
SAFECOAST WORKSHOP 2

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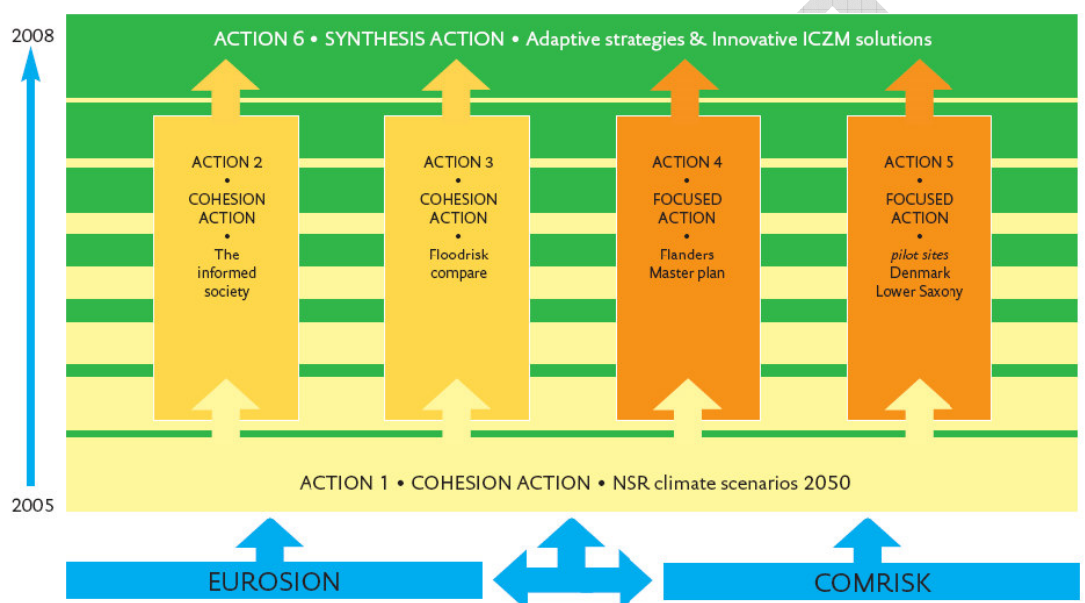
The workshop was held at the Thermae Palace in Ostend



1. Framework of Workshop

SAFECoast is an Interreg IIIb project with 9 partner organisations from the Netherlands, Flanders, Denmark, Germany and the U.K. It focuses on the consequences of climate change and future spatial developments in flood risk management. The general question is “How to manage our North Sea coasts in 2050?” with a focus on the consequences of climate change and spatial developments with respect to safety from coastal flooding.

The project framework is shown below, and is formed by three parts, - cohesion actions, focused actions, and a synthesis action.



This workshop was organised by the Belgian delegation of Safecoast (Coastal Division and Flanders Hydraulics Research of the Ministry of Transport and Public Works) and aimed at inviting different experts to discuss and contribute to the actions of these partners:

- In Action 3b Flanders Hydraulics Research executes a transnational comparison of different coastal flood risk methodologies.
- In Action 4 the Coastal Division will set up an “Integrated Master plan for Flanders future coastal safety” which looks at how to control coastal flooding risks in Flanders in 2050.

2. Content of workshop

The workshop included one whole day of presentations by the Belgian partners and different experts. In between these presentations and during lunch there was time enough to ask



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questions and discuss the different topics. Several academici were also invited in order to evoke discussions in between the presentations.

2.1 Program

- 08 h 30 Reception
- 09 h 00 Opening of the workshop (T. Verwaest - FHR)
- 09 h 15 Presentation of the Flemish SAFECOast Actions 3B and 4
- Flemish methodology for estimating failure behaviour of the sea defence and future improvements (P. Peeters - FHR)
 - Comparison between different Coastal Flood Risk Methodologies (W. Vanneuville – Ugent/FHR)
 - Flanders future Coastal Safety: an Integrated Master Plan (T. Mertens – Coastal Division)
- 10 h 15 Climate Change scenarios for Belgium and possible effects on the Coastal Zone (J.-P. Van Ypersele, P. Marbaix, I. Chalanton - UCL)
- 10 h 45 Coffee Break
- 11 h 15 Wave propagation from the -5 meter line till the sea defence (Jaak Monbaliu - KULeuven)
- 11 h 45 FLOODSite: Failure behaviour of the Sea Defence (A. Kortenhuis)
- 12 h 30 Lunch
- 13 h 45 Introduction to the afternoon program (T. Verwaest - FHR)
- 14 h 00 Hydraulic modelling of flood propagation: Lessons learned in FLOODSite and IMPACT (S. Soares Frazão - UCL)
- 14 h 30 FLORIS fase 2: Estimation of the consequences of flooding (damage and victims) (H. Stefess - Rijkswaterstaat)
- 15 h 00 Coffee Break
- 15 h 45 Social Cost Benefit Analysis to evaluate investments in coastal flooding protection (L. De Nocker - VITO)
- 16 h 30 Coastal Safety and Spatial Planning (F. Vanhaverbeke - AGSOostende)
- 17 h 15 Closure of the Workshop (T. Verwaest, K. Van Eerdenbrugh - FHR)



Due to unforeseen circumstances two presentations were cancelled at the last moment, i.e.:

- 1) FLORIS fase 2: Estimation of the consequences of flooding (damage and victims) (H. Steffens - Rijkswaterstaat)
- 2) Coastal Safety and Spatial Planning (F. Vanhaverbeke - AGSOostende)

2.2 Presentations

Annex B.

2.3 Discussions

In between the different presentations there was time to ask questions and discuss the topic.

Comparison between different Coastal Flood Risk Methodologies (W. Vanneville – Ugent/FHR)

Q(uestion): *What is the total amount of damage in Flanders for a return period of 10.000 years?*

A(nswer): For rivers the damage is known, i.e. €1 billion. For the entire Belgian coastline this figure isn't known at the moment, it will be calculated in the framework of action 4.

Remark 1: working with only one number for the entire Flemish coast should be interpreted carefully.

Remark 2: The higher the detail level of riskmapping, the higher the accuracy of damage number. Still, there is a lot of uncertainty and sometimes we have to guess, for example in the case of 'victims' (guess: 1%).

Remark 3: In this model the velocity of the wave and sea level rise is taken into account.

Q: *Damage = € 1 billion/km². Probability is very low. Where these numbers compared with what is available in literature?*

A: Yes. If historical data was available this comparison was made.

Q: *Does this number (Damage = € 1 billion/km²) involve people?*

A: No.



Q: *Do the damage maps involve replacement values?*

A: Yes. Is a car isn't used any more after 5 years for example, this car is replaced by the same type of car.

Remark 4: The calculations give a number for the REAL DAMAGE instead of the MAXIMUM DAMAGE. For example: only the ground floor of an apartment building is taken into account during the damage calculation instead of the entire building.

Q: *Is the relative importance of the cost categories taken into account? For example: 23 classes represent everything if other classes are less important*

A: In the old model: yes. Now: no. We have defined special points. Which means that it's possible we calculate a lot of damage in a small area. Cars are less important. And for the industry we have to account a lot of uncertainties.

Q: *Are immaterial damages included? (plants, genetic material, ...)*

A: Not at the moment. We're tinkering about including this in the model.

Climate Change scenarios for Belgium and possible effects on the Coastal Zone (J.-P. Van Ypersele, P. Marbaix, I. Chalanton - UCL)

Q: *Is the model accurate?*

A: There are 2 uncertainties in the temperature-range model:

1. which scenario do we choose?
2. sensitivity of the temperature rise according to the sea level rise

You can change the sensitivity yourself, but the uncertainty of the model comes from the scenario you choose.

Q: *In the USA they don't believe in sea level rise. They say for example that the snow fall in Antarctica rises. What's your opinion about that?*

A: Antarctica is growing, indeed. Today we measure a temperature increase all over the world. This research is very accurate and sets up a sea level rise of 10-20 cm in the past century. Even the last 10 years there were a lot of indications of sea level rise. The thermal expansion runs faster than the growth of Antarctica. The sea level has risen the last century and will keep on rising the next 100 years.

Q: *Looking at the graphs of CO₂-production: is CO₂-reduction still useful?*

A: Yes, if we can reduce the production under the current value. Otherwise 13% of Flanders will be lost and the sea level will rise to +8m TAW in 3000.

Q: *Which layer of water do you involve in your calculation of the expansion of water?*

A: In the past: mixed layer of the first 100m. Now: the whole depth of the ocean.



Q: *Do the physical models include all controlling mechanisms?*

A: No. But we haven't found any missing controlling mechanisms so far.

Q: *Maybe you have to emphasise adaptation measures more? Does IPCC looks at adaptation measures?*

A: In 2007 a new IPCC report will be produced. Two topics include:

1. Impact, vulnerability and adaptation
2. mitigation

There's not enough research available on "Impact, vulnerability and adaptation". IPCC is not a research body. It needs input from researchers. A lot of adaptation measures are looked at by the government, but their reports are often not available for the IPCC.

Q: *So at the moment "CO2-policy" is THE policy?*

A: IPCC does its best. They want some kind of balance: adaptation is necessary, but this has its limits.

Q: *Are the position of the earth + its axes involved in sea level rise?*

A: The earth's position changes a few cm's which can only give a small contribution to the sea level rise.

Wave propagation from the -5 meter line till the sea defence (Jaak Monbaliu - KULeuven)

Q: *The Boussinesq model was successful for calculating wave propagation in the harbour of Ostend. However, if you want to calculate a 100 waves storm, you still need 2 weeks to calculate this event. Correct?*

A: Yes. The model has its limitations. Stochastically spoken you have to do this calculation 100 times.

FLOODSite: Failure behaviour of the Sea Defence (A. Kortenhuis)

Q: *What's the accuracy of the method 'probability breaching'?*

A: The uncertainty of the parameters is not included. The method does explain how erosion takes place. It's very difficult to predict the uncertainty.

Q: *A question about the strength of structures. How do you define the strength? There are principles for one cross section, but how do you define the strength for the entire coastline? Can you give guidelines?*

A: Guidelines are not possible. The geotechnical parameters differ a lot from section to section. It's impossible to define these parameters for the entire coastline. Instead we give a higher uncertainty value for these parameters, e.g. increase the probability of failure.



Q: *In the video the effective stress is very low. Does this also account in reality?*

A: Yes. The breaching is the same in the scale model as it is in reality, only the erosion differs.

Remark: The strength of the model is too high according to reality. It's very important to look at 'how fast does this process go?', rather than making an exact copy of reality.

Hydraulic modelling of flood propagation: Lessons learned in FLOODSite and IMPACT (S. Soares Frazão - UCL)

Q: *This is a shallow water model. How do you take the dry/wet boundary into account?*

A: In the equation. We define the 'dry-point' below a certain level.

Q: *Does this model run without calibration?*

A: Yes. The model/equation includes the roughness and the topography. If you want to know the sensitivity of the model for the parameter 'roughness', you know that if you increase the roughness in a very low current the depth of the water will increase also. If you however increase or decrease the roughness in a fast current, the waterdepth will not change.

Social Cost Benefit Analysis to evaluate investments in coastal flooding protection (L. De Nocker - VITO)

Q: *This involves a stepwise approach. Very good. But is participation of the different stakeholders involved?*

A: Yes.

Q: *Nature is not involved. You have to say something about this topic (it's not possible to avoid this). In The Netherlands we look at nature at the one hand, and society at the other hand.*

A: You're right.

Q: *You need all information, good/bad, to involve all stakeholders.*

A: It's not possible to give a good estimation about 'nature'.

3. Evaluation

During this workshop new input and ideas concerning the content and development of actions 3b&4 have come up. It was a unique opportunity to meet experts working on these topics, but also to communicate these specific safecoast actions to a broader public.



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ANNEX A List of participants

The Netherlands		organisation	remarks
1	Niels Roode	RWS - RIKZ	partner
2	Evelien van Eijsbergen	RWS - RIKZ	partner
3	Wout Snijders	RWS - DWW	partner
4	Kees van Ruiten	RWS - RIKZ	partner

Germany			
5	Holger Blum	Lower Saxony Water Management, Coastal Defence and Nature Conservation Agency / NLWKN	partner
6	Frank Thorenz	Lower Saxony Water Management, Coastal Defence and Nature Conservation Agency / NLWKN	partner
7	Jacobus Hofstede	Ministry of the Interior of the Land Schleswig-Holstein	partner
8	Matthias Hamann	Ministry of the Interior of the Land Schleswig-Holstein	partner

Denmark			
9	Thorsten Piontkowitz	Danish Coastal Authority	partner
10	Carlo Sørensen	Danish Coastal Authority	partner

Belgium			
11	Tina Mertens	Coastal Division	partner
12	Wouter Vanneuville	Flanders Hydraulic Research	partner
13	Toon Verwaest	Flanders Hydraulic Research	partner
14	Katrien Van Eerdenbrugh	Flanders Hydraulic Research	partner
15	Patrik Peeters	Flanders Hydraulic Research	partner
16	Peter Troch	University Ghent	
17	Julien De Rouck	University Ghent	
18	Jonas Timmermans	University Ghent	
19	Prof De Mayer	University Ghent	
20	Nancy Fockedeey	VLIZ	

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21	Jan Mees	VLIZ	
22	Jean-François Franck	DIREN Nord-Pas de Calais	
23	François Clerc	DIREN Nord-Pas de Calais	
24	J.-P. Van Ypersele	UCL	speaker
25	Philippe Marbaix	UCL	speaker
26	Isabelle Chalanton	UCL	speaker
27	Jaak Monbaliu	KULeuven	speaker
28	Andreas Kortenhaus	University Braunschweig	speaker
29	Sandra Soares Frazão	UCL	speaker
30	H. Stefess	RWS	speaker
31	Leo De Nocker	VITO	speaker
32	Filip Vanhaverbeke	AGSOostende	speaker
33	Marc Willems	Flanders Hydraulic Research	partner
34	Stefaan Gysens	Coastal Division	partner
35	Kevin Delecluyse	Coastal Division	partner
36	Leen Vermeersch	Coastal Division	partner
37	Peter DeWolf	Coastal Division	partner

	The UK		
38	Stephen Worrall	Environment Agency	partner










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ANNEX B Presentations

Please download the following presentations from the website:

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-  Climate Change scenarios for Belgium and possible effects on the Coastal Zone (J.-P. Van Ypersele)
 -  Coastal Safety and Spatial Planning (F. Vanhaverbeke - AGSOostende)
 -  Flanders future Coastal Safety an Integrated Master Plan (T. Mertens Coastal Division)
 -  Flemish methodology for estimating failure behaviour of the sea defence and future improvements (P. Peeters FHR)
 -  FLOODSite Failure behaviour of the Sea Defence (A. Kortenhaus)
 -  Hydraulic modelling of flood propagation Lessons learned in FLOODSite and IMPACT (S. Soares Frazão - UCL)
 -  Opening of the workshop (T. Verwaest FHR)
 -  Social Cost Benefit Analysis to evaluate investments in coastal flooding protection (L. De Nocker - VITO)
 -  Wave propagation from the -5 meter line till the sea defence (Jaak Monbaliu - KULeuven)

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