Strategic foresight for maritime transitions: A digital foresight platform as a framework for exploring systemic changes and policy pathways

Ahlqvist, Toni (University of Turku, toni.ahlqvist@utu.fi)

Basnet, Sunil (Aalto University)

Farokhi, Raheleh (Aalto University)

Hukkinen, Janne (University of Helsinki)

Janasik, Nina (University of Helsinki)

Kauppi, Patrik (Merikotka)

Kuikka, Sakari (University of Helsinki)

Knudsen, Mikkel (University of Turku)

Lauttamäki, Ville (University of Turku)

Lehikoinen, Annukka (Merikotka)

Luoma, Emilia (Merikotka)

Nikkanen, Maija (University of Helsinki)

Valdez Banda, Osiris (Aalto University)

Abstract

Under the European and Finnish national climate objectives, novel digital solutions are introduced at a rapid pace. New smart concepts and services are claimed to have a significant role in introducing cleaner, safer, and more efficient operations. Putting new devices and instruments into operation by multiple actors across the operational environment may, however, increase the risk of both technical problems and human errors.

Gyroscope project (Academy of Finland, grant 353056) produces a comprehensive picture of sustainable transition to sustainable marine logistics in Finland, including risks and policy pathways to achieve it.

The aim of this presentation is to outline a concept of digital foresight platform (DFP) as part of Gyroscope project. In the project, DFP has three parallel targets.

Firstly, DFP is theoretical framework for combining various scientific traditions in the project, such fields as futures studies, systems analysis, policy studies and spatial planning. From the theoretical perspective, DFP is a systemic planning frame, a future maritime logistics space, for scanning long-term planning prospects, related policy pathways and possible systemic contradictions. The systems perspective, built via causal modelling, outlines the problem domains in the case setting. The long-term perspective emphasizes three future modalities: probable futures, possible futures and radical futures. As part of the analytical process, DFP also emphasises socio-technical contradictions, based on the idea of contradiction as a potential generative force in society suggested by Castán Broto (2015).

Secondly, DFP is an analytical and empirical process that integrates several methods springing from these traditions, for example horizon scanning, Bayesian modelling, scenario analysis, risk analysis, and development of policy pathways. Analytically, DFP provides a foundation for scoping long-term changes, expectations, and contradictions in the domain of maritime logistics, and planning policy pathways accordingly.

Thirdly, DFP will also be “proof-of-concept" model and “a dashboard”, a visual platform in the web, enabling transparent combination of methods when scrutinising socio-technical transitions.

Implications for sustainable maritime operation

The initial aim is to provide a “proof-of-concept” of a frame that can be utilised for scrutinizing potential changes, transitions and transformations in various maritime contexts, and in other socio-technical settings.

In the Gyroscope project, the DFP approach is set in three case contexts: 1) autonomous shipping; 2) ship navigation in ice; and 3) alternative fuels. The case contexts have their own particularities, and, when integrated, they open a variegated window to key aspects of green transition, and on the multiple roles of digitalisation in it.