



## Adaptation in international and European legislation

### WP 1.2.

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## ABBREVIATIONS

BLG	Biodiversity Liaison Group
CBD	Convention on Biological Diversity
CIS	Common Implementation Strategy
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CMS	Convention on the Conservation of Migratory Species of Wild Animals
CZM	Coastal Zone Management
EC	European Commission
EIA	Environmental Impact Assessment
EQR	Ecological Quality Ratio
FRMP	Flood Risk Management Maps
GeNS	good environmental status
GES	good ecological status
GIG	Geographical Intercalibration Groups
ICES	International Council for the Exploration of the Sea
ICZM	Integrated Coastal Zone Management
JLG	Joint Liaison Group
IMCAM	Integrated Marine and Coastal Area Management
MA	Millennium Ecosystem Assessment
MSD	Marine Strategy Framework Directive
OJ	Official Journal
OECD	Organisation of Economic Cooperation and Development
REFCOND	Reference conditions and ecological status class boundaries for inland surface waters
SIDS	Small Island Developing States

UNCCD	UN Convention to Combat Desertification
WFD	Water Framework Directive
WHC	Convention concerning the protection of the World Cultural and Natural Heritage
WP	Work Package

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# 1 Introduction

This report forms part of Work package 1.2. and deals with adaptation in international and European legal instruments.

Adaptation measures in the coastal zone, such as building coastal defences should ideally be part of an integrated coastal zone management (ICZM), aimed at the development of a sustainable coast. Within those adaptation measures issues such as safety, nature protection and economic activities should be integrated. Ecosystems and biodiversity provide important functions and services, e.g. as natural defence against flooding. Using those natural systems as part of your adaptation strategy is cost-efficient (as was shown in the recent report TEEB<sup>1</sup>). Losing biodiversity and ecosystem services on the other hand increase the negative effects of climate change. The protection and strengthening of those ecosystem functions is an important element in adapting to climate change.

International policy stresses the importance of an ecosystem-based adaptation. "Ecosystem-based adaptation, which integrates the use of biodiversity and ecosystem services into an overall adaptation strategy, can be cost-effective and generate social, economic and cultural co-benefits and contribute to the conservation of biodiversity"<sup>2</sup>. Measures to increase the adaptive capacity of species and ecosystems in the face of accelerating climate change include for instance strengthening of protected area networks. Ecosystem-based adaptation uses biodiversity and ecosystem services in an overall adaptation strategy. It includes the sustainable management, conservation and restoration of ecosystems to provide services that help people adapt to the adverse effects of climate change. Examples of ecosystem-based adaptation activities include coastal defence through the maintenance and/or restoration of coastal wetlands to reduce coastal flooding and coastal erosion<sup>3</sup>. The relation between climate change adaptation and biodiversity conservation has been further worked out, e.g. in COP decisions in the framework of the Convention on Biodiversity (see further).

Also within the policy of the European Union an ecosystem-based adaptation is advocated. In the White Paper on adaptation<sup>4</sup> the Commission points out the need for increasing the resilience of biodiversity, ecosystems and water. Ecosystem services such as flood protection and protection against soil erosion are directly linked to climate change and healthy ecosystems are an essential defence against some its most extreme impacts. A comprehensive and integrated approach towards the maintenance and enhancement of ecosystems and the goods and services they provide is needed. A number of existing EU policies contribute to adaptation efforts. In particular, the Water Framework Directive establishes a legal framework to protect and restore clean water across Europe by 2015 and to ensure the long-term sustainable use of water. Climate change must also be properly integrated in the implementation of the Floods Directive. Regarding habitats, the impact of climate change must also be factored into

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<sup>1</sup> The Economics of Ecosystems & Biodiversity (TEEB), TEEB Climate Issues Update, September 2009.

<sup>2</sup> <http://www.cbd.int/climate/intro.shtml>.

<sup>3</sup> <http://www.cbd.int/climate/intro.shtml>.

<sup>4</sup> European Commission, *White Paper, Adapting to climate change: Towards a European framework for action*, COM(2009) 147 final, 1 April 2009.

the management of Natura 2000 to ensure the diversity of and connectivity between natural areas and to allow for species migration and survival when climate conditions change. In future it may be necessary to consider establishing a permeable landscape in order to enhance the interconnectivity of natural areas. Both the EU and Member States should explore the possibilities to improve policies and develop measures which address biodiversity loss and climate change in an integrated manner to fully exploit co-benefits and avoid ecosystem feedbacks that accelerate global warming<sup>5</sup>.

The European Commission's Communication on Biodiversity – halting the decline of biodiversity in the EU by 2010,<sup>6</sup> including the EU Action Plan to 2010 and Beyond, contains a specific objective to support biodiversity adaptation to climate change. Adaptation requires, in particular, securing the coherence of the network of protected areas: by 2010 the coherence, connectivity and resilience of Natura 2000 and non-Natura 2000 protected areas must be strengthened, in order to maintain favourable conservation status of species and habitats in the face of climate change, by applying tools which may include flyways, buffer zones, corridors and stepping stones, as well as actions in support of biodiversity in the wider environment (Action A.9.4.2., Technical annex to the Communication)<sup>7</sup>. Care must also be taken to prevent, minimise and offset any potential damage to biodiversity arising from climate change adaptation and mitigation measures (Target A.9.3., Technical annex to the Communication). The new Biodiversity Strategy of the Commission of 2011<sup>8</sup> however does not address the issue of adaptation to climate change explicitly.

Specifically on the resilience of coastal and marine areas, the White Paper on adaptation stresses that climate change must be properly integrated in the implementation of the Marine Strategy Framework Directive which requires the achievement of good environmental status of the EU's marine waters by 2020. Full implementation of this Directive will help increase resilience in the marine environment and facilitate adaptation efforts. A more coherent and integrated approach to maritime and coastal planning and management is also necessary. The Integrated Maritime Policy will provide a comprehensive framework to integrate adaptation efforts coherently into sectoral and specific policies and measures. Efforts must be stepped up to ensure that the provisions in the Integrated Coastal Zone Management (ICZM) Recommendation are fully respected and strengthened. The follow-up to the Roadmap for Maritime Spatial Planning should incorporate adaptation to climate change in maritime and coastal management. Climate change is also an additional pressure on European fisheries and should be taken into account with a view to ensuring long-term sustainability in the future reformed Common Fisheries Policy<sup>9</sup>.

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<sup>5</sup> European Commission, *White Paper, Adapting to climate change: Towards a European framework for action*, COM(2009) 147 final, 1 April 2009, 3.2.3.

<sup>6</sup> Communication from the Commission, *Halting the loss of biodiversity by 2010 – and beyond – Sustaining ecosystem services for human well-being*, COM(2006) 0216, 22 May 2006.

<sup>7</sup> Annex 1, EU Action Plan to 2010 and beyond, Annex to the Communication from the Commission, *Halting the loss of biodiversity by 2010 – and beyond – Sustaining ecosystem services for human well-being*, COM(2006) 0216, 22 May 2006.

<sup>8</sup> Communication from the Commission to the European Parliament, the Council, the Economic and Social Committee and the Committee of the regions, *Our life insurance, our natural capital: an EU biodiversity strategy to 2020*, COM(2011) 244 final, 3 May 2011.

<sup>9</sup> European Commission, *White Paper, Adapting to climate change: Towards a European framework for action*, COM(2009) 147 final, 1 April 2009, 3.2.4.



The idea of an ecosystem-based approach for adaptation was further worked out in a discussion paper “Working with nature” from the EU Ad Hoc Expert Working Group on Biodiversity and Climate Change<sup>10</sup>.

Although the international and European policies on adaptation promote an ecosystem-based approach to adaptation, as well as integrating adaptation into other sectors, it is not clear if legislation also sustains this approach. In this report a number of international and European instruments will be examined to see if they allow for an ecosystem-based adaptation. Also some possible legal uncertainties will be examined. The analysis of the European legislation will be more extensive. Each instrument will be examined according to the same structure:

#### 1. Objectives

2. Are there explicit provisions on adaptation to climate change? Are there indirect (no explicit) possibilities for enabling adaptation to climate change?

3. Are there any problems in the legislation that could hamper adaptation to climate change or are there uncertainties in the current legislation?

This report is a second report under Work package 1.2. dealing with institutional and legal issues on adaptation. A first report deals with the institutional complexities (competences amongst different governmental organs). This report will focus more on the legal complexities from an international and European perspective.

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<sup>10</sup> EU Ad Hoc Expert Working Group on Biodiversity and Climate Change, Towards a Strategy on Climate Change, Ecosystem Services and Biodiversity.

## 2 International conventions on nature conservation

### 2.1 Biodiversity Convention

#### 2.1.1 Objectives

The objectives of the Convention on Biodiversity (CBD)<sup>11</sup> are the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of the utilization of genetic resources, including by appropriate access to genetic resources and by appropriate transfer of relevant technologies, taking into account all rights over those resources and to technologies, and by appropriate funding (art. 1, CBD).

#### 2.1.2 Adaptation in the convention

Even though there is no explicit reference to climate change or adaptation to climate change within the Convention on Biological Diversity itself, the CBD Secretariat made various efforts to link the goal of the Convention to protect biodiversity with the combat against climate change.<sup>12</sup>

#### 2.1.3 Analysis

##### 2.1.3.1 Jakarta Mandate on Marine and Coastal Biodiversity

Due to the raising threats against marine and coastal biodiversity e.g. overexploitation, pollution, habitat destruction, climate change and alien species, and the lack of a specific elaborate programme, the 'Jakarta Mandate on Marine and Coastal Biodiversity' was adopted in 1998 during the 4th Conference of the Parties (COP 4) to the Convention of Biological Diversity (CBD).<sup>13</sup> It proposed a multi-year programme of work for its parties and set basic principles for handling marine and coastal biodiversity namely:

- The ecosystem approach, i.e. "a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way".<sup>14</sup> The Jakarta Mandate especially addresses the integration of the marine protected areas and the consideration of adverse effects of external activities.
- The precautionary approach i.e. "*In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of*

<sup>11</sup> Convention on Biological Diversity of 5 June 1992 in Rio de Janeiro, Belgian Law Gazette 02/04/1997.

<sup>12</sup> D. R. Hodas, "Biodiversity and Climate Change Laws: A Failure to Communicate?", Presented at 3d Colloquium of IUCN Academy of Environmental Law at Macquari University, 10-15 July 2005, Sydney, Australia.

<sup>13</sup> CBD COP 4, Decision IV/5, Conservation and sustainable use of marine and coastal biological diversity, including a programme of work: Annex Jakarta Mandate on Marine and Coastal Biodiversity, 1992. <http://www.cbd.int/decision/cop/?id=7128> (online, 10/05/2010).

<sup>14</sup> <http://www.cbd.int/ecosystem/> (online, 10/05/2010).

*full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation*".<sup>15</sup> The explicit incorporation of this approach when addressing all activities affecting marine and coastal diversity already set in Decision II/10 of COP 2 is confirmed in the Jakarta Mandate.<sup>16</sup> It also mentioned the relevance of the precautionary principle in other international agreements such as the UN Agreement on Straddling Fish Stocks and Highly Migratory Fish Stocks and the OSPAR Convention.

- The importance of science is also stipulated as a basic principle, given the understanding of the natural factors outside human influence and the influence of human interference on ecosystems is essential for the development of an effective regulation for marine and coastal biodiversity. In addition, regional scientific organizations should be developed after the example of the International Council for the Exploration of the Sea (ICES) and special efforts are asked for in specific projects like the Global Taxonomy Initiative.
- The roster of experts on marine and coastal biological diversity, invited for their specific expertise, should be used in a comprehensive, efficient, effective and transparent manner.
- The importance of the involvement of local stakeholders and indigenous communities already cited in the Convention on Biological Diversity (CBD) is reaffirmed in the Jakarta Mandate.<sup>17</sup> The involvement holds the use of traditional knowledge e.g. scientific, technological and technical, as well as community and user-based approaches.
- The Jakarta Mandate further focalizes on the use of various levels of implementation e.g. the local and national, regional and global level. As set in article 6 of the respective Convention, the Parties should work out national strategies, plans and programmes, taking into account the cross-sectoral implications. Regional integration is suggested to be established through the development and use of regional organizations and a constant information flow between the economic sectors. The Secretariat of the CBD functions as an overall coordination centre on the global level between the Convention and other relevant bodies, listed inexhaustively in Decision II/10 of COP 2.<sup>18</sup>

Besides these aforementioned principles, the Jakarta Mandate also indicates five main programme elements which are essential for adequately regulating the conservation and sustainable use of marine and coastal biodiversity.

First, Integrated Marine and Coastal Area Management (IMCAM) should be implemented by the Parties which from an environmental point of view, implies the

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<sup>15</sup> Principle 15, General Assembly United Nations, Declaration on Environment and Development (UNCED) of 12 August 1992 in Rio de Janeiro. <http://www.un.org/documents/ga/conf151/aconf15126-1annex1.htm> (online, 11/05/2010).

<sup>16</sup> CBD COP 2, Decision II/10, Conservation and Sustainable use of Marine and Coastal Biological Diversity: Annex II: Draft Programme for further work on marine and coastal biological diversity, 1995. <http://www.cbd.int/decision/cop/?id=7083> (online, 11/05/2010).

<sup>17</sup> Article 8(j), Convention on Biological Diversity of 5 June 1992 in Rio de Janeiro, B.S. 02/04/1997.

<sup>18</sup> Par. 13, COP 2, Decision II/10 Conservation and Sustainable Use of Marine and Coastal Biological Diversity, 1995.

integration of biological diversity concerns in all socio-economic sectors adversely impacting the marine and coastal environment. Second, the ecosystem approach should be employed concerning marine and coastal living resources. The approach is externalized through on the one hand the identification of the components of biological diversity, their sustainable use and ecosystem impacts and on the other the free information distribution between and to the Parties. Third, the use of marine and coastal protected areas should be properly implemented. Criteria for the designation of marine and coastal protected areas should be developed in order to uniformize the practice. Next research of these marine areas should be promoted as it grades up our understanding of the marine environment. Fourth, in relation to mariculture the focus should be on its implications towards the marine and coastal biological diversity. Techniques that have a minimized impact on the marine environment need to be promoted; consequently the available information on these different techniques should be made available. Fifth, a better understanding of the occurrence of alien species and genotypes and its impacts should be generated. On the basis of the obtained knowledge the lacunas in the legal framework can be identified with special attention for its cross-border nature. Subsequent an 'incident list' listing case-studies, should be developed.<sup>19</sup>

The Millennium Ecosystem Assessment (MA), established in 2000, also corroborates climate change as one of the drivers of ecosystem change. It further states that ecosystem change also rises due to human actions. Consequently adaptation based on the ecosystem principle is necessary.<sup>20</sup> At the CBD COP 5 in 2000 ecosystem based adaptation was repeated with regards to the climate change impacts on coral reefs and forest ecosystems.<sup>21</sup>

### **2.1.3.2 Technical Series N° 10: Interlinkages between biodiversity and climate change**

In 2003 an Ad Hoc Technical Expert Group (AHTEG) specifically developed for this purpose, published a report on the interlinkages between biological diversity and climate change. As an introduction the report first reiterates the earlier determined findings. As the impacts of climate change on biodiversity differ on the basis of time and space, logically the adaptation approach is also developed at the local/national level. A higher genetic diversity within a species increases their long-term persistence; consequently the respective species have a higher adaptive capacity. Nevertheless globally the ecosystems provide four main services with a significant economic value to their local communities: 1) supporting services i.e. services that maintain the conditions for life on Earth such as soil formation and nutrient cycling; 2) regulating services like water purification and pollination; 3) provisioning services including fuel wood and

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<sup>19</sup> CBD COP 4, Decision IV/5, Conservation and sustainable use of marine and coastal biological diversity, including a programme of work: Annex Jakarta Mandate on Marine and Coastal Biodiversity, 1992; I. B. Pranoto, Z. Arifin, "The Jakarta Mandate of the Convention on Biological Diversity and its implementation for the East Asian Seas Region", Presented at the International Symposium on Protection and Management of Coastal Marine Ecosystem, 12-13 December 2000, Bangkok, Thailand.

<sup>20</sup> <http://www.millenniumassessment.org/en/> (online, 11/05/2010).

<sup>21</sup> CBD COP 5, Decision V/3, Progress Report on the implementation of the Programme of Work on Marine and Coastal Biological Diversity (implementation of decision IV/5), 2000; CBD COP 5, Decision V/4, Progress Report on the implementation of the Programme of Work for forest biological diversity, 2000.

genetic resources; 4) cultural services i.e. services that provide non-material benefits like recreation and religious values.<sup>22</sup>

The following findings are made with regard to the impacts of climate change on biological diversity:

- *“Climate range of many species will move poleward or upward in elevation from their current locations;*
- *Many species that are already vulnerable are likely to extinct;*
- *Changes in frequency, intensity, extent and locations of (non) climatically induced disturbance will affect how and in what rate the existing ecosystem will be replaced by new plant and animal assemblages;*
- *Some ecosystems are particularly vulnerable to Climate Change;*
- *Net primary productivity of many species will increase due to the elevated concentrations of atmospheric carbon dioxide, however, there may be losses in net ecosystem and biome productivity;*
- *The livelihood of many indigenous and local communities in particular, will be adversely affected.*<sup>23</sup>

As the IPCC defines adaptation as ‘adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities’, not only awareness and understanding of potential impacts and available strategies is needed but also the capacity to implement effective options.<sup>24</sup> The AHTEG emphasizes that conservation of biological diversity and maintenance of ecosystem structure are significant climate change adaptation strategies. Specifically for coastal and marine ecosystems an integrated approach to fisheries management taking into account both ecological and socio-economic issues, is presented as an adaptation strategy. The use of sustainable practices in aquaculture and fisheries, and adjustments to the externalization of marine protected areas can improve the ecosystems’ resilience towards climate change, such as the creation of biological corridors between protected areas and the provision of all habitat requirements of all the species present in the protected area.<sup>25</sup>

The linkages between climate change and biological diversity offer the opportunity to develop and use policy options that have a double benefit, on the one hand adapting to climate change and the other the conservation of biodiversity, such as climate change-

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<sup>22</sup> AHTEG on Biological Diversity and Climate Change, CBD Technical Series N° 10, *“Interlinkages between biological diversity and climate change: advice on the integration of biodiversity considerations into the implementation of the United Nations Framework Convention on Climate Change and its Kyoto Protocol”*, UNEP-CBD, October 2003, p. 1-2.

<sup>23</sup> AHTEG on Biological Diversity and Climate Change, CBD Technical Series N° 10, *“Interlinkages between biological diversity and climate change: advice on the integration of biodiversity considerations into the implementation of the United Nations Framework Convention on Climate Change and its Kyoto Protocol”*, UNEP-CBD, October 2003, p. 2-3, 30-46.

<sup>24</sup> IPCC, *Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change: summary for policymakers*, 2007, Cambridge University Press.

<sup>25</sup> AHTEG on Biological Diversity and Climate Change, CBD Technical Series N° 10, *“Interlinkages between biological diversity and climate change: advice on the integration of biodiversity considerations into the implementation of the United Nations Framework Convention on Climate Change and its Kyoto Protocol”*, UNEP-CBD, October 2003, p. 79-81.

integrated conservation strategies (CCS).<sup>26</sup> In order to guarantee a long-term success of the respective policy, the decision making processes should be transparent and from the beginning all relevant stakeholders and the indigenous community should be involved. In addition a set of minimum common international environmental and social standards should be developed in order to more adequately evaluating and monitoring climate change adaptation projects and their overall policy framework.

These suggestions are infused by the underestimation of the value of the ecosystems' ecological services and the need for an internationally coordinated and integrated approach which would function as guidance for others.<sup>27</sup>

Both the Environmental Impact Assessment (EIA – on the project level) and the Strategic Environmental Assessment (SEA – on the (national) policy level) are put forward as useful tools for adaptation as these assessments combine environmental aspects with socio-economic aspects.

*“The common steps of a Strategic Environmental Assessment are:*

- *Select and define issue;*
- *Screening;*
- *Scoping;*
- *Setting objectives and developing options;*
- *Baseline survey;*
- *Option analysis;*
- *Evaluating impacts;*
- *Deciding the policy;*
- *Implementation;*
- *Monitoring and review.*<sup>28</sup>

*“The common steps of an Environmental Impact Assessment are:*

- *Developing the project concept;*
- *Screening;*
- *Scoping;*
- *Information Gathering;*
- *Prediction of impacts;*
- *Mitigation measures and management plan;*
- *Monitoring and auditing.*<sup>29</sup>

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<sup>26</sup> L. Hannah, G. F. Midgley, T. Lovejoy et. al., “Conservation of Biodiversity in a Changing Climate”, *Conservation Biology*, V 16 (1), February 2002, p. 264-268.

<sup>27</sup> AHTEG on Biological Diversity and Climate Change, CBD Technical Series N° 10, “*Interlinkages between biological diversity and climate change: advice on the integration of biodiversity considerations into the implementation of the United Nations Framework Convention on Climate Change and its Kyoto Protocol*”, UNEP-CBD, October 2003, p. 88-90.

<sup>28</sup> AHTEG on Biological Diversity and Climate Change, CBD Technical Series N° 10, “*Interlinkages between biological diversity and climate change: advice on the integration of biodiversity considerations into the implementation of the United Nations Framework Convention on Climate Change and its Kyoto Protocol*”, UNEP-CBD, October 2003, p. 95.

<sup>29</sup> AHTEG on Biological Diversity and Climate Change, CBD Technical Series N° 10, “*Interlinkages between biological diversity and climate change: advice on the integration of biodiversity considerations*

The EIA is used and put forward by various international agencies and institutions. The Convention on Biological Diversity requests the use of EIA explicitly and in its Decision VI/7 of COP 6 it included 'Guidelines for incorporating biodiversity-related issues into environmental impact assessment legislation and/or process and in strategic environmental assessment'.<sup>30</sup>

With regards to climate change, although UNEP warrants environmental and socio-economical assessments in its own processes, no explicit reference to EIA can be found in the United Nations Framework for Climate Change Convention (UNFCCC) or the Kyoto Protocol (KP). Despite the aforementioned, most Parties to CBD/UNFCCC agreed to the use of EIAs through the Safeguard Policies of the World Bank.<sup>31</sup>

Past experiences clarify that the lack of a legal framework for EIA reduces its effectiveness and that the EIA on its own is insufficient to assess cumulative effects of multiple projects due to its single project basis. Therefore, the CBD SBSTTA needs to develop a list of negative activities which should be subject to an EIA.<sup>32</sup> The additional use of tools like the Strategic Environmental Assessment and the ecosystem approach would warrant the assessment on degree of integration.<sup>33</sup>

In 2003 at COP 7 the linkage between climate change and biodiversity was further highlighted and the programme of work set specifically for the marine and coastal biological diversity was reviewed.<sup>34</sup> Beside the prolongation of the time period to 2016, the particular importance of action taking for Small Island Developing States (SIDS) was underlined. Marine and coastal protected areas were not established on a fast enough rate due to difficulties when handling the habitat coverage in relation to management and size of the respective protected areas. The Party concerned should distinguish two types of marine and coastal protected areas, those where extractive uses are excluded and those where extractive uses are allowed under conditions.

In order to guide the CBD Parties in their future work, key features for adequate management of the marine and coastal protected areas were listed:

- *Effective governance;*

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*into the implementation of the United Nations Framework Convention on Climate Change and its Kyoto Protocol*", UNEP-CBD, October 2003, p. 91.

<sup>30</sup> Art. 14, Convention on Biological Diversity of 5 June 1992 in Rio de Janeiro, B.S. 02/04/1997; CBD COP 7, Decision VI/7, Identification, monitoring, indicators and assessments: Annex 'Guidelines for incorporating biodiversity-related issues into environmental impact assessment legislation and/or process and in strategic environmental assessment', 2002.

<sup>31</sup> World Bank, Safeguard Policies: Operational Policy (OP) 4.01 – Environmental Assessment, January 1999 (updated in March 2007); World Bank, Safeguard Policies: Bank Procedures (BP) 4.01 – Environmental Assessment, January 1999 (Updated in March 2007).

<sup>32</sup> F. Jacquemont, A. Caparrós, "The Convention on Biological Diversity and the Climate Change Convention 10 Years after Rio: Towards a Synergy of the Two Regimes?", Blackwell Publishers, *Reciel*, 11(2), 2002.

<sup>33</sup> AHTEG on Biological Diversity and Climate Change, CBD Technical Series N° 10, "Interlinkages between biological diversity and climate change: advice on the integration of biodiversity considerations into the implementation of the United Nations Framework Convention on Climate Change and its Kyoto Protocol", UNEP-CBD, October 2003, p. 90-95.

<sup>34</sup> CBD COP 7, Decision VII/5, Marine and Coastal Biological Diversity: Review of the Programme of Work on marine and coastal biodiversity, 2003; CBD COP 7, Decision VII/15, Biodiversity and Climate Change, 2003.

- *Clear national and customary framework to prevent damaging activities;*
- *Effective compliance and enforcement;*
- *Strategic planning;*
- *Capacity building;*
- *Sustainable financing.*<sup>35</sup>

### **2.1.3.3 Technical Series N° 25: Guidance for promoting synergy**

In addition to the establishment of the Joint Liaison Group (JLG) in 2001,<sup>36</sup> the AHTEG on Biodiversity and Adaptation to Climate Change published a second report as guidance for the synergy activities. It was accompanied by Decision VIII/30 of COP 8 that also stated the importance of an analogous report by another Ad Hoc Working Group.<sup>37</sup> Even though the environment adapts autonomously to various circumstances, e.g. resilience, resistance, inertia, sensitivity and vulnerability, it is still insufficient to adequately adapt to climate change. Consequently planned adaptation is urged for.

To guide the Parties, an indicative list of adaptation activities, their potential risks and impacts with regard to biodiversity and the possibility for adaptative management was given, specifically for each category of biodiversity.<sup>38</sup> Next, the complementarity and overlap in provisions was assessed of a selected group of multinational environmental agreements (MEAs).<sup>39</sup> The report ends by giving an example framework for adaptation integrating biodiversity issues based on the risk management approach, combined with a list of available tools for adaptation. These approaches and tools can be either top-down meaning scenario-driven or bottom-up which is vulnerability-driven.

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<sup>35</sup> CBD COP 7, Decision VII/5, Marine and Coastal Biological Diversity: Review of the Programme of Work on marine and coastal biodiversity, 2003.

<sup>36</sup> "An informal forum between the three Rio Conventions for exchanging information, exploring opportunities for synergistic activities and increasing coordination", <http://www.cbd.int/cooperation/liaison.shtml> (online, 17 May 2010).

<sup>37</sup> CBD COP 8, Decision VIII/30, Biodiversity and Climate Change: Guidance to promote synergy among activities for biodiversity conservation, mitigating or adapting to climate change and combating land degradation, 2006; CBD AHOWG on Review of Implementation of the Convention, UNEP/CBD/WGRI/1/7/Add. 1, Options for enhanced Cooperation among the three Rio Conventions: Note by the Executive Secretary, September 2005.

<sup>38</sup> AHTEG on Biodiversity and adaptation to Climate Change, CBD Technical Series n° 25, "Guidance for promoting synergy among activities addressing biological diversity, desertification, land degradation and Climate Change", UNEP-CBD, May 2006, p.10-11.

<sup>39</sup> UNFCCC, UNCCD, CBD, the Convention on Wetlands, Ramsar Convention and CMS. AHTEG on Biodiversity and adaptation to Climate Change, CBD Technical Series n° 25, "Guidance for promoting synergy among activities addressing biological diversity, desertification, land degradation and Climate Change", UNEP-CBD, May 2006, p.23-28.



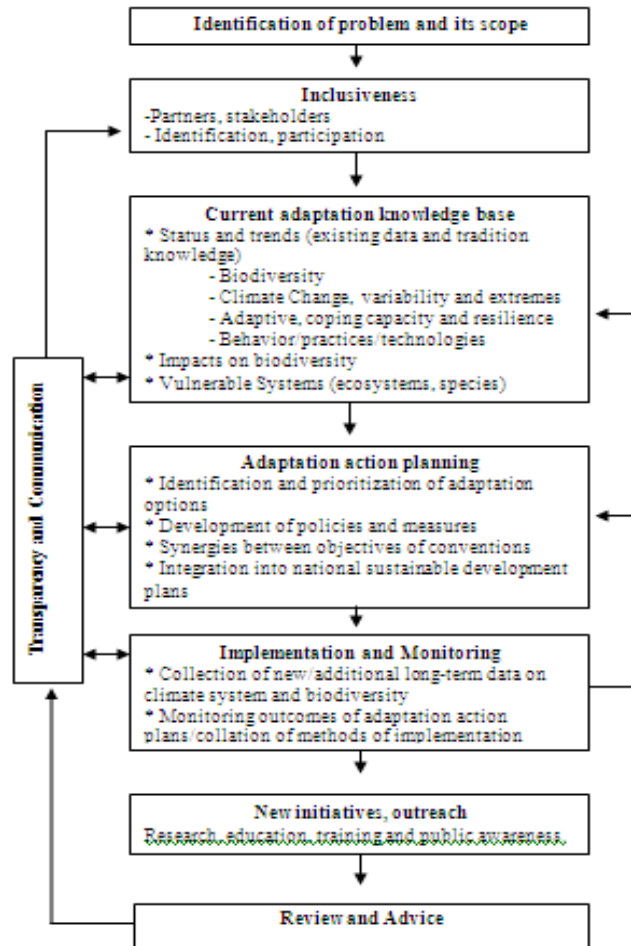


Figure 1 A framework for adaptation integrating biodiversity concerns

**Source:** AHTEG on Biodiversity and adaptation to Climate Change, CBD Technical Series n° 25, “Guidance for promoting synergy among activities addressing biological diversity, desertification, land degradation and Climate Change”, UNEP-CBD, May 2006, p.31.

#### 2.1.3.4 Technical Series N° 41-42 of the COP 9

At COP 9 the work of the AHTEG on Biodiversity and Adaptation to Climate Change was extended based on paragraph 12(b) of Decision IX/16<sup>40</sup>. Through this prolonged mandate, the Expert Group published two additional reports. The first report reaffirmed the use of risk assessment in order to prioritize the future adaptation activities. This risk assessment is ideally divided into two steps; first the assessment of general impacts of climate change on biodiversity and second an assessment of the resilience of selected species and ecosystems. Adjoining it, a set of principles for adaptation activity planning were listed and objectives were postulated. Even though these principles such as ecosystem based adaptation, were already somewhat determined in the Jakarta

<sup>40</sup> 40 CBD COP 9, Decision IX/16, Biodiversity and Climate Change, 2008.

Mandate; throughout the years they were fine-tuned and ameliorated. As the previous report of 2006 already stated, most strategies proposed to adapt coastal regions to climate change impacts, involve far-reaching infrastructure approaches e.g. dikes, sea walls..., which often adversely affect the closely situated ecosystems. An ecosystem based adaptation alternative could be the use and management of coastal wetlands.<sup>41</sup>

The second report reviews the recent scientific literature on the link between biodiversity and climate change. Due to the interconnectivity of ecosystems and their implications, it is hard to determine the effectiveness of proposed adaptation strategies. There are geographic variations with regard to the impacts of climate change and countries differ in their level of adaptive capacity.<sup>42</sup> In the case of coastal adaptation, developed countries favour hard defences while SIDS and other developing countries prefer the use of soft defences such as managed realignment or coastal retreat, for example the use of mangroves. Take also into account that the use of hard defences adversely affects the coastal ecology as it tends to reduce availability of habitats and increase the risk of invasion of invasive species. On the other hand, a soft defence such as beach nourishment could also have an adverse effect on the surrounding habitats when dredging sand material. Next, strategies focused on resource management can produce multiple benefits, both with regard to biodiversity conservation and mitigation through carbon sequestration. The proposed adaptation strategy should therefore be holistic and integrated, through the use of Integrated Coastal Zone Management (ICZM or IMCAM as aforementioned) and protected areas. Nevertheless, some recent studies on the 2004 tsunami put forward the still limited protective impact of protected areas such as mangroves since the tsunami destroyed most of the mangroves.<sup>43</sup>

PROTECTION	RETREAT	ACCOMMODATION
Hard structures: dykes, sea walls, tidal barriers.	Establishing set-back zones	Early warning systems, hazard insurance
Soft structures: dunes or wetland restoration, beach nourishment	Relocating threatened buildings and hard protection structures	Land-use planning (building and agricultural practice)
Indigenous options: afforestation	Phasing out development in exposed areas	Improved drainage and desalination

Figure 2 Major adaptation strategies for the coastal zone

<sup>41</sup> AHTEG on Biodiversity and adaptation to Climate Change, CBD Technical Series n° 41, "Connecting biodiversity and Climate Change mitigation and adaptation: Report of the Second AHTEG on biodiversity and climate change", UNEP-CBD, 2009, p. 24-37 en 40-41.

<sup>42</sup> AHTEG on Biodiversity and adaptation to Climate Change, CBD Technical n°42, "Review of the Literature on the links between Biodiversity and Climate Change: Impacts, Adaptation and Mitigation", UNEP-CBD, 2009, p.21-23.

<sup>43</sup> *Ibid.*, p.54-58.

**Source:** UNFCCC, Technologies for adaptation to climate change, Brochure UNFCCC Secretariat, 2006.

Therefore the coastal adaptation to climate change impact should be a combination of hard and soft defences and the re-establishment of protected areas in relation to resource management through an integrated, ecosystem-based approach in a sustainable manner.<sup>44</sup> This holistic view can be warranted through the use of EIAs and SEAs.<sup>45</sup>

### **2.1.3.5 COP 10 in Nagoya**

At the COP 10 held in Nagoya in October 2010, the Strategic Plan for the period of 2011-2020 was adopted. The plan contains 20 headline targets subdivided under five strategic goals. Targets 10 and 15 specifically address climate change respectively the minimization of pressures and impacts from climate change and the enhancement of ecosystem resilience and use of carbon stocks as ways to mitigate and adapt to climate change.<sup>46</sup> During the conference it was emphasized that tools needed to be developed for planning a network of protected areas in light of climate change, especially concerning the maritime areas mitigation and adaptation options needed to be included.<sup>47</sup>

### **2.1.3.6 Conclusion**

Even though the COP Decisions and additional relevant guidance made several explicit references to climate change adaptation and its link with biodiversity conservation combined with various possible adaptation options gaining a double benefit, to create a legally binding system there still is a need for specific provisions regarding the needed adaptation regarding climate change such as the creation of interconnectivity between the set protected areas.<sup>48</sup>

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<sup>44</sup> *Ibid.*, p. 53-58; Par. 2 a), CBD COP 9, Decision IX/7, Ecosystem approach, 2008; A. Par. 23, B. Par. 3 h) and 6 e), CBD COP 9, Decision IX/18, Protected areas, 2008.

<sup>45</sup> AHTEG on Biodiversity and adaptation to Climate Change, CBD Technical n°42, "Review of the Literature on the links between Biodiversity and Climate Change: Impacts, Adaptation and Mitigation", UNEP-CBD, 2009, p. 64-66.

<sup>46</sup> CBD Secretariat, Press Release 'A new era of living in harmony with Nature is born at the Nagoya Biodiversity Summit, 2010, p. 1-2.

<sup>47</sup> <http://www.cbd.int/nagoya/outcomes/> (online, 26 november 2010).

<sup>48</sup> A. Trouwborst, "International Nature Conservation Law and the Adaptation of Biodiversity to Climate Change: a Mismatch?", *Journal of Environmental Law*, 2009, V. 21 N. 3, p. 419-442.

## **2.2 Ramsar Convention**

### **2.2.1 Objectives**

The Ramsar Convention<sup>49</sup>, adopted on 2 February 1971 and amended by the Paris Protocol of 3 December 1982 and the Regina Amendments of 28 May 1987, is an intergovernmental treaty that provides a framework for national and international action and cooperation for the conservation and wise use of wetlands and their resources. The objective of the Convention is the protection of wetlands of international importance, as a contribution towards achieving sustainable development throughout the world. The convention is the only treaty that deals with one particular ecosystem.

### **2.2.2 Adaptation in the convention**

Analogous to the Convention on Biological Diversity, the Ramsar Convention on Wetlands also lacks an explicit reference to climate change or the adaptation thereto. However, since climate change is recognized as one of the many treats against wetlands by the Ramsar Secretariat, adaptation and mitigation to climate change were taken into account in the additional documentation of the Convention.<sup>50</sup>

### **2.2.3 Analysis**

#### **2.2.3.1 Additional Guidance for the Implementation of the Wise Use Concept and the IUCN report on Wetlands and Climate Change: Exploring collaboration between the Convention of Wetlands (Ramsar, Iran, 1971) and the UN Framework Convention on Climate Change**

The link between climate change and wetland degradation was explicitly recognised at the 5th Meeting of the Conference of the Contracting Parties (COP 5) to the Ramsar Convention in 1993, as stated in the 'Additional Guidance for the Implementation of the Wise Use Concept' adopted as an annex to Resolution 5.6.<sup>51</sup> Since knowledge of the impacts of climate change on wetlands was still rather limited, the Ramsar Strategic Plan 1997-2002 requested further analysis of the possible effects of climate change under Operational Objective 5.1 and urged to formalize the linkage with the UNFCCC under Operational Objective 7.2.<sup>52</sup> Subsequent the Ramsar Secretariat commissioned IUCN to prepare a technical document on the subject in preparation for UNFCCC COP 5.<sup>53</sup> As drought and heavy percipitation as well as sea level rise due to climate change will contribute to further wetland degradation in the future, wetland rehabilitation can form a viable solution to certain impacts of climate change such as floodings. Therefore

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<sup>49</sup> Convention on Wetlands of International Importance especially as Waterfowl Habitat. Ramsar (Iran), 2 February 1971. *UN Treaty Series No. 14583*. As amended by the Paris Protocol, 3 December 1982, and Regina Amendments, 28 May 1987.

<sup>50</sup> Ramsar COP 8, Document 11, Climate Change and wetlands: impacts, adaptation, and mitigation, 2002; Ramsar COP 10, Resolution X.24, Climate Change and wetlands, 2008.

<sup>51</sup> Ramsar COP 5, Additional Guidance for the Implementation of the Wise Use Concept, 1996.

<sup>52</sup> Ramsar COP 6, Ramsar Strategic Plan 1997-2002, 1996.

<sup>53</sup> IUCN, Wetlands and Climate Change: Exploring collaboration between the Convention of Wetlands (Ramsar, Iran, 1971) and the UN Framework Convention on Climate Change, 1999.

the technical report pleads for adaptation strategies which pursue a win-win situation for both the protection of wetlands and the combat against climate change. Consequently levees and dikes as an example would have a counterproductive effect if they were to be established on existing wetlands.

Most relevant is the concept of 'wise use' of wetlands determined as 'the wise use of wetlands is their sustainable utilization for the benefit of mankind in a way compatible with the maintenance of the natural properties of the ecosystem'.<sup>54</sup> This wise use concept is interpreted as flexible enough to take into account possible climate change impacts. In the respective technical report four targets were set to achieve collaboration between UNFCCC and the Ramsar Convention:

- Promoting linkages between conventions through a Memorandum of Cooperation<sup>55</sup>, working links between the scientific and technical bodies of both conventions, recognition of areas of common interests and therefore supporting joint actions in the developed strategic documents, national level cooperation and last but not least sharing information;
- Predicting and monitoring the impacts of climate change on wetland areas in order to create win-win opportunities;
- The role of wetlands in adapting to, and mitigating the impacts of climate change;
- The role of wetlands in reducing greenhouse gas emissions,<sup>56</sup>

This need for collaboration between the UNFCCC and the Ramsar Convention was reaffirmed in the 'Guidelines for international cooperation under the Ramsar Convention' of 1999.<sup>57</sup>

### **2.2.3.2 COP 8 and COP 10 of the Ramsar Convention on Wetlands**

During the COP 8 in 2002 the cooperation among several multilateral environmental agreements and their subsidiary bodies was formalized. The Ramsar Convention was invited to participate in the Joint Liaison Group (JLG) of the Convention on Biodiversity, the UNFCCC and the UN Convention to Combat Desertification (UNCCD)<sup>58</sup>. In addition, it also participates in the Biodiversity Liaison Group (BLG), which consists of the CBD, the UNCCD, the CMS, CITES and the World Heritage Convention<sup>59</sup>. In relation to biodiversity protection, wetlands and climate change the Ramsar Convention also developed several Joint Work Plans with the CBD in order to coordinate their future work. With that same goal the Ramsar Convention also established Memoranda

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<sup>54</sup> Ramsar COP 3, Recommendation 3.3., Wise use of wetlands, 1987.

<sup>55</sup> This unfortunately did not come into being until now.

<sup>56</sup> Ramsar COP 3, Recommendation 3.3., Wise use of wetlands, 1987.

<sup>57</sup> Ramsar COP 7, Guidelines for international cooperation under the Ramsar Convention, 1999.

<sup>58</sup> Ramsar COP 8, Resolution VIII.3, Climate change and wetlands: impacts, adaptation, and mitigation, 2002.

<sup>59</sup> [http://www.ramsar.org/cda/en/ramsar-about-synergy/main/ramsar/1-36-192\\_4000\\_0](http://www.ramsar.org/cda/en/ramsar-about-synergy/main/ramsar/1-36-192_4000_0) (online, 19 augustus 2010).

of Cooperation with several of those environmental conventions<sup>60</sup>. These cooperations imply coordinated work through collaboration, information sharing and the communication of progress between the respective conventions.

As the Third Assessment Report (TAR) of the IPCC stated that wetlands will be especially vulnerable due to their limited adaptive capacity towards change, several information documents with a special focus on the link between wetlands and climate change, were presented at the COP 8<sup>61</sup>. As adaptation is interpreted as a human intervention to address the effects of climate change rather than the autonomous response of the ecosystems themselves, the possibility to adapt and the degree of adaptation is highly dependent on the institutional, infrastructural and financial capacity of a region of a country. Analogous to the effects of climate change specifically on biodiversity, the effects of climate change on wetlands will differ between the types of wetlands and between regions. In relation, wetlands can be divided into three main groups:

- Permanent wetlands such as lakes, reefs and rivers;
- Wetlands with broad short-term variability, i.e. high intra-annual variations;
- Ephemeral wetlands with high interdecadal or interannual variability such as (semi-) arid parts of the world.<sup>62</sup>

As adaptation options should be considered in a sustainable development framework, there are no explicit constraints raised against combined actions in the protection of wetlands and adaptation towards climate change, thus creating a double benefit.<sup>63</sup>

Due to the large amount of uncertainty regarding the projected effects of climate change, monitoring of the adaptation options is considered to be an essential feature, so that actions can be modified when needed in the future, based on the observed changes. Suggested adaptations options with a double benefit were:

- *“Design of multiple-use reserves and protected areas which incorporate corridors that would allow for migration of organisms as a response to climate change. The response of some wetland species (both animals and plants) to climate change could be a range expansion or poleward movement of the species. Some of these may be invasive species (both native and alien) and could impact on the system especially through changes in the hydrology. Adaptation options in this case would have to include truncation of potential corridors or control of invasive species to limit the expansion of more competitive native or alien species, especially into wetlands that may be small and have high endemism;*

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<sup>60</sup> Ramsar COP 8, Resolution VIII.3, Climate change and wetlands: impacts, adaptation, and mitigation, 2002; [http://www.ramsar.org/cda/en/ramsar-documents-mous/main/ramsar/1-31-115\\_4000\\_0](http://www.ramsar.org/cda/en/ramsar-documents-mous/main/ramsar/1-31-115_4000_0) (online, 19 Augustus 2010).

<sup>61</sup> IPCC, Third Assessment Report (TAR) Climate Change 2001: Impacts, Adaptation and Vulnerability, 2001; Ramsar COP 8, Resolution VIII.3, Climate change and wetlands: impacts, adaptation and mitigation.

<sup>62</sup> Ramsar COP 8, Document 40, Interim Executive Summary to Ramsar COP 8. Doc. 11: Climate Change and Wetlands, 2002; Ramsar COP 8, Document 11, Information paper: Climate change and wetlands: impacts, adaptations and mitigation, 2002.

<sup>63</sup> Ramsar COP 10, Resolution X.24, Climate Change and Wetlands, 2008; Ramsar COP 10, Document 25, Additional information on climate change and wetlands issues, 2008.

- *Expansion of aquaculture to relieve stress on natural fisheries, despite the fact that much past aquaculture has led to the loss of wetlands and wetland species. Such options should be implemented only if they could demonstrate a reduction in pressure on existing wetlands;*
- *Poleward transportation of less mobile aquatic species across watershed boundaries to cooler waters;*
- *Specific management in some ecosystems which could reduce pressures on wetlands. For example, in the wetlands in the Arctic, economic diversification could reduce the pressure on wildlife. Rotational and decreased use of marginal wetlands, especially in semi-arid areas, could reduce wetland and wetland biodiversity loss;*
- *Integration of land, water and marine area management with the aim of reducing non-climate stresses upon wetlands, for example through reduction of fragmentation of water systems, reduction of land-based pollution into marine systems such as coral reefs, or reduction of invasive species;*
- *Use of water control structures for some wetlands, in order to enhance particular wetland functions and address water management issues, such as securing long-term water resources for wetland conservation. It is unlikely that such steps could be taken independently of other water management decisions, such as those that will affect irrigation and potable water supplies, and they should form part of integrated river basin and water resource management;*
- *Development of 'setbacks' for coastal and estuarine wetlands, perhaps linked with moves to direct sediment to specific places;*
- *High priority management actions in wetlands that are valuable and likely to be lost or degraded, including the implementation of wetland rehabilitation and restoration projects. Wetland creation could also be usefully undertaken, but possibly not in many cases where existing infrastructure limits both the area and processes that support particular wetland types or functions.*

*Other adaptation options which could benefit wetlands concern the more efficient use of natural resources and the removal of policies and financial measures that work against the maintenance, and even the creation, of wetlands.*<sup>64</sup>

However some adaptation options in relation to climate change will have a reverse effect on the respective wetlands. Even though poleward transportation of certain aquatic species is mentioned as a suitable adaptation option, one should be cautious as this is not feasible for all aquatic species. The introduction of 'better-adapted' warm water species in the respective regions could induce the extinction of local wetland species and alter the features of the respective ecosystem. Other negative effects on the wetlands might result from the presence of recreational, aquacultural and hydrologic engineering structures.

To assess the potential damage of actions to the ecological character of wetlands, both the environmental and socio-economical aspects, strategic and other forms of environmental impact assessment<sup>65</sup> and risk assessment is advised. Nevertheless, as

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<sup>64</sup> Ramsar COP 8, Document 11, Information paper: Climate change and wetlands: impacts, adaptations and mitigation, 2002.

<sup>65</sup> EIA and SEA as explained under the Biological Diversity Convention.

these projected impacts are still rather uncertain, further analysis by the Scientific and Technical Review Panel (STRP) remains necessary.<sup>66</sup>

As coastal wetland conservation should be seen as essential to the sustainable development of the coastal zone as a whole rather than a sectoral nature conservation issue, the link with integrated coastal zone management (ICZM) should be made. For that purpose the 'Principles and Guidelines for incorporating wetland issues into ICZM' were developed, stating nine guiding principles to ensure a full incorporation. Jurisdictional overlap should be resolved combined with a legal institutional framework for wetland conservation through among other the designation and management of Wetlands of International Importance and involvement of stakeholders. In order to create a broad-scale integrated ecosystem management, a clear link should be made with river basin and catchment management, oceans and fisheries management.<sup>67</sup> More general, the objective to integrate wetlands policy in relation to climate change and the adaptation thereto was reaffirmed in the Strategic Plan 2003-2008.<sup>68</sup>

During the COP 10 the key urgency was cited for a shift of national environmental governance from sectoral demand-driven approach towards an ecosystem-based approach of policy and decision-making. Therefore, a close partnership is needed with other sectors of the government, other multilateral environmental agreements and the civil society.<sup>69</sup>

### 2.2.3.3 Conclusion

In conclusion, as adaptation holds promoting both resilience to change and the accommodation of change, the ecosystem-based adaptation to climate change should imply the replacement of hard infrastructure developments against coastal floodings with green infrastructures<sup>70</sup>, the restoration of coastal wetlands which offers an increased resilience against sea level rise, an increase in afforestation and management of the wetlands.<sup>71</sup> Although this ecosystem or holistic perspective aims at managing human activities in conformity with the integrity of ecosystems, it still needs to be embedded more explicitly and strictly within the Convention itself.<sup>72</sup>

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<sup>66</sup> Ramsar COP 8, Resolution VIII.3, Climate change and wetlands: impacts, adaptation and mitigation, 2002.

<sup>67</sup> Ramsar COP 8, Principles and Guidelines for incorporating wetland issues into Integrated Coastal Zone Management (ICZM), 2003; Ramsar COP 10, Resolution X.24, Climate Change and Wetlands, 2008.

<sup>68</sup> Ramsar COP 8, Ramsar Strategic Plan 2003-2008, 2002.

<sup>69</sup> Ramsar COP 10, Ramsar Strategic Plan 2009-2015, 2008; Ramsar COP 10, Resolution X.3, The Changwon Declaration on human well-being and wetlands, 2008; Ramsar STRP, Briefing Note, Wetlands and the UNFCCC COP 15 climate change meeting (Copenhagen, 7-18 December 2009), 2009.

<sup>70</sup> "Green infrastructure is defined as a term reflecting the role the natural environment can play in land use planning. True of both inland and coastal wetlands." (Secretariat Ramsar, Information Leaflet for World Wetlands Day 2010, Caring for Wetlands: An Answer to Climate Change, 2010).

<sup>71</sup> Secretariat Ramsar, Information Leaflet for World Wetlands Day 2010, Caring for Wetlands: An Answer to Climate Change, 2010.

<sup>72</sup> A. Trouwborst, "International Nature Conservation Law and the Adaptation of Biodiversity to Climate Change: a Mismatch?", *Journal of Environmental Law*, 2009, V. 21 N. 3, p. 419-442.



Sector/System dependent on wetlands	Adaptation Options
Water	<ul style="list-style-type: none"> <li>• Increase water-use efficiency with ‘demand-side’ management (e.g. pricing incentives, regulations, and technology standards).</li> <li>• Increase water supply, or reliability of water supply, with ‘supply-side’ management (e.g., construct new water storage and diversion infrastructure).</li> <li>• Change institutional and legal framework to facilitate transfer of water among users (e.g., establish water markets)</li> <li>• Reduce nutrient loadings of rivers and protect/augment streamside vegetation to offset eutrophying effects of higher water temperatures.</li> <li>• Reform flood management plans to reduce downstream flood peaks; reduce paved surfaces and use vegetation to reduce storm runoff and increase water infiltration.</li> <li>• Re-evaluate design criteria of dams, levees and other structures for flood protection.</li> </ul>
Food, Fiber, Coastal Areas, Marine Fisheries	<ul style="list-style-type: none"> <li>• Change timing of planting, harvesting, and other management activities.</li> <li>• Prevent or phase-out development in coastal areas vulnerable to erosion, inundation, and storm-surge flooding.</li> <li>• Use ‘hard’ (dikes, levees, seawalls) or ‘soft’ (beach nourishment, dune and wetland restoration, afforestation) structures to protect coasts.</li> <li>• Implement storm warning systems and evacuation plans.</li> <li>• Protect and restore wetlands, estuaries, and floodplains to preserve essential habitat for fisheries.</li> <li>• Modify and strengthen fisheries management institutions and policies to promote conservation of fisheries.</li> <li>• Conduct research and monitoring to better support integrated management of fisheries.</li> </ul>

Figure 3 Examples of adaptation options for selected sectors (modified from IPCC 2001c, Tables 3-6)

**Source:** Ramsar STRP, COP 8 Document 11, “Information paper: Climate change and wetlands: impacts, adaptations and mitigation”, 2002, p. 44.

## **2.3 World Heritage Convention**

### **2.3.1 Objectives**

The Convention Concerning the Protection of the World Cultural and Natural Heritage (hereafter the World Heritage Convention)<sup>73</sup> was adopted by the General Conference of UNESCO on 16 November 1972. The Convention was initiated by the idea of combining cultural conservation with natural conservation. It aims to promote cooperation among nations to protect heritage around the world that is of such outstanding universal value that its conservation is important for current and future generations.

### **2.3.2 Adaptation in the convention**

No explicit reference to climate change or adaptation to climate change can be found in the World Heritage Convention. The impacts of climate change are however implemented in the Operational Guidelines accompanying the Convention and some obligations expounded in the Convention can be interpreted in relation to climate change and the adaptation and mitigation thereto.<sup>74</sup>

### **2.3.3 Analysis**

The possible impacts and consequences of climate change on the World Heritage Properties first came to the attention of the World Heritage Committee in 2005. While natural heritage sites will be subject to temperature shifts externalized as desertification, decline in permafrost and an increase of coral bleaching among others, and an increased risk of extreme weather events such as floodings, storms and precipitation; cultural heritage sites will not only be susceptible to extreme weather events, but also to the consequences of soil change in combination with possible social and cultural impacts. At the 29th session the World Heritage Committee requested the establishment of a broad working group of experts which would be responsible for the review and risk-scale of the impacts of climate change and the development of a strategy.<sup>75</sup> On 16-17 March 2006 the United Kingdom hosted the meeting of the respective expert working group in the UNESCO headquarter in Paris. The working group comprised experts from 15 State Parties, representatives of UNFCCC, Ramsar Convention, CBD, UNEP, IPCC, the UNESCO Programme of Man and Biosphere (MAB) and of seven NGO's.

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<sup>73</sup> Convention of 16 November 1972 concerning the protection of the World Cultural and Natural Heritage in Paris (France), Belgian Law Gazette 6/11/1996.

<sup>74</sup> A. Trouwborst, "International Nature Conservation Law and the Adaptation of Biodiversity to Climate Change: a Mismatch?", *Journal of Environmental Law*, 2009, V. 21 N. 3, p. 419-442.

<sup>75</sup> World Heritage Committee, Decision 29 COM 7.B.a, Threats to World Heritage Properties, 2005.

### 2.3.3.1 The impacts of climate change on World Heritage Properties

The results of the expert meeting e.i. a report and a strategy document were presented at the 30th session of the World Heritage Committee in 2006.<sup>76</sup> The strategy “Strategy to assist State Parties to the Convention to implement Appropriate Management Responses” expounds three types of actions towards climate change applicable on the various levels (local, regional, global a.o.):

- Preventive actions include monitoring, reporting and the mitigation of climate change;
- Corrective actions implies adaptive measures towards the impacts of climate change;
- Sharing knowledge such as best practices, research and capacity building.<sup>77</sup>

After giving an overview of the expected impacts of climate change, the report “Predicting and managing the effects of climate change on World Heritage” focuses on the different fields of work.

Analogous to the above mentioned conventions, the World Heritage Committee promotes further communication, consultation and integration between the related conventions as the goal is to implement the biodiversity related MEA’s in a coherent manner. Furthermore drafting management plans which are periodically updated are a key tool in managing the threats of climate change on the various World Heritage sites. In order to be adequately prepared for the forecasted changes on specific sites, the local and regional authorities should be able to define flexible adaptation strategies using a landscape-based approach which implies the involvement of local communities.<sup>78</sup> Consequently education, training, research and ongoing monitoring and maintenance are necessary in conjunction with the planning for emergency preparedness. Even though the adaptation to impacts of climate change should be done on a local and regional level, a network should be created to exchange valuable experiences and information.

To improve the resilience of natural heritage properties to climate change impacts, corridors should be created as links between different sites and some areas will have to be enlarged. Other proposed adaptation measures are in agreement with those suggested by the advisory bodies of the Ramsar Convention and CBD. However not all adaptation responses are suitable for all heritage sites. In the case of the adaptation of coastal areas to sea level rise, one might prefer reinforcing dykes and drains whereas

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<sup>76</sup> World Heritage Committee, Decision 30 COM 7.1, Issues related to the State of Conservation of World Heritage Properties: the impacts of climate change on World Heritage Properties, 2006.

<sup>77</sup> *Ibid.*

<sup>78</sup> A landscape-base approach hold the interpretation of a heritage site in an integrated manner, taking into account all the aspects of the respective area e.g. buildings, landscape and other facets.

in other cases planned retreat of coastal settlements might be more feasible as aforementioned under the Biological Diversity Convention.

The adaptation of cultural heritage properties is not as simple, as initially thought. Moving the heritage away from its original site like it was done with the Abu Simbel in Egypt, has far reaching consequences for the site and the cultural heritage itself. Therefore, cultural heritage properties should be regarded as immovable by nature, consequently the adaptation measures need to take place on site.<sup>79</sup>

### **2.3.3.2 The policy document on impacts of climate change on World Heritage Properties**

In 2007 the General Assembly of States Parties to the World Heritage Convention (WHC) adopted a policy document at its 16th session.<sup>80</sup> The need for synergies between international conventions and organizations was reaffirmed through the participation in the Biodiversity Liaison Group and other processes with related conventions such as the UN Convention to Combat Desertification (UNCCD) among others. The World Heritage Properties could function as laboratories for monitoring, testing and improving of mitigation and adaptation measures. In order to assess the impacts of climate change and the adaptation efforts for each heritage property in a coherent manner, the use of the “Compendium on methods and tools to evaluate impacts of, vulnerability and adaptation to, climate change” designed under the UNFCCC, was promoted.

*“Article 4 - Each State Party to this Convention recognizes that the duty of ensuring the identification, protection, conservation, presentation and transmission to future generations of the cultural and natural heritage referred to in Articles 1 and 2 and situated on its territory, belongs primarily to that State.”<sup>81</sup>*

Article 4 of the World Heritage Convention can be seen as the basis for the commitment of the States Parties to do all that they can to address causes and impacts of climate change even though climate change is not explicitly mentioned. This article is further enunciated in article 5 WHC which holds specific obligations for the States Parties. Article 6 WHC points out that a collaborative approach is needed by the international community in order to tackle the causes and effects of climate change.

As listed under article 11(4) WHC, the ‘serious and specified dangers’ which are imperative for the inclusion of a heritage site in the List of World Heritage in Danger, do not explicitly mention climate change. However the numeration is broad enough to include the effects of climate change.

The policy document continues by recommending the revision of the “Operational Guidelines for the Implementation of the World Heritage Convention”. The amendment

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<sup>79</sup> World Heritage Committee, Decision 30 COM 7.1, Issues related to the State of Conservation of World Heritage Properties: the impacts of climate change on World Heritage Properties, 2006.

<sup>80</sup> World Heritage General Assembly, Document WHC-07/16.GA/10, Policy Document on the Impacts of Climate Change on World Heritage Properties, 2007.

<sup>81</sup> Art. 4 of the Convention of 16 November 1972 concerning the protection of the World Cultural and Natural Heritage.

of several paragraphs is proposed in order to expressly take into account impacts and causes of climate change, not only as threats to possible heritage properties but also when it comes to reactive monitoring and reporting. Furthermore boundaries of heritage properties should be easier adaptable so that the Outstanding Universal Value (OUV) of a world heritage site can be maintained. The presence of Outstanding Universal Value of a heritage site is essential for the admission of a site in the World Heritage List, consequently if the OUV disappears, delisting can take place. In the Operational Guidelines OUV is defined as a cultural/natural significance which “is so exceptional as to transcend national boundaries and to be of common importance for present and future generations of all humanity”.<sup>82</sup> Natural heritage is characterized by bio-geographical diversity while cultural heritage conveys human creativity and cultural diversity.<sup>83</sup>

In closing the policy document urged the incorporation of the precautionary approach in the Operational Guidelines as it would encourage States Parties to deal more actively in their decision-making with the risks and uncertainty that climate change involves.

### **2.3.3.3 Latest evolutions**

The Operational Guidelines for Implementation of the World Heritage Convention, adopted in 1978, stated precise criteria for the inscription of sites on the World Heritage List. In the format for nomination of properties for inscription on the World Heritage List climate change is implemented in the factors affecting property in various ways. Although not specifically linked to climate change, adaptation is mentioned as a possible development pressure (4.b.i). Next environmental pressures such as climate change might also threaten the OUV of a property (4.b.ii) and specific natural disasters e.g. floods, fires and earthquakes, and risk preparedness which include specific impacts of climate change, are also enlisted (4.b.iii).<sup>84</sup>

These Operational Guidelines were last amended in 2008. Even though the policy document of 2007 proposed several amendments of the Operational Guidelines, only a few amendments were actually adopted. ‘Threatening impacts of climatic, geological or other environmental factors’ were included as potential danger for both cultural heritage (paragraph 179 (b) (vi)) and natural heritage (paragraph 180 (b) (v)). Paragraph 181 concerning the need and amenability for corrective actions was amended in the sense that the emphasis should be more on adaptation rather than on mitigation in relation to threats.<sup>85</sup>

In September 2008 a submission to the AWG-KP put forward another perspective on the link between climate change and world heritage sites. As the continued release of Greenhouse Gases is a deliberate action done in States, which causes damage to

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<sup>82</sup> World Heritage Committee, Operational Guidelines for Implementation of the World Heritage Convention, 2008.

<sup>83</sup> . v. Droste et al. (eds.), *Linking Nature and Culture ...Report of the Global Strategy Natural and Cultural Heritage Expert Meeting, 25-26 March 1998, Amsterdam, The Netherlands.* (p. 221)

<sup>84</sup> World Heritage Committee, Operational Guidelines for Implementation of the World Heritage Convention, 2008.

<sup>85</sup> World Heritage Committee, Decision 32 COM 7.A.32, Impacts of Climate Change on World Heritage properties, 2008.

World Heritage properties, it can be interpreted that State Parties are in breach with their commitments under the World Heritage Convention.<sup>86</sup>

A petition submitted in 2009 to the World Heritage Committee raised the issue of black carbon and its impacts on the environment. Until now, neither the UNFCCC nor the WHC address the issue of black carbon, a non-greenhouse gas pollutant, explicitly. Therefore the organizations EarthJustice and ACJP propose the inclusion of threat by black carbon in the List of World Heritage in Danger and increased effort on this topic.<sup>87</sup>

#### **2.3.3.4 Conclusion**

Even though the topic of climate change was already five years on the agenda of the World Heritage Committee, still some further measures can be taken. The amendments to the Operational Guidelines suggested in the policy document should be adopted in order to address climate change threats and impacts more comprehensively. Adjoining it the inclusion of the precautionary approach would hold a great improvement.

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<sup>86</sup> Australian Climate Justice Program, Climate Action Network Australia and FOE Australia, Submission to AWG-KP, State Parties Responsibilities under the World Heritage Convention in the Context of Climate Change – Absolute Minimum Temperature Rise Necessary for Compliance with the World Heritage Convention, September 2008.

<sup>87</sup> EarthJustice and ACJP, Petition to the World Heritage Committee: The role of Black Carbon in endangering World Heritage sites threatened by glacial melt and sea level rise, January 2009.

## 2.4 OSPAR Convention

### 2.4.1 Objectives

In 1992 the OSPAR Convention<sup>88</sup> unified the Oslo Convention<sup>89</sup> and the Paris Convention<sup>90</sup> into one broad convention addressing the protection of the marine environment of the North-East Atlantic Maritime Area from the negative impacts of human activities.<sup>91</sup> Together with the European Community, the 15 State Parties collaborate in order to ensure efficient national action to combat the threats through a long-term holistic approach.

The objective of the Convention is to provide for coordinated protection of the marine environment of the North-East Atlantic.

### 2.4.2 Adaptation in the convention

Even though the Convention for the protection of the marine environment of the North-East Atlantic (the OSPAR Convention) does not explicitly refer to impacts of climate change and adaptation towards climate change, its broad definitions and integrated principles leave some room for interpretation.

### 2.4.3 Analysis

As article 2 states, it is the obligation of every Contracting Party to prevent and eliminate pollution and other negative impacts of human activities. The OSPAR Convention defined pollution as:

*“the introduction by man, directly or indirectly, of substances or energy into the maritime area which results, or is likely to result, in hazards to human health, harm to living resources and marine ecosystems, damage to amenities or interference with other legitimate uses of the sea”.*<sup>92</sup>

Broadly interpreted, the definition of pollution also includes impacts of climate change as they are an indirect consequence of the introduction of greenhouse gases linked to human activities. In addition the impacts of adaptation measures related to climate change are also included in the general obligation of article 2 since these are human activities which can adversely affect the marine environment.

In case of pollution from other sources then explicitly stated, such as climate change, article 7 stipulates that State Parties should cooperate to adopt additional annexes concerning those specific threats. However, if the respective pollution is already subject to measures developed in other international organisations or conventions e.i. UNFCCC, the State Parties are not able to develop a separate annex for that specific topic.

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<sup>88</sup> Convention for the protection of the Marine Environment of the North-East Atlantic of 22 September 1992 in Paris (Council Decision 98/249/EC; O.J. L 104 of 3.04.1998).

<sup>89</sup> Convention for the Prevention of Marine Pollution by Dumping from Ships and Aircraft of February 1972 in Oslo.

<sup>90</sup> Convention for the Prevention of Marine Pollution from Land-Based Sources of June 1974 in Paris.

<sup>91</sup> Convention for the protection of the Marine Environment of the North-East Atlantic of 22 September 1992 in Paris (Council Decision 98/249/EC; O.J. L 104 of 3.04.1998).

<sup>92</sup> Art. 1 (d), *ibid.*

### 2.4.3.1 Guiding principles

To guide the Contracting Parties better in their commitments, the OSPAR Commission puts forward a set of principles. The precautionary principle was adopted at the second international conference on the protection of the North Sea in London, broadening the obligation of the States Parties to preventive actions to protect the marine environment of the North-East Atlantic.<sup>93</sup> In addition the expenses of measures taken under the OSPAR Convention should be defrayed by the one responsible for the pollution or harmful human activities, named the polluter-pays principle. This principle can be implemented either through command-and-control or market based mechanisms. The measures taken should be in conformity with the Best Available Techniques (BAT) and Best Environmental Practices (BEP), described in Appendix I of the OSPAR Convention.

The ecosystem approach integrating conservation, management and other related activities, was confirmed several times. The Intermediate Ministerial Meeting on the integration of fisheries and environmental issues in 1997 urged the use of the multi-species ecosystem approach based on best available scientific knowledge and stakeholder participation.<sup>94</sup> In 2002 a framework for the ecosystem approach was developed by means of Ecological Quality Objectives (EcoQOs) focusing on creating understanding and acceptance, monitoring and reporting of the impacts of human activities.<sup>95</sup> The Göteborg Declaration of 2006 reaffirmed the use of the ecosystem approach in relation to the possible impacts of climate change.<sup>96</sup>

### 2.4.3.2 Quality Status Report 2010

As climate change and the adaptation thereto will affect the key facets of the ecosystems within the North-East Atlantic Maritime Area, the effects and impacts of climate change on the marine environment were expounded in the Quality States Report of 2010, accompanied by two related assessments. As the QSR and the first assessment stated, the impacts of climate change are most evident in Region I (Arctic Waters) and Region II (Greater North Sea) e.g. warming of sea temperature, decreasing of sea ice, increasing of fresh water input and the occurrence of coastal erosion.<sup>97</sup> Therefore adaptation and mitigation are vital for the protection and conservation of the marine environment. The second assessment glances through the possible responses and policy options.<sup>98</sup> Examples of mitigation measures and actions

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<sup>93</sup> OSPAR Commission, Ministerial Declaration from Second International Conference on the Protection of the North Sea, London, 24-25 November 1987.

<sup>94</sup> OSPAR Commission, Statement of Conclusions from Intermediate Ministerial Meeting on the Integration of Fisheries and Environmental Issues, 13-14 March 1997, Bergen (Norway).

<sup>95</sup> OSPAR Commission, Bergen Declaration, Fifth International Conference on the Protection of the North Sea, 20-21 March 2002, Bergen (Norway).

<sup>96</sup> OSPAR Commission, Göteborg Declaration, North Sea Ministerial Meeting on the Environmental Impact of Shipping and Fisheries, 4-5 May 2006, Göteborg (Sweden).

<sup>97</sup> OSPAR Commission, nr. 497/2010, Quality Status Report 2010, Monitoring and Assessment, 2010, London (<http://qsr2010.ospar.org>); OSPAR Commission, nr. 463/2009, Impacts of climate change on the North-East Atlantic Ecosystem, Monitoring and Assessment, 2009.

<sup>98</sup> OSPAR Commission, nr. 464/2009, Assessment of climate change mitigation and adaptation, Monitoring and Assessment, 2009.



against ocean acidification are CO2 capture and sequestration (CCS) and the extraction of offshore renewable energy (wind/waves/tides). Ocean fertilisation is due to environmental concerns not mentioned as a viable solution.

Regarding adaptation options the OSPAR Commission made a distinction between on the one hand the responses towards the marine area and on the other measures for the coastal area. Marine adaptation options mainly include the implementation of climate change implications into existing practices. The adjustment of operational quotas such as the catch quota for the fishing sector, and management plans of maritime activities so impacts of climate change are also taken into consideration and an ecosystem approach is plied.

Current strategies concerning coastal adaptation mainly focalize on the category of protective options like storm surge barriers, beach nourishment and strengthening defence structures that already exist. Another feasible approach is the conversion of farmland into salt marshes. The coastal adaptation options suggested by the OSPAR Commission are largely analogous to those mentioned by the CBD administrative body.

Options	Protect = effort to continue use of vulnerable areas	Accommodate = effort to continue living in vulnerable areas by adjusting living and working habits	Retreat = effort to abandon vulnerable areas
“Hard”	Dykes, seawalls, groins, breakwaters, salt water intrusion barriers	Building on pilings, adapting drainage, emergency flood shelters	Relocation threatened buildings
“Soft”	Sand nourishment, dune building, wetland restoration or creation	New building codes, growing flood or salt tolerant crops, early warning and evacuation systems, risk-base hazard insurance	Land use restriction, set-back zones

**Figure 4** Examples of coastal adaptation options given by the OSPAR Commission

**Source:** Policy Research Corporation, 2009, European Commission study: the economics of climate change adaptation in EU coastal areas, European Communities.

The most feasible approach may differ between the OSPAR regions but a profound cooperation of the countries is needed due to transboundary issues. Consequently, coordination between the various used measures is needed to create an integrated, coherent framework of measures. In the opinion of the OSPAR Commission the legal instruments to create such a framework are already in place at the European level.<sup>99</sup> Promoted tools that could be used to establish such a framework are the Integrated Coastal Zone Management and Marine Spatial Planning.<sup>100</sup>

<sup>99</sup> The EU White Paper, Marine Strategy Framework Directive, Water Framework Directive and the EC Flood Directive.

<sup>100</sup> OSPAR Commission nr. 497/2010, Quality Status Report 2010, Monitoring and Assessment, 2010, London (<http://qsr2010.ospar.org>); OSPAR Commission, nr. 463/2009, Impacts of climate change on the North-East Atlantic Ecosystem, Monitoring and Assessment, 2009; OSPAR Commission, nr. 464/2009, Assessment of climate change mitigation and adaptation, Monitoring and Assessment, 2009.

Beside these two assessments, the OSPAR Commission also made several other assessments regarding to specific maritime activities. Concerning the impact of cables the OSPAR Commission chiefly stipulated that the precautionary principle should be applied as the number of cable connections would only increase over the years.

Therefore common guidelines for the placement of submarine cables should be developed.<sup>101</sup> With regard to offshore wind farms the same conclusion was made, resulting in additional guidelines.<sup>102</sup> The environmental impacts of coastal defence structures differ for hard and soft structures. Therefore the use of an environmental impact assessment (EIA) is promoted combined with the principles of sustainability and ICZM. In national legislation the use of natural and soft structures is often prioritized as its short- and long-term impacts are less harmful than those of hard structures.<sup>103</sup> With regard to land reclamation, state parties of OSPAR have sufficient national legislation to control the potential impacts. In addition, land reclamation sites are very limited in the OSPAR regions. However more knowledge needs to be gathered on the potential impacts and effects through assessment and monitoring, as the use of land reclamation will likely grow in the future.<sup>104</sup>

#### **2.4.3.3 Conclusion**

In spite of the impossibility to establish an additional annex specifically on the impacts of climate change on the North-East Atlantic Maritime Area, the OSPAR Commission has conducted a large amount of research on the impacts of various human activities related thereto. Through these assessments, it offers guidance in the choice of tools, such as EIA, ICZM and MSP, and points out the existence of policies and principles. In addition, it focuses on the need for transboundary cooperation and the use of an integrated approach.

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<sup>101</sup> OSPAR Commission, nr. 437/2009, Assessment of the environmental impacts of cables, Biodiversity Series, 2009.

<sup>102</sup> OSPAR Commission, nr. 385/2008, Assessment of the environmental impact of offshore wind-farms, Biodiversity Series, 2008; OSPAR Commission, Agreement 2008/03 on Guidance on Environmental Considerations for offshore wind-farm development, Monitoring and Assessment, 2008, Brest.

<sup>103</sup> OSPAR Commission, nr. 435/2009, Assessment of the impact of coastal defence structures, Biodiversity Series, 2009.

<sup>104</sup> OSPAR Commission, nr. 368/2008, Assessment of the environmental impact of land reclamation, Biodiversity Series, 2008.

## 3 European legislation

### 3.1 *Birds and Habitats Directives*

#### 3.1.1 Objectives

The objective of the Habitats Directive<sup>105</sup> is to contribute towards ensuring biodiversity through the conservation of natural habitats and of wild fauna and flora in the European territory of the Member States. More specifically, measures must be taken to maintain or restore, at favourable conservation status, natural habitats and species of wild fauna and flora of Community interest. The Birds Directive<sup>106</sup> has a similar objective: measures are required to maintain the population of the species of all wild birds occurring in the European territory.

The notion of favourable conservation status is very important, as will be shown in further analysis. In order to reach this objective, member states have to establish and manage specially protected areas, and strictly protect (certain) species. This analysis will mainly focus on area protection. The Habitats Directive contains the explicit obligation to create a coherent ecological network, Natura 2000 (Article 3(a), Habitats Directive). This ecological network will consist of both the protected areas under the Birds Directive and the Habitats Directive.

#### 3.1.2 Adaptation in the directives

There are no specific provisions on adaptation to climate change in the Birds and Habitats Directives. Indirectly the directives provide at least some possibilities, although there are some uncertainties on the legal margins for taking adaptive measures, also taking into account the case law by the European Court of Justice. This will be discussed in the next point<sup>107</sup>.

#### 3.1.3 Analysis

##### 3.1.3.1 General

The EU policy on adaptation to climate change stresses the coherence, resilience and connectivity of the sites of the Natura 2000 network. The question is in how far the

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<sup>105</sup> Directive 92/43/EEC of 21 May 1992 on the Conservation of Natural Habitats and of Wild Fauna and Flora, OJ L 206, 22.7.1992.

<sup>106</sup> Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds, OJ L 20 of 26 January 2010 (replacing Directive 79/409/EEC of 2 April 1979 on the Conservation of Wild Birds, OJ L 103, 25.4.1979).

<sup>107</sup> See also: CLIQUET, A., BACKES, C., HARRIS, J., HOWSAM, P., 2009, Adaptation to climate change: legal challenges for protected areas, *Utrecht Law Review*, Special issue on protected areas in environmental law, vol. 5, issue 1. <http://www.utrechtlawreview.org/publish/articles/000098/article.pdf>; CLIQUET, A., BACKES, C., HARRIS, J., HOWSAM, P., 2010, Response to 'Protected areas and climate change – Reflections from a practitioner's perspective', *Utrecht Law Review*, vol. 6, issue 1.; RABAUT, M. & CLIQUET, A., 2009, The Dynamics of the Marine Environment Versus the Rigid Interpretation of Nature Conservation Law, In: Riley, A. (Ed.), *Advances in Environmental Research*, Volume 3, Nova Science Publishers.

directives enable these goals. The definition of 'conservation' in the Habitats Directive includes the element of restoration of habitats and species (Article 1(a)). Article 2(2) explicitly requires that measures are taken to maintain or restore, at favourable conservation status, natural habitats and species of wild fauna and flora of Community interest. Habitat conservation and restoration will be important as a way to secure the coherence and connectivity of a network. In general, both Directives include the potential to increase ecosystem resilience by designating and managing special protection areas and special areas of conservation. Article 6(4) of the Habitats Directive refers to the overall coherence of Natura 2000 in taking compensatory measures. The requirements for connectivity are provided in Article 3(3) and Article 10 of the Habitats Directive. The Natura 2000 network has thus a key role in halting biodiversity loss because of climate change. By maintaining species and habitats at a favourable conservation status, the network should increase their resilience.

However, several general problems can be identified concerning the implementation of the directives. When we look at the implementation of EU policy and law so far, we see that it concentrates more on the conservation of certain habitats and species at certain places than on the coherence of Natura 2000 as a whole and on the connectivity of the ecosystems. There has been a general failure to consider protected areas as part of an integrated package of measures that the Birds and Habitats Directives require to deliver the overarching objective of obtaining a favourable conservation status<sup>108</sup>. Also, implementation of the directives has sometimes been done in a rather static way. Adaptation to climate change requires a more flexible approach in nature conservation legislation.<sup>109</sup> However, this need for more flexibility should not be abused as an excuse to undermine or weaken nature conservation policy. It should be stressed that 'flexibility' means to do more in nature conservation, not less – more sites, bigger areas, better connected, in order to safeguard and strengthen ecosystem functions and services.

Stronger efforts on a more pro-active implementation will be necessary, amongst others, a continuous process of designation of sites, formulating and re-adapting conservation objectives, allowing for ecosystem functioning and ecological processes and taking measures for connectivity. It will be the task of the member states, and of the Commission and Court to supervise this process. Such a pro-active implementation is necessary in order to reduce the loss of biodiversity and ecosystem services.

In taking adaptive measures (such as the creation of flooding areas) we come across legal rights such as ownership rights and user rights. So a balance must be found between private rights and the common interest. The issue of the likely conflict between private rights and common interest will not be further discussed, but may have to be dealt with by further legislation – property ownership should bring responsibilities as well as rights. According to Woldendorp, the need for legal certainties leads to the 'juridification' of nature conservation policy. This can be in conflict with ecological

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<sup>108</sup> Dodd, A., Hardiman, A., Jennings, K. & Williams, G., 2010, Protected areas and climate change. Reflections from a practitioner's perspective, *Utrecht Law Review*, Vol. 6, Issue 1.

<sup>109</sup> J. Verschuuren, 'Adaptatie aan klimaatverandering vraagt om adaptatie van de wet', 2007 *Nederlands Juristenblad*, no. 45/46, p. 2880; H.E. Woldendorp, 'Dynamische natuur in een statische rechtsorde', 2009 *Milieu & Recht*, no. 3, pp. 134-143.

dynamics.<sup>110</sup> A balance must be found between the need for ecological dynamics and the need for legal certainties.

The issues of increasing ecosystem resilience and coherence and providing connectivity will now be discussed in more detail.

### **3.1.3.2 Increase of ecosystem resilience and coherence**

First, ecosystems need to become more resilient in order to face up to the additional pressure by climate change on biodiversity and to be able to fulfil its function and services, such as coastal defence. Resilience of ecosystems may be secured by creating ecological networks, which should consist of more robust nature areas where ecological processes can take place – depletion of ‘overall’ biodiversity would certainly weaken resistance and resilience.<sup>111</sup> Thus, the first important thing to do is to strengthen the core areas of Natura 2000. The different steps to implement the Natura 2000 network will be analysed: designation of sites, setting conservation objectives, taking conservation measures and making an assessment of human activities.

#### **Designation of protected areas under the Birds and Habitats Directives**

Both the Birds Directive of 1979 and the Habitats Directive of 1992 provide for the establishment of specific protected areas. The procedure for this designation is different for each Directive. Both types of areas will however be included in the same ecological network, the ‘Natura 2000 network’.<sup>112</sup>

On the basis of Article 4 of the Birds Directive, Member States have to take special conservation measures for the species mentioned in Annex I of the Directive, as well as for regularly occurring migratory species that are not mentioned in Annex I, to ensure their survival and reproduction in their area of distribution. For this purpose the Member States shall classify the territories that in number and size are most suitable for the conservation of those species as Special Protection Areas (SPAs), taking into account their protection requirements in the geographical land and sea areas to which this directive applies.

The Court of Justice has produced extensive jurisdiction relating to the designation of SPAs.<sup>113</sup> Decisive for the duty to designate areas are the number of specimens of certain bird species and their relative importance within the Member State in certain areas at the moment of designation. In essence it results in Member States having very little policy margin for designating areas and only being allowed to invoke ecological (ornithological) criteria for the designation of areas; social or economic criteria must not

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<sup>110</sup> See Woldendorp, *supra* note 30, p. 143.

<sup>111</sup> C. Folke *et al.*, ‘Regime shifts, resilience, and biodiversity in ecosystem management’, 2004 *Annual Review of Ecology, Evolution, and Systematics* 35, pp. 557-581.

<sup>112</sup> Art. 3(1) Habitats Directive.

<sup>113</sup> See for instance: Case C-335/90, *Commission v Spain (Marismas de Santoña)*; Case C-44/95, *Regina v Secretary of State for the Environment (Lappel Bank)*; Case C-166/97, *Commission v France (Seine estuary)*; Case C-96/98, *Commission v France (Poitevin Marshes)*; Case C-3/96, *Commission v the Netherlands*; see on this case law B. Beijen, ‘The implementation of area protection provisions from European environmental directives in the Member States’ in this issue of the *Utrecht Law Review*.

play a role in the designation or non-designation of an area. Looking at the requirements of the Birds Directive and the jurisprudence of the Court, they seem rather static. Areas have to be designated because of the presence of a certain number of individuals of a species at a certain time at a certain place. On the other hand, the process of designating sites is not a one-time operation, but is a continuous process, as was confirmed by the Court of Justice<sup>114</sup>. If new bird species occur, because their habitats shift due to climate change, then Member States will have to designate new and additional areas.

The Habitats Directive aims to designate areas for the natural habitats and habitats of species of Community importance described in Annexes I and II, in order to reach a favourable conservation status and if necessary to restore them. Member States contribute to the establishment of Natura 2000 by designating areas as Special Areas of Conservation (SACs). The procedure for the establishment of the SACs is described in Article 4 and consists of various stages. First of all, each Member State shall propose a list of sites indicating which natural habitat types in Annex I and which species in Annex II that are native to its territory the site currently hosts. The designation must take place on the basis of the criteria in Annex III (Stage 1) and relevant scientific data. Annex III includes the ecological criteria on which the designation should be based. Just as for the designation of SPAs under the Birds Directive, Member States should not take into account economic and social criteria in the designation of SACs<sup>115</sup>. A second stage in the establishment of the Natura 2000 network consists of the Commission establishing a list of Sites of Community Importance (SCIs), drawn from the Member States' lists identifying those which host one or more priority natural habitat types or priority species and based on the criteria in Annex III (Stage 2). The decisions of the Commission for the establishment of the list are divided up according to biogeographical regions. For most of these regions Community lists have been established<sup>116</sup>. Once an area has been declared to be an Site of Community Importance according to the procedure described above, the Member State involved designates that area as soon as possible (and within six years at the most) as an SAC.

According to the EU Biological Diversity Plan<sup>117</sup> (European Commission 2006) the network of SPAs should be completed by 2006 for the terrestrial environment and by 2008 for the marine environment. The lists of SCIs have to be adopted by 2006 (terrestrial) and 2008 (marine). The final designations of SACs have to be made by 2010 (terrestrial) and 2012 (marine). The necessary management and conservation measures should be taken by 2010 (terrestrial) and 2012 (marine) for both the SPAs designated under the Birds Directive and the SACs under the Habitats Directive.

In most EU countries the process of designating Natura 2000 sites is well underway (as can be seen on the EU barometer<sup>118</sup>). So far, those areas have been designated on the basis of the presence of certain habitat types and species. The criteria for selecting the SACs, set forth in Annex III of the Habitats Directive, depart from a rather classical

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<sup>114</sup> Case C-209/04, *Commission v Austria (Lauteracher Ried)*.

<sup>115</sup> Confirmed in Case C-371/98, *Severn estuary*.

<sup>116</sup> [http://ec.europa.eu/environment/nature/natura2000/sites\\_hab/biogeog\\_regions/index\\_en.htm](http://ec.europa.eu/environment/nature/natura2000/sites_hab/biogeog_regions/index_en.htm).

<sup>117</sup> See note 22, *supra*.

<sup>118</sup> [http://ec.europa.eu/environment/nature/natura2000/barometer/index\\_en.htm](http://ec.europa.eu/environment/nature/natura2000/barometer/index_en.htm).

conservation approach. The selection of sites for habitat types in Annex I should be based on:

- *‘The degree of representativity of the natural habitat type on the site.*
- *The area of the site covered by the natural habitat type in relation to the total area covered by that natural habitat type within national territory.*
- *The degree of conservation of the structure and functions of the natural habitat type concerned and restoration possibilities.*
- *A global assessment of the value of the site for conservation of the natural habitat type concerned.’*

For the habitats of species mentioned in Annex II, the criteria for selection are:

- *‘The size and density of the population of the species present on the site in relation to the populations present within national territory.*
- *The degree of conservation of the features of the habitat which are important for the species concerned and restoration possibilities.*
- *The degree of isolation of the population present on the site in relation to the natural range of the species.*
- *A global assessment of the value of the site for conservation of the species concerned.’*

Thus, in the Habitats Directive, the size of habitats and the number of species at a certain moment are the most critical factors for the duty to designate conservation sites. However, the fact that the potential for ecological restoration can also be taken into account leaves some room for selecting sites that can fulfil a role in adaptation measures. This aspect should be strengthened and accentuated as far as the designation of new areas is at stake.

In the second phase of the designation of SACs, a Community list is established. The criteria for the selection of these sites include:

- *‘The relative value of the site at national level;*
- *The geographical situation of the site in relation to migration routes of species in Annex II and whether it belongs to a continuous ecosystem situated on both sides of one or more internal Community frontiers;*
- *The total area of the site;*
- *The number of natural habitat types in Annex I and species in Annex II present on the site;*
- *The global ecological value of the site for the biogeographical regions concerned and/or for the whole of the [European] territory (...) [of Member*

*States], as regards both the characteristic of unique aspect of its features and the way they are combined.'*

Although most criteria in the second phase are also mostly aimed at selecting sites based on the actual presence of habitats and sites, the criteria leave some room for flexibility (e.g. the mentioning of migration routes).

Adaptation to climate change should be taken into account when designating sites. This holds true for both SACs and SPAs. This means that sites should be designated that are large enough to face the effects of climate change. Specific attention should be paid to the site selection of those habitats that play a role as carbon sinks. Designated sites should also have a potential as a future refuge for species that will migrate because of climate change. Protected sites may have an important role in providing locations where the full range of potential species' association within each habitat type can develop. The transitional stages of habitats should be recognised, as changing climate results in changing Community compositions.<sup>119</sup> All of this should be explicitly taken into account when evaluating the designation of sites. Ideally, the criteria in Annex III of the Habitats Directive should be expanded and include specifically criteria that allow for designation of sites because of their ecosystem functions and their role in adaptation.

### **Conservation objectives**

According to the Preamble to the Habitats Directive, the necessary measures have to be implemented in each area, having regard to the conservation objectives pursued. Conservation objectives are also important when assessing the impact of plans and projects on the site. Article 6(3) states that any plan or project likely to have a significant effect thereon shall be subject to an appropriate assessment of its implications for the site in view of its conservation objectives. In the Court of Justice's case on the *cockle fisheries in the Wadden Sea*<sup>120</sup>, the importance of conservation objectives was confirmed: where a plan or project is likely to undermine the site's conservation objectives, it must be considered likely to have a significant effect on that site.

Most EU Member States are still in the process of defining those objectives. Conservation objectives can be defined in quantitative parameters (e.g. for the conservation of a certain habitat type we need x hectares; y breeding pairs of birds; z number of reproducing female otters; the number of typical species of a habitat type present). However, it is not necessary to define the conservation objectives with quantitative criteria. Qualitative criteria can serve as objectives, too. If, for example, the

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<sup>119</sup> J. Hossell *et al.*, 'Climate change and nature conservation: Implications for policy and practice in Britain and Ireland', 2003 *Journal for Nature Conservation* 11, p. 70.

<sup>120</sup> Case C-127/02, concerning a request for a prejudicial decision under Art. 234 EC, submitted by the Council of State (Netherlands) by decision of 27 March 2002, recorded on 8 April 2002, in the procedure '*Landelijke Vereniging tot Behoud van de Waddenzee*' (National Association for the Protection of the Wadden Sea), '*Nederlandse Vereniging tot Bescherming van Vogels*' (Dutch Association for the Protection of Birds) against the Secretary of State for Agriculture, Nature Management and Fisheries, in the presence of the *Coöperatieve Producentenorganisatie van de Nederlandse Kokkelvisserij* (Cooperative Producers' Organisation of the Dutch Cockle Fisheries) UA.



capability of an area to serve as a habitat for a certain species is the conservation objective, this objective is still met even when the species concerned has left the area because of the effects of climate change.<sup>121</sup>

Objectives are defined on a national/regional and site level. This is necessary in order to make an appropriate assessment of the conservation status of the habitats and species, and on the impact of human activities on the site. In some cases a change in conservation objectives or an adjustment to the boundaries of an area may be justified (see below). However, we face a possible conflict between the need for legal certainty and the reality of scientific uncertainties: stakeholders want conservation objectives to be set for the long term and to be permanent. This is difficult, if not impossible, in view of climate change: species will disappear; other species will appear, for which new conservation objectives will have to be set. Ecological models predict that migration will be needed and will have to be included in the conservation objectives.

Thus, to some extent the dynamics of nature and especially the dynamics caused by climate change can be taken into account by formulating more qualitative rather than quantitative conservation objectives and by allowing these objectives to be changed after a certain time. However, both these solutions face the disadvantage of a loss of legal certainty when applying the legal regime.

### **Conservation measures and the management of the sites**

According to Article 4(1) and (2) of the Birds Directive, Member States must take special protection measures to ensure the survival and reproduction of the species listed in Annex I and of regularly occurring migratory birds. According to the case law of the Court of Justice Member States must take adequate protection measures (see *Commission v France with regard to the Seine estuary*).<sup>122</sup>

For the sites protected under the Habitats Directive, Member States must also take necessary conservation measures (Article 6(1) Habitats Directive). According to the Habitats Directive 'conservation' means a series of measures required to maintain or restore natural habitats and the populations of species of wild fauna and flora at a favourable status (Article 1(a)). The conservative status of a natural habitat will be taken as favourable when:

- *'its natural range and areas it covers within that range are stable or increasing,*
- *the specific structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future, and*
- *the conservation status of its typical species is favourable as defined [further] in the Habitats Directive (...).' (Article 1(e)).*

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<sup>121</sup> The Dutch Council of State (*Raad van State*), acting as an administrative court, has determined that such qualitative criteria are sufficient, Council of State November 6<sup>th</sup> 2008, 200802545/1, 2009 *Tijdschrift voor Milieu en Recht*, no. 29.

<sup>122</sup> Case C-166/97, *Commission v France (Seine estuary)*.

The reference to the structure and functions of habitats as an element of their favourable conservation status is important in the light of adaptation to climate change (e.g. the proper functioning of a wetland, which in turn can serve as a natural buffer against flooding). It could for example be very useful when taking adaptation measures at the coast (in function of safety against flooding), that those measures also aim at conserving and restoring those habitats which can fulfil a role in coastal defence.

The conservation status for species will be taken as favourable when:

- *'population dynamics data of the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats,*
- *the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and*
- *there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.'* (Article 1 (i))

Besides the positive conservation measures Member States must also take action to prevent negative effects on the SPAs. The measures were originally included in Article 4(4), 1st clause of the Birds Directive. As a consequence of the strict interpretation of this provision by the Court of Justice this regime was replaced by Article 6(2)-(4) of the Habitats Directive (see below). Finally, Member States must also strive to prevent pollution and any deterioration of habitats outside the protection areas (Article 4(4), 2nd clause of the Birds Directive). According to the Habitats Directive, Member States must take appropriate action for both the SPAs and SACs to avoid the deterioration of natural habitats and of habitats of species and to avoid any disturbance of the species for which the areas have been designated (Article 6(2) Habitats Directive).

In the light of the effects of climate change, this raises a couple of questions. If there is deterioration, the question rises whether this is the consequence of insufficient measures against human activities, which Member States have to avoid, or whether this is an impact of climate change (the species will migrate in as well as out). If climate change, which is at least to a great extent human induced, is the cause of an alteration, can that be qualified as a 'natural reason' and can it be attributed to one Member State? If habitats deteriorate to such an extent that they no longer qualify as a habitat for the species for which they were designated, can the site be reduced in size, or even removed from the Natura 2000 network?

The Birds Directive does not provide any explicit provisions on the declassification of sites. The Habitats Directive only provides a possibility in Article 9: an SAC may be considered for declassification where this is warranted by natural developments noted as a result of the surveillance provided for in Article 11 of the Habitats Directive. Even if Article 9 may not be applied to SPAs as well (but only for SACs), which is uncertain, the same possibility seems to be recognized by the Advocate General for SPAs, too. In

a case from 2006 against Portugal<sup>123</sup> the Court did not accept an adjustment of an SPA, but in her opinion in that case the Advocate General concluded that '(...) if the Member State can show that a deterioration in quality in the meantime is due to objective circumstances over which it has no influence, for example volcanic eruptions, may it justify the reduction in the extent of an SPA.'<sup>124</sup> Although she did not explicitly state this, we assume that the Advocate General could have relied on Article 9 of the Habitats Directive to underpin this conclusion. The Court confirmed in that case that a Member State may not reduce the surface area of an SPA or alter its boundaries unless the areas are no longer the 'most suitable territories'. Since Portugal did not deliver any proof of the existence of such a situation, the Court held that Portugal had failed to fulfil its obligations under Article 4(1) of the Birds Directive. Thus there seems to be some room at least in the reasoning of the Advocate General that habitat loss due to 'natural' reasons and a change of the boundaries or conservation objectives for those reasons may be justified.

However, in a case against the UK on the transposition of Article 6(2) Habitats Directive in Gibraltar, the Court seems to be very restrictive. In that case the United Kingdom raised the argument that only non-natural deterioration is to be avoided. The Advocate General on the contrary held that the examples brought forward by the UK, changes in sea level and climate change, relate less to nature in general than to structural environmental changes that jeopardise the conditions for the continued existence of the protected habitats and species in the Natura 2000 sites concerned. The Court did decide that at least to some extent the Member States are obliged to take measures to react to natural changes to avoid any deterioration of the habitats and species for which the areas have been designated. 'It may be necessary to adopt both measures intended to avoid external man-caused impairment and disturbance and measures to prevent natural developments that may cause the conservation status of species and habitats in SACs to deteriorate.'<sup>125</sup>

It has to be seen whether and how the Court itself will accept 'natural changes' as a reason for a decline in a certain habitat type or species in a protected area. Even if it does, the question is whether and to what extent the effects of climate change can be qualified as 'objective circumstances over which a Member State has no influence'. Guidance by the EU is needed on how to assess the conservation status of each species and habitat type with respect to climate change.<sup>126</sup> Even if one could consider climate change as a situation over which one has no influence (as an individual state),<sup>127</sup> then still, the burden of proof is for the Member State to show that the deterioration is the direct consequence of climate change. According to the Advocate General only if a Member State can show that a deterioration in quality is due to objective circumstances over which it has no influence, may it justify the reduction in the extent of an SPA. It might be very difficult for Member States to provide the required necessary proof.<sup>128</sup>

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<sup>123</sup> Case C-191/05, *Commission of the European Communities v Portuguese Republic*.

<sup>124</sup> AG Kokott, C-191/05, Para. 14.

<sup>125</sup> Case C-6/04, *Commission v United Kingdom*, Para. 34.

<sup>126</sup> Hossell *et al.*, *supra* note 40, p. 70.

<sup>127</sup> See in this sense: H.E. Woldendorp, 'Integratiedebat in het natuurbeschermingsbeleid', 2007 *Nederlands Juristenblad*, no. 45/46, p. 2884.

<sup>128</sup> Woldendorp, *supra* note 49, p. 2884.

Furthermore, the deterioration of a habitat will often be caused by more than just climate change, but will already have been influenced by other human-induced reasons as well.<sup>129</sup> For those factors Member States should take appropriate steps to avoid deterioration and they cannot rely on the exception of natural developments or objective circumstances.

### **Assessment of plans and projects**

An assessment framework for the implementation of (new) activities is determined in Article 6(3)-(4) of the Habitats Directive: any plan or project that is not directly connected with or necessary to the management of an SPA or SAC, but is likely to have a significant effect thereon, shall be subject to an appropriate assessment of its implications for the site in view of the site's conservation objectives. The national authorities can only agree to the plan or project after having ascertained that it will not adversely affect the natural features of the site concerned and after having provided opportunities for participation if necessary (Article 6(3) Habitats Directive). A possible exception is provided in Article 6(4) of the Habitats Directive: a plan or project may nevertheless be carried out, in spite of a negative assessment of the implications for the site, if certain conditions are met. No alternative solutions should be available; it should concern imperative reasons of overriding public importance, including reasons of a social or economic nature; and the Member State should take all compensatory measures necessary to ensure that the overall coherence of Natura 2000 is protected. The Commission should be informed of the compensatory measures adopted.

Given the importance of Article 6(3)-(4) a further concretization of concepts such as significant consequence and appropriate assessment is very important. The Court of Justice has made some conclusions concerning those concepts in a preliminary ruling on the cockle fisheries in the Wadden Sea.<sup>130</sup> In this case, the Court stated the importance of the conservation objectives (see above).

According to the text of Article 6(3) of the Habitats Directive and the guidelines of the Commission,<sup>131</sup> the assessment should take into account the cumulative effect of individual plans and projects. This was confirmed by the Court in the *cockle fisheries* case.<sup>132</sup> Both the Court and the Commission, refer to the cumulative effects of the combination of a plan or project with other plans and projects. The Commission is of the opinion that on grounds of legal certainty the combination provision is restricted to other plans or projects which have actually been proposed. No statements have been made on the cumulative effects of plans and projects and the effects emanating from climate change. According to Verschuuren, autonomous developments such as the effects of climate change or invasive species should be taken into consideration as well.

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<sup>129</sup> *Ibid.*, p. 2885.

<sup>130</sup> Case C-127/02, *Cockle Fisheries*.

<sup>131</sup> European Commission, [Managing Natura 2000 sites: The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC](#), 2000, p. 35.

<sup>132</sup> Case C-127/02, *Cockle Fisheries*, Para. 53.

However, a problem is that little can be done to mitigate the effects of climate change.<sup>133</sup> Also on this issue guidance by the EU is needed on how to deal with the cumulative effects of plans or projects and climate change.

As an exception, plans and projects with a negative effect can be allowed for reasons of overriding public interest. Adaptive measures (such as safety measures against flooding) can certainly fall under this definition. In view of the impact of climate change on biodiversity, this creates the opportunity for win-win situations, by including elements of naturalness in the adaptive measures. In taking adaptation measures, the damage to biodiversity should be prevented and minimised (as was also put forward by the Commission in the Communication on Biodiversity (Objective 9)).

If plans and projects are allowed within Natura 2000 sites, compensation measures have to be taken. The Commission requires active compensation, meaning that compensation must be realised before the negative effects of a plan take place.<sup>134</sup> According to Boere and Taylor this guidance could be used by Member States proactively to adjust the Natura 2000 network in response to climate change. They admit, however, that this may be difficult to implement, because there might be little space available in Member States for any adjustment.<sup>135</sup> Furthermore, Article 6 of the Habitats Directive only requires compensation in the case of a plan or project with negative effects on the site. The Commission also stated that taking compensatory measures from the beginning does not exempt Member States from following the procedure on Article 6 on the assessment of plans and projects.<sup>136</sup>

### 3.1.3.3 Connectivity

Next to creating coherent ecological networks, measures are needed outside these networks. The aim is to enhance connectivity and coherence. In order to enable species to migrate, ecological corridor areas are needed.

Connectivity is provided in Articles 3 and 10 of the Habitats Directive. Member States shall endeavour in their land-use planning and development policies to encourage the management of features of the landscape which are of major importance for wild fauna and flora. This must be done in particular with a view to improving the ecological coherence of the Natura 2000 network. Those features are those which, by virtue of their linear and continuous structure or their function as stepping-stones are essential for the migration, dispersal and genetic exchange of wild species.

The Habitats Directive thus provides a legal basis for connectivity. However, compared to the provisions on the Nature 2000 network, the provisions on connectivity are put rather weakly: 'shall endeavour', 'where they consider it necessary', 'to encourage'. Both the EU itself and the Member States have focused mainly on the implementation of the provisions on the designation and management of the Natura 2000 areas.

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<sup>133</sup> J. Verschuuren, 'Shellfish for Fishermen or for Birds? Article 6 Habitats Directive and the Precautionary Principle', 2005 *Journal of Environmental Law*, no. 2, pp. 265-283.

<sup>134</sup> European Commission, *supra* note 53, p. 46.

<sup>135</sup> G. Boere and D. Taylor, 'Global and regional governmental policy and treaties as tools towards the mitigation of the effect of climate change on waterbirds', 2004 *Ibis* 146, p. 114.

<sup>136</sup> European Commission, *supra* note 53, p. 45.

Because of the urgent need for connectivity, and the transboundary character of corridor areas, this cannot be left in the hands of the Member States alone. Therefore a stronger commitment on the European level for nature conservation measures outside the core areas of Natura 2000 and for connectivity measures is necessary. In light of the overall objective of reaching a favourable conservation status of habitats and species and creating a coherent network of protected areas, and the fact that in the most of Europe the status of conservation is unfavourable, connectivity measures will be obliged, in spite of the weaker formulation.

A commitment for connectivity has recently been taken at the policy level: in the new biodiversity strategy target 2 aims by 2020 for maintaining and enhancing ecosystems and their services by establishing green infrastructure and restoring at least 15% of degraded ecosystems. One of the actions under this target contains specific provisions on green infrastructure:

*“6a) By 2014, Member States, with the assistance of the Commission, will develop a strategic framework to set priorities for ecosystem restoration at sub-national, national and EU-level.*

*6b) The Commission will develop a Green Infrastructure Strategy by 2012 to promote the deployment of green infrastructure in the EU in urban and rural areas, including through incentives to encourage up-front investments in green infrastructure projects and the maintenance of ecosystem services, for example through better targeted use of EU funding streams and Public Private Partnerships.”<sup>137</sup>*

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<sup>137</sup> Communication from the Commission to the European Parliament, the Council, the Economic and Social Committee and the Committee of the regions, Our life insurance, our natural capital: an EU biodiversity strategy to 2020, COM(2011) 244 final, 3 May 2011, Annex, Target 2, Action 6.

## 3.2 Water Framework Directive

### 3.2.1 Objectives

In the framework of the Water Framework Directive (Directive 2000/60/EC<sup>138</sup>), member States shall achieve a good ecological status (GES) of their surface waters<sup>139</sup> and a good quantitative status of their groundwaters<sup>140</sup>. They have to achieve a good chemical status too for both surface water, including coastal water and groundwater.

Those objectives could be affected by climate change: scarcity of water, decreased dilution capacity of receiving waters, salt water intrusion, and perturbation of ecosystems...<sup>141</sup>.

What are those obligations?

The Directive gives some definitions detailing the content of those objectives.

- Quantitative status is part of the good groundwater status<sup>142</sup>. It is "an expression of the degree to which a body of groundwater is affected by direct and indirect abstractions"<sup>143</sup>. It is good when it achieves the "status defined in table 2.1.2 of Annex V"<sup>144</sup>.
- Chemical status is part of good surface water and groundwater status "Good surface water chemical status" means the chemical status required to meet the environmental objectives for surface waters established in Article 4(1)(a), that is the chemical status achieved by a body of surface water in which concentrations of pollutants do not exceed the environmental quality standards established in Annex IX and under Article 16(7), and under other relevant Community legislation setting environmental quality standards at Community level"<sup>145</sup>. Whereas "Good groundwater chemical status" is the chemical status of a body of groundwater, which meets all the conditions set out in table 2.3.2 of Annex V<sup>146</sup>."
- Ecological status is part of the good surface water status. It shall be at least good<sup>147</sup>. "Good ecological status" is the status of a body of surface water, so classified in accordance with Annex V<sup>148</sup> and "Ecological status" is an expression of the quality of the structure and functioning of aquatic ecosystems associated with surface waters, classified in accordance with Annex V<sup>149</sup>".

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<sup>138</sup> Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy *OJ L 327*, 22.12.2000, p. 1–73.

<sup>139</sup> Art. 4. 1. a) ii WFD.

<sup>140</sup> Art. 4. 1. b) ii WFD.

<sup>141</sup> Examples of primary and secondary climate change impacts on water status in European Commission, Common Implementation Strategy for the Water Framework Directive (2000/60/EC), Guidance document No. 24 River Basin Management in a Changing Climate, technical report 2009 – 040, 134p. 45-46.

<sup>142</sup> Art. 2 § 20 WFD.

<sup>143</sup> Art. 2 § 26 WFD.

<sup>144</sup> Art. 2 § 28 WFD.

<sup>145</sup> Art. 2 § 24 WFD.

<sup>146</sup> Art. 2 § 25 WFD.

<sup>147</sup> Art. 2 § 18 WFD.

<sup>148</sup> Art. 2 al. 22 WFD.

<sup>149</sup> Art. 2 al. 21 WFD.

Then, to define the GES, the WFD mostly refer to annex V which is strongly technical<sup>150</sup>.

Is the WFD allow to support ecosystems adaptation to climate change? To this end, on the one hand the GES obligation should be flexible enough to take into account the evolution of the ecosystems, but on the other hand it has to be strong enough to ensure its water qualities objectives. The general orientation given in the definition of ecological status seems to fit well with this constraint: "Ecological status" is an expression of the quality of the structure and functioning of aquatic ecosystems associated with surface waters, classified in accordance with Annex V"<sup>151</sup>. Moreover, in the annex V, the GES is assessed according to the level of human pressures and not according to a list of species which should be present. A network of reference sites has been implemented in the process of calibration of the boundaries between high, good and moderate status<sup>152</sup>. They should present reference conditions i.e. with the least possible human pressure. In front of the difficulty to isolate the impact of climate change from other human pressures, the reference site network will have a critical role: It is one of the principles set out in the climate change guide of the European Commission – Common Implementation Strategy (EC-CIS): "Principle 3: Monitoring change at reference sites. Human activities and climate changes at the river basin scale may have similar outcomes in the quality elements used for status assessment. Therefore, robust information on changes at reference sites – locations that by definition are subject to limited anthropogenic modification – is the primary means of isolating the two sets of impacts"<sup>153</sup>.

### **3.2.2 Adaptation in the directive**

There is no mention of adaptation to climate change in the WFD.

In the WFD there are two indirect possibilities for enabling adaptation to climate change: To adapt the text of the Directive according to scientific and technical progress (3.1.1) or exemptions to GES (3.1.2).

#### **3.2.2.1 To adapt the text of the Directive according to scientific and technical progress**

Following the regulatory procedure<sup>154</sup> (see annex 3), some elements of the WFD can be modified with a lighter process than the procedure to adopt the initial Directive.

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<sup>150</sup> See annex I concerning the GES calibration.

<sup>151</sup> Art. 2 al. 21 WFD.

<sup>152</sup> See annex 1.

<sup>153</sup> European Commission, Common Implementation Strategy for the Water Framework Directive (2000/60/EC), Guidance document No. 24 River Basin Management in a Changing Climate, technical report 2009 – 040, 134p., p.6.

<sup>154</sup> To begin, all those adaptations followed the regulatory procedure defines in the articles 5 and 7 of the Decision 1999/468/EC (Council Decision of 28 June 1999 laying down the procedures for the exercise of implementing powers conferred on the Commission (1999/468/EC) OJ L 184, 17.7.1999, p. 23–26). But this decision has been modified to include, in an article 5a, a regulatory procedure with scrutiny according more importance to the European Parliament and to the Council. Then WFD has been modified to include this procedure concerning technical specifications and standardized methods for analysis and monitoring of water status (Art. 8.3) ; modification of Annexes I, III and section 1.3.6 of Annex V and result of intercalibration exercise (Annex V 1.4.1 point ix).



In the WFD, this competence is limited to the adoption of technical specifications and standardised methods for analysis and monitoring of water status<sup>155</sup>; the modification of annexes I Information required for the list of competent authorities, III Economic analysis and section 1.3.6 of Annex V standards for monitoring of quality elements ; the adoption of guidelines on the implementation of Annexes II and V ; the adoption of technical formats for the purpose of transmission and processing of data, including statistical and cartographic data<sup>156</sup>.

### 3.2.2.2 Exemptions to GES

A water body can be designated as artificial or heavily modified<sup>157</sup>. The WFD states that "'Artificial water body' means a body of surface water created by human activity" and "'Heavily modified water body' means a body of surface water which as a result of physical alterations by human activity is substantially changed in character, as designated by the Member State in accordance with the provisions of Annex II"<sup>158</sup>. Then, it shall achieve a good ecological potential as defined in annex V<sup>159</sup> instead of a GES<sup>160</sup>.

Otherwise, in the WFD, exemptions to the GES can be allowed on different basis : extension of the deadline or temporary deterioration (Art. 4.4 and 4.6). In some cases more time is needed to achieve the GES objectives. "Member states determine that all necessary improvements in the status of bodies of water cannot reasonably be achieved within the timescales set out in that paragraph for at least one of the following reasons:

*(i) the scale of improvements required can only be achieved in phases exceeding the timescale, for reasons of technical feasibility;*

*(ii) completing the improvements within the timescale would be disproportionately expensive;*

*(iii) natural conditions do not allow timely improvement in the status of the body of water"<sup>161</sup>. Moreover, exemptions can be allowed when a temporary deterioration occurs "if this is the result of circumstances of natural cause or force majeure which are exceptional or could not reasonably have been foreseen, in particular extreme floods and prolonged droughts, or the result of circumstances due to accidents which could not reasonably have been foreseen"<sup>162</sup>.*

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<sup>155</sup> Art. 8.3 WFD.

<sup>156</sup> Art. 20 WFD.

<sup>157</sup> Art. 4.3 WFD.

<sup>158</sup> Art. 2 al. 8 and 9 WFD

<sup>159</sup> Art. 2 al. 23 WFD.

<sup>160</sup> However, this disposition seems not to be considered as a exemption because it is a specific water body category. European Commission, Guidance document on exemptions to the environmental objectives, Guidance document n°20, technical report – 2009 – 027, 2009, 46p., p. 21.p. 6-7.

<sup>161</sup> Art. 4.4 WFD.

<sup>162</sup> Art. 4.6 WFD.

Less stringent environmental objectives can be set "for specific bodies of water when they are so affected by human activity (...), or their natural condition is such that the achievement of these objectives would be infeasible or disproportionately expensive" if "the environmental and socioeconomic needs served by such human activity cannot be achieved by other means, which are a significantly better environmental option not entailing disproportionate costs;"<sup>163</sup>. But new modifications can be taken into account too if "(...) the reasons for those modifications or alterations are of overriding public interest and/or the benefits to the environment and to society of achieving the objectives set out in paragraph 1 are outweighed by the benefits of the new modifications or alterations to human health, to the maintenance of human safety or to sustainable development" and "the beneficial objectives served by those modifications or alterations of the water body cannot for reasons of technical feasibility or disproportionate cost be achieved by other means, which are a significantly better environmental option"<sup>164</sup>.

So those WFD exemptions should allow Member States to adapt their implementation of WFD to climate change without breaching of it.

### 3.2.3 Analysis

#### 3.2.3.1 Expected impact of Climate Change on implementation of the WFD

"Apart from exceptional circumstances, it is not expected that, within the timeframe of WFD implementation (i.e., up to 2027), and within the metrics used for status assessment, that a climate change signal will be statistically distinguishable from the effects of other human pressures at a level requiring reclassification of sites. It is more likely that indirect pressures arising from human responses to climate change – both adaptation and mitigation - will have a greater impact (such as elevated water abstractions for irrigated agriculture, new flood defence infrastructure or effects on water quality and quantity of intense production of energy crops)"<sup>165</sup>.

GES will support ecosystems because it will allow them a better adaptation to climate change. But if adapting to climate change ecosystems evolve leading to fail in achieving GES, it will be very difficult to link a specific evolution to this global change. Reference sites should play a critical role in observing this evolution (because about no anthropogenic disturbance impacts them)<sup>166</sup>.

If some modifications to avoid negative effects of climate change, like dykes to avoid flood because of sea rising, impact some water bodies preventing Member States to achieve GES, they could use the 4.7 exemption.

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<sup>163</sup> Art. 4.5 WFD. European Commission, Guidance document on exemptions to the environmental objectives, Guidance document n°20, technical report – 2009 – 027, 2009, 46p., p. 21.

<sup>164</sup> Art. 4.7 WFD.

<sup>165</sup> European Commission, Common Implementation Strategy for the Water Framework Directive (2000/60/EC), Guidance document No. 24 River Basin Management in a Changing Climate, technical report 2009 – 040, 134p.

<sup>166</sup> *Ibid.* p. 45, 49, 50.

### 3.3 Marine Strategy Directive

#### 3.3.1 Objectives

The Marine Strategy Directive (Directive 2008/56/EC<sup>167</sup>) includes the notion of good environmental status (GEnS)<sup>168</sup> which is close to the notion of GES (good ecological status) of the WFD adopted close to eight years before. "Member States shall take the necessary measures to achieve or maintain good environmental status in the marine environment by the year 2020 at the latest"<sup>169</sup>.

#### Definition of the GEnS in the Marine Strategy Framework Directive (MSD).

Focussed on the ecosystem notion, the GEnS can be compared to the GES of the WFD. Its definition can be found: art. 3.5 completed by the article 9 titled "Determination of good environmental status". From one hand, its definition is much longer than the one in the WFD, describing in a qualitative way conditions for a healthy ecosystem. From the other hand, it seems not so technical. As the WFD, the definition of GEnS refers to annexes, annex 1 "Qualitative descriptors for determining good environmental status" and an annex 3 "Indicative lists of characteristics, pressures and impacts". But, these annexes keep on "qualitative descriptors". Neither classification nor normative definitions can be found. However, the article 9.3 holds that Directive will be supplemented, following a quite light procedure<sup>170</sup>, by non-essential elements of the Directive: criteria and methodological standards to be used by the Member State. The purpose of this addition is "to ensure consistency and to allow for comparison between marine regions or subregions of the extent to which good environmental status is being achieved"<sup>171</sup>. This is the Commission Decision of 1 September 2010 on criteria and methodological standards on good environmental status of marine waters<sup>172</sup>. GEnS should be achieved by 2020. The MSD gives a definition of the term 'criteria': "distinctive technical features that are closely linked to qualitative descriptors"<sup>173</sup>.

Wouter Van De Bund, from JRC<sup>174</sup> makes a constructive interpretation of this large definition, proposing "to work on making the descriptors more concrete and quantifiable". He expects "extended normative definitions for GES [GEnS] descriptors" and points out that "For each of the descriptors, we want to identify relevant metrics

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<sup>167</sup> 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 (Marine Strategy Framework Directive) *OJ L* 164, 25.6.2008, p. 19–40.

<sup>168</sup> There is a translation mismatch between English and some other languages versions of the Directive like the French one. The French version uses the expression "bon état écologique" to translate "good environmental status". For more developments see: Mee, L. D., Jefferson, R. L., Laffoley, D. A. & Elliott M., "How good is good? Human values and Europe's proposed Marine Strategy Directive", *Marine Pollution Bulletin*, Volume 56, Issue 2, February 2008, pp.187-204, p.190.

<sup>169</sup> Art. 1.1 MSD.

<sup>170</sup> Following the procedure of the articles 5Bis and 7 of 1999/468/EC Council Decision of 28 June 1999 laying down the procedures for the exercise of implementing powers conferred on the Commission (Art. 25.3 MSD).

<sup>171</sup> Art. 9.3 (extract) MSD.

<sup>172</sup> 2010/477/EU, JOUE 2.9.2010, L 232/14.

<sup>173</sup> Art. 3.6 MSD.

<sup>174</sup> European Commission's Joint Research Centre (JRC) is part of the European Commission (Directorate-General, DG). Its mission is to provide an "independent scientific and technological support for EU policy-making". see: <http://ec.europa.eu/dgs/jrc/index.cfm>

and evaluate their response to degradation gradient"<sup>175</sup>. Concerning methodological standards, which are not defined in the MSD, he states that "we will come to a generally-applicable mechanism which will come from observational data through the statement-assessment outputs. It is not the aim to set the boundary between what does and does not constitute GES [GEnS], but to agree on the conceptual framework that should be applicable throughout the marine regions"<sup>176</sup>.

Marine ecosystems are much more open than terrestrial ones. That's why finding marine sites with "the least possible human pressure" to constitute a network of reference sites is very difficult. Scientists state that modelisation or hind-casting is needed to estimate reference conditions in order to calculate metric assessment of GEnS<sup>177</sup>. But an interesting example of the difficulty to define GEnS is offered by Mee: "Two centuries ago the English Channel had extensive oyster beds - a completely different habitat than any current one. Oyster beds were destroyed by overexploitation and pollution in the 19th Century but, at that time, the more mobile flatfish flourished. Since then, the entire area has been subjected to heavy trawling, another major source of impact, and flatfish populations have dwindled.

Should a baseline be a seafloor abundant in oysters or one having large populations of flatfish?"<sup>178</sup> This question highlights the importance to focus on the dynamic feature of ecosystems in assessing their health. The choice of bio-indicators enables to reflect this dynamic balance is critical to achieve an effective and realistic GES/GEnS.

### 3.3.2 Adaptation in the directive

Since the introduction MSD includes climate change in the GEnS conception: "In view of the dynamic nature of marine ecosystems and their natural variability, and given that the pressures and impacts on them may vary with the evolvement of different patterns of human activity and the impact of climate change, it is essential to recognise that the determination of good environmental status may have to be adapted over time. Accordingly, it is appropriate that programmes of measures for the protection and management of the marine environment be flexible and adaptive and take account of

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<sup>175</sup> As advocated in their extended abstract : "the targets for good environmental status operational in such a way that the critical descriptors of the ecosystem integrity can be linked to pressures, and that there is a common understanding across regional seas what is 'good' and what is 'undesirable' status for the set of descriptors listed in the Annex I". Heiskanen, A-S., Van De Bund, W., Cristina Cardoso, A. " "Marine Strategy Framework Directive: Experiences from the Water Framework Directive Implementation" " 2012 Marine Targets Seminar European Marine Strategy and issues in the High seas " Brest, 9-11 December 2008, see : [http://www.ifremer.fr/2012MarineTargets/pages\\_accueil/European\\_Marine\\_Strategy.html](http://www.ifremer.fr/2012MarineTargets/pages_accueil/European_Marine_Strategy.html).

<sup>176</sup> Van De Bund, W., Communication " Towards criteria and methodological standards for Good Environmental Status ", " 2012 Marine Targets Seminar European Marine Strategy and issues in the High seas " Brest, 9-11 December 2008, see : [http://www.ifremer.fr/2012MarineTargets/pages\\_accueil/European\\_Marine\\_Strategy.html](http://www.ifremer.fr/2012MarineTargets/pages_accueil/European_Marine_Strategy.html)

<sup>177</sup> Heiskanen, A-S., Van De Bund, W., Cristina Cardoso, A. " "Marine Strategy Framework Directive: Experiences from the Water Framework Directive Implementation" op. cit.

<sup>178</sup> Mee, L. D., Jefferson, R. L., Laffoley, D. A. & Elliott M., " How good is good? Human values and Europe's proposed Marine Strategy Directive ", *Marine Pollution Bulletin*, Volume 56, Issue 2, February 2008, Pages 187-204, p. 193.

scientific and technological developments. Provision should therefore be made for the updating of marine strategies on a regular basis"<sup>179</sup>.

Then, the MSD makes provisions concerning adaptives measures. Climate change is identified as an element which could make varying pressures and impacts on ecosystems. Climatic factors are integrated in the definition of environmental status" meaning the overall state of the environment in marine waters, taking into account the structure, function and processes of the constituent marine ecosystems together with natural physiographic, geographic, biological, geological and climatic factors, as well as physical, acoustic and chemical conditions, including those resulting from human activities inside or outside the area concerned;" (Art. 3§4 MSD)

Adaptive management is part of the "good environmental status" definition "(...) Adaptive management on the basis of the ecosystem approach shall be applied with the aim of attaining good environmental status" (Art. 3§5 MSD).

There is no definition of Adaptive management but its spirit can be found in §34 of the introduction: "In view of the dynamic nature of marine ecosystems and their natural variability, and given that the pressures and impacts on them may vary with the evolvement of different patterns of human activity and the impact of climate change, it is essential to recognise that the determination of good environmental status may have to be adapted over time. Accordingly, it is appropriate that programmes of measures for the protection and management of the marine environment be flexible and adaptive and take account of scientific and technological developments. Provision should therefore be made for the updating of marine strategies on a regular basis."

We can perceive difficulty to combine both achievement of good environmental status objectives, programmes of measures "flexible and adaptive" and possibility to make evolve the notion of good environmental status itself. How to distinguish the origin of an evolution between climate change and other pressures?

As well as the WFD, the MSD offers two indirect possibilities for enabling adaptation to climate change: To adapt the text of the Directive according to scientific and technical progress (3.3.1) or exemptions to GEnS (3.3.2).

### **3.3.2.1 To adapt the text of the Directive according to scientific and technical progress**

In the MSD, the field of the Commission competence is broader. The regulatory procedure shall follow methodological standards which may be adopted for the application of Annexes I (Qualitative descriptors for determining good environmental status), III (Indicative lists of characteristics, pressures and impacts), IV (Indicative list of characteristics to be taken into account for setting environmental targets) and V (Monitoring programmes) ; and concerning technical formats which may be adopted for the purposes of transmission and processing of data, including statistical and cartographic data<sup>180</sup>.

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<sup>179</sup> §34 Introduction MSD; a close disposition was already part of the Commission's proposal see: COM(2005) 505 final, 24 October 2004.

<sup>180</sup> Art. 24.2 MSD.

The regulatory procedure with scrutiny is required in the other cases. This procedure was used to define "Criteria and methodological standards to be used by the Member States "to ensure consistency and to allow for comparison between marine regions or subregions of the extent to which good environmental status is being achieved. Before proposing such criteria and standards the Commission shall consult all interested parties, including Regional Sea Conventions"<sup>181</sup> ; to amend Annexes III (Indicative lists of characteristics, pressures and impacts), IV (Indicative list of characteristics to be taken into account for setting environmental targets) and V (Monitoring programmes) in the light of scientific and technical progress.

We can imagine that practical difficulties met by experts in implementing the WFD specially in the framework of intercalibration exercise have led to extend the executive power of the Commission on amending Annexes and defining criteria and methodological standards to define the GEnS. The regulatory procedure with scrutiny is lighter than amending the MSD by a new Directive, but it guaranties an important role to the European Parliament and to the Council in those evolutions<sup>182</sup>.

### 3.3.2.2 Exemptions to GEnS

The article 14 of MSD is dedicated to exceptions to environmental targets or GenS. They are listed as following:

- "a) action or inaction for which the Member State concerned is not responsible;
- b) natural causes;
- c) force majeure;
- d) modifications or alterations to the physical characteristics of marine waters brought about by actions taken for reasons of overriding public interest which outweigh the negative impact on the environment, including and transboundary impact;
- e) natural conditions which do not allow timely improvement in the status of the marine waters concerned"<sup>183</sup>.

The European Parliament fails to include climate change to the causes allowing exemptions to the GEnS in MSD. It proposed, in its 66th amendment to the MSD project, to add climate change to the causes allowing an exemption to the good environmental status<sup>184</sup>. This amendment has been rejected by the common position of the European Council<sup>185</sup>. The decision of the Committee responsible, 2nd reading

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<sup>181</sup> Art. 9.3 MSD.; Commission Decision of 1 September 2010 on criteria and methodological standards on good environmental status of marine waters op. cit.

<sup>182</sup> See annex 2.

<sup>183</sup> Art. 14.1 MSD.

<sup>184</sup> Report A6/2006/373, first lecture Parliament opinion TA/2006/482/.

<sup>185</sup> COM(2007)456.

propose again this part of the amendment<sup>186</sup>. But the Parliament falls into the line of the common position in 2nd reading<sup>187</sup>.

A table detailing exemptions and derogations to GES/GeNS in WFD and MSD is presented in the annex 2<sup>188</sup>. It is important to notice that a disposition concerns the articulation between Directives about those exemptions. According to the article 4.9 WFD "Exemptions from the WFD environmental objectives cannot be used to deviate from objectives and obligations set by other pieces of EU legislation".

For example, a new development is proposed that would cause deterioration of status and a failure to achieve the objectives for a Natura 2000 site. In such a case, in order to fulfil both the WFD and the Habitats Directive obligations, the Member State have to prove that it comply to the exemption dispositions of both of them<sup>189</sup>.

### **3.3.3 Analysis**

As well as in the ICZM recommendation, Member States have to conduct an ecosystem approach in order to achieve their GeNS obligation. This approach should be flexible enough to allow them to adapt to climate change.

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<sup>186</sup> Document A6/2007/389 amendement 45.

<sup>187</sup> TA/2007/595.

<sup>188</sup> It will be a base for comparing and analysing exemptions and derogations between all the texts analysed in the framework of WP1.2 Part. 1.

<sup>189</sup> European Commission, Guidance document on exemptions to the environmental objectives, Guidance document n°20, technical report – 2009 – 027, 2009, 46p, p. 11.

## **3.4 Environmental impact assessment Directive and Strategic Environmental Assessment Directive**

### **3.4.1 Objectives**

The Environmental Impact Assessment Directive (Directive 85/337/EEC<sup>190</sup>, as amended by Directive 97/11/EC<sup>191</sup> and Directive 2003/35/EC<sup>192</sup>, hereafter “EIA Directive”) requires an Environmental Impact Assessment (EIA) of any project likely to have significant effects on the environment by virtue, *inter alia* of their nature, size or location, before consent for the development can be granted<sup>193</sup>. The public is consulted at the beginning as well as in the different stages of the EIA process, it can give its opinion and is informed of the decision afterwards<sup>194</sup>.

The Strategic Environmental Assessment Directive (Directive 2001/42/EC<sup>195</sup>, hereafter SEA Directive) involves the systematic identification and evaluation of the impacts of a plan or programme on the environment. In association with the EIA Directive, the SEA Directive requires certain plans and programmes that are likely to have significant effects on the environment to undergo an environmental assessment. The Directive's overall aim is “*to contribute to the integration of environmental considerations, into the preparation and adoption of plans and programmes with a view to promoting sustainable development*”<sup>196</sup>.

### **3.4.2 Adaptation in the directives**

The EIA Directive outlines the project categories that are subject to an EIA, the procedures to be followed and the content of the assessment. Article 4 of the Directive states that an EIA is mandatory for projects of the classes listed in Annex I but is only mandatory for projects listed in Annex II after a case-by-case examination or when it falls under certain thresholds or criteria set by Member States. Dams and other installations designed for the holding back or permanent storage of water when this exceeds 10 million cubic metres is an example of a project that falls into the Annex I category. Other dams and installations to hold water or store it on a long-term basis, coastal work to combat erosion and maritime works such as dykes, jetties and other sea defence works, marinas and caravan sites are included in Annex II as projects which may require an EIA. Following the European Court of Justice in the case *C-72/95 Kraaijeveld*<sup>197</sup> the EIA Directive has a wide scope and broad purpose. A Member State is said to exceed the limits of its discretion if they establish criteria and thresholds in

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<sup>190</sup> Council Directive 85/337/EEC of 27 June 1985 on the assessment of the effects of certain public and private projects on the environment, OJ L 175, 5.7.1985, p. 40.

<sup>191</sup> Council Directive 97/11/EC of 3 March 1997 amending Directive 85/337/EEC on the assessment of the effects of certain public and private projects on the environment. OJ L 073, 14.03.1997, p5.

<sup>192</sup> Directive 2003/35/EC of 26 May 2003 providing for public participation in respect of the drawing up of certain plans and programmes relating to the environment and amending with regard to public participation and access to justice Council Directives 85/337/EEC and 96/61/EC.

<sup>193</sup> Art. 2 (1) EIA-Directive.

<sup>194</sup> Art. 6, 7, 9, 10 and 10a EIA-Directive.

<sup>195</sup> Directive 2001/42/EC of the European Parliament and of the Council on the assessment of the effects of certain plans and programmes on the environment. OJ L 197, 21.7.2001, p. 30-37.

<sup>196</sup> Art. 2 SEA-Directive.

<sup>197</sup> ECJ 24 October 1996, nr. C-72/95, *European Court Reports* 1996, I, 5403.



such a way that, in practice, projects are exempted in advance from the requirement of an impact assessment, without taking into account the significant effects on the environment. Dykes, in order to prevent flood relief works, should be seen as flood relief works and therefore fall under Annex II of the EIA Directive. Furthermore modification to dykes (relocation, reinforcement or widening and replacement) is also subjected to an EIA under the EIA Directive. Subsequent to this decision the EIA Directive was amended so that, from 1997 onward, dykes are explicitly included in Annex II (k) of the EIA Directive.

Due to the fact that climatic factors are mentioned as one of the aspects of the environment likely to be significantly affected, and the emission of pollutants is mentioned as one of the likely significant effects, it must be noted that the inclusion of assessing the emissions of greenhouse gasses of certain projects is already a commonly used practice in several Member States (Annex IV). Annex III of the Directive lists the factors that should be taken into account when assessing the environmental impact of a proposed development. These factors include characteristics of the project, location and characteristics of the potential impacts. With clear guidance, climate change adaptation could also be considered in the EIA process. Such guidance has already been developed by the Organisation of Economic Cooperation and Development (OECD) in relation to general EIA processes. The OECD is a multi-disciplinary inter-governmental cooperation organisation established in 1961. Today, it comprises 33 member countries and the European Commission. In 2010 the report "Incorporating Climate Change Impacts and Adaptation in Environmental Impact Assessment Opportunities and Challenges" was published<sup>198</sup>. The report shows that there is ample scope for employing EIA procedures as a vehicle for enhancing the resilience of projects to the impacts of climate change. A number of entry points within the EIA process have been identified to incorporate climate change impact and adaptation consideration<sup>199</sup>.

On the other hand, the SEA Directive requires a SEA of certain plans and programmes that are likely to have significant environmental impacts. It can be said that SEA identifies the impacts of a proposed plan or programme on the environment rather than the impact of environmental change, such as climate change, on the plan or programme. This means that the inclusion of adaptation considerations, which anticipates the effects of climate change, is not strictly included into the SEA Directive.

However this does not mean that the plan-maker does not need to take into account the effects climate change will have on the plan or programme since this can lead to maladaptation and is not in line with the initial purpose of the SEA Directive, namely to enhance sustainable development. There are several entry points to include climate change adaptation considerations in the procedural requirements of an SEA. At the screening phase it can be assessed whether the scope of the plan or programme justifies considering climate change risk and vulnerability by investigating if the plan or programme is climate change sensitive. In the scoping phase it can be determined

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<sup>198</sup> S. Argawala, Kramer, A.M., Prudent-Richard, G., and Sainsbury M., 2010. Incorporating climate change impacts adaptation in Environmental Impact Assessments: Opportunities and Challenges. OECD Environmental Working Paper No. 24, OECD Publishing, 37pp.

<sup>199</sup> S. Argawala, Kramer, A.M., Prudent-Richard, G., and Sainsbury M., 2010. Incorporating climate change impacts adaptation in Environmental Impact Assessments: Opportunities and Challenges. OECD Environmental Working Paper No. 24, OECD Publishing, 37pp.

what climate change variables and elements of the plan or programme need to be assessed, as well as which adaptation options can be included. The environmental report assesses the likely significant effects of the plan and programme on the environment. Climate change can influence these effects in the future and therefore climate change impacts on the plan or programme need to be assessed in the baseline description as well as the influence of other relevant adopted plans and programme. Significant problems and constraints caused by climate change on the plan and programme should be identified. At the implementation and monitoring phase climate change indicators can be taken into account to make sure that the plan and programme can withstand the effects of climate change. Finally the public participation process, which preferably takes place as early as possible to avoid public resistance at the end of the process by adopting the plan or programme, will lead to an increased climate change awareness.<sup>200</sup>

### 3.4.3 Analysis

SEA differs from an EIA as the environmental assessment takes place at a higher level (planning and programming) and at an earlier stage in the process than an EIA that applies to specific projects.

The SEA and the EIA are used and put forward by various international agencies and institutions, but most of the MS recognize that climate change issues are not adequately identified and assessed within their processes.

Within the EU, the Green Paper on Adaptation states that climate change proofing must be integrated into the EIA Directive and Strategic Environmental Assessment Directive (SEA Directive<sup>201</sup>) and policy impact assessments must address impacts on ecosystems.<sup>202</sup> The White Paper on Adaptation states that the Commission will develop guidelines together with Member States and stakeholders to ensure that climate change impacts are taken into account when implementing EIA and SEA by 2011. In a follow-up to this statement, the European Commission launched a wide public consultation in relation to review of EIA legislation in June 2010. In August of the same year the Committee of the Regions gave its opinion on improving the EIA and SEA Directives which states that both Directives should contain a well-established methodology to determine the impacts of climate change<sup>203</sup>. All these findings will elaborate into a review in 2011. This review should culminate in a new text that will also encompass new policy developments such as sectors of climate change, energy and

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<sup>200</sup> S. Argawala, Kramer, A.M., Prudent-Richard, G., and Sainsbury M., 2010. Incorporating climate change impacts adaptation in Environmental Impact Assessments: Opportunities and Challenges. OECD Environmental Working Paper No. 24, OECD Publishing, 37pp.

<sup>201</sup> Directive 2001/42/EC of the European Parliament and of the Council on the assessment of the effects of certain plans and programmes on the environment. OJ L 197, 21.7.2001, p. 30-37.

<sup>202</sup> COM (2007) 354 final, Green Paper from the Commission to the Council, the European Parliament, the European Economic and Social Committee and the Committee of the Regions: Adapting to climate change in Europe – options for EU action.

<sup>203</sup> Opinion of the Committee of the Regions on Improving the EIA and SEA Directives (2010/C 232/07) OJ. L. 232/41.

biodiversity.<sup>204</sup> Concluding guidance on the integration of adaptation in the SEA and the EIA Directive is underway.

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<sup>204</sup> Report from the Commission to the Council, the European Parliament, the European Economic and Social Committee and the Committee of the Regions on the application and effectiveness of the EIA Directive, COM/2009/0378 final, 2009.

## **3.5 Flood directive**

### **3.5.1 Objectives**

The Directive on the assessment and management of floods (Directive 2007/60/EC<sup>205</sup>) was adopted by the Commission on 18 January 2006 and entered into force on 26 November 2007. The aim of this Directive is to introduce a framework for the assessment and management of flood risks so as to reduce the risks that floods pose to human health, the environment, infrastructure and property.<sup>206</sup> This framework centres on assessing flood risk, developing hazard and risk maps for various scenarios and finally preparing flood risk management plans. It is recognised in the preamble to the Directive that the WFD did not have the reduction of flood risk as a principal objective and did not take the future risk of flooding as a result of climate change fully into account.<sup>207</sup> In contrast to it, climate change is explicitly included in the Floods Directive and Member States are clearly expected to take into account the likely impacts of climate change on the occurrence of floods<sup>208</sup>. The objectives of the Directive relating to the management of flood risks are to be determined by the Member States themselves and should be based on local and regional circumstances.<sup>209</sup> The Directive applies to both inland waters and coastal waters across the European Union.

The word 'flood' is defined as "the temporary covering by water of land not normally covered by water. This shall include floods from rivers, mountain torrents, Mediterranean ephemeral water courses, and floods from the sea in coastal areas, and may exclude floods from sewerage systems".<sup>210</sup> 'Flood risk' is defined as "the combination of the probability of a flood event and of the potential adverse consequences for human health, the environment, cultural heritage and economic activity associated with a flood event".<sup>211</sup> There is a strong correlation between the mechanisms used in the Water Framework Directive and those to be used in implementing the Floods Directive.<sup>212</sup> Accordingly certain coastal areas and/or river basins must be assigned to a specific river basin district, to correspond with the provisions of the WFD. The competent authorities may be different to those identified in accordance with the provisions of the WFD if deemed necessary.

### **3.5.2 Adaptation in the directive**

The Floods Directive makes no specific mention of adaptation to climate change per se, though it is clear from the objectives and provisions, outlined below, that it does take into account the role that climate change plays in flood risk and management. With this in mind, the provisions of the Directive can be interpreted in a sufficiently

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<sup>205</sup> Directive 2007/60/EC of 23 October 2007 on the assessment and management of flood risks, OJ L 288, 6.11.2007, p 27-34.

<sup>206</sup> Art. 1, Floods Directive.

<sup>207</sup> Preamble paragraph 4, Floods Directive.

<sup>208</sup> Art. 4, Floods Directive.

<sup>209</sup> Preamble paragraph 10, Floods Directive.

<sup>210</sup> Art. 2(1), Floods Directive.

<sup>211</sup> Art. 2(2), Floods Directive.

<sup>212</sup> Art. 3(1), Floods Directive.

flexible manner so as to incorporate adaptation options. A precautionary approach against increased flood risk could be described as a strategy of adaptation to changing hydro-climatic conditions. The Commission itself views the management of flood risks as a crucial component of climate change adaptation, the full implementation of the Directive is said to “help increase resilience and facilitate adaptation efforts”.<sup>213</sup> The fact that the Directive requires Member States to assess flood risk and prepare management plans signifies that it is a comprehensive mechanism for addressing increased risk of flooding due to climate change and for developing appropriate adaptation approaches. The flood risk management plans to be developed by 2015 are premised on prevention, protection and preparedness; key elements of adaptation. It can be said, therefore, that while adaptation is not explicitly mentioned in the Directive, the principles of adaptation are at the heart of the Directive and adaptation can be integrated into the implementation of it, and by association, the WFD.

In order to achieve the objectives of the Floods Directive, Member States must firstly carry out a preliminary flood risk assessment to identify the river basins and associated coastal areas at risk of flooding.<sup>214</sup> The Directive states that this assessment can be based on “available or readily derivable information” but specifically identifies “impacts of climate change on the occurrence of floods”.<sup>215</sup> The assessment must include maps of the river basin district / coastal area showing topography and land use; a description of previous flood events and their adverse impacts and a description of where these may re-occur.<sup>216</sup> In addition, if it is felt necessary by the Member State concerned, the preliminary assessment may also take into account “as far as possible” issues such as “the topography, the position of watercourses and their general hydrological and geomorphological characteristics, including floodplains as natural retention areas, the effectiveness of existing manmade flood defence infrastructures, the position of populated areas, areas of economic activity and long-term developments including impacts of climate change on the occurrence of floods”.<sup>217</sup> The Directive stipulates that Member States must complete this preliminary flood risk assessment by 22 December 2011.<sup>218</sup>

Following on from the preliminary assessment, Article 5 states that Member States must then identify those areas where potential significant flood risks exist or might be considered likely to occur.<sup>219</sup> Once this step has been completed, responsible authorities will then be required to draw up flood hazard and flood risk maps by 2013.<sup>220</sup> According to Article 6(3) the hazard maps to be prepared after the initial assessment must cover:

- (a) floods with a low probability, or extreme event scenarios;
- (b) floods with a medium probability (likely return period  $\geq$  100 years);
- (c) floods with a high probability, where appropriate.

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<sup>213</sup> COM(2009) 147 final, para. 3.2.3.

<sup>214</sup> Art. 4(1), Floods Directive.

<sup>215</sup> Art. 4(2), Floods Directive.

<sup>216</sup> Art. 4(2)(a)-(c), Floods Directive.

<sup>217</sup> Art. 4(2)(d), Floods Directive.

<sup>218</sup> Art. 4(4), Floods Directive.

<sup>219</sup> Art. 5, Floods Directive.

<sup>220</sup> Art. 6(8), Floods Directive.

For each of these scenarios, the flood hazard maps must show the flood extent, the water depths or water level, as appropriate and the flow velocity or the relevant water flow.<sup>221</sup> Likewise, the flood risk maps must show the “potential adverse consequences” associated with each of the above scenarios. This should include information on the indicative number of people potentially affected, type of economic activity of the area potentially affected, potentially affected developments that are subject to an IPPC licence and thereby constitute a pollution threat, protected areas identified under Annex IV of the WFD and any other information which the Member States regard as important.<sup>222</sup> Interestingly, in relation to coastal areas, Article 6(6) provides that Member States may decide that where there is an “adequate level of protection” in place for these, the preparation of flood hazard maps shall be limited to floods with a low probability or extreme event scenarios (i.e. (a) above).

On the basis of both the hazard and risk maps, flood risk management plans (FRMPs) are to be prepared and coordinated at the appropriate river basin district, or otherwise agreed unit of management, level.<sup>223</sup> Member States must set out objectives for the management of flood risks for the areas identified in their flood risk maps. Such objectives should focus on reducing the potential adverse consequences of flooding on “human health, the environment, cultural heritage and economic activity”, but can also, if considered appropriate, focus on “non-structural initiatives and/or on the reduction of the likelihood of flooding”.<sup>224</sup> FRMPs must also take into account aspects such as costs and benefits, flood extent and flood conveyance routes and areas which have the potential to retain flood water, such as natural floodplains, the environmental objectives of the WFD, soil and water management, spatial planning, land use, nature conservation, navigation and port infrastructure.<sup>225</sup> There is a large degree of flexibility associated with flood risk management plans, with Article 7(3) providing for the inclusion of other related matters such as the promotion of sustainable land use practices, improvement of water retention and controlled flooding of certain areas in the case of a flood event. Member States must be cognisant of the implications of their flood risk management plans on countries upstream and/or downstream of them and, accordingly, avoid the likelihood of increasing flood events in those areas.<sup>226</sup> Flood risk management plans must be completed and published by Member States by 22 December 2015.<sup>227</sup>

The Floods Directive strongly emphasises the commonalities between it and the Water Framework Directive and advocates that Member States focus on opportunities for improving efficiency, information exchange and for achieving common synergies and benefits regarding the environmental objectives stipulated in Article 4 of the WFD.<sup>228</sup> The preparation of the first flood risk management plans and their subsequent reviews, for example, can be carried out in coordination with, or indeed integrated into, the reviews of river basin management plans.<sup>229</sup> The preliminary flood risk assessment,

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<sup>221</sup> Art. 6 (4)(a)-(c), Floods Directive.

<sup>222</sup> Art. 6(5)(a)-(d), Floods Directive.

<sup>223</sup> Art. 7(1), Floods Directive.

<sup>224</sup> Art. 7(2), Floods Directive.

<sup>225</sup> Art. 7(3), Floods Directive.

<sup>226</sup> Art. 7(4), Floods Directive.

<sup>227</sup> Art. 7(5), Floods Directive.

<sup>228</sup> Art. 9, Floods Directive.

<sup>229</sup> Art. 9(2), Floods Directive.

hazard maps, risk maps and flood risk management plans must be made available to the public.<sup>230</sup> Likewise, this article further provides that Member States should promote “active involvement” of interested parties in the production, review and updating of the flood risk management plans. In terms of reviewing the FRMPs, there is further potential for adaptation to be included here as the Directive stipulates that the Commission may “adapt the Annex [according] to scientific and technical progress” albeit in accordance with the regulatory procedure provided for in Article 5a of Decision 1999/468/EC.<sup>231</sup> The Annex outlines the components to be included in the first Flood Risk Management Plans to be prepared as well as what should be included in subsequent versions. Preliminary flood risk assessments, flood hazard maps, flood risk maps and flood risk management plans must be reviewed and, if necessary, updated every six years.<sup>232</sup> Article 14 specifically provides that “the likely impact of climate change on the occurrence of floods shall be taken into account in the reviews”.<sup>233</sup>

### 3.5.3 Analysis

The Floods Directive has inherent flexibility to incorporate and promote adaptation to climate change. Member States are proffered scope to do this by formulating their own objectives in relation to flood risk management, allowing their objectives to be specific to their needs and the needs of the region concerned. Integration with the WFD, from the second River Basin Management Plan onward, will also facilitate adaptation efforts. Arguably more could have been done by the Directive to advocate natural approaches to flood management, such as the use of wetlands for flood attenuation, but this is still possible at Member State level. Further guidance for both Member States and competent authorities, on how to incorporate adaptation into flood risk management planning, would be useful and may be forthcoming as part of the Commission’s efforts to mainstream climate change adaptation into key European policy areas.

The Common Implementation Strategy referred to above (under the WFD – See 3.2) also supports the implementation of the Floods Directive. In December 2006 EU Water Directors established a Working Group on Floods (Group F), which reports to the Strategic Coordination Group and the Water Directors. One of the objectives of the work programme for the period 2010-2012 is to provide a platform for information exchange between Member States and other actors (including WFD groups) on themes relevant to the implementation of the Floods Directive. These themes include, but are not limited to, flood risk assessment, vulnerability assessment, climate change and floods, flood management plans and civil protection aspects (Water Directors, 2009). In terms of tangible outputs the Working Group proposes to deliver a catalogue of good practices of ‘no regret’ and ‘win-win’ measures in view of climate change by mid 2011.

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<sup>230</sup> Art. 10(1), Floods Directive.

<sup>231</sup> Preamble para. 21 and Art. 11(2), Floods Directive.

<sup>232</sup> Art. 14(1)-(3), Floods Directive.

<sup>233</sup> Art. 14(4), Floods Directive.

## 3.6 ICZM Recommendation

### 3.6.1 Objectives

The Integrated Coastal Zone Management Recommendation<sup>234</sup> is a no binding instrument. It states a strategy to manage coastal zone in an integrated way.

In order to achieve a "good coastal zone management", Member States should follow principles of integrated coastal zone management in their national strategies and measures based on these strategies. The recommendation states the eight following principles:

*"(a) a broad overall perspective (thematic and geographic) which will take into account the interdependence and disparity of natural systems and human activities with an impact on coastal areas;*

*(b) a long-term perspective which will take into account the precautionary principle and the needs of present and future generations;*

*(c) adaptive management during a gradual process which will facilitate adjustment as problems and knowledge develop. This implies the need for a sound scientific basis concerning the evolution of the coastal zone;*

*(d) local specificity and the great diversity of European coastal zones, which will make it possible to respond to their practical needs with specific solutions and flexible measures;*

*(e) working with natural processes and respecting the carrying capacity of ecosystems, which will make human activities more environmentally friendly, socially responsible and economically sound in the long run;*

*(f) involving all the parties concerned (economic and social partners, the organisations representing coastal zone residents, non-governmental organisations and the business sector) in the management process, for example by means of agreements and based on shared responsibility;*

*(g) support and involvement of relevant administrative bodies at national, regional and local level between which appropriate links should be established or maintained with the aim of improved coordination of the various existing policies. Partnership with and between regional and local authorities should apply when appropriate;*

*(h) use of a combination of instruments designed to facilitate coherence between sectoral policy objectives and coherence between planning and management."*

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<sup>234</sup> Recommendation of the European Parliament and of the Council of 30 May 2002 concerning the implementation of Integrated Coastal Zone Management in Europe, OJ L 148, 6.6.2002, p. 24–27.



In order to achieve, a "good coastal zone management", this approach develops an ecosystem approach on the coastal zone<sup>235</sup>. In a climate change context, long term perspective and adaptive management principles will be of critical to achieve a "good coastal zone management".

### 3.6.2 Adaptation in the recommendation

It is interesting to specify that initially, the Commission recommendation proposal<sup>236</sup> and its presentation document<sup>237</sup> don't mention climate change. The following section will present how the reference to climate change will be included later in the procedure.

The Committee of the Regions opinion about those two documents do not mention climate change<sup>238</sup>. But climate concern appears in the opinion of Economic and Social Committee<sup>239</sup>. The first comment of the Committee about principles of ICZM is following: "a) the Commission emphasises that the coastal zone management model must be applied in a broad, long-term perspective, drawing in all the social and economic players in these zones. The duration and impact of phenomena particular to coastal zones are not immediately clear. Their effects are also influenced by upstream human actions. Climate change too can trigger reactions which jeopardise the dynamics and stability of coastal zones, as in the case of the currently rising sea levels, caused by higher temperatures, which disrupt the coastal equilibrium; "<sup>240</sup>.

So, in its recommendations, the Committee mentions: " Climate change, triggered by rising ambient temperatures (the greenhouse effect), is increasing evaporation rates and loss of water reserves; the Committee considers that ICZM should look closely at the approach to water savings in rivers and up-stream reservoirs. This should include testing new crop systems which minimise water consumption. Scientists acknowledge the close link between stormy sea conditions, floods and rising air temperatures, which will affect the territorial stability of coastal zones. The Committee believes that ICZM must include spatial planning and land-use standards which reflect these new circumstances, without prejudice to the need for a land-use policy for coastal zones"<sup>241</sup>.

Then, the P. McKenna report on the recommendation proposal raised the problem that there is no reference to climate change in the proposal. P. McKenna proposed to solve it by some amendments<sup>242</sup>:

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<sup>235</sup> Queffelec (B.) et Philippe (M.) « La gestion des zones côtières dans le golfe du Morbihan : regard du projet Corepoint » rapport Corepoint 2008, cofinancement interreg région Bretagne, CG Ille et Vilaine, CG Morbihan, 148p.

<sup>236</sup> Document COM(2000)545 final.

<sup>237</sup> Communication from the Commission to the Council and the European Parliament on Integrated Coastal Zone Management: a Strategy for Europe (COM(2000)547 final/2).

<sup>238</sup> Document 2001/C148/07 14 February 2001 OJ C 148 18.05.2001, p. 0023.

<sup>239</sup> CES0401/2001, 28 March 2001, OJ C 155 29.05.2001, p. 0017.

<sup>240</sup> CES0401/2001, op. cit, §3.1 a).

<sup>241</sup> CES0401/2001, op. cit, §4.1.1 et 4.1.2.

<sup>242</sup> Report on the proposal for a European Parliament and Council recommendation concerning the implementation of Integrated Coastal Zone Management in Europe, A5-0219/2001, 21 June 2001.

- Amendment 4 introduces in the preamble the following paragraph: "The threat to EU coastal zones is increased by global warming, causing the sea level to rise, changes in storm frequency and strength, and increased coastal erosion and flooding". Its justification details: "The draft Recommendation ignores the threat from global warming and climate change which is possibly the greatest new threat to Europe's coastal zones. The European Commission's recent report 'Assessment of Potential Effects and Adaptations for Climate Change in Europe, 2000, outlines the ongoing factors of climate change, rising sea levels and storm frequency, as important contributors to the problems of flood risk, coastal erosion and coastal squeeze. The report predicts that by 2080 global sea levels could be 20 to 105cm higher than the 1961 to 1990 mean climate";
- Amendment 7 introduces in the preamble the following paragraph: "(2d) Coastal areas are increasingly subject to the general changes in climate." Its justification details: "The amendment stresses the link between the problems observed in coastal areas and the current climate changes";
- Amendment 17 to the Chapter 1 proposes to change the name of the Chapter 1 from "A Common Vision" to "A Common Strategy". This strategy will be based on "principles", the second one is following: "Recognition of the threat to coastal zones posed by continued global warming";
- Amendment 24 to the Chapter 2 adds the following paragraph: "5a. The protection of coastal settlements and their cultural heritage from the dangers posed in the sea (the rising level of the sea, the increasing frequency and violence of coastal storms and the changes in wind direction)".

P. McKenna goes back to climate change in the section "Threats and Needs" of its explanatory statement: "The draft Recommendation also ignores the threat from global warming and climate change which is possibly the greatest new threat to Europe's coastal zone. The European Commission's recent report 'Assessment of Potential Effects and Adaptations for Climate Change in Europe, 2000, outlines the ongoing factors of climate change, rising sea levels and storm frequency, as important contributors to the problems of flood risk, coastal erosion and coastal squeeze. The report predicts that by 2080 global sea level could be 20 to 105cm higher than the 1961 to 1990 mean climate (...). The need for a European CZM policy, very close cooperation between member states and their national CZM structures is essential".

Join to the McKenna report, the opinion of the Committee on Fisheries does not mention climate change but Committee on the Regional Policy, Transport and Tourism does it, inviting the Committee on the Environment, Public Health and Consumer Policy to include the following amendment: "Coastal areas are increasingly subject to the general changes in climate" in the preamble of the recommendation. It is the Amendment 7 of the McKenna report aforementioned. Those amendments have been adopted by the European Parliament. Then, in the Common Position adopted by the Council<sup>243</sup>, amendments 4 and 7 have been accepted but merged; amendment 17 have been "largely incorporated and reworded, although the reference to a "binding"

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<sup>243</sup> Document 13395/2/2001 (C5-0698/2001), C 058, 05 March 2002, p. 0001 E.

common strategy is omitted"<sup>244</sup>; amendment 24 have been rejected: "the Council consider[ing] that the substance of this amendment is already covered in Chapter I (A Strategic Approach - see indents (a) to (d)). Chapter II on the principles to be followed for ICZM is not considered an appropriate place for such a provision."<sup>245</sup>

So at the end of this procedure, the Recommendation has been adopted. It includes climate change, in its preamble: "Community coastal zones are further threatened by the effects of climate change, in particular rising sea levels, changes in storm frequency and strength, and increased coastal erosion and flooding." and in the strategic approach: "recognition of the threat to coastal zones posed by climate change and of the dangers entailed by the rise in sea level and the increasing frequency and violence of storms;". Moreover, in Chapter 1 "a strategic approach" the recommendation states that Member States "take a strategic approach to the management of their coastal zones, based on: (...) recognition of the threat to coastal zones posed by climate change and of the dangers entailed by the rise in sea level and the increasing frequency and violence of storms;"

Otherwise, it is important to mention that the principles of ICZM as presented in the recommendation include the following statements: "a long-term perspective which will take into account the precautionary principle and the needs of present and future generations" and "adaptive management during a gradual process which will facilitate adjustment as problems and knowledge develop. This implies the need for a sound scientific basis concerning the evolution of the coastal zone;". By combining those latter dispositions with statements mentioning climate change we can consider that ICZM recommendation considers the question of adaptation to climate change.

The recommendation is a no binding instrument which takes into account the climate change. So, Member States can adapt their duty to conduct a "good coastal zone management" to the evolution implied by the climate change. The implementation of ICZM as stated in the Recommendation should support coastal ecosystem to better adapt to the climate change.

### 3.6.3 Analysis

Following an ecosystem approach, the ICZM recommendation should allow Member States to adapt their good coastal zone management to climate change.

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<sup>244</sup> *Ibid.* p. 4.

<sup>245</sup> *Ibid.*

## 4 Conclusion

Nature and biodiversity can contribute significantly to the adaptation to climate change. International protected areas such as Ramsar sites and World Heritage sites can contribute to a worldwide network of protected areas. None of the mentioned international conventions discussed in this report address the issue of climate change explicitly in the convention. However, all deal with the issue of climate change in the framework of the work of the Conference of the Parties or the Meeting of the Parties, such as work programmes or decisions. Although the nature conventions do not form a barrier against adaptation to climate change, the conventions fall short of a pro-active adaptation strategy, including more stringent and precise obligations on creating a robust network of protected areas and creating connectivity between these protected areas .

At the European level, the Birds and Habitats Directives provide to a certain extent for possibilities for ecosystem resilience and connectivity. The Natura 2000 network can play an important function in an adaptation strategy. As a result of their climate change policy, the EU and the Member States could focus more on implementing the directives in such a way that they correspond better to those needs.

The following elements are important:

- The designation of sites should include sites that have a potential as a future refuge for species, and sites that provide us with ecosystem services. Ideally, the criteria in Annex III of the Habitats Directive should mention this explicitly.
- Qualitative rather than quantitative criteria seem to be preferable when defining the conservation objectives of an area.
- Changes to the conservation objectives should be allowed when the Member State proves that the reason for those changes is not man-made.
- Conservation and restoration measures for the Natura 2000 sites are required in order to safeguard the ecosystem services provided by certain habitat types such as coastal wetlands.
- In order to provide for connectivity between the core areas, there is a need for a stronger policy commitment on the European level for nature conservation measures outside the core areas of Natura 2000 and for connectivity measures. This can be done by a more stringent approach by the Commission in supervising the implementation of Article 10 by Member States. Compulsory purchase powers for securing ecosystem service provision may be required.

It appears that WFD, ICZM recommendation and MSD seems flexible enough to allow Member States to achieve their obligations in spite of climate change. In the framework of WFD, European Commission advocates that achieving GES would help ecosystems to adapt to climate change. This statement can be extended to ICZM recommendation and MSD. So, theoretically speaking, climate change should not impede member states to implement those texts.

But, by nature ecosystems and especially marine ecosystems, evolve. This evolution is increased by climate change. So, practically speaking, the difficulty will be for the scientists to find bio-indicators allowing to assess if Member States achieve their good status obligations in an evolving ecosystem.

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