



# DELTA IN TIMES OF CLIMATE CHANGE II

## INTERNATIONAL CONFERENCE

OPPORTUNITIES FOR PEOPLE, SCIENCE, CITIES AND BUSINESS  
 ROTTERDAM THE NETHERLANDS, 24-26 SEPTEMBER 2014

<b>Deltas in Practice, policy-practice sessions</b>	
<b>Deltas in Practice Theme 1. Risk assessment</b>	
<b>DP 1.2 Extreme weather impacts on critical infrastructures: International lessons to improve analysis</b>	
<b>Chair</b>	Nienke Maas, TNO, the Netherlands
<b>Organised by</b>	Nienke Maas, Rene Willems, Ruben Vogel, TNO, the Netherlands
<b>Presentations</b>	<ul style="list-style-type: none"> <li>• Andrew Tagg, HR Wallingford, United Kingdom</li> <li>• Jos Streng, City of Rotterdam, the Netherlands</li> <li>• Dr. William Hynes, Future Analytics Consulting, Ireland</li> </ul>
<b>Session topic</b>	<ul style="list-style-type: none"> <li>• The combination of infrastructure and network interconnectedness with climate change and extreme weather events asks for better ways of assessing risks and determining policy and adaptation options in practice</li> </ul>
<b>Objective of the session</b>	<ul style="list-style-type: none"> <li>• Inspiration and lessons learnt from international cases for the analysis of extreme weather impacts on critical infrastructure</li> <li>• Collaboratively identifying steps forward for research and analysis of interconnected risks on critical infrastructures</li> </ul>
<b>Main conclusions and lessons learnt from the presentations</b>	
<p><i>The UK 2013/14 winter floods: examples of effects of adverse weather</i></p> <ul style="list-style-type: none"> <li>- A good flood defence will contribute a lot on the reduction of risks of damaged infrastructure by inundation</li> <li>- New models are developed for making better weather and wave predictions</li> <li>- Main improvements in flood risk management are to be found in: flood forecasting and warning, collaboration between organisations, understanding of risk components, improved flood modelling &amp; mapping, management of flood response system, analysis of and adaptation to new flood events</li> </ul> <p><i>Flooding The Hague Rotterdam Airport: risks for transport and electricity network</i></p> <p>The city of Rotterdam presents a simulation on the inundation (through a dam burst) of a part of the Rotterdam Region. This area has a lot of crucial infrastructure: national highway, high speed rail track, airport, and residential area. This provides a joint interest in interdependencies between these networks.</p> <p>Most important conclusions:</p> <ul style="list-style-type: none"> <li>- There is an increase of effects due to interconnectedness</li> <li>- Connections between different networks forces agents from network managers to coordinate their asset management, unexpected events plans, maintenance, and investment strategies</li> <li>- The combination of data systems for different networks opens new perspectives</li> <li>- Asset managers from different industries have to be physically brought together. Until now, it still happens that they obstruct each other's functioning without knowing it. Trust is important for sharing information on critical parts.</li> </ul> <p><i>Ireland Flash Floods</i></p> <p>The South-West region of Ireland is annually exposed to extreme weather patterns. Since 2009, there have been four large scale flooding events. The flooding can be of different types: pluvial, fluvial and coastal.</p> <ul style="list-style-type: none"> <li>- Policy on flooding has only just started in this area, as they are still in a catch-up mode</li> </ul>	





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- There is still a disconnection between flood mapping and meteorological data, those databases need to be integrated

### Main conclusions of the discussion

- Industries tend to look after their own interest
- Today, the focus is still on responding after an emergency, resilience is about reducing the risks by adapting the system
- There is a security problem when doing research on the interconnectedness of infrastructures. When the geographical data of the interconnectedness of infrastructures falls into the wrong hands, a nation shows its most vulnerable spots. This is a problem when doing research on this topic.
- We need data of what happened exactly during a disaster, the focus now is only on the recovery
- More simulations need to be run
- All different stakeholders need to be involved

### Main result or conclusion of the session

For better insights on interconnected risks of critical infrastructures we need:

- Data and scenario's
- To bring the asset managers physically together. Then they can start to think about problems that are in their influence. They will also trigger each other to do better.

### Most exciting insights or outcomes

"Interconnectivity is a big challenge; there is still a tendency of working in silos"

"You have to bring the asset managers physically together!"

"We need to collect more data and to run more simulations"

