of MPAs in the North Adriatic. Therefore, as it can be seen in Fig. 5, among the final set of considered stakeholders can be found MPAs managers, Environmental ministries, NGOs, European Union and UNEP MAP agencies. The final outset of the considered stakeholder was refined applying a snowball technique (Coyne, 1997; Reed, 2009) during the interviews process. In the final set of considered stakeholders only those that accepted to be interviewed are considered. Table 2 supply a brief description for each considered stakeholder and its relevance for MPAs.

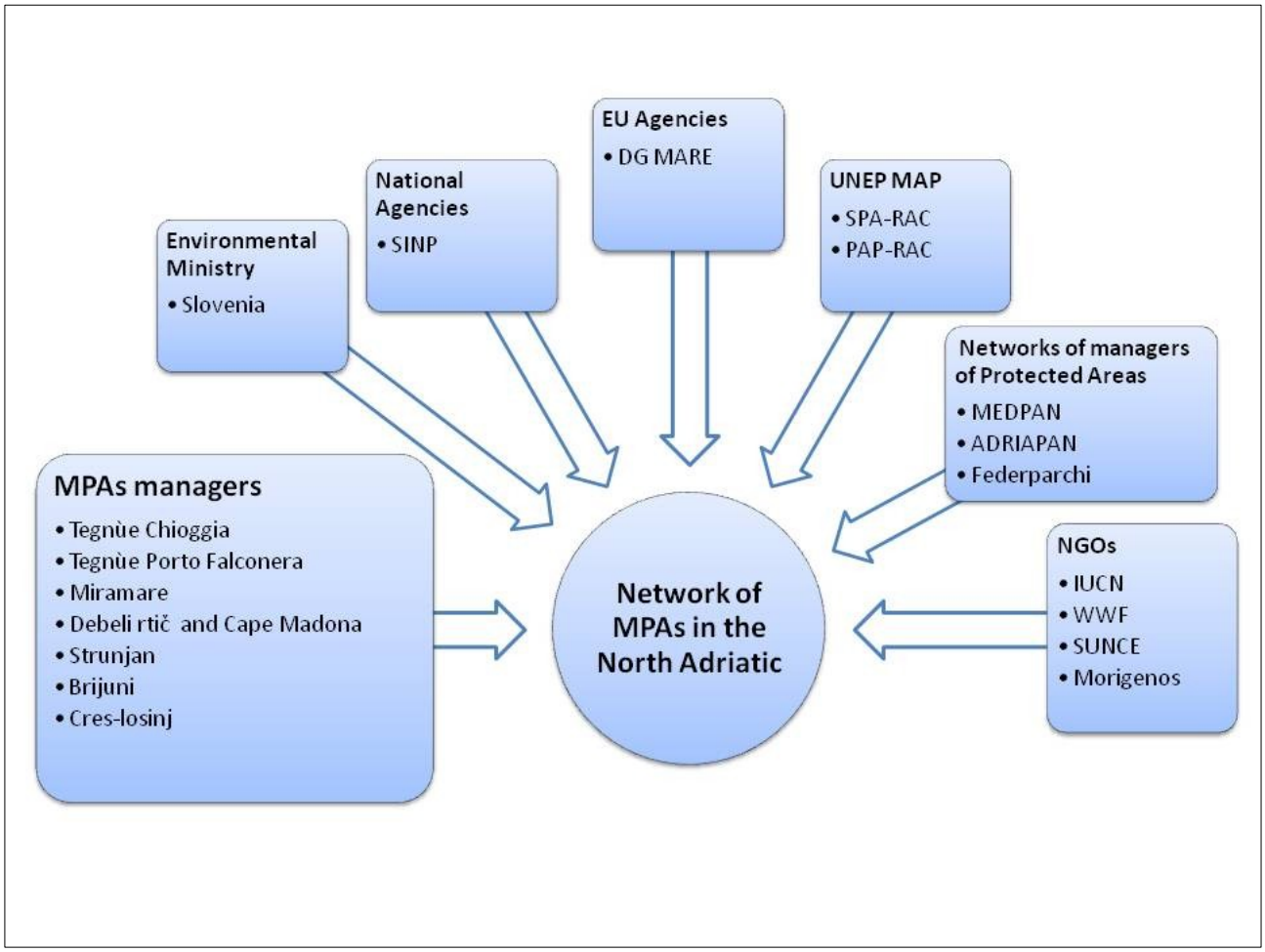

Figure 5 The stakeholders involved in the survey

Table 5 Description and role for MPAs management of the selected stakeholders for the North Adriatic Case Study

	Stakeholder	Description	Role in MPAs
1	**Tegnuè di Chioggia**	NGO aimed at promoting the research and the promotion of the the BPA of Tegnùe Chioggia	Management and organization of activities related to Chioggia BPA (up to January 2014)
2	**Gruppo sommozzatori Caorle (Caorle Diving group)**	NGO of divers for Caorle BPA	Management of Caorle BPA
3	**World Wildlife Found (WWF)- Italy**	Environmental Association	Management of Miramare MPA
4	**Institute of the Republic of Slovenia for Nature Conservation, Regional Unit Piran**	Professional national institute dealing with the conservation of nature. The Piran Regional Unit of the Institute covers the southwestern part of Slovenia.	Referring Institute for both Cape Madona and Debeli rtič (DR) MPAs
5	**Public Institute Landscape Park Strunjan**	Public institute composed by members from public authorities (Environmental, Agriculture ministry, regional and local authorities)	Management of Strunjan Landscape Park MPA
6	**"Brijuni National Park" Public Institution**	Public body	Management of activities in the Brijuni National Park MPA
7	**Blue World Institute of Marine Research and Conservation**	Croatian non-profit and non-governmental organisation with its headquarters on the island of Lošinj aimed at the research, education and conservation programmes in the field of marine biodiversity	Support for the permanent protection of the Lošinj MPA through support of the process of transparent public participation and establishment for the local protected area management institution.
8	**Ministry of Agriculture and Environment of Slovenia**	Ministry of Environment protection	Responsible for the designation of protected areas, according to the Nature Conservation Act
9	**State Institute for Nature Protection (SINP) of Croatia**	The central institute dealing with expert tasks of nature conservation in Croatia.	Management of protected areas and the use of natural resources

10	**Directorate-General for Maritime Affairs and Fisheries (DG MARE)**	The European Commission department responsible for the implementation of the Common Fisheries policy and of the Integrated Maritime Policy	The Integrated Maritime Policy promoted by DG MARE consider MPAs as a fundamental tool
11	**The Priority Actions Programme Regional Activity Centre (PAP-RAC)**	This UNEP MAP Agency is aimed at contributing to sustainable development of coastal zones and sustainable use of their natural resource and assist Mediterranean Countries in the application of the ICZM Protocol	ICZM protocol deals specifically with MPAs that should be planned and managed within a broader ICZM strategy.
12	**The Regional Activity Centre for Specially Protected Areas (RAC/SPA)**	This UNEP MAP Agency assists Mediterranean countries in implementing the Protocol concerning Specially Protected Areas and Biological Diversity in the Mediterranean.	The SPA/BD protocol is aimed at the establishment of Specially protected Areas of Mediterranean Importance (SPAMI); most of them are already areas recognized as MPAs. Others are Areas beyond National Jurisdiction (ABNJ)
13	**Adriapan - MedPan**	A bottom-up network of managers of MPAs and other associations and organization; it is part of MedPan, the Network of Managers of Marine Protected Areas in the Mediterranean.	AdriaPan is very active in the promotion of initiative regarding MPAs in the Adriatic Sea, involving mainly MPAs managers
14	**Italian Federation of Parks and Natural ReserveS (Federparchi)**	Association that joins over 160 bodies managing national and regional parks, marine protected areas, regional and state nature reserves, and consists of regional coordination offices	Federparchi covers an important role in the interaction among protected areas an national and international institutions
15	**The International Union for Conservation of Nature (IUCN)**	the world's oldest and largest global environmental organization	IUCN has developed a number of guidelines for the identification and management of MPAs
16	**WWF Mediterranean Programme (WWFMedPo)**	This WWF programme is meant to pursue the conservation and sustainable management of forest, marine and freshwater ecosystems in the Mediterranean.	Through projects like MedPan South, WWF MedPo has contributed to the building capacity of MPAs managers and to the strengthening of the network of MPAs

17	**SUNCE**	This Croatian association aims at the protection of nature and environment in Croatia.	SUNCE supports local parks including MPAs on activities like managing planning processes, habitat and species mapping and monitoring concrete actions for certain sites; socioeconomic studies, communication and awareness raising material. Their role is also to put political pressure for joint problems and issues.
18	**Slovenian Marine Mammal Society Morigenos**	It is an independent, scientific, non-profit, non-governmental organisation that combines scientific research, monitoring, education, public awareness, capacity building and management, to achieve effective conservation of the marine environment and biodiversity.	Morigenos is carrying out several projects in the field of scientific research, education, public awareness and conservation collaborating with several MPAs in the North Adriatic

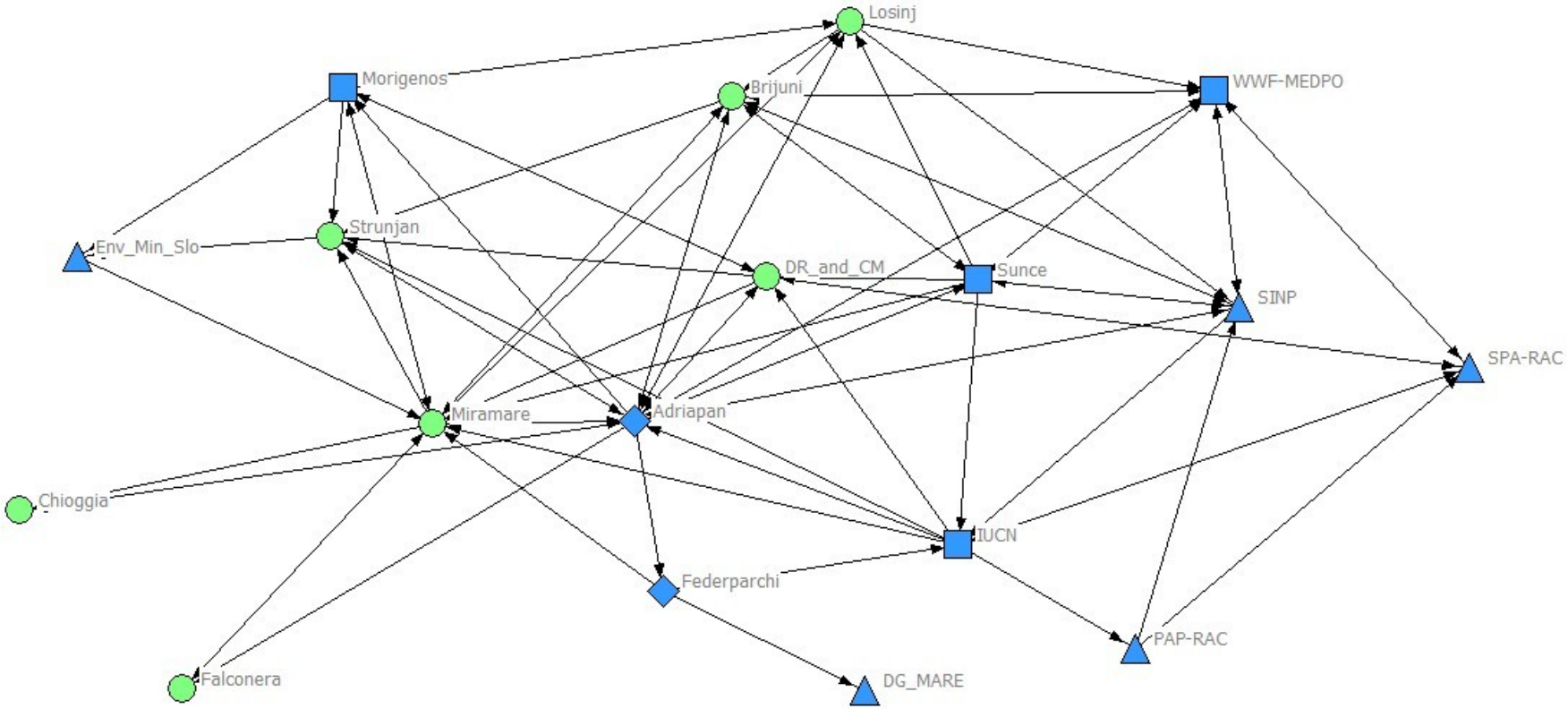

Figure 6 Communication network (edited with UCINET-NETDRAW).Green circle represent MPAs manager authorities while in blue all the other stakeholders: squares represent NGOs, triangles institutional agencies, rhombus networks)

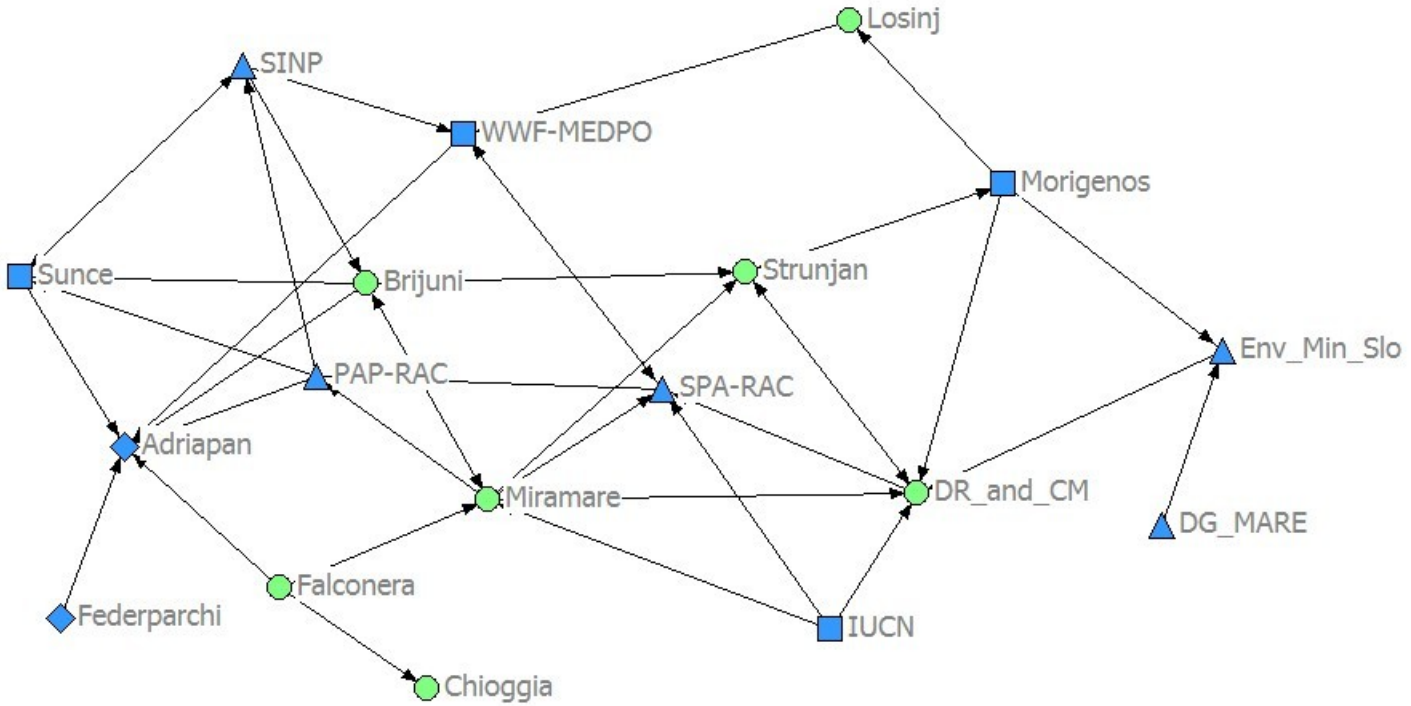

Figure 7 Collaboration flow among the Partners (edited with UCINET-NETDRAW). Green circle represent MPAs manager authorities while in blue all the other stakeholders: squares represent NGOs, triangles institutional agencies, rhombus networks)

As described in chapter 3, in the North Adriatic case study, all identified stakeholders were interviewed to gain specific information both about MPAs and the existing level of communication and collaboration among different actors. Since social networks are considered fundamental in the good functioning of a network of MPAs, by means of the Social Network Analysis (SNA) the information collected during the interviews were used as an input to create some networks maps (by running UCINET software) to understand communication and collaboration flows among the different actors. Stakeholders were asked to identified those agencies, associations or institutions they communicate with on issues related to MPAs: the answers were then used to create a social network map as reported in Fig. 6. As described in Chapter 3, in a SNA map (fig. 6 and 7), arrows represent the existing relation between couples of actors (represented by points). Arrows can me mono directional (actor A recognizes a relation with actor B, but B does not recognize the same relation) or bidirectional (actor A recognizes a relation with actor B and vice versa). The inflows and outflows arrows show how each stakeholders have been identified by another for what concerns communication. UCINET allows to carry out some statistics about the existing relationship among actors in order to identify characteristics as centrality (stakeholders that are more relevant in the communication process due to high contact numbers, position in the network etc.) and potential control over the communication and/or collaboration flow.

Communication is relevant to understand whether MPAs and other stakeholders concerned are used to be in contact among them, and if information can be easily shared and finally to identify if there are stakeholders more relevant than others for this purpose. Collaboration is intended as a relation that involves common projects or partnership in activities related to MPAs and/or coastal and marine resources conservation. It is relevant to better understand whether MPAs managers and other stakeholders are carrying out activities together as part of an active network involved in the protection of coastal and marine resources.

Comparing the two networks, namely Communication (Fig. 6) and Collaboration (Fig. 7), the former owns and higher density, with 75 ties while the latter has 39 ties.

In the Communication network some stakeholders are more relevant than others. Adriapan, owning 12 outflows (that means that Adriapan declared to be in contact with about 70% of the selected stakeholders) emerges to be the stakeholder with the highest “degree” value. Adriapan is indeed an association that put in contact several MPAs and other institutions and associations.

Following, SUNCE results as the second stakeholder in terms of communication relationships, established with both MPAs and other international institutions. For what concerns MPAs, Miramare results as the MPA with both an high inflow and outflow (respectively 9 and 7), followed by Brijuni (6 inflow and 6 outflows).

Another measure considered in the analysis is the *Betweenness centrality* that measures how much potential control an actor has over the flow of information. In this case, a very high *betweenness* (about 98) is a characteristic of Adriapan. This is the stakeholder that owns the highest value, followed by Miramare MPA (about 54).

A third measure that can help describing the presence of actors more linked in the network than others is *closeness*, that focuses on the distance between one node (actor) and the others in the network.

Also in this case, Adriapan is the actor showing the highest value (both for outflows and inflows) followed by SUNCE for the outflow and the MPA Miramare for the inflow.

Considering the Collaboration network, the situation is rather different. First of all, the collaboration level (the number of ties) is almost the half of the one related to communication (39 collaboration, 75 communication). Therefore collaboration emerge as a practice less rooted among stakeholders compared to the communication one. Among those stakeholders that declared to be collaborating with somebody, Miramare MPA and the NGO Morigenos resulted as those being collaborating the most among the members of the network. Adriapan followed by the referring authority for both Cape Madona and Debeli rtič (namely Institute of the Republic of Slovenia for Nature Conservation), are the two stakeholders recognized the most as collaborators by other partners. At least half of the collaboration flows declared by MPAs are with other MPAs. For what concerns collaboration, it is worth to focus on the situation regarding MPAs only. In the following Fig. 8 the collaboration flows among MPAs in the North Adriatic is described. Losinj MPA is currently not collaborating with any of the North Adriatic MPAs but as can be seen in the overall network (Fig. 7), it collaborates with WWF MedPo within a MedPan project.

The Slovenian MPAs managers (i.e. Strunjan and Cape Madona and Debeli rtič) show a reciprocal collaboration flow. Moreover they recognized each other as the stakeholder they collaborate the most with. The other MPAs specified to collaborate the most with environmental ministry (Miramare), local institutions (Falconera and Losinj), environmental agency (Chioggia) while Brijuni collaborates the most with the army (that has been historically present on the Brijuni island).

Chioggia MPA does not recognize any collaboration within the network even thought Falconera addresses Chioggia as a collaborating partner.

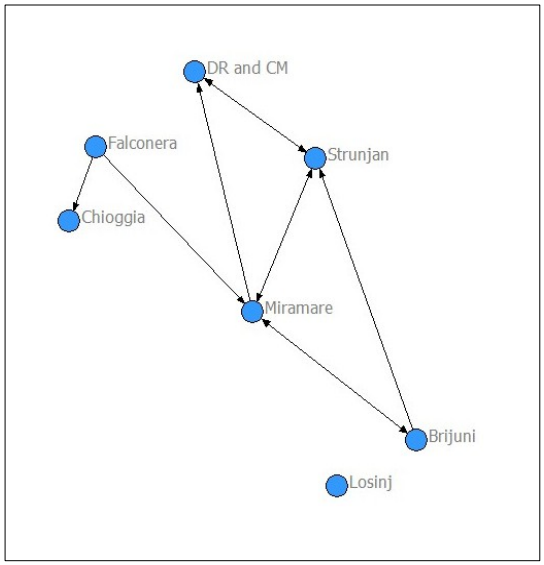

Figure 8 Collaboration network among MPAs in the North Adriatic Sea (edited with UCINET-NETDRAW)

4.3 The drivers

Recalling one of the main issue of this research, the policy change, we are interested to explore why the establishment of a network of MPAs in the North Adriatic is considered relevant by the 18 identified stakeholders. Therefore we are interested in exploring the drivers, in particular the interest in bringing about this change in the marine and coastal conservation strategy. As described in chapter 3, in order to analyze the results of the interviews, answers were categorized as reported in the bar charts below (from Fig. 9 to 12).

4.3.1 The interest

The 18 identified stakeholders all support the development of a network of MPA in the North Adriatic and they all have an interest in it. In order to understand which are the drivers that are underpinning the endorsement towards the establishment of a network of MPAs, some questions were specifically addressed about:

- The relevance of strengthening the relations among MPAs;
- the pitfalls in the current protection of natural resources in the North Adriatic;

- suggestions for the improvement of MPAs efficiency in the North Adriatic;
- the constraints that could slow down the process of establishing a transboundary network of MPAs.

The results of the content analysis (applying the methodology described in chapter 3) are shown in the bar charts in Fig. 9,10,11 and 12. Results let emerge that more than half of stakeholders mainly believe that strengthening MPAs relationship would be relevant for the protection of the ecosystem of the North Adriatic. A network could also better gain political power (for 7 stakeholders), in order to obtain in a more efficient way resources and attention. Finally a network of MPAs would also allow the exchange of expertises and good practices helping to get more easily funds through common projects. Therefore a network of MPAs should be improved both in an ecological sense and also in a social one.

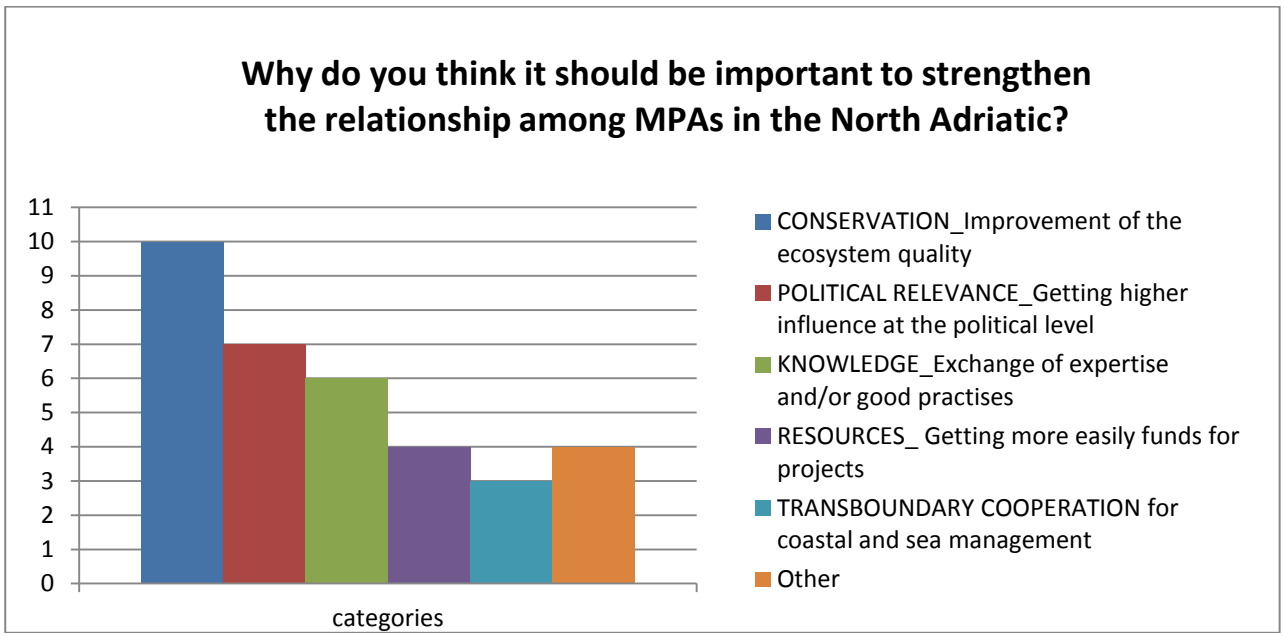

Figure 95 Bar chart representing the frequency of answer categories of MPA managers related to the importance of strengthening the relationship among MPAs in the North Adriatic

Figure 10 shows the results of the question about missing elements in the protection of natural resources in the North Adriatic.

According to 50% of the interviewed stakeholders, the a lack of political interest towards MPA issues represents the main pitfall in the protection of the North Adriatic coastal and marine resources. Indeed, it is worth to remind that Environmental ministries of Italy and Croatia decided not to take part to this survey. The lack of funding emerges as the second reason that is challenging not only the management of marine resources but the very MPAs daily activities. The

lack of Governance, intended as a poor communication and coordination among different management levels is also highlighted as relevant. Moreover, for 4 respondents, the number of MPAs is currently not enough to protect efficiently the natural resources in the considered basin.

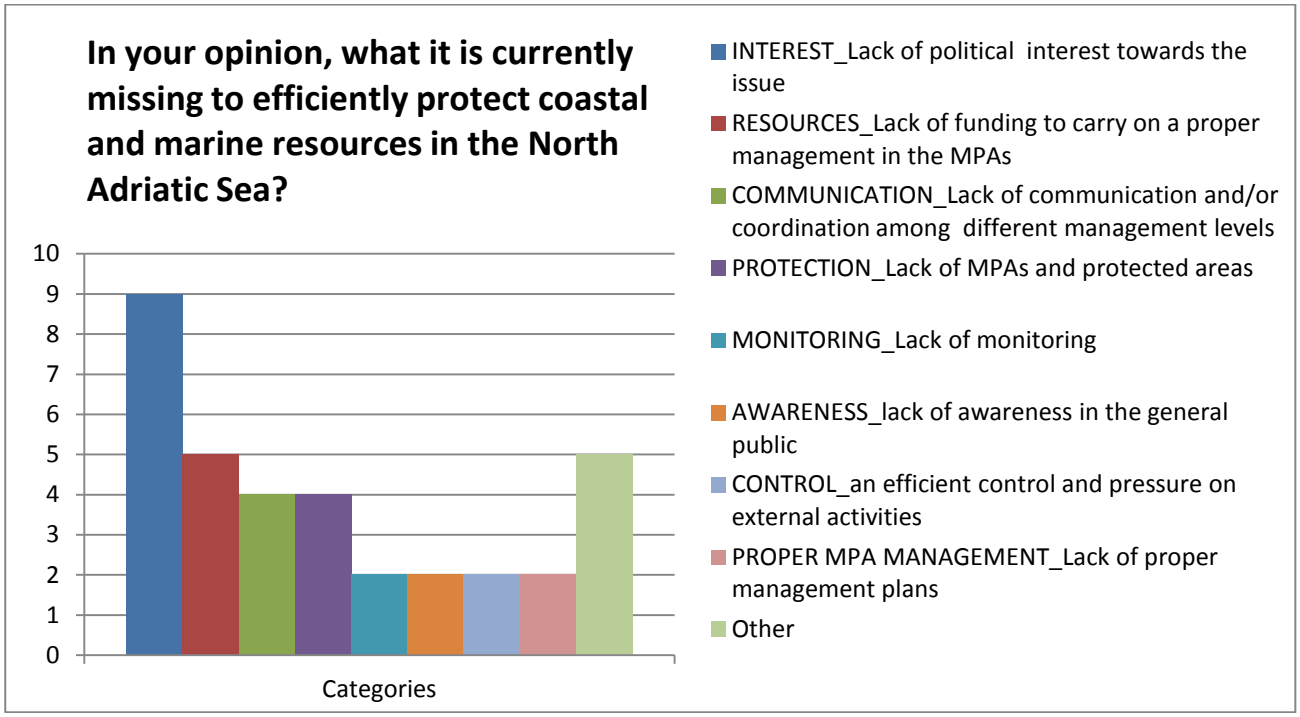

Figure 6 Bar chart representing the frequency of answer categories related to the shortcoming in protecting coastal and marine resources in the North Adriatic

Stakeholders had also the chance to suggest some solutions to improve the efficiency of MPAs in conserving marine and coastal resources in the North Adriatic (Fig. 11). MPAs should get ah higher influence at the political level that currently do not own. MPAs should collaborate more one with another and at the same time the governance side of the management should be improved: coordination should be enhanced among the different level of natural resources protection management. Another aspect to be improved is related to the involvement of other stakeholders whose activities are taking place outside the MPA. Finally isolation should be overcome collaborating with other economic sectors.

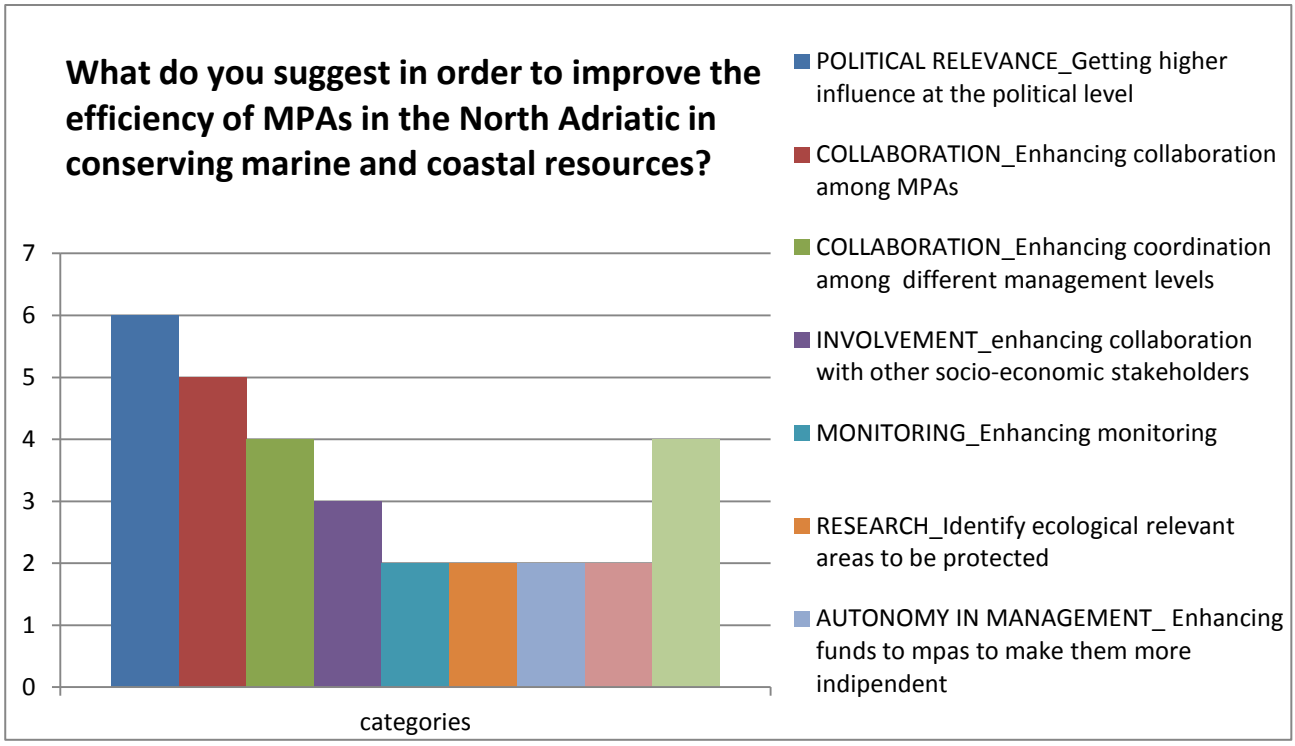

Figure 11 Bar chart representing the frequency of answer categories related to the suggested actions to improve the efficiency of MPAs in the North Adriatic in conserving marine and coastal resources.

Finally stakeholders were asked to present their opinions about the possible constraints that could slow down the establishment of a transboundary network of MPAs among Italy, Slovenia and Croatia (Fig. 12).

The lack of interest from national governments is considered the main obstacle to this process, together with the lack of funding. Pending conflicts related to maritime borders (Slovenia and Croatia for the Piran Bay unsolved issue of national maritime borders; Italia and Croatia for the lack of agreements about the establishment of an EEZ) are considered another relevant obstacle.

It is worth to underline that when asked about the possible constraints that could slow down the process of the establishment of a transboundary network of MPAs in the North Adriatic, the Italian MPA managers (Chioggia, Falconera and Miramare) all agreed in not envisioning any hindrance since the bottom-up process enhanced by the network of MPA managers in the Adriatic (i.e. AdriaPan) is perceived as already going towards this direction.

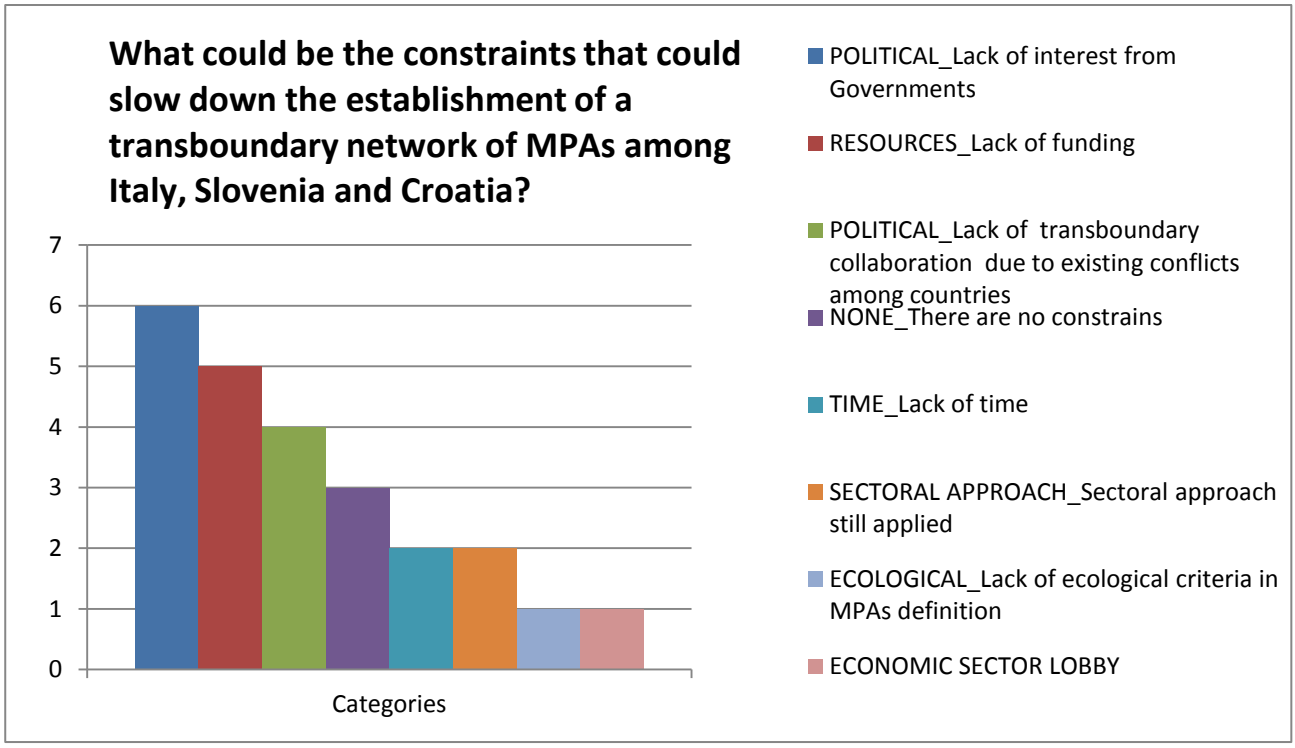

Figure 12 Bar chart representing the frequency of answer categories related to the perceived constraints in the establishment of a transboundary network of MPAs

The results described in this chapter together with other information gained during the interviews, will be employed in the next chapter in order to identify the figure of the policy entrepreneur in this ongoing process of policy change regarding the establishment of a Marine Protected Area network in the North Adriatic.

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Chapter 5 The role of the policy entrepreneurs in the policy change in the North Adriatic

This chapter deals with the analysis of the role of the Policy entrepreneur in the process of changing the policy regarding the establishment of a network of MPAs in the North Adriatic. The structure of the chapter is designed on the following research questions described in chapter 2 as reported in the following Table1.

Table 6 The Research questions applied to the Case study of North Adriatic

Research questions	
Overall question: **How policy entrepreneurs achieve policy change in the North Adriatic?**	
1	Where can policy entrepreneurs be found in the North Adriatic?
2	Which have been the strategies related to the choice of the venues made by policy entrepreneurs?
3	Which are the successful policy alternatives developed by the policy entrepreneurs?
4	Is the change lead by a bottom up or a top down process?

Therefore, based on the information collected by means of direct interviews and further documents (e.g. proceedings, meetings minutes, reports, scientific literature) this chapter aims at exploring the presence and the role of the policy entrepreneur, investigating the strategies applied and the change that he is bringing about. Finally the ongoing process will be described according to its of bottom-up and top-down components.

5.1. The policy entrepreneur in the process of establishing a network of MPAs in the North Adriatic

The analysis of a policy change process would usually require a time span of 10 years (Sabatier, 1993), while the North Adriatic represents instead a process at an early stage. However the information collected within the context of the case study allow to proceed with some consideration about policy change process and the policy entrepreneur.

As emerged from the scientific literature (Fouzai et al., 2012; Lotze, et al., 2011; Camuffo et al., 2010) and the results of the interviews (see chapter 4), in the North Adriatic a change is needed in

the policy regarding the conservation and preservation of coastal and marine resources. In particular, the enhancement of a network of MPAs in the basin is considered a possible solution to improve the current biodiversity preservation and to meet the 2020 Aichi CBD target.

In the North Adriatic, 18 stakeholders were identified including MPA managers, environmental ministries, UNEP map and governmental agencies, European directorates generals, NGOs. All of them are professionals with recognized expertise and competence in a particular domain concerning the field of MPAs and protection of coastal areas. They all form around consensual knowledge and share the same idea of promoting a network of Marine Protected Areas in the North Adriatic. Therefore, the identified network can be considered an **epistemic community** (Haas, 1992). Since individual policy entrepreneurs can be found anywhere - from government agencies to political parties, from NGOs to expert communities (Kingdon 1995) - this heterogeneous epistemic community composed by people motivated in bringing about this policy change is a suitable context wherein finding the figure of the policy entrepreneur. Indeed as reminded by Brower and Bermann (2011) entrepreneurs are primarily recognizable "by the actions they take, rather than by the positions they hold".
From the results of the interviews and other documents, it emerged that among the members of this epistemic community, there are a few having sufficient influence to bring at the political level the issue of marine protected areas and willing to spend time and resources for this objective can be considered as **policy entrepreneurs**.

From the analysis, in the context of marine protected areas, three persons resulted owning some of the characteristics of an **individual policy entrepreneurs**:

- Fabio Vallarola, the spokesman for Adriapan network: he is currently investing a lot of time and resources to enhance the network of MPAs managers and turn it into a body that has been officially recognized at international level in political venues (e.g. Adriatic Ionian Initiative); Vallarola is promoting Adriapan as a platform to develop projects, gain resources and share expertise.
- Mitja Bricelj: member of the Environmental Ministry of Slovenia, during the year wherein he was the chairman of the Trilateral Commission for the Adratic protection (2011) he tried to promote Integrated coastal zone management and the issue of marine protected areas. Unfortunately the work of the Trilateral Commission has slowed down in the following years due to the change of the Chairman country.

- Robert Turk: referring authority for Cape Madona and Debeli rtič MPA , he works for the National Institute for Nature Conservation in Piran, Slovenia where he organized a workshop in 2010 "Towards a representative network of marine protected areas in the Adriatic" where invited both MPAs managers, scientists, UNEP-MAP agencies, NGOs and politicians to discuss on the enhancement of MPAs network in the North Adriatic.

Even though all these 3 persons play a relevant role in promoting a policy change related to MPAs, Adriapan and its spokeperson Vallarola result as the subject that can be identified as a policy entrepreneur due to his good networking skills and perseverance (Meijerink and Huitema, 2009a).

5.2 The strategies adopted by the policy entrepreneur in the North Adriatic

The Adriapan Association, was initially set up in 2008 by two Italian MPAs, Miramare and Torre del Cerrano, and since then has been increasingly gaining members among MPAs managers, association, research institutions; currently the network counts about 40 members from all countries bordering the Adriatic Sea, and more than 30 associated organizations interested in collaborating on AdriaPAN initiatives[33].

The main objective of the network is to support of all MPAs managers and staff in the Adriatic, by providing a web-based tool for MPA managers to help them in improving management, enforcement, communication and planning activities. The network aims at sharing energies and knowledge to represent and promote the ecological, cultural and economic specificities of the Adriatic Sea through programs of international and regional cooperation for environmental protection, sustainable development, green tourism and biodiversity conservation.

[33] Adriapan website: http://www.adriapan.org/index.php/en/home-en/12-adriapan-network/8-adriapan-initiative (last access: 10.02.2014)

Figure 7 Adriapan members in 2013 (source: http://triviadicerrano.blogspot.it/2013/12/adriapan-in-lecce-16-12-2013.html)

The recognition of Adriapan at international level has grown a lot during the last years. In 2008 was recognized by IUCN, and it is currently considered a regional branch of the MEDPAN network.

In 2010 Adriapan was recognized by the Adriatic-Ionian Initiative (AII), the international organization coordinated by the Foreign Ministers of the Adriatic countries (Albania, Bosnia Herzegovina, Croatia, Greece, Italy, Montenegro, Serbia, Slovenia) for the constitution of a EU Adriatic Macroregion.

AdriaPAN is currently mentioned as a good practice, within the "EU Maritime Strategy for Adriatic and Ionian Seas" adopted by European Commission and officially presented to the EU Parliament and Council on November 30th, 2012 (COM 2012- 713 final).

Within this EU Strategy document, in the Second Pillar called "*Healthier Marine Environment*" [34] (concerning the conservation of biodiversity and against pollution of the sea), it is reported as follows: «*Concrete options to be considered could be exchanging best practices among managing authorities of Marine Protected Areas aiming to preserve biodiversity, building on the work of the Adriatic Protected Areas Network (AdriaPAN*)»

Interaction of ADRIAPAN with International and European agencies (e.g. DG MARE) has emerged to be easier that the one with national Environmental Ministries (interview with Fabio Vallarola, 27.02.2013). Croatian and Italian Environmental Ministries decided indeed not to take part to the survey on MPAs. Moreover, as also shown by the results of the analysis of the interviews in chapter 4, the lack of interests from the government of the MPA issue is considered a serious impediment in the development of the MPA network.

[34] Trivia del Cerrano blog: http://triviadicerrano.blogspot.it/2012/12/adriapan-in-eu-maritime-strategy-for.html (last access: 10.02.2014)

Based on the network of contacts and motiviated actors established and the capability to give relevance to the issue of MPAs in the North and the whole Adriatic, strategies applied by Vallarola as the spokeperson for Adriapan can be ascribable to "Networking and coalition building" and the "attention drawing on the idea". These to broader strategies make use of two well known strategies in the policy change process: the "window of opportunity" (Kingdon, 1995) and "Venue shopping". These strategies are described in the following paragraphs.

5.2.1 Window of opportunity

Windows are particular moments in time (e.g. election or disaster) that offer opportunities for policy entrepreneurs to launch and gain support for new policy proposals. Such windows, however, need to be recognized and exploited, a key challenge for policy entrepreneurs.

In the case of the Adriatic Sea, the window of opportunity were offered by two moments: the Aichi Target of the Convention on Biodiversity in 2010, and the development of the Marine Strategy for the Adriatic-Ionian Macroregion in 2012.

Attention on MPAs gained a momentum in 2010 thanks to the Aichi Targets of the Convention on Biodiversity in Nagoya related to the postponement from 2012 to 2020 of the target of protection up to 10% of marine and coastal areas. Since the Mediterranean and the Adriatic are really poor as regard marine and coastal protection, the network of MPAs was recalled as a fundamental way to achieve the CBD targets. This fact can be considered as the window of opportunity that was exploited by Adriapan: 2010 is indeed also the year in which Adriapan was officially recognised by the Adriatic&Ioninan Initative as a working body; in the same year visibility to Adriapan was given among scientist and other MPAs managers at the workshop organized in Piran "Towards a representative network of marine protected areas in the Adriatic". Since 2010, the number of MPAs members has doubled (from 21 to 40) and the network have functioned as a platform for the development of projects proposals.

5.2.2 Venue shopping

The capability of policy entrepreneurs to understand which venue (e.g. a particular workshop, congress, meeting) can better fit the objectives of the policy change process is expressed through the strategy called **Venue shopping.**

Fabio Vallarola (also with the support of Fabio Franzosini from Miramare MPA) within Adriapan, have tried to exploit venues for putting forward the MPA arguments.

The following have been the main venues where Adriapan had the chance to promote the MPA issue and to give visibility to its network.

MedPan Forum of Marine Protected Areas in the Mediterranean (25-28 November 2012)

In this meeting Mediterranean MPA community (attended by about 300 participants ranging from MPAs managers, NGOs, politicians, governmental institutions and agencies, private sector and civil society) reviewed the status of MPAs in the Mediterranean region and identified the actions needed to establish a well managed ecological network of MPAs. They elaborated a roadmap with the action in order to achieve by 2020, the objectives set by international commitments.

During this venue Fabio Vallarola within Adriapan had the opportunity to promote and share new proposals for projects involving stakeholders related to the Adriatic MPAs that were present and the Forum.

EU Strategy for Adriatic Ionian the region (EUSAIR)

Since 2012, attention have been brought from European Union to the Adriatic-Ionian region towards the elaboration of a new EU Strategy for the region (EUSAIR) before the end of 2014.

In the meanwhile DG Mare has developed the Marine strategy for the Adriatic Ionian region(COM(2012) 713) and adopted by the Commission on 30 November 2012 which constitutes one of the main component of this broader macro-regional strategy for the area, which will encompass also the territory beyond coastal areas. EUSAIR – like the Maritime Strategy – is addressed to 8 countries: 4 EU Member States (Croatia, Greece, Italy, Slovenia) and 4 non-EU countries (Albania, Bosnia and Herzegovina, Montenegro, Serbia).

In order to develop the aforementioned Marine Strategy, during 2012 4 stakeholders meetings were organized in Athens, Triest, Portoroz and Zagreb by DG MARE in collaboration with the Adriatric&Ionian Initiative. Adriapan managed to exploit the elaboration of this strategy and as previous reported it managed to gain visibility and further recognistion thanks to an explicit

reference to Adriapan in the final document adopted on December 3rd, 2012 by the European Commission. The document in the part dealing with the protection of the environment suggest to build on the work of Adriapan for what concern the exchange of best practices. Adriapan is still actively contributing to the elaboration of the broader Marine Strategy for the Adriatic Ionian region, participating as a speaker to meetings like the "Stakeholders seminar on boosting blue growth in the Adriatic and Ionian Region" organized by the European Commission in Brussels on November 14th , 2013. In that occasion the speech by Carlo Franzosini stressed the need of more marine protected areas in the Adriatic and more control on human activities[35].

5.3 A Bottom up process

Adriapan is a bottom-up network, developed following a network oriented approach. There are no pyramidal organization or authorities, but only a net of managers that avoid any hierarchical approach.

Scarcity of funds and human resources has emerged to be a common obstacle for many of the MPAs in the Adriatic. Therefore sharing knowledge, expertise and efforts to overcome the shortage of resources aims at producing common projects and proposals to exploit funding tools such as EU's instrument for grants on programmes like Interreg, IPA Adriatic, MED, Life+, South East Europe and others.

Currently 25 projects are now listed on the Adriapan website including proposals and those ones already accepted and financed. Among them in particular, the project proposal "1010by2020"[36] regards the development of a valorization and promotion program to reach the recognition by law of 10 MPAs already designate but still waiting for the foundation law. Among the proposed 10 MPAs, 2 of them fall within the Case study of the North Adriatic: Cres-Losijnji in Croatia (already considered as MPA in this work) and the North Adriatic area, referring to the SPAMI are proposed

[35] Minutes & Conclusions of Panel 3A Spatial planning and coastal zone management on boosting Blue growth in the Adriatic and Ionian region.
(http://www.amiando.com/eventResources/f/R/kaNp1cFQQBnXeH/Minutes_Panel_3A.pdf)

[36] 1010by2020 project factsheet:
http://www.adriapan.org/index.php?option=com_content&view=article&id=67&Itemid=157&jsmallfib=1&dir=JSROOT/0_AdriaPAN+Projects+Update&download_file=JSROOT/0_AdriaPAN+Projects+Update/1010by2020.pdf (last access 10.02.2014)

by the SPA/RAC. This project is particular relevant because it aims to support the MPAs designation process that generally relies at Ministry level in each North Adriatic country.

Therefore there is currently a process of development of a MPAs governance system that is trying to overcome not only the shortage of funds but also the lack of interest and management from at the national level. The increasing set of projects proposed by Adriapan and financed by European funds are therefore speeding up the process of the establishment of an ecological network of MPAs in the North and also in the whole Adriatic.

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6 The Wadden Sea CASE Study description

This chapter aims at describing the case study of the Wadden sea for what concerns the transboundary governance of its wetland areas.

In order to structure the description of all the aspects taken into account in this analysis, as already done in the North Adriatic Case (chapter 4), the Dore et al. (2012) analytical framework was adopted to structure the information collected.

As shown in Fig. 1 below The adapted Governance framework portrays the importance of, and connections between: context, arenas and drivers.

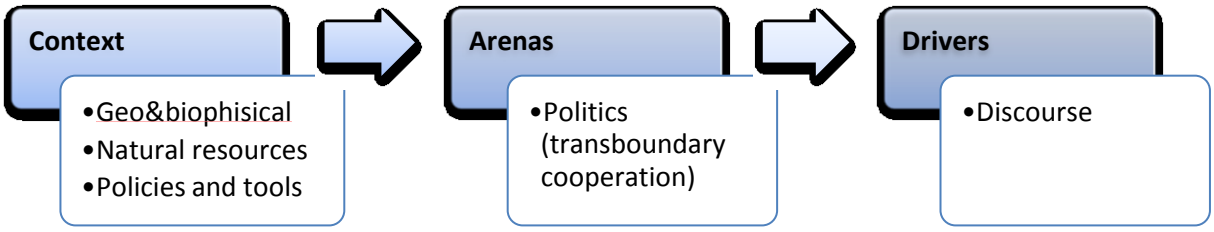

Figure 8 The Case study analytical framework

The **context** describes the natural and biophysical characteristics of the area, the coastal issues, the coastal and marine protection measures and policies and the relative tools adopted.

Arenas represents the context wherein *Actors* and *Politics* interact together.

Politics includes ''the whole area of power relations during the identification of a problem and possible solutions, the consultation and decision making processes that follow and further on into the public action phase'' (Dore, 2012)

In the Wadden case study, *politics* are intended as the transboundary experience of cooperation on coastal and marine areas protection.

Drivers are what influence and motivate actors: in particular, *discourse* represents the way people portray their personal way of reflecting the world, identities and social relations (Runhaar_2009).

Interests provide insight into needs, wants, desires, concerns, hopes, fears and values. All actors have a variety of interests which is what can make environmental governance so socially complex. Different interests manifest themselves within and between different categories of actors. Moreover interests are entwined and change through time.

In the Wadden Sea governance system, discourse emerge both from the analysis of the literature and of the interviews of key stakeholders.

6.1 The context: Wadden Sea characteristics and protection policies

In this section, the Wadden case study is described according to their main geographical characteristics, focusing on ecological aspects; moreover the protection policies and tools at national, European and international level are supplied.

6.1.1 Wadden Sea Biophysical characteristics and ecosystems

The Wadden Sea is an important tidal wetland, extending along the North Sea coast of the Netherlands, Germany and Denmark. It covers an area of almost 15,000 km^2 of which almost 12,000 km^2 constitute the trilateral Conservation Area of the national Wadden Sea nature reserves and national parks (Enemark_2005).

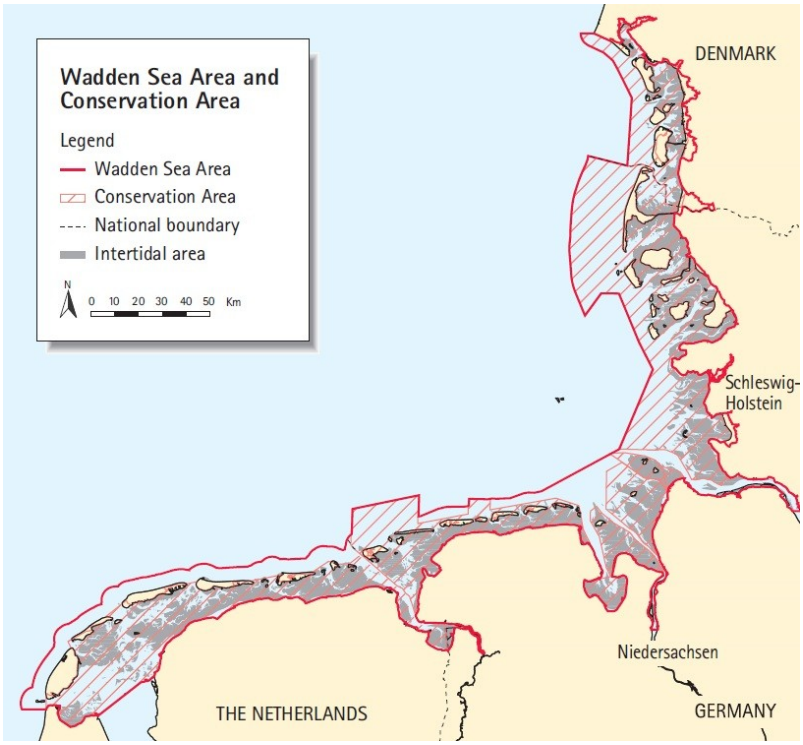

Figure 9 The Wadden Sea area and conservation area (source http://www.waddensea-secretariat.org/sites/default/files/images/cons_area_map.jpg)

The nature reserves and national parks that are currently guarantee the protection of the Wadden sea could be denominated as Marine Protected Areas due to the large extent marine areas covered; however there are no Marine Protected Area legal categories in any of the conservation laws of the three countries (Da Silva, 2012). Due to its protection regime, the Wadden Sea is the largest contiguous nature reserve of western Europe and the most extensive tidal area worldwide.

The Wadden Sea is composed by a network of islands, tidal channels, sandbars, and mudflats, constantly reshaped by tides and currents. The Wadden sea represent the world's most important waterbird habitat. The Wadden ecosystems hosts several benthic animals, ranging from cockles to

mussels. The area constitutes a fish nursery for several and the inter-tidal sandbanks are used by seals for resting and nursing[37].

6.1.2 Environmental policies and tools for the biodiversity protection of the sea and coastal areas at national level.

The Netherlands

In the Netherlands, since 1980 several policy documents are regulating the protection of the Dutch Wadden sea; the main pillars are constituted by the Key Planning Decision Wadden Sea Third Policy Document, a national physical planning decree defining the overall objectives of conservation, management and use of the Wadden sea (CWSS, 2008) and the Ecological Main structure, that set the basis for a coherent national ecological network of nature areas. These two documents represent the basis for legislation such as the 1988 Nature Conservation Act (relevant for Natura 2000 and State Nature Reserves in the Wadden Sea) and the Flora and Fauna Act.
Federal State, Provinces, Municipalities and several private nature organizations are in charge of the management and protection of the dutch Wadden Sea areas.

Germany

In Germany the Wadden sea is protected by each one of the coastal federal states, responsible for the implementation of the National Park laws. Every federal state along the North Sea coast has its own National Park, and its own legislation. The German Wadden Sea includes three national parks: the National Park Schleswig-Holsteinisches Wattenmeer, the National Park Hamburgisches Wattenmeer and the National Park Niedersächsisches Wattenmeer. These National Parks are divided into two or three zones, each with different degrees of protection[38].

Denmark

[37] Government of Netherlands website:
http://www.government.nl/issues/nature-biodiversity-and-rural-areas/nature
[38] Wadden Sea World Heritage (http://www.waddensea-worldheritage.org/wadden-sea-world-heritage/protection-and-management)

The Danish Wadden region includes the inhabited islands of Rømø, Mando and Fanø, the uninhabited island of Langli, the coastal regions of the mainland around the Ho Bugt with Skallingen and the region of Esbjerg down to the German-Danish border. In 2010, the Danish Wadden Sea including islands and adjacent marshes were designated as National Park Vadehavet[39].

6.1.3 Protection regimes of the Wadden

The Wadden Sea initiative has been supported by a variety of international and regional instruments. At regional level the Wadden sea is included by the OSPAR Convention and Helsinki Convention.

At European level, as the Netherlands, Germany and Denmark are part of the EU, the whole area is part of Natura 2000 Network (based on Birds Directive – Directive 79/409/EEC as amended by Directive 2009/147/EC and Habitats Directive – Council Directive 92/43/EEC) and European Union Common Fisheries Policy.

The Wadden Sea is not yet formally designated on the whole as a Transboundary Ramsar Site, however within its area there can be found 9 Ramsar sites among the Netherlands, Germany and Denmark.

Since 2009, the Wadden Sea (only Dutch and German areas) is included in the UNESCO's list of World Heritage sites. The status World Heritage does not change anything in the protection measures and it does not imply new regulations. This status represents a recognition of "years of efforts of many residents, organizations and governments in the region"[40].

The Wadden Sea was also recognized as a Particularly Sensitive Sea Area (PSSA) in 2002. A PSSA is "an area that needs special protection through action by IMO because of its significance for recognized ecological or socio-economic or scientific reasons and which may be vulnerable to damage by international maritime activities"[41].

Currently the protection of the Wadden Sea is granted by a national park in Denmark, four national parks in Germany and a strictly protected area in the Netherlands. Since the beginning of

[39] Ecomare website: http://www.ecomare.nl/en/encyclopedia/regions/wadden-sea-region/danish-wadden-region/
[40] Wadden Sea World Heritage (http://www.waddensea-worldheritage.org/wadden-sea-world-heritage/protection-and-management)
[41] IMO website visited 10.07.2013

the transboundary protection, the surface of the Wadden Sea under protection has risen from a few squared kilometers (less than 0.1%) in 1975 to about 8000 squared kilometers in 2010, representing over 95% of the Wadden sea (Wolff, 2013).

6.2 The Arenas

In this section, the transboundary experience of cooperation of the Wadden sea is presented describing the role of each actor of the governance platform.

6.2.1 Politics: Transboundary cooperation in the Wadden Sea.

Since 1978, the Wadden sea has been protected by a transboundary cooperation among the Netherlands, Germany and Denmark, aimed - as specified in the "Joint Declaration" of 1982 - "to achieve as far as possible, a natural and sustainable ecosystem in which natural processes proceed in an undisturbed way". Members of the three countries meet every four years to discuss the forming or upgrading of the protection policy for the Wadden Sea area.
In 1997 a first version of the Wadden Sea plan (WSP) was edited, then revised in 2010. The WSP regards the management of the whole area and includes measure, projects and action for the protection and safeguard of the Wadden Sea ecosystem.
The Wadden Sea is considered a successful example of trilateral institutional cooperation (Da_Silva_2012); more than three decades of cooperation lead to the development of an articulated governance platform (Fig. 3).
Within the Trilateral Wadden Sea Cooperation (TWSC), Decision-making is limited to two levels: The Trilateral Wadden Sea Governmental Council and the Wadden Sea Board (Common Wadden Sea Secretariat, 2010):

- The **Trilateral Wadden Sea Governmental Council** is the body politically responsible for the Cooperation. It approves the strategies for the area, it supplies political leadership and advises, assures international policy development, harmonisation and decision-making between the three national governments.

- The **Wadden Sea Board** is the governing body of the Cooperation. It is responsible for the preparation and implementation of the Strategy; it oversees the operational and advisory bodies, and secures relations with key stakeholders.

The two decision-making bodies are supported and advised by three types of operational and advisory bodies called “advisors”:

- **The Wadden Sea Forum**, a platform established in 2002 including stakeholder representatives of Agriculture, Energy, Fisheries, Industry and Harbor, Nature Protection and Tourism, as well as local and regional authorities from The Netherlands, Germany and Denmark;
- **The Task Groups**;
- **the Triennial conferences**.

Finally, the **Common Wadden Sea Secretariat (**CWSS) is the Secretariat for the Trilateral Cooperation. CWSS is responsible in supporting the Board and the Council, implementation of the CWSS Work Plan, support to scientific networks and projects, communications and financial management.

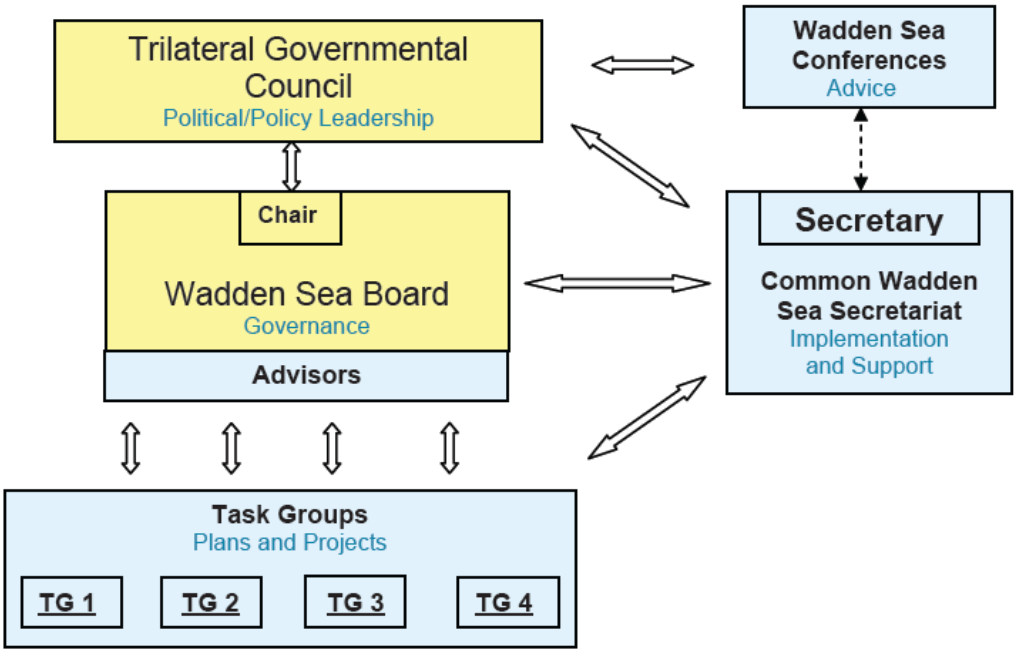

Figure 10 Organizational Structure of the Trilateral Wadden Sea Cooperation (Common Wadden Sea Secretariat, 2010)

6.3 The drivers

6.3.1 The discourse

The current policy of the Wadden Sea trilateral cooperation depicted within the Wadden Sea plan of 2010 is oriented towards an equilibrium between the protection and enhancement of the quality of the coastal area ecosystem and the development of economic activities like tourism and recreation, agriculture, industry, shipping and fisheries. However, the issue of human safety (that was the main discourse until the 70s of the last century) still remains crucial: as stated in the point n. 16 of the 2010 plan, a precondition of the implementation of the Wadden Sea plan is not to "affect the priority of coastal flood defense and protection and the safety of the local inhabitants against the sea".

During the three decades of the history of the transboundary cooperation in the management of the Wadden Sea, the main discourse concerning the wetland management has evolved according to the change of needs and drivers. 3 main discourse phases can be identified:

a) protection from the sea first (until the 70s);
b) protection of the environment first (until the first 2000s);
c) sustainable development (ongoing).

We are interested to better explore those moments corresponding to the policy change in the management of the Wadden Sea that lead from one phase to another. In particular we want to identify the policy entrepreneurs that brought about the policy change in the Wadden sea in the two main moments: from phase a) to b): From protection from the sea to protection of the environment; and from phase b) to c): from protection of the environment to a sustainable development. The two linkage phase are briefly described below.

From protection from the sea to protection of the environment

For several hundreds of years the management of the Wadden Sea have been based on reclamation and embankments in order to guarantee safety of the people and gain land for agriculture. However, since the end of the 60s of the 20th century, thanks to programs of coastal defense launched by Wadden sea national Governments - following the severe storm floods of 1953 (Dutch delta area) and 1962 (Hamburg)- people began to feel safe behind the dykes (Kabat,

2012). In the 1960s–1970s, new projects regarding large scale embankments, harbor and industrial developments, tourism and agriculture product discharges into the sea started to be perceived by the general public as significant impacts for the Wadden Sea ecosystem (Enemark, 2005; Smardon, 2009). Flora and fauna of the wetlands were showing a continuous decline. Harbour porpoises disappeared from the tidal channels, and the number of harbor seal showed a huge decline, only partly due to over-hunting. Discharge of chlorinated hydrocarbons from Rotterdam harbor were causing the death of coastal birds like spoonbill, herring gull , eider duck and sandwich tern (Wolff, 2013). At the same time, people living around the area of the Wadden sea started to discover the beauty and the conservation value of the areas.

This raising care towards the Wadden sea, lead to a growing opposition to the plans related to construction of dams that would have linked the island of Ameland with the mainland. This led - thanks also to a letter send to one of the main Dutch newspaper by a school-boy named Kees Wevers- to the setting of the Dutch Wadden Society (Waddenvereniging). In the same year, an international working group of concerned scientists, the "Wadden Sea Working Group" was established in order to inform the public about the unique value of the Wadden sea ecosystem. In order to do so they published a scientific overview of the geomorphology, hydrography and ecology in a series of 11 reports within the publication called "The ecology of the Wadden Sea" (Wolff, 1983). These scientists and environmental NGOs like the Wadden society and the WWF, strongly advocated a policy of protection and conservation for the Wadden sea ecosystem (Enermark_2005). The public discussion against the reclamation of the Wadden sea in the Netherlands, lead the Dutch Government to establish a Committee (called Committee Mazure after the name of its chairman) aimed at investigating the best options for the future of the Wadden Sea (Kabat, 2012).

The Mazure committee suggested to protect the Wadden Sea as a nature reserve or a National park instead of reclaiming it. (report Waddenzeecommissie, 1974).

The decision of the Mazure committee was accepted by the Dutch government through a document known as "Key Decision on Physical Planning" (PKB), which was accepted by Parliament in 1980. This document stated that the protection, the preservation and - where needed- the restoration of the Wadden Sea as a nature area should have been the target of the Dutch government policy (Kabat_2012).

As a consequence, in 1981 the most of the Dutch Wadden Sea was protected as "state nature reserves". Following the Netherlands Germany turned almost the entire Wadden Sea into a

national Park and in the same period the Danish government set some forms of protection of the Wadden.

In 1978, with the Trilateral Wadden Sea Governmental Conference, Denmark, Germany and the Netherlands started an international cooperation on the protection of the Wadden Sea that lead first to the joint declaration of 1982 and then to the establishment of a Common Wadden Sea Secretariat in 1987.

From protection of the environment to a sustainable development

In the 2000s the discourse in the Wadden Sea management shifted from nature protection towards a discourse where nature development could be compatible with the needs of a sustainable economic development (Runhaar et al., 2009; Reise, 2013).

In the 1990s there was a strong dispute concerning the impact of the gas mining and the cockle and mussel fisheries in the Wadden Sea. There was no certainty about the lack of risk linked to gas mining and about the local or regional gains related to extraction of the gas; moreover during those years, the dominant discourse was still "Hands off the Wadden Sea!" (Runharr,2009). As a consequence, all activities related to gas extraction in the Dutch sea were banned. On the contrary, other impacting activities like cockle and mussels fisheries - even when clearly responsible to food shortage and a consequent high mortality for birds- were still allowed during all 90s.

In 2000, Wouter van Dieren, member of the Club of Rome and director of the environmental research and consultancy company IMSA, started contesting these policy arrangement in the Wadden Sea. Van Dieren sought to oppose to the ban of the gas extraction and to the environmental policy situation in the Wadden Sea as depicted by Van Dieren own words:

""Hands off! Let nature have its own way". This mantra impeded scientific research and even resulted in a degradation of the ecosystem in the area. Together with politicians, scientists and various interest groups we concluded early 2003 that the image of the Wadden as an untouched nature area was not correct and that this image had resulted in deterioration instead of an enrichment of the Wadden nature. An intervention was needed, because the area should be managed. The issue thus was how we could break through this mantra" (Runharr,2009).

Van Dieren and IMSA advocated an alternative discourse promoting further gas mining in the Wadden Sea in order to use part of the benefits to restore the Wadden Sea ecology. Since 2002

he started to discuss with and involve several stakeholders and started mobilizing politicians in order to identify worries, ideas and solution related to the Wadden sea. The Dutch Petroleum Company (NAM) sponsored the project, with the broad aim of "analysing the societal dynamics related to the Wadden Sea issue, analyse the underlying scientific uncertainties, initiate further research and make everything publicly available and inform relevant actors" (Van der Linde, 2008).
In 2003 Van Dieren and IMSA published a report in order to advise decision makers to allow mining and use part of the revenues to create a Wadden fund to address main problems of the tidal area; to carry out a research about ecological impacts of cockle fisheries; finally to install a Commission to advise politicians on these issues. Eventually the advice was taken over and the Commission (named Meijer after its chairman) was installed in 2003 to advise on policies for gas mining, nature and shellfish fisheries in the Wadden Sea to guarantee a sustainable protection and development of the area (Runhaar et al., 2009).
The Advisory Group on Wadden Sea Policy (Meijer Committee) concluded that there were no ecological grounds against gas mining and advised the Government to apply the 'hand on the tap' method. This method allows monitoring in order to prevent irreversible effects to occur; for this reason the amount of gas exploitation per year is restricted.(Meijer et al., 2004).
This advice was taken up in the governmental decision in 2004 to allow gas exploitation. The dominant discourse was no longer "Hands off the Wadden Sea!" and replaced by "Human activities within ecological limits" (Runhaar, 2009), therefore adopting sustainable development principles.

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Chapter 7 The role of the policy entrepreneurs in the policy change in the Wadden Sea

In this chapter of the thesis we are going to investigate the role of policy entrepreneurs in two different policy change moments in the history of the Wadden sea. In particular as described in 6.3.1, two policy change moments are particular relevant in the history of how the Wadden sea has been conceived and management:

a) the shift from a protection from the sea to a protection of the environment management regime;

b) from protection of the environment to a sustainable development management regime.

Based on the literature, for each one of the policy change moments, potential policy entrepreneurs were identified. In order to investigate the strategies adopted by the identified policy entrepreneurs, 2 focus interviews were conducted. In the following paragraphs, the results of the analysis of the interviews together with the referring scientific literature will provide some consideration about each of the identified policy entrepreneurs and related strategies.

7.1. From protection from the sea to protection of the environment: the role of policy entrepreneurs

As emerged in chapter 6, in the shift from a policy oriented to the "protection from the sea" (until the beginning of the 70s) to one focusing on "the protection of the environment" (until the first years of 2000s), the Dutch Wadden Society, the Dutch WWF and the Scientific group "Wadden Sea working group" could be considered as groups of policy entrepreneurs:

The **Wadden Society** is an association funded in 1965 and since then has been promoting the optimal conservation of the natural and historical–cultural values of the Wadden area. Within the Wadden Society, several working groups are engaged according to their expertise in issues such as water, military use, recreation, industrialization, and management. The work of the organization is oriented towards providing information and advice, stimulating alternatives; and put pressure on policy makers. The society has about 60,000 members, 300 of them active (Smardon, 2009). Information are disseminated to members to a periodical called "Wadden Bulletin".

The **Wadden Sea working group** was originally born in 1965 as group of Dutch scientists who wanted a better protection of the Wadden Sea. Since the beginning of the 70s the group became international, involving German and Dutch scientists, including about 20 members (Wolff, 2013). The Group was then structured in subgroups in order to cover 11 different disciplines (e.g. Hydrography and Primary production).

The **Dutch World Wildlife Fund** (WWF) was established in 1962 with the name of Nature Emergency Fund. It is a national agency of the international NGO WWF working on issues regarding the conservation, research and restoration of the environment.

These 3 organisations could be considered the ones that have influenced the most the policy change according to Enemark (2005) due to their influence in shifting the policy agenda based on dams and embankments to an environmental conservation policy. Based on these premises, following the strategies applied buy these three policy entrepreneurs are described based both on scientific literature and the result of a focus interview with Hans Revier, spokesperson for the Wadden Sea Society.

7.1.2 The strategies applied by policy entrepreneurs

Window of opportunity

There was a moment, that can be considered as a window of opportunity, in which the attention towards Wadden sea raised in 1965, due to the intention of the Dutch government to apply the national plan regarding the reclamation of the Wadden Sea. Thanks to the growing attention towards the importance of the Wadden sea environment, and to a letter of a schoolboy asking for the preservation of the Wadden environment, on October, 17th 1965 the "Dutch society for the preservation of the Wadden Sea" was founded after a first meeting of 10 concerned people (Revier, interview 2013).

Another window of opportunity was offered by the changing in the political cabinet from the right to the left wing, with the socialist party at the government until the first half of the 70s. This lead to a higher attention on environmental issues at political level.

Coalition building

According to Revier (interview, 2013), the Wadden Sea society established some coalitions also with groups that were not primarily aiming at the protection of the natural resources in the Wadden Sea. These groups were represented by the tourism sector (that during the late 60s was starting to expand in the Wadden sea islands) and the Fishery sectors (especially the shellfish fishery) that would have suffered from the embankment of the Wadden sea.

Networking

According to the spokesperson of the Dutch Wadden Sea Hans Revier (interview, 2013), it emerged that a relevant new idea was brought by the Wadden society concerning networking. Indeed during the 60s the nature protection in the Netherlands was a matter of "buying areas". Nature Conservation organisations like "Nature Monumentum" and WWF used to buy land in order to preserve them as natural areas. The Wadden society promoted a new way of protecting natural areas by means of an awareness raising campaign on the importance and the value of the Wadden Sea; the mid 60s and 70s showed indeed a raising of public attention towards the environment and the protection of nature and the Wadden Sea started to be considered as a resource to be preserved (Wolff,2013; Floor, 2012). The Wadden Sea society, according to Revier was "the first nature protection organisation that lobbied politicians" and that happened before the emerging of the well known lobbying environmental organization such as Greenpeace (founded in 1971) and Friends of Earth (founded in 1969).

Thanks to awareness campaigns, mainly carried out by volunteers of the association under the slogan "to be proud of the Wadden Sea", the members of Wadden Sea raised up to 25000 in 2 years (Revier, interview 2013).

The link with the scientific community was also considered pivotal. There was a continuous exchange among the Wadden society and a group of scientists that gave birth to the "Scientific Wadden Sea Working Group" which had its first public meeting in 1965 (Wolff, 2013); the Wadden Sea Working Group started just from few Dutch scientists and by 1970 was already involving 20 scientists including Germany and Denmark.

The Wadden Society established also contacts with other organizations in Germany and Denmark that have been crucial in setting the basis for a trilateral collaboration at governmental level.

In Germany, awareness raising against the embankment of the tidal area was carried out by the the environmental organisation Schutzstation Wattenmeer and the World Wildlife Fund (WWF) for the Wadden Sea in the Schleswig-Holstein federal state.

In Denmark, a Danish Wadden Group (based on the Wadden Society from which they adopted also the logo) was officially established just in 1977; this group worked against reclamation plans and the increasing of facilities for water sports. Finally the Fishing Museum in Esbjerg has contributed to the awareness raising with a number of publications on the Danish Wadden (Smardon, 2009; Revier, interview 2013)

The Dutch WWF - that during the late 60s and early 70s was mainly acting as a fundraising association- was strictly collaborating with the Wadden society and contribute to the transboundary collaboration among national organization. In particular during 1970, the European Year for Nature, WWF organized a big fundraising campaign and addressed to the Wadden Society part of the fund in order to coordinate the establishment of an international cooperation among environmental organization in the 3 Wadden Sea countries (Revier, interview 2013).

7.2 From protection of the environment to a sustainable development.

In this section the moment related to the shift from a policy oriented to "environmental protection" to one oriented towards a "sustainable development" in the Wadden sea (as described in 6.3.1) will be analysed in order to identify the role and strategy of the policy entrepreneur. The policy process regards the strong dispute concerning the impact of the gas mining and the cockle and mussel fisheries in the Wadden sea area between the 90s and the first years of 2000s.

In this process, Van Dieren and the staff of the environmental research and consultancy company IMSA could be considered as successful entrepreneurs.

Thanks to recent literature (e.g. Floor, 2012; Runhaar, 2009; Runhaar et al., 2010;) and to the analysis of the interview with Tammo Oegema, principal and senior consultant of the IMSA, the strategies applied by the identified policy entrepreneur are described.

It is worth to note that also in this case, everything started after an article appeared on a Dutch newspaper, that in this case motivated Van Dieren to start a process of policy change (Oegema, interview 2013).

7.2.2 The strategies applied by policy entrepreneurs

Networking

In order to try to bring about a policy change concerning the banning of gas exploration in the Wadden sea, since 2002 Van Dieren, together with the staff of IMSA, contacted individual representatives from the main organisations involved in the tidal area, including governmental bodies, nature and environmental NGOs, gas mining companies and shellfish fishermen; with them started to discussed in informal meetings the situation in the Wadden Sea. The list of actors to be interviewed was first identified thanks to the personal network of Van Dieren and then refined through a snowball technique. For several years IMSA organized both individual informal meetings and also 7 meetings in which a selection of relevant actors were invited to discuss about new scientific insights regarding the ecology of the Wadden sea and related threats (Runhaar et. Al., 2010). By means of a model developed by IMSA, ecological risks identified in the Wadden Sea were ranked and results were presented during one of the meetings. The main threats for the Wadden sea emerged to be represented by cockle and mussel fisheries and only in a lower way by gas mining (Oegema, interview 2013).

Windows of opportunity

A window of opportunity that was exploited by IMSA, was offered by the exit at the end of the 1990s of some socialist party members of Parliament who were strongly opposing gas mining in the Wadden sea (Runhaar,2009).

Venue Shopping

IMSA chose to use a venue shopping strategy when interacting with politicians associated with the new cabinet parties and with the by then new chair of the Wadden Society, Henk Tameling, that was open to the new discourse (Runhaar et al., 2010). Van Dieren and IMSA created themselves venues, organizing several individual and group meetings and several conferences (Floor_2012).

Although this case of policy change regards the dutch Wadden sea only , the shift from a discourse related to “Hands off the Wadden sea!” to a sustainable development policy allowing monitored

human activities under the discourse “Hand on the tap”, has affected the whole management of the basin at international level. Following a decision by the 9th Governmental Conference of the Trilateral Wadden Sea Cooperation, in 2002 the Trilateral Wadden Sea Forum was established with the aim to enhance the sustainable development of the Wadden Sea area. Stakeholders from the sectors of nature, tourism, industry and harbour, energy, agriculture, fisheries and public authorities of the three participating countries (Denmark, the Netherlands, and Germany) are included. The Trilateral Wadden Sea Forum includes social, economic and ecological aspects in a sustainable development perspective.

Economic, social and environmental sector representatives meet in thematic work groups and the resulting issue recommendations are forwarded to the Trilateral Wadden Sea Cooperation and the trilateral intergovernmental conferences.

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8 Discussion and conclusions

This work was aimed at the analysis of two case studies of the North Adriatic and the Wadden Sea for what concerns the experience of transboundary governance for Marine Protected Areas (MPAs).

In particular, one of the objectives of this work was the identification and analysis of the figure of the policy entrepreneur and the strategies applied to bring about a policy change in the two case studies. Policy entrepreneurs are defined as those individuals or organisations that thanks to their perseverance, ingenuity, and willingness to spend time and resources for an idea, can help bringing about a policy change.

In the case study of the North Adriatic, the ongoing process related to the establishment of a transboundary network of MPAs was considered: a stakeholders analysis was carried out involving organizations, governmental agencies, and other actors considered relevant for the development of a transboundary network of MPAs. Social Network Analysis was applied in order to describe communication and collaboration flows both among MPA managers and all the considered stakeholders. All the 18 identified stakeholders were interviewed about issues regarding MPAs and the importance and the obstacles regarding the enhancement of the MPA network in the considered area. In the North Adriatic it emerges that marine and coastal resources conservation is considered not sufficient and there is a need of more MPAs managed at transboundary level. However a lack of interest at national governmental level is considered the main obstacle for the development of such a system of MPAs. Moreover MPAs should collaborate more in order to exchange good practices and expertise and gain more political power.

From the Social Network Analysis output, the Adriapan organization (a bottom-network of MPAs managers of the Adriatic) emerged as the most important stakeholder in terms of communication network and its capability of connecting other actors within the network. Thanks also to these characteristics, Adriapan and its spokesperson Fabio Vallarola were identified as a policy entrepreneur. By means of strategies like venue shopping and window of opportunity, Vallarola and Adriapan are enhancing their visibility at political level and increasing their network. Adriapan is currently representing a platform for the development of project proposals that through EU funds are aimed at the enhancement and promotion of the network of MPAs in the Adriatic.

Therefore, the bottom up process lead by Adriapan in the North as in the whole Adriatic, involving several stakeholders from Italy, Slovenia and Croatia emerged as an efficient way to overcome a deficit of marine and coastal conservations policies that should be instead established within a transboundary governance among the 3 countries. Thanks to the efforts made by Adriapan there is currently a process of development of a MPAs governance system that is trying to overcome not only the shortage of funds but also the lack of interest and management from at the national level. The increasing set of projects proposed by Adriapan and financed by European funds are therefore speeding up the process of the establishment of an ecological network of MPAs in the North and also in the whole Adriatic. Moreover the designation of the Adriatic-Ionian basin as a Macroregion, and the development of the Maritime Strategy by 2014 can represent a way to establish a cooperation also on marine and coastal resources conservation among riparian countries. The transboundary cooperation of HELCOM in the Baltic Sea represent in this case a successful example to take into account for the development of a network of MPAs both in national and international waters in coherence with Integrated Coastal Zone Management (ICZM) and Marine Spatial Planning (MSP) principles. Beyond the network of MPAs, other options can be considered in the Adriatic for the protection and conservation of marine and coastal resources: one of this is the establishment of an Ecologically or Biologically Significant marine Areas (EBSAs) a protection area regarding international waters in the Adriatic. This ambitious target that can be only reached through the cooperation of all Adriatic countries involved.

The second Case study taken into account was the Wadden Sea. The governance of Marine Protected areas at transboundary level of Trilateral Wadden Sea experience is considered one of the best practices worldwide. Cooperation among the 3 countries bordering this tidal area (namely The Netherlands, Germany and Denmark) started back in 1975. The history of the governance and the environmental policy related to the management of the Wadden sea have experienced different policy changes that lead the Wadden sea first under an environmental protection regime and then under the current state of a coexistence of natural protection and human uses. In this work we chose to explore two policy change moments: the first that set the basis to a transboundary protection of the Wadden sea avoiding its embankment during the late 60s of the last century; the second -started in the late 90s- related to the shift from a management dominated by the discourse "Hand off the Wadden Sea" to the current phase with the permission of human activities (like gas extraction) in the area under monitoring, expressed by the discourse "hand on the tap". In the Wadden sea, focus interviews and the existence of dedicated literature

on the issues, allowed the identification of the figures of the policy entrepreneur and related strategies in the two moments. In both cases actors outside the government brought about a policy change: in the first moment the Wadden Sea Society, born for the protection of the Wadden sea in 1965, had a fundamental role in raising awareness on the values to be protected in the Wadden sea, with the support of a group of scientists at international level and WWF. This process lead to the beginning of the safeguard of the tidal ecosystems.

The second moment considered in the history of the Wadden sea management regards the strong dispute concerning the impact of the gas mining and the one related to cockle and mussel fisheries in the tidal area at the beginning of 2000s. In this case the director and the staff of the environmental research and consultancy company IMSA brought about the process of policy change involving a network of relevant stakeholders in a series of meeting to discuss new scientific findings related to the Wadden sea. By means of this consultancy and participatory process, IMSA and its director Van Dieren, succeed in influencing the policy makers about the benefits of allowing gas mining in the area.

The two case studies considered, North Adriatic and the Wadden sea, both represent context where transboundary governance among three different countries is needed for the conservation of marine and coastal resources. However, the Wadden Sea owns almost 40 years of experience in the tranboundary management while the North Adriatic, despite some attempts of transboundary trilateral experience, is still at the early stage of a regime of collaboration among Adriatic and Ionian countries and currently is not regulated by any agreed plan. Several tools and strategies like ICZM plans and Marine Spatial Planning still need to be developed at national level.

The two considered case studies differ in the environmental context. The North Adriatic differs significantly from west to east: from the Italian sandy, flat and uniform coasts interrupted by lagoons, to the eastern part, with rocky steep coasts, channels, numerous small islands, promontories and bays. On the other hand, The Wadden Sea is composed by an homogeneuous tidal area made by a network of islands, tidal channels, sandbars, and mudflats, constantly reshaped by tides and currents. Therefore the transboundary collaboration in the Wadden Sea has been favored by the similar conditions and needs also of local economic sectors like fishery and tourism.

The experience of the Wadden sea has shown how a process of stakeholder involvement, networking and research has lead to the assessment of environmental risks related to the

activities in the tidal area and therefore to the permission of carrying out gas exploitations. In the Adriatic sea on the other hand, the economic crisis has pushed Adriatic countries to open for exploitation of gas and oil in the basin. In 2014 Croatia opened tenders for gas and oil exploration in its territorial water. The rising conflicts among different sectors for the economic use and exploitation of the Adriatic resources are therefore urgently calling for the development of Marine Spatial Planning and Integrated Coastal Zone Management plans.

Moreover this work has shown how the policy change theory can be applied also in such different governance contexts, like the Wadden sea and the North Adriatic. The short time span considered for the Adriatic (less than 5 years) and the poor literature on this topic in this context has not impeded the recognition of the policy entrepreneur and his strategies. However for what concern the discourse, this has not been possible to define in the North Adriatic due to lack of maturity of the process and poor literature on the topic.

Attachment 1: Questions for the North Adriatic stakeholders

DATE: PLACE:

INTERVIEWEE:

1	Who do you communicate with about MPAs issues?
2	Which are the most relevant issues treated?
3	Which are the public bodies and other organization you collaborate the most with on MPAs issues? (These could be MPAs, ministries, administrative bodies or NGOs)
4	Who is the public body or other kind of organization you collaborate the most with?
5	List the projects or meetings about MPAs in which your office took part in the last 5 years
6	Why do you think it should be important to strengthen the relationship among MPAs in the North Adriatic?
7	In your opinion, what it is currently missing to efficiently protect coastal and marine resources in the North Adriatic Sea?
8	What do you suggest in order to improve the efficiency of MPAs in the North Adriatic in conserving the marine and coastal resources?
9	What could be the constraints that could slow down the establishment of a transboundary network of MPAs among Italy, Slovenia and Croatia?
10	Do you know the Integrated Coastal Zone Management? (from 1 to 5, where 1 is “not at all” and 5 is “a lot”)
11	How do you think Integrated Coastal Management can improve the efficiency of Marine Protected Areas?