

The Need for an Adaptive Risk Governance Framework for the Danish Energy Island Program

Igor Kozin

Senior researcher

Ibsen C. Cardenas

Postdoctoral researcher



Danish Energy Agency

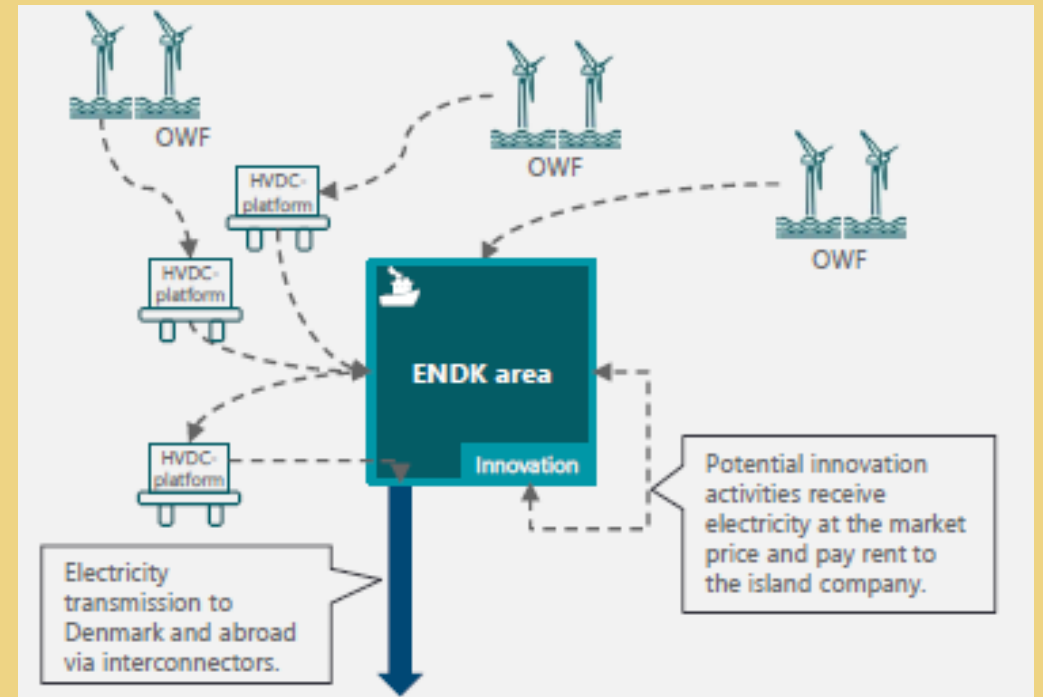
Some facts

An energy island serves as a hub for connecting and distributing power from the surrounding offshore wind farms (OWF)

The energy island in the North Sea will be an artificial island to be built approximately 80 km off the coast of Thorsminde

It is expected to have an initial capacity to serve 3 GW of offshore wind and later reach full capacity at 10 GW

Delivery of first power in 2033



More facts

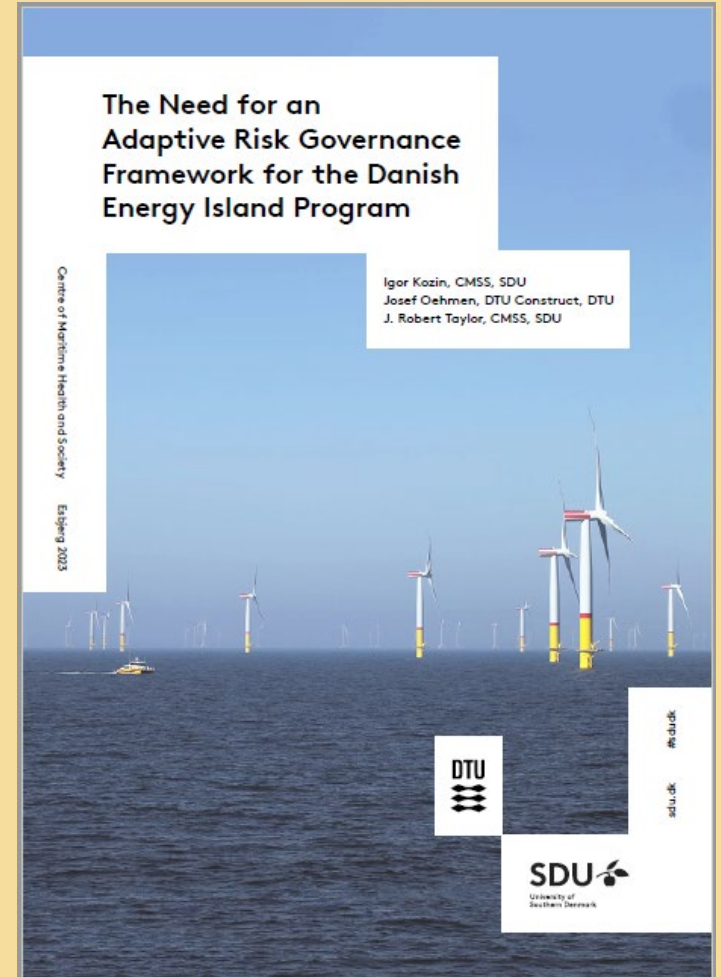


THE ESBJERG DECLARATION

on The North Sea as a Green Power Plant of Europe

White paper

Insufficiently managed risks - from health & safety to cost - can bring the largest engineering programs to a sudden halt, and we can expect significant public scrutiny regarding promised budgets, schedules, and technical performance.



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What is risk governance?

*Risk governance provides guidance to cope with risks in situations of high complexity, uncertainty or ambiguity. It is not just about **risk management**. It starts at the earlier stage of **risk pre-assessment**, and urges institutions to gather not only knowledge about the physical, economic and social impacts of technologies, natural events or human activities but **also knowledge about the concerns** that people associate with causes and consequences of risks.*

White paper (continued)

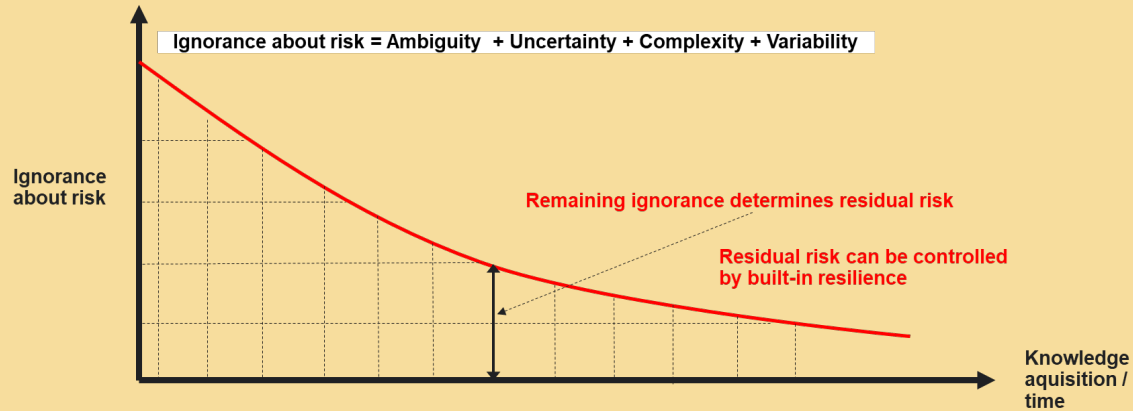
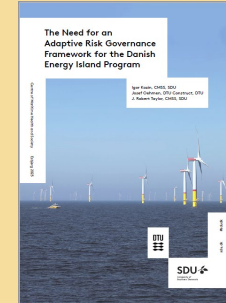


Figure 1. Bound characteristics of risk

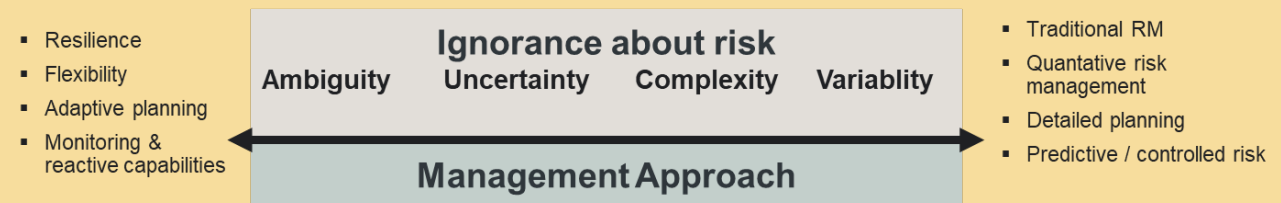


Figure 2. Knowledge about risks determines risk management strategy

The status

The adaptive risk governance framework is being operationalized

A scenario analysis of alternative options for PtX production in the North Sea

Michael Barfod & George Panagakos

DTU

Igor Kozin

SDU

Jens Møller Andersen

Aarhus University

Mahdi Abkar

CBS

The idea of developing a research project was put forward at the Maritime Research Alliance (MRA) event 'Industry-academia follow-up workshop on green transition in ports and city-port relations' of 24 May 2023



One risk has already become true

Press release, June 28, 2023

The Danish government has postponed the decision to initiate the tender for the artificial energy island it plans to build in the North Sea. The reason behind the move is that the current concept for the North Sea Energy Island is too expensive, so the government wants to look into other concepts.

"In its current form, the costs to the state are too great and the risks too many", the ministry states

Decision is to thoroughly analyse several options for a better and cheaper North Sea Energy island concept

It is timely to scrutinise alternative set-ups

The focus suggested is **PtX production**
(*can be extended to the energy storage and other innovation activities*)

There are a number of foreseen alternatives:

Production of what? Hydrogen, ethanol or ammonia?

Production where? On the Island, separate platform or onshore?

Transportation by pipelines to shore, **bunkering** ships offshore, storage, usage for **different needs**?

The analysis could cover the risks, technical feasibility, socio-economic considerations, energy efficiency, timeline for alternative fuel deployment, timeline for scaling up, and synergies with out-of-sector activities.