

Appendix 2 Belgium

Table of contents

1. GENERAL DESCRIPTION	2
2. ORGANISATIONAL FRAMEWORK	2
2.1 ORGANISATIONS/AUTHORITIES INVOLVED	2
2.2 LEGISLATION.....	2
2.3 RESPONSIBILITIES	2
2.4 FINANCING ARRANGEMENTS	2
2.5 FLOOD AND COASTAL DEFENCE POLICY	2
3. SAFETY LEVELS.....	3
3.1 BACKGROUND.....	3
3.2 APPLICATION	3
4. TECHNICAL MODELS AND CRITERIA	3
5. PROBABILISTIC TECHNIQUES	3
6. FUTURE DEVELOPMENTS	3

1. General description

There are three means of coastal defence in Belgium:

- a seawall, consisting of beach, dunes or dikes;
- dikes further inland, protecting land in case of a breach;
- higher grounds, including natural dunes.

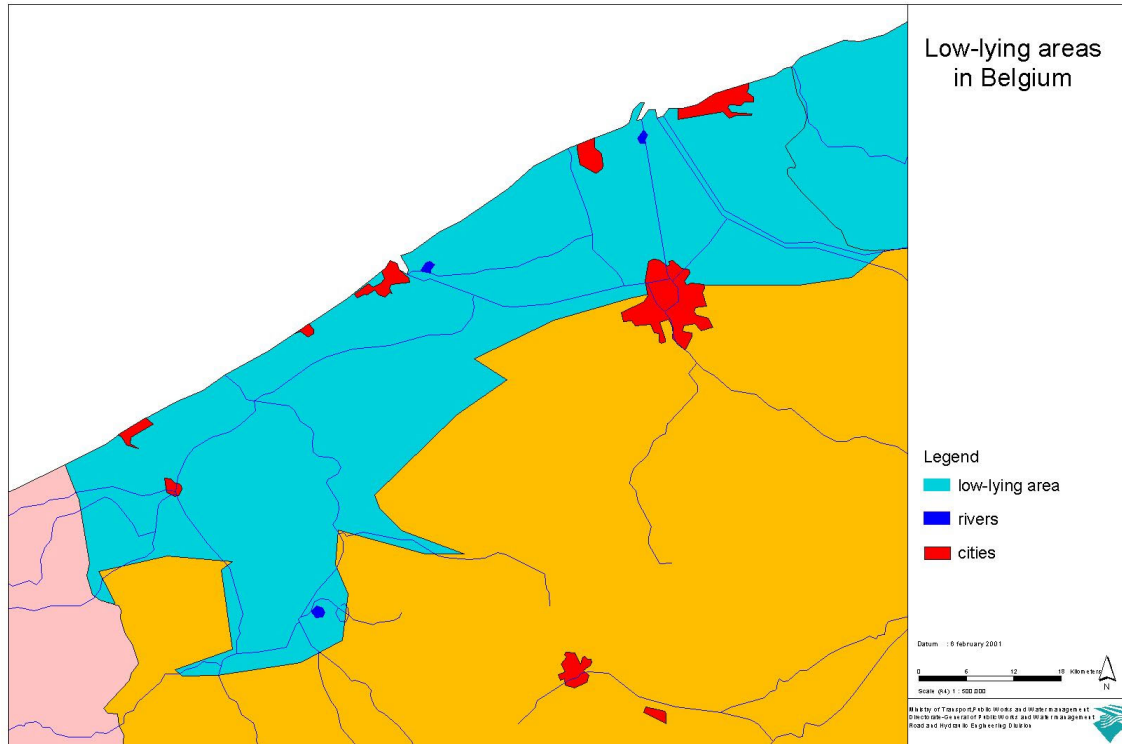


Figure 1: Coastal flood prone areas in Belgium

2. Organisational framework

2.1 Organisations/authorities involved

In Belgium, the Flemish Region is responsible for coastal defence. The Region owns all the coastal defence structures. A part of the natural defences, some beaches above the high-water line and part of the sea-front dunes are owned by municipalities or private landowners.

2.2 Legislation

Regionalisation act (1988) : all powers with regard to flood and coast defence are transferred to the region.

2.3 Responsibilities

The Flemish Region is fully responsible for flood and coastal defence.

2.4 Financing arrangements

All coastal and flood defence measures are paid for by the Region.

2.5 Flood and coastal defence policy

Some important principles of coastal management:

- Integrated Coastal Zone Management (ICZM)

- coastal resiliency
- stimulation of natural coastal dynamics
- increasing biological diversity.

In 1977 the Ministry decided to implement the Sigma plan for the tidal rivers (mainly the Scheldt River), with the following measures:

- reinforcing and raising the dikes of the tidal rivers.
- preparing areas of controlled flooding
- building a storm surge barrier near Antwerp.

3. Safety levels

3.1 Background

In Belgium (Flanders) there is currently no statutory level of coastal defence. The selection of designs is not based on cost/benefit analyses. In the recent past safety levels for beach nourishments were calculated using two successive storms with return periods of 100 years. This is approximately equivalent to at least a 1000-year safety level. At the moment a minimum required safety level of a 1000 years is prescribed according to the Dutch methodology. However, a comprehensive study has been started with regard to safety levels and coastal protection in general along the Flemish coast. One of the aims of this study is to determine statutory levels of protection.

3.2 Application

The design criterion for beach and dune foot nourishment is that the nourishment should withstand a 1000-year storm.

4. Technical models and criteria

In Belgium, dunes are measured with Super Dune, a method based on the Dutch method for assessing dunes every five years.

5. Probabilistic techniques

Probabilistic techniques are used at present only for determining extreme water levels and wave heights.

6. Future developments

A comprehensive study of safety levels and coastal defence is now underway, with the following goals:

- First, the methodology used in the Netherlands for measuring the safety of coastal defences will be implemented to systematically check the Belgian coastal defence.
- Data must first be collected to do this, namely extreme water level and wave values, topographic data of coastal defences and low-lying polders, and data on the condition of the coastal defence (e.g. size of dune grains and size of sea dike cover stones).
- An assessment of the risks of flooding damage by extreme storms will be made using the models mentioned earlier.
- Finally, socio-economically optimised safety standards will be determined.