Polder2c's living lab: Toolbox for a better future of levee management

Beerlandt Jadon and Rauwoens Pieter

KU Leuven, Spoorwegstraat 12, 8200 Brugge, Belgium
E-mail: jadon.beerlandt@kuleuven.be

Climate change is affecting countries in the 2 Seas region (Netherlands, Belgium, France, and the UK area) faster and more extreme than previously expected. The countries in this region face a major threat from increasing sea levels. Particularly because it is unknown how robust the flood defences are or how well the emergency response is organized in a real-life situation. There is also a scarcity of well-trained water managers, as well as a lack of knowledge transfer and societal awareness. The Hedwigepolder in the Netherlands, along with an adjacent part of the Flemish Prosperpolder, is the largest tidal area in Western Europe, covering 465 hectares. In function of the Sigma plan, the existing dike is in a phase of depoldering. The current "Scheldedijk" will be removed and replaced with a new levee further inland. Polder2C's approach to the development of flood resistance measures is unique. The depoldering of the Hedwige-Prosperpolder has created a six km² living lab environment where new and innovative techniques, processes, procedures, and products can be tested for practical validation. Implementing and successfully executing appropriate flood emergency procedures are critical to a successful flood emergency response. For this to succeed you need the right kind of tools and expertise. It is also critical that everyone participating follows the same set of guidelines. To answer this, the Polder2C's project knowledge and insights will be integrated with existing knowledge to provide a set of useful tools. These tools could then be used for flood defence and emergency response at levees and sites different from HPP and for different climate scenarios. Based on the findings obtained in this project, current practices and guidelines will also be evaluated and a proposal for an update to “The International Levee Handbook” and “International Handbook for Emergency Response to Flood Risk” will be addressed if shortcomings are observed. This toolbox will be made up out of a combination of information (e.g., wiki, data centre) and practicalities (e.g., calculation methods, inspection strategies, blueprints, checklists, ...). As a result, it will be an invaluable tool for training flood-fighting and emergency-response personnel. It will present best practices and lessons learned from levees and dikes in various circumstances and climates throughout the world. This toolbox will give these "generally agreed tools," including flood defenses and emergency response management, as well as specialized issues such as failure mechanisms and intervention tactics. A team will be formed to oversee the development of this toolbox, including input from several stakeholders. The end result will be a knowledge website coupled with a data wizard to present everything in a user-friendly manner that is also informative for research institutions and students.

Keywords: Flood risk; Toolbox; Emergency response; Flood defences; Levees