12

Safety against flooding

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In the 20th century, the average annual sea level increase was 1.7 mm. Since the 1950s, a significant acceleration of the global sea level rise has been observed. Currently, the annual sea level increase amounts to 3.4 mm per year (global average), and thus exceeds the sustainability goal of a maximum increase of 2 cm each decennium (*Brouwers et al. 2015*). The statistical analysis of the measurements at the Belgian coast is not straightforward, given that the sea level is not only influenced by climate change but also by natural fluctuations. Nevertheless, the values show that the annual average sea level in 2013 was significantly higher than at the start of the measurements. In Ostend the trend line increased by 115 mm between 1951 and 2013 (figure 1). Significant increases have been recorded in Zeebrugge and Nieuwpoort as well. However, this increase does not seem to have continued in the last few years (*Brouwers et al. 2015*). Recent studies concerning extreme high water in Ostend reveal that the storm surge, regardless of the increase of the annual average sea level, does not seem to show an exceptional or additional increase (*Willems 2014*). Climate change and the associated sea level rise also result in more intense erosion of coastal areas and a higher frequency of storm surges (*EEA Technical Report 2010a*, *Balancing the future of Europe's coasts, EEA 2013*), although no increase in the storm frequency in the Belgian part of the North Sea (BNS) has been observed so far (*Van den Eynde et al. 2011*, *CLIMAR project BELSPO*). In *Brouwers et al. (2015)* an overview is given of scenarios regarding the sea level rise and storm surges for the Belgian coast.

The above-mentioned factors imply an increased flood risk in low-lying coastal areas. The Netherlands and Belgium belong to the most vulnerable countries of the European Union, given that the elevation of more than 85% of the Belgian and Dutch coastal area is lower than the level of a yearly storm (+ 5 m TAW) (*EEA Report 2006*, *Eurosion*, *Balancing the future of Europe's coasts, EEA 2013*). In Flanders, 15% of the area is situated below 5 meters above the average sea level. Moreover, the Belgian coast has the highest proportion of built-up area of all European coasts: in 2000, more than 30% of the coastal strip of 10 km wide was built-up area. This figure amounted to 50% of the coastal area when considering the first kilometer inland of the coastline. 33% of citizens living in West Flanders reside in the low-lying polders which are prone to flooding from the sea (*Brouwers et al. 2015*). Besides housing, intense economic activities take place in the coastal areas of the Netherlands and Belgium, *inter alia* due to the presence of harbours. Hence, the loss of life and material damage in case of a flood may be quite high (*The European environment: state and outlook 2010. Adapting to climate change 2010*, *Kellens, 2011*).

An analysis of the Flemish sea barrier in 2007 and 2008 revealed that about one third of the coast and coastal ports need additional protection against the impact of super storms. The *Masterplan Coastal Safety* (approved by the

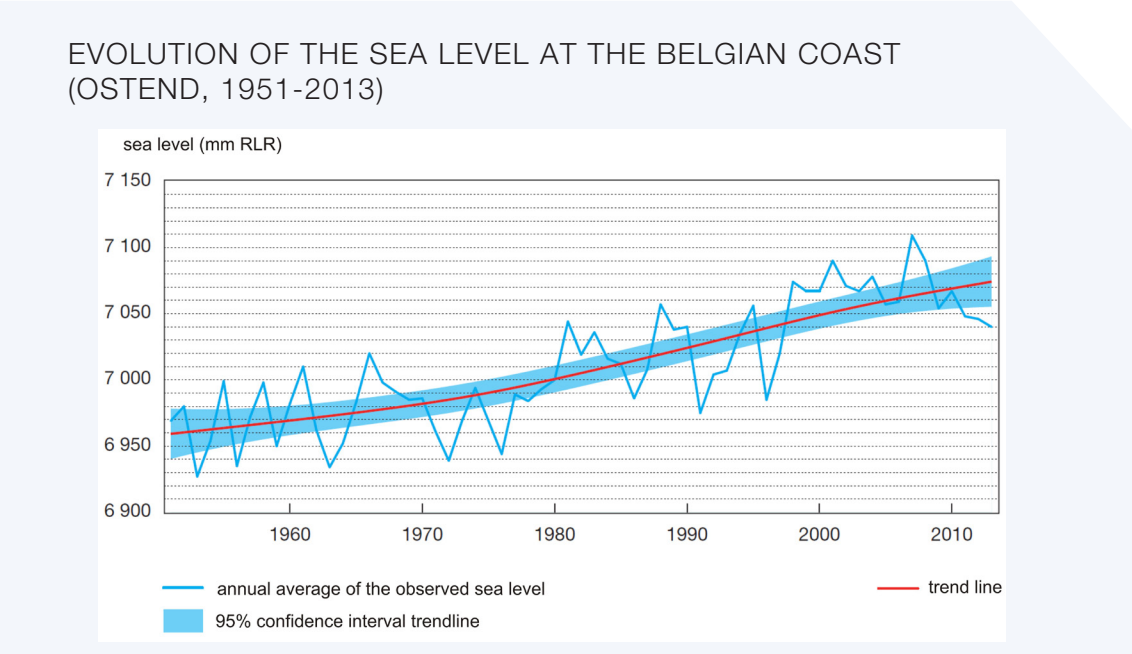

Figure 1. Evolution of sea level on the Belgian coast (Ostend, 1951-2013) (Source: *Brouwers et al. 2015*, MIRA based on PSMSL and agency for Maritime and Coastal Services, more information: *www.milieurapport.be*). Note: The sea level is expressed in mm RLR (Revised Local Reference). Data relating to a local reference level (for the Belgian coast this is TAW) was converted to the international reference level.

Flemish government on 10 June 2011) defines the measures required for a sufficient protection of the coastline, coastal harbours and the adjacent low-lying polders against super storms by 2050. To achieve this both 'soft' measures (beach nourishment, dune nourishment, etc.) and 'hard' coastal protection measures (seawall, flood barriers, etc.) are included in the masterplan. In Nieuwpoort the realization of a storm surge barrier is investigated. Measures include the reinforcement of locks, dams and discharge constructions that constitute the connection with rivers and canals in the hinterland. Flooding of low-lying polders due to heavy rainfall also occurs in the coastal area, but is not restricted to this zone. Nevertheless, it is important to take this kind of floods into account, especially given that by 2100, the chance of rainfall may be 10% higher in the coastal area compared to the hinterland (*Van Steertegem 2009*). However, this type of floods will not be discussed in the current text.

12.1 Policy context

In 2007, the *Directorate-General for the Environment* of the European Commission issued the *Floods Directive* (2007/60/EC) to counter the harmful consequences of floods on humans, nature, heritage, economy, etc. and the potential increase in the number of floods in the context of climate change. The directive is valid for all European coastal and inland waters. Since 2013, Europe has a strategy for adapting to climate change (COM (2013) 216, *website Climate Adapt*) which includes the impact on coastal areas.

Since 1980, the policy concerning water management has been a competence of the regions (law of 8 August 1980). The most important legislative component of this policy is the *Integrated Water Policy of 18 July 2003* that deals with the Flemish implementation of the European Floods Directive from 2010 onwards. The *Coordination Committee on Integrated Water Policy* hosts the deliberation in Flanders between the various policy domains and levels of government responsible for water policy. The policy context and the division of competences in Belgium and Flanders with regard to water policy is discussed in detail in the river basin management plan for the Scheldt 2016-2021 (in preparation).

The *Coastal division* (part of the agency for Maritime and Coastal Services – *MDK*, which in turn is part of the policy domain of Mobility and Public Works – *MOW*) is responsible for the safety of the Flemish coast and more specifically for flooding by the sea. Every 6 years, the Flemish authorities submit the entire sea barrier to a safety test. This test aims to guarantee the basic safety in all coastal zones. This basic safety concerns the protection against a super storm with a statistic return period of 1,000 years. In the framework of the *Masterplan Coastal Safety*, the *Coastal division* elaborated a flood risk management plan for the coastal area in collaboration with *Flanders Hydraulic Research*. This *Masterplan Coastal Safety* is discussed in more detail in the section **Sustainable use**. Besides this masterplan, the *Sigmaplan* of the Flemish government should be mentioned. This plan addresses the protection against flooding from the Scheldt and its tributaries, but will not be further elaborated in the current text (theme **Scheldt Estuary**).

In order to realize the coastal protection measures, the environmental legislation needs to be respected by the drafting of Environmental Impact Assessments (EIAs). Besides, building permits have to be requested for so-called hard protection measures. This requires collaboration, in particular with the Agency for Nature and Forest (*ANB*) of the Flemish policy domain of Environment, Nature and Energy and with the Flemish policy domain of Spatial Planning with regard to the building permits.

100% safety can never be guaranteed. Hence, emergency plans remain necessary. All coastal towns need to elaborate a municipal emergency plan against floods (so-called 'BNIP floods'). The provincial level is responsible for the coordination between the municipalities in case of super storms. Furthermore, the *Province of West Flanders* is competent for the elaboration and coordination of a provincial BNIP floods. When cross-border problems occur in case of a super storm, the crisis centre of the FPS Home Affairs will take over the coordination, *inter alia* by the implementation of the National Emergency Plan 'Floods and High Water'.

12.2 Spatial use

In the *Masterplan Coastal Safety* the demarcation of areas of particular attention along the Flemish coast is discussed, as well as the necessary protection measures for each of these areas. The status of the works in these zones can be found on the following website: *www.kustveiligheid.be*.

The spatial distribution of the flood hazards (the physical characteristics of floods such as the extent and depth) and the flood risks (potential negative consequences for humans, environment, heritage, etc.) are available for Flanders on the following *geoportal* (waterinfo.be).

The protection of the coast is also discussed in the marine spatial plan (royal decree of 20 March 2014, see also *Van de Velde et al. 2014*). The plan stipulates some spatial policy choices with regard to coastal safety. In the context of the implementation and support of the Masterplan Coastal Safety, sufficient sand and gravel extraction areas are demarcated with an eye to soft coastal protection (see also theme **Sand and gravel extraction**). In addition, a zone has been demarcated for the study of wave propagation in shallow coastal areas in the proximity of the Broers Bank in cooperation with the Coastal division.

12.3 Societal interest

12.3.1 Damage and casualties in case of floods

A study has been conducted to determine the protection measures of the *Masterplan Coastal Safety*. In addition to the safety tests of the sea barrier, flood risk calculations have been executed. In these calculations, the number of casualties and economic damage has been investigated for a range of super storms. Table 1 summarizes the results. Moreover, the ongoing spatial developments in the coastal areas further increase the potential economic and human losses. Hence, this increases the damage a storm may cause with a certain probability of occurrence (*Plan-MER voor het Geïntegreerd Kustveiligheidsplan: kennisgeving 2009*, *Kellens 2011*).

Table 1. An overview of the flood risks (for conditions in 2006) in the Belgian coastal area for different storm surge levels and return periods, with the associated deaths and the direct economic damage (*Meire et al. 2011*).

FLOOD RISKS IN THE BELGIAN COASTAL ZONE			
Storm surge level	Return period	Deaths	Direct economic damage
+ 6.5 m TAW	~100 year	41	0.67 billion euro
+ 7.0 m TAW	~1,000 year	251	2.1 billion euro
+ 7.5 m TAW	~4,000 year	885	3.9 billion euro
+ 8.0 m TAW	~17,000 year	3,297	6.5 billion euro

In the context of the *Masterplan Coastal Safety* a map has been drafted with the distribution of the flood in case of a 1,000-year storm under the conditions present in 2006 (figure 2). The largest risk of damage is situated in the four ports, which are also the weakest areas when considering coastal safety. With regard to the coastal municipalities, special attention needs to be paid to the zones Ostend centre, Ostend-Raversijde, Ostend-Mariakerke, Ostend-Wellington and De Haan-Wenduine. Also, the damage risk in Middelkerke is relatively high. Moreover, the expected number of casualties in these zones is not socially acceptable (*Masterplan Coastal safety*).

A study in the context of the *CLIMAR project (BELSPO)* has selected three indicators quantifying the risks of climate change with regard to floods in the coastal zone: the loss of beach and dune areas due to erosion (1), modelling of the economic damage (2) and the number of casualties (3) in case of a storm surge level of + 8.00 m TAW in two long-term climate scenarios (2100) (*Van der Biest et al. 2009*). In this study, the focus is on the issues in coastal municipalities. Harbours have not been taken into consideration, while sandy coasts without dykes have.

Flanders Hydraulic Research (department of Mobility and Public Works of the Flemish government) and Ghent University have developed LATIS software which calculates both risk and damage for Flanders. This instrument allows to determine the economic and human losses in case of a flood. These calculations cover the entire Flemish region. The software is currently being extended with new modules (expected in 2016), enabling the calculation of the social, cultural and ecological impact of floods (*Brouwers et al. 2015*).

The potential economic loss and flood risks of can be consulted for the Flemish region using the following *geoportal* (waterinfo.be).

CALCULATION OF THE DISTRIBUTION OF THE FLOOD OF A 1,000-YEAR STORM, UNDER THE CONDITIONS PRESENT IN 2006

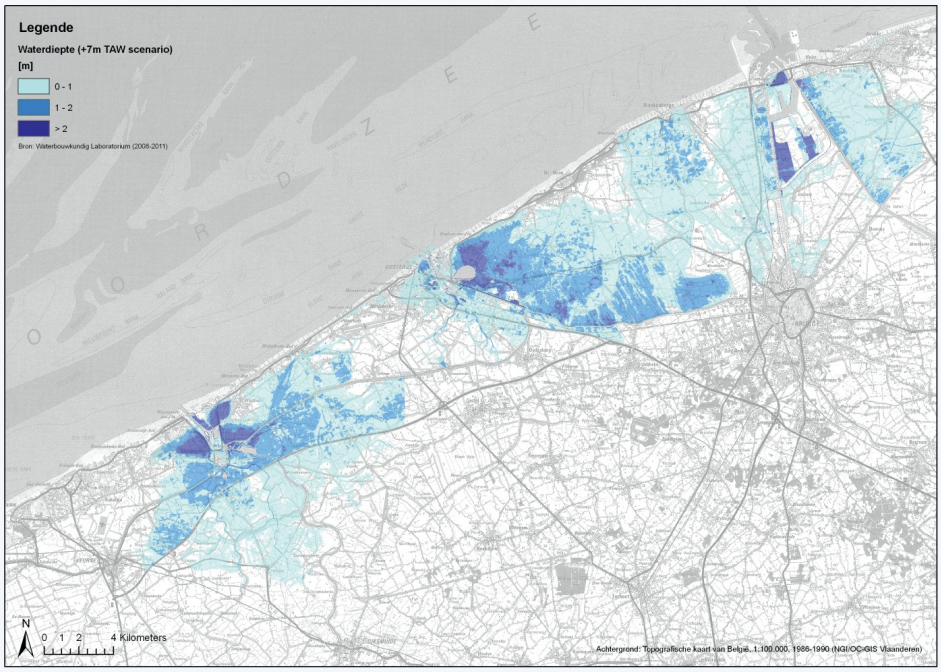

Figure 2. Calculation of the distribution of the flood of a 1,000-year storm, under the conditions present in 2006 (*Masterplan Coastal Safety*).

Global long-term climate scenarios are published by the Intergovernmental Panel on Climate Change (*IPCC*). Such estimates clearly illustrate the societal interest of sea barriers and safety against floods in general.

12.3.2 Investments in coastal safety

In Europe, a total of 15.8 billion euro was invested in coastal protection and climate adaption between 1998 and 2015 in order to protect the coastline against floods and erosion (*Balancing the future of Europe's coasts, EEA 2013*). In the *ClimateCost* project, the associated costs have been calculated using different future scenarios (*Brown et al. 2011*).

The total cost of investment of the *Masterplan Coastal Safety* is estimated to be more than 300 million euro. The renovation and reinforcement of sea locks, weirs and other constructions in the ports constitute a considerable share of this estimate. The estimated volume for maintaining the new beaches amounts to a yearly average of 600,000 to 700,000 m³. Prior to the *Masterplan Coastal Safety*, the Flemish beaches were replenished with a yearly average of 550,000 m³ of sand (both by means of pressure pipes and trucks) (*Maelfait & Belpaeme 2007*, *Vandewalle et al. 2008*, *Masterplan Coastal Safety*).

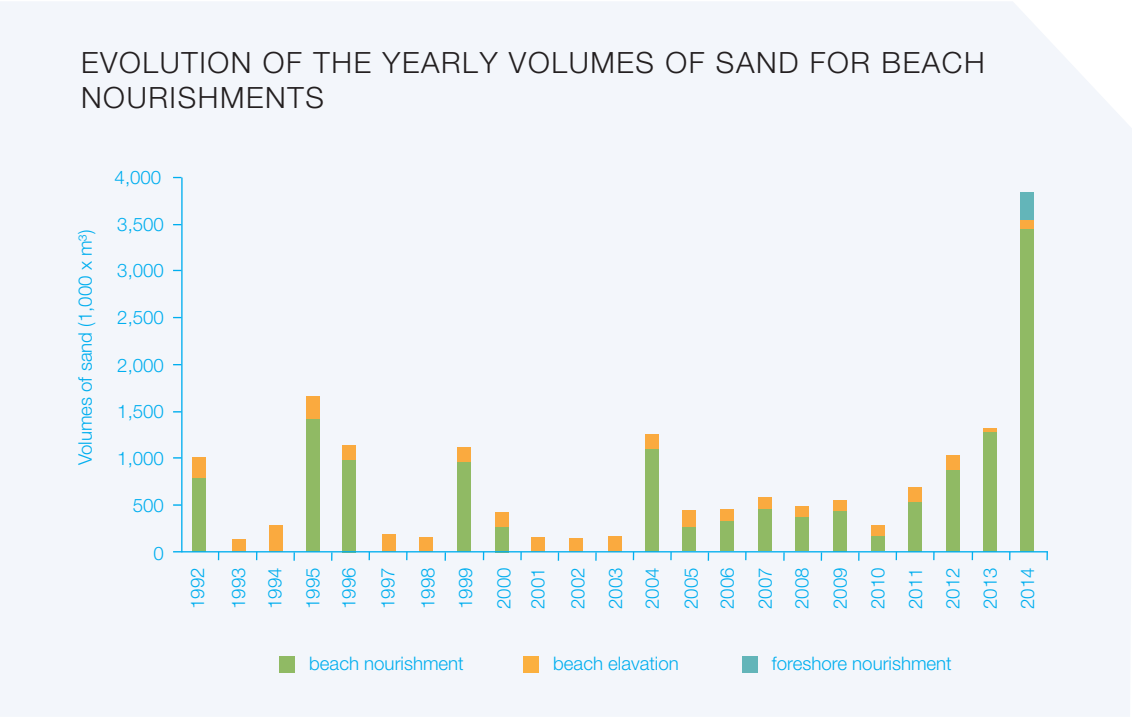

Figure 3. Evolution of the yearly volumes of sand for beach nourishments and beach elevations (Source: Coastal division). The sand for beach nourishments is supplied by dredgers, while the sediment for beach elevations is supplied by lorries.

12.4 Impact

The coastal protection works and infrastructure along the Flemish coast have an impact on some environmental aspects, depending on the technique used. The hard as well as the soft protection works are therefore subject to the European *EIA Directive* (85/337/EEC), which implies that an environmental impact assessment (EIA) needs to be drafted prior to the granting of any environmental permit.

In general, the EIA studies of the *Masterplan Coastal Safety* estimate the environmental impact that may appear during the construction, subsequent to the execution and during the maintenance works. Therefore, the effects need to be considered as potential effects, which depend on the section of the coast. The impact of the extraction of the necessary raw materials (e.g. offshore sand extraction) has been included in separate EIAs.

Table 2 gives an overview of the potential effects which need to be considered during the assessment of coastal protection measures, as well as the associated literature which deals with these effects. A more detailed description is given in the following publications: *Geïntegreerd Kustveiligheidsplan. Niet-technische samenvatting 2009*, *Plan-MER – Plan voor kustverdediging en maritieme toegankelijkheid van Oostende (2007)*.

Besides a general EIA plan that maps the total environmental effects of the measures of the *Masterplan Coastal Safety*, a project EIA may be needed in order to evaluate the local effects of the different projects. However, in most cases an exemption from the project EIA can be requested.

Table 2. An overview of the potential effects that have to be taken into account when evaluating coastal protection measures, as well as the related literature.

DISCIPLINE	POTENTIAL EFFECTS	LITERATURE
Water	• Turbidity of the water column • Modification of the flow pattern and the currents of the sea water • Hydrological effects - changing groundwater levels in the dunes and adjacent areas • Changes in the groundwater quality (depending on the quality of the replenished sand)	*Plan-MER – Plan voor kustverdediging en maritieme toegankelijkheid van Oostende 2007*, *Geïntegreerd Kustveiligheidsplan. Niet-technische samenvatting 2009*, *Lebbe 2011*
Seabed	• Impact on the present seabed, beach, dune and polder soils (degree of soil disturbance) and the effect on the morphology	*Plan-MER – Plan voor kustverdediging en maritieme toegankelijkheid van Oostende 2007*, *Geïntegreerd Kustveiligheidsplan. Niet-technische samenvatting 2009*, *Houthuys 2012*, *Janssens et al. 2013* (*QUEST4D project BELSPO*), *Houthuys et al. 2014*
Air	• Emissions into the air and their impact on human health	*Plan-MER – Plan voor kustverdediging en maritieme toegankelijkheid van Oostende 2007*, *Geïntegreerd Kustveiligheidsplan. Niet-technische samenvatting 2009*
Noise and vibrations	• Noise impact on humans and animals and the effects on human health	*Plan-MER – Plan voor kustverdediging en maritieme toegankelijkheid van Oostende 2007*, *Geïntegreerd Kustveiligheidsplan. Niet-technische samenvatting 2009*
Landscape, archaeology and architectural heritage	• Functional fragmentation of the spatial use • Visual-spatial effects of adding or changing landscape elements • Disappearance and disturbance of the historical geographical elements and structures • Effects on the architectural heritage and archaeology	*Plan-MER – Plan voor kustverdediging en maritieme toegankelijkheid van Oostende 2007*, *Geïntegreerd Kustveiligheidsplan. Niet-technische samenvatting 2009*
Fauna and flora	• Effects on the habitat, vegetation, benthos and avifauna • Creation of habitats due to the expansion of dry beaches and dunes • Barrier function for benthos	*Engledow et al. 2001*, *Speybroeck et al. 2004*, *Volckaert et al. 2004*, *Speybroeck et al. 2006a*, *Speybroeck et al. 2006b*, *Speybroeck et al. 2007*, *Plan-MER – Plan voor kustverdediging en maritieme toegankelijkheid van Oostende 2007*, *Van Ginderdeuren et al. 2007*, *Geïntegreerd Kustveiligheidsplan. Niet-technische samenvatting 2009*, *Janssen & Rozemeijer 2009*, *Braarup Cuykens et al. 2010*, *Vanden Eede & Vinckx 2011*, *Vanden Eede 2013*, *Van Tomme 2013*, *Van Tomme et al. 2013*, *Vanden Eede et al. 2014*
Mobility	• Modifications in the accessibility	*Plan-MER – Plan voor kustverdediging en maritieme toegankelijkheid van Oostende 2007*, *Geïntegreerd Kustveiligheidsplan. Niet-technische samenvatting 2009*
Spatial use (Human - Space)	• Modifications in the access possibilities • Modifications of the recreational area • Modification of functions • Nuisance	*Plan-MER – Plan voor kustverdediging en maritieme toegankelijkheid van Oostende 2007*, *Geïntegreerd Kustveiligheidsplan. Niet-technische samenvatting 2009*
Human – health and safety aspects	• Possible health effects, due to the exposure to polluted air, noise emissions and vibrations • Changes in the safety of recreationists or inhabitants, due to changing sea currents, or due to the placement or removal of obstacles, or general modification of coastal safety	*Plan-MER – Plan voor kustverdediging en maritieme toegankelijkheid van Oostende 2007*, *Geïntegreerd Kustveiligheidsplan. Niet-technische samenvatting 2009*

12.5 Sustainable use

12.5.1 Floods directive

In the context of the *EU Floods Directive* (2007/60/EC), the Member States monitor the river basins and associated coastal areas that are vulnerable to floods. Flood hazard maps (physical properties of a flood such as the distribution and depth) and flood risk maps (potential negative effects on humans, environment, heritage, etc.) need to be elaborated by the member states in accordance with these directives. In the case of Flanders, these maps can be consulted on the following *geoportal* (waterinfo.be).

Since 2015, the member states also need to elaborate flood risk management plans at a river basin level, focusing on the prevention of and protection against floods. These flood risk management plans are integrated into the river basin management plans that have to be drafted in the context of the *European Water Framework Directive* (2000/60/EC) (WFD; see theme **Nature and environment**). The flood risk management plans of *inter alia* the Flemish coastal area are integrated in the river basin management plan of the Scheldt 2016-2021 (in preparation).

An additional challenge in the coastal area is the integration of flood risks from inland waters (such as the Yser) on the one hand, and from the sea on the other. In Flanders, the Coordination Committee on Integrated Water Policy (*CIW*) coordinates the procedures for the drafting of all required documents for the WFD and the Floods Directive. Furthermore, an instrument such as the *water test* (*watertoets*) also contributes to the preventive reduction of the damage caused by floods.

12.5.2 An integrated approach to coastal protection

Considering the many user functions that are active in the coastal zone, Europe formulated a *recommendation on integrated coastal zone management* (ICZM) in 2002. In this context, deliberations between services with competences with regard to the coastal zone are organized by the *Coastal Territorial Cooperation* of the Province of West Flanders (the former Coordination Centre for ICZM) (i.e. agency for Maritime and Coastal Services, agency for Nature and Forest, Flanders Marine Institute, Province of West Flanders and Federal Public Service Health, Food Chain Safety and Environment). The following section will elaborate on policies, studies, projects and initiatives which deal with coastal safety in an integrated way.

MASTERPLAN COASTAL SAFETY

By means of the *Masterplan Coastal Safety*, the Coastal division aims to protect the coast from at least a 1,000-year storm surge, and wants to reduce the residual risk of serious economic damage and casualties, based on a cost/benefit approach. The masterplan follows an approach according to the principles of ICZM (see *European recommendation on integrated coastal zone management*). Since its approval by the Flemish government on 10 June 2011, the plan has been gradually implemented. The website *www.kustveiligheid.be* gives a description of the measures for each of the attention zones along the coast. The website also provides a status of the progress of the works (see also table 3).

Table 3. An overview of the selected protection measures for each zone of particular attention (*Masterplan Coastal Safety*).

ZONE OF PARTICULAR ATTENTION	SELECTED MEASURES
De Panne - section 8	Dune nourishment
De Panne – centre (section 13 to 18)	Beach nourishment with an elevated beach
St. Idesbald - Koksijde-centre (section 21 to 31)	Beach nourishment with an elevated beach
Koksijde - section 39	Raising the road by the replenishment of the dune passage in combination with the reconstruction of the road
Port of Nieuwpoort	Construction of a storm surge barrier
Middelkerke - Westende (section 74 to 88)	Beach nourishment with a low-lying beach in combination with wave absorbing expansions and a storm wall seawards of the casino
Raversijde – Ostend Wellington (section 97 to 108)	Beach nourishment with a low-lying beach in combination with a high stormwall or adapted seawall ramp and wave absorbing expansion or widening of the seawall at Raversijde
Ostend centre (section 109 to 117) + Port of Ostend + Ostend-East (section 118 tot 120)	OW-Plan Ostend
Ostend-East (section 121)	Beach nourishment in connection with the OW-plan, subplan for integrated coastal zone management at *Oosteroever* (section 119 and 120)
De Haan - Wenduine (section 172 to 176)	Beach nourishment with a low-lying beach in combination with stormwalls at *De rotonde* and the seawall/widening of the seawall
Port of Blankenberge	Construction of a storm wall at + 8 m TAW in combination with anti-erosion protection around the port
Blankenberge (section 185 to 195)	Beach nourishment with a low-lying beach
Port of Zeebrugge	Construction of a storm wall at + 8 m TAW around the *Prins Albert I* dock and connected to the locks in combination with anti-erosion protection around the port
Knokke-Heist (section 225 to 243)	Beach nourishment (profile between steep and low-lying beach)
Zwin (section 250 to 255)	Zwin project
Renovation of weirs and locks	Ports of Blankenberge, Ostend and Zeebrugge

VISIONS, PROJECTS AND INITIATIVES FOR AN INTEGRATED APPROACH TO COASTAL SAFETY

In the project 'Flemish Bays' (*Vlaamse Baaien*) of the Flemish government, a plan has been developed for coastal development which comprises three tracks (*Masterplan Vlaamse Baaien 2014*). For each of these tracks, a set of measures has been elaborated from an overarching vision, in the short (2020), medium (2050) and long (2100) term.

1. A robust coast with an accelerated implementation of the Masterplan Coastal Safety (decided policy) in the short term, alternative feeding methods in the short and medium term and innovative sea barrier techniques and spatial vision in the long term.
2. The development of the port of Zeebrugge in conjunction with the adjacent coastal zone, with the optimization of the accessibility of the port (through a pilot project with a local deepening of the port entrance and potentially an expansion of the western jetty) in the short term, an investigation to assess the possibility of inland shipping along de coast in the short term and its implementation in the medium term (also see *Delecluyse et al. 2014*) as well as the expansion of the port in the long term.
3. Streamlining of all stakeholders on the cross-border aspects of the Flemish Bays project (*Vlaamse Baaien*), but also alignment on external aspects that influence the project. An example might be how to use the Dutch dredged material released during the construction of an alternative fairway in the Scheldt Estuary.

A few other relevant studies, projects and initiatives are given in table 4.

Table 4. An overview of studies, projects and initiatives in the framework of an integrated approach to coastal safety.

STUDIES, PROJECTS AND INITIATIVES	EXPLANATION
Kappa plan	Natuurpunt proposes one integrated plan that elaborates on climate adaption in combination with the natural environment along our coast: the so-called Kappa plan provides a sustainable vision on coastal safety with natural climate buffers.
CcASPAR (Climate change and changes in spatial structures in Flanders) project (*Allaert et al. 2012*)	This project conducts research on the spatial impact of climate change with the aim to develop spatial adaptation strategies and sustainable policies for Flanders on various spatial levels. The developed strategies have been tested for the coast and the Yser Valley
Metropolitaan Kustlandschap 2100 (*verkennende en methodologische analyse van de Belgische Kust*, *ontwerpopgaven* and *exploratief ontwerpend onderzoek deel 1*, *2* and *3*)	This initiative from *LABO Ruimte* (*Ruimte Vlaanderen* and *Team Vlaams Bouwmeester*) – in association with the department Mobility and Public Works and the agency for Maritime and Coastal Services – explores various possible future scenarios for the Flemish coast from a metropolitan perspective.
The BELSPO project *CLIMAR* (*Van den Eynde et al. 2009*, *Van den Eynde et al. 2011*)	This project aims to develop a framework in which adaptation measures, implemented to control the impacts of climate change, can be evaluated for the ecological as well as the social and economic aspects of the North Sea environment.
Coastal communities 2150	This project aims to inform stakeholders in coastal areas about climate change and its effects on the coast (erosion, floods, etc.).
Provoost et al. 2014	In this ecosystem service report of the nature report (NARA) 2014, the protection against floods from the sea by means of natural sea barrier elements is elaborated.
New Ecosystem Vision Coast (*Ecosysteemvisie Kust*)	ongoing

Legislation reference list

Table with European legislation. The consolidated version of this legislation is available on *Eurlex*.

EUROPEAN LEGISLATION			
Abbreviations (if available)	Title	Year	Number
Directives			
EIA Directive	Council Directive on the assessment of the effects of certain public and private projects on the environment	1985	337
Water Framework Directive	Directive 2000/60/EC establishing a framework for Community action in the field of water policy	2000	60
Floods Directive	Directive on the assessment and management of flood risks	2007	60
Other (Decisions, Communications, White Papers, etc.)			
Recommendation for integrated coastal zone management	Recommendation of the European Parliament and of the Council of 30 May 2002 concerning the implementation of Integrated Coastal Zone Management in Europe	2002	413
	Communication from the commission to the European economic and social committee and the committee of the regions. An EU Strategy on adaptation to climate change	2013	216

Table with Belgian and Flemish legislation. The consolidated version of this legislation is available on *Belgisch staatsblad* and the *Justel-databases*.

BELGIAN AND FLEMISH LEGISLATION		
Date	Title	File number
Laws		
Bijzondere wet van 8 augustus 1980	Bijzondere wet tot hervorming der instellingen	1980-08-08/02
Royal decrees		
KB van 20 maart 2014	Koninklijk besluit tot vaststelling van het marien ruimtelijk plan	2014-03-20/03
Decrees		
18 juli 2003	Decreet (betreffende het) Integraal Waterbeleid	2003-07-18/72