



FRAMES LETTER

FRAMES: Increasing flood resilience beyond borders

'If we want to manage flooding and flood protection, we need to look beyond today's prevention methods,' according to Rik Janssen, Regional Minister of Zuid-Holland. 'In areas where flooding has the potential to cause major damage, additional measures continue to be required. Multi-layer Safety is a good response to mitigating the risks.' The purpose of FRAMES (Flood Resilient Areas by Multi-layEr Safety) is to ensure that inhabitants and infrastructure are more resilient to the potential effects of flooding. The province of Zuid-Holland is the lead partner in the project, which began on 1 October 2016 and will have a total duration of 3 years.

'Primary defences remain important, but it is also necessary to find ways of handling water in an integrated and adaptive manner. However flooding and flood protection are not the only issues: climate change is also causing increased drought and more frequent spells of hot weather. There are also risks in terms of water quality. So it is wise to view flood protection from an integrated perspective.' FRAMES brings together regional authorities and knowledge institutions which are

working on similar projects, so that they can learn from each other and cooperate internationally. Together, we need to raise awareness of issues relating to flooding and flood protection. No government can do that alone. International and regional cooperation are essential.

Learning from each other

The regions involved in FRAMES are all addressing flood protection, but different governance models lead to



different implementations. While in the Netherlands the water boards and municipalities are working hard on this issue, in the UK it is water trusts that are doing this work – charitable organisations staffed by volunteers. Awareness among residents regarding the risks and possible consequences of flooding also differs significantly from country to country. It is precisely these differences that we can learn from. I look forward to seeing the results of the FRAMES project.'

IN THE SPOTLIGHTS

Mixed double: Multi-Layer Safety into practice



Lucy Smeets

Multi-Layer Safety (MLS) is a strategic concept, but how best to put it into practice? At the National Delta Congress 2017, Lucy Smeets and Helge Bormann presented their pilot projects, located in Alblasserwaard-Vijfheerenlanden in the west of the Netherlands and Wesermarsch in the north of Germany.

How do you apply the concept of MLS?

'We don't use the MLS concept as such in Germany, but all the layers of MLS are important elements of the German concept of the 'Flood Risk Management Cycle', explains Helge Bormann, professor at Jade University.

'Only when we consider all those elements (defence, prevention (e.g. spatial planning), crisis management, recovery) can flood risk management be maximized effectively.' Lucy Smeets, project leader at the Province

of Zuid-Holland: 'The Alblasserwaard-Vijfheerenlanden is two metres below sea level and during a flooding event the water level rises up to 4 metres above street level. This means that spatial measurements are not always an option. The MLS concept enables us to assess possible strategies in relation to flood risk management.'

Resilient areas only?

Both contributors stressed that working on resilient areas is partly - and crucially - a matter of working on resilient communities. Helge: 'The main challenge will be to raise awareness and pave the way for the remaining preventive measures and for crisis management, in order to achieve a balanced risk management that includes all layers of the MLS.' In Alblasserwaard-Vijfheerenlanden, people are used to depending on dykes for their safety. Reinforcing dyke structures is higher on the list. 'There is a growing awareness that reinforcing dykes is good, but combining it with crisis management and recovery programmes is even better. I recently initiated a dialogue on MLS. Public opinion is starting to shift and knowing that this process takes time, I consider that a substantial step', says Lucy.

Pilots

1 Alblasserwaard



Adoption of evacuation models and calculation of models and spatial plans to integrate evacuation.

2 Kent



Implementing Multi-Layer Safety (with a focus on emergency response) for a more flood resilient Health and Social Care sector in Kent.

3 Upper Darent



Modelling the selection and placement of natural flood management measures.

4 Lustrum Beck



Modelling and mapping potential natural flood management solutions, such as local collaboration and risk reduction.

5 Southwell



Identifying innovative NFM and SuDS measures with the potential to reduce flood risk.

6 Flood Proof Electricity Grid Zeeland



Researching the climate resilience of the electricity network.

7 Reimerswaal

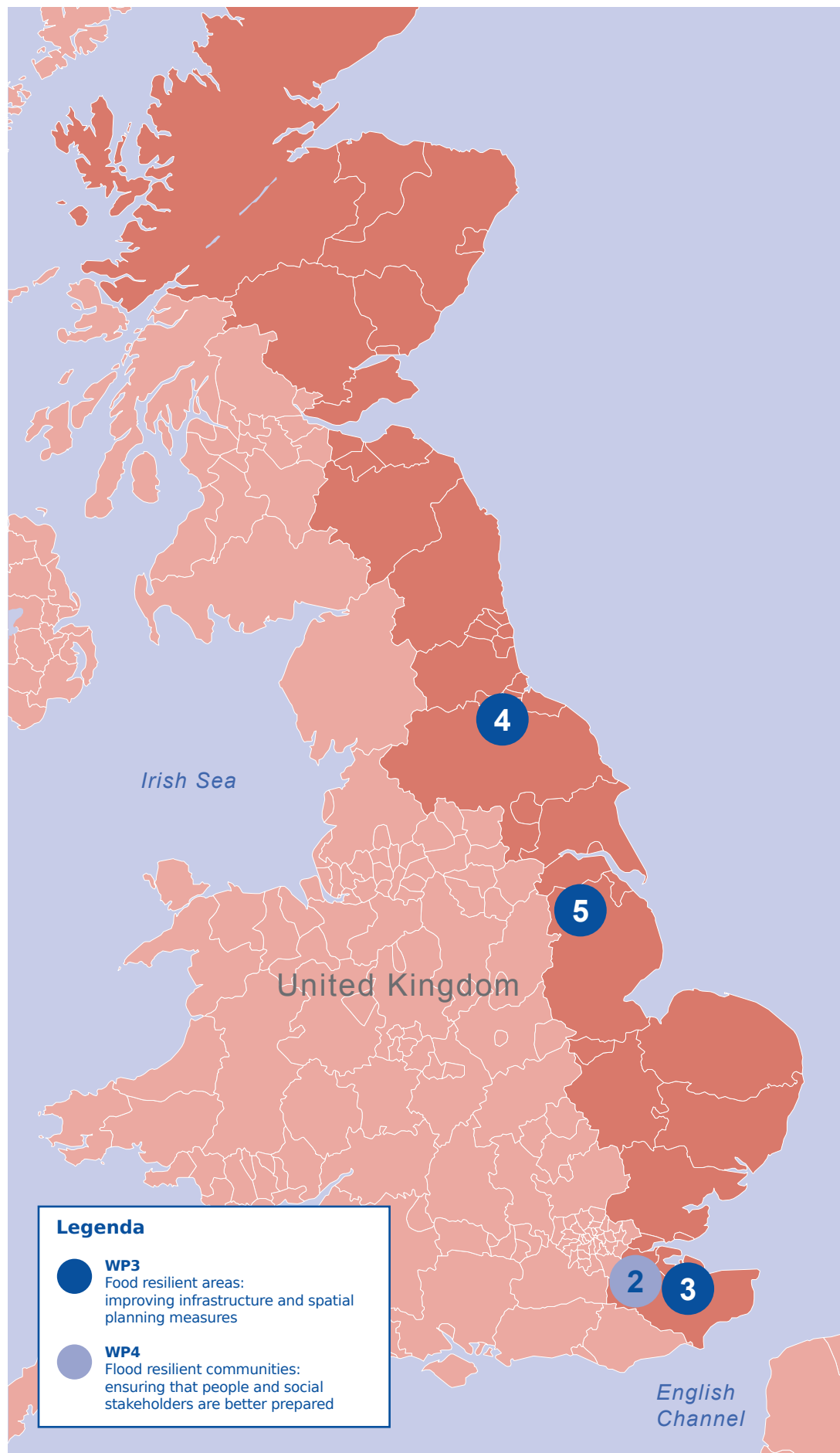


Cost-effective solutions and designs that reduce the vulnerability of lower-lying areas.

8 Flood Risk Sloe Area



Assessing the flood vulnerability of an area and defining the requirements for a shelter and evacuation site.



9 Roskilde

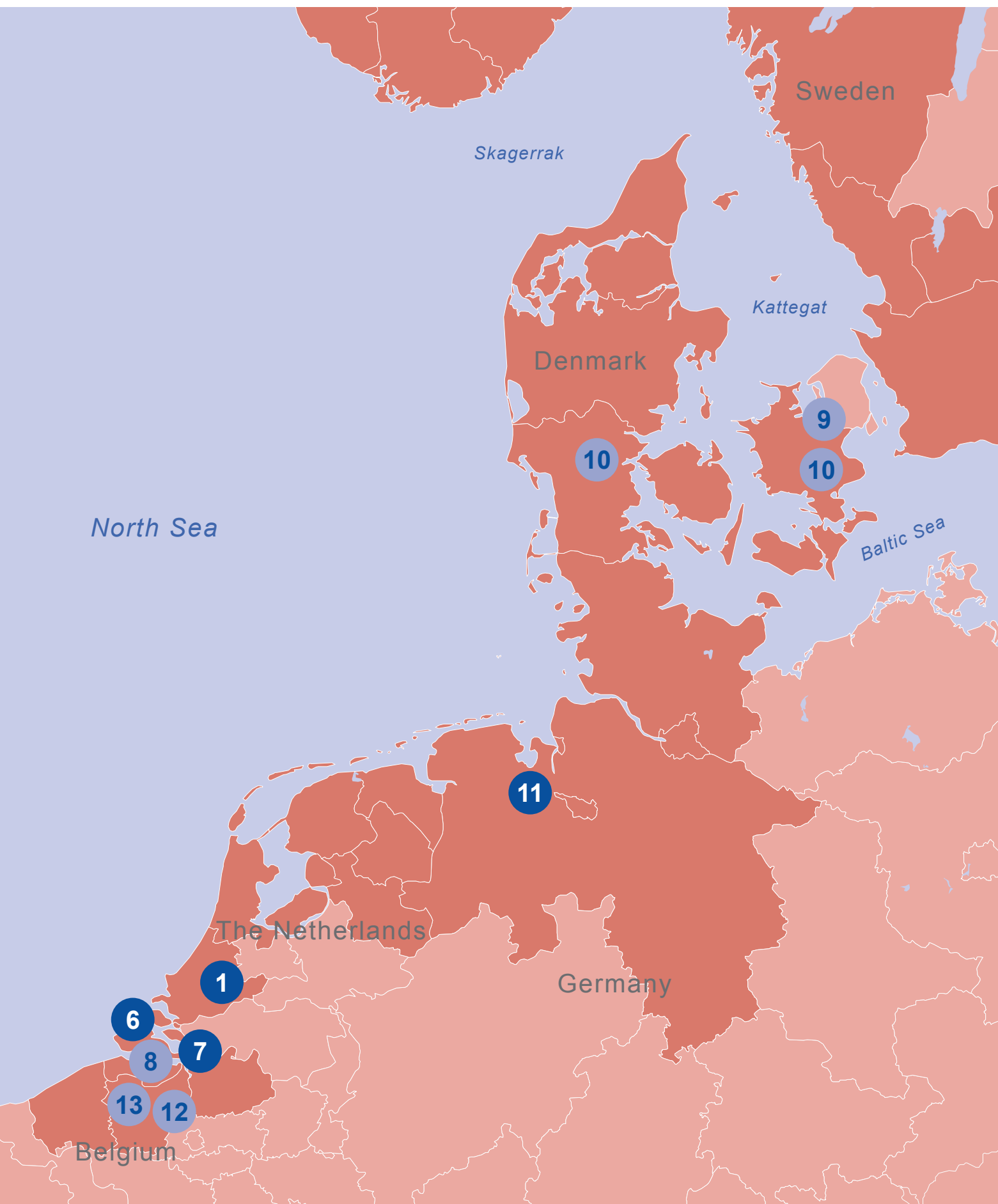


Learning the lessons of storm Xavier, which has resulted in tools and guidance for the integration of risk reduction and response in the recovery process.

10 Velje & Solrød/Køge



Testing the applicability of MLS for flood-prone areas without conventional protection.



11 Wesermarsch



Improving spatial planning and disaster management on the German North Sea coast.

12 Ninove



Incorporating spatial, evacuation and recovery measures at the Burchtdam site and building community resilience business cases for flood prone urban areas.

13 Denderleeuw



Investigating individual and community-based flood risk action, such as self-reliant water management.

Je ne maintiendrai pas¹

Major weather alarms and flooding events in the Caribbean, for instance, are indications of ongoing climate change. Whereas the average Atlantic hurricane season over the last three decades included some six hurricanes, we have already witnessed nine hurricanes this season, of which three were category 4 and two were category 5.

After Franklin and Gert, Harvey was followed by Irma, Jose, Katia, Lee, Maria and Nate; and at the time of writing there are still two months of the season to go. Hurricane Irma in particular, which peaked at wind speeds of up to 295 km/h, had a devastating effect and destroyed over 95% of development on the islands of Barbuda and Saint Martin. As such, it also directly affected some Western European countries as the former or current administrators of these islands.

In the face of such intensifying hazards and rising sea-levels, the Intergovernmental Panel on Climate Change (IPCC) proposed three possible strategies for coastal adaptation back in the 1990s. The three strategies are: advance the line, retreat the line and hold the line. The first strategy implies new adaptive measure in front of existing coastlines, such as the 'sediment engine' in the Netherlands or coastal islands in Belgium. The second strategy focuses on measures in the coastal hinterland to allow room for flooding and minimise its impact. The latter strategy would focus on implementing major civil engineering works as a final defence against potential flooding events. However, none of these strategies would be feasible for the Caribbean islands. Their coastal front is too deep to implement effective adaptive measures, and the islands themselves are too small or hilly to adapt the hinterlands. Even the hold the line strategy would prove too radical and expensive for these island communities, most of which have small populations.

Therefore, one could also propose a fourth strategy, which would imply withdrawal. As in advancing deserts, where mankind retreats from its former strongholds as they become too hot or dry to inhabit, this strategy would imply a retreat from islands which are under continuous threat from hurricanes, and where the resulting damage would take several decades and tens of billion euros to repair. Such a strategy has already been suggested by some for certain low-lying areas in the delta of the Scheldt-Meuse-Rhine in Europe, including the defining of a new path for the future coastline, from Bergen op Zoom, via Breda, Utrecht and Harderwijk towards Drenthe. But while such a strategy would be impossible over here, since it would imply giving up the economically prosperous and densely populated Randstad and Flemish Diamond, it could be considered as a strategy for other less populous regions. Instead of spending €20 billion on rebuilding the Dutch island of Saint Maarten (potentially repeatedly), the alternative may be to provide each household with €2 million on average to start a new life elsewhere, and leave nature to run its course on the islands.

Whatever you might think about this proposition, it is difficult to deny that our strategies have to be rethought in order to adapt to the continuously changing climate circumstances of our future. This may mean abandoning the path dependencies of past civil engineering and refocusing on new methods of ecological and socio-economic climate adaptation. In fact, for me that is what this *reframes project* is all about.



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- 1: *Je maintiendrai* has the motto of the Netherlands' coat of arms since 1815. In this negative phrase it would mean: 'I will not maintain'.
- 2: Sanders, Wies (2002) New coastal path in times of Climate Change (in cooperation with the Design Academy) Eindhoven

FRAMES Letter is a special edition on occasion of the National Delta Congress 2017. This year, pluvial flooding is central to the programme of this Dutch national event on water management.

FRAMES

Climate change is leading to rising sea levels and extreme rainfall patterns. FRAMES (Flood Resilient Areas by multi-layer Safety) aims to increase the resilience of vulnerable areas and communities, by working with the Multi-Layer Safety (MLS) concept.

FRAMES has the following aims:

- Flood-resilient areas: improving infrastructure and spatial planning measures
- Flood-resilient communities: ensuring that people and social stakeholders are better prepared
- Flood-resilient public authorities: reducing recovery times and enhancing response capacity

The Interreg project is part of the North Sea Region programme, which brings together 11 partners from Belgium, Denmark, the UK, Germany and the Netherlands. The results will be available at the end of 2019.

Take a look! FRAMES Wiki

FRAMES is all about sharing insights and learning from other pilots. For this purpose, HZ University of Applied Sciences has developed a semantic wiki which is already available. Jean-Marie Buijs explains: 'The design of this semantic wiki is based on an expertise-management method, which will help us to bring together all the lessons learned from the pilots. All pilot members will be able to contribute to the semantic wiki.'

Take a first look at this knowledge sharing tool on www.frameswiki.eu.

Colophon

Unless differently required by the managing authority, any notice or publication in relation to the project, made in any form and by any means, including the internet, must state that it only reflects the author's views and that the programme authorities are not liable for any use that may be made of the information contained therein.

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