Summary

The dynamic development of seaports, especially in the 20th and early 21st centuries, has meant that as they grow and the volume of cargo increases, they have begun to have an increasingly negative impact on the environment. The main challenge has become the need to balance their economic development with social development with the least possible interference with the environment. This leads to the development of pro-environmental initiatives in ports.

The green port concept is the port industry's contemporary response to new challenges and is sometimes identified with a new port development model. The process of transformation towards green ports combines the implementation of sustainable business and technological practices with environmental and social responsibility, maintaining a balance between environmental effects and economic benefits.

The research topic of the thesis covers the development of the green port concept on the example of ports of key importance for the national economy in Poland, i.e. in Gdańsk, Gdynia, Szczecin and Świnoujście. The main objective of the dissertation was to identify and verify this concept in terms of science and practice. Previous research in this direction focused on the environmental aspect. In the dissertation, it was expanded to include an original socio-spatial perspective.

The thesis identified the main nuisances associated with the exploitation and investment activities of ports, and indicated that the proximity of ports, through increased exposure to noise and air pollution, affects the quality of life of residents of port districts. A questionnaire survey of residents in these neighbourhoods showed that the nuisances associated with port activities are a daily problem for residents, and that the measures taken by the ports are perceived as ineffective. Despite an openness to dialogue and cooperation with the ports, the level of trust of residents in these institutions remains low.

The research included in-depth literature analyses and the use of GIS modelling, allowing for a comprehensive assessment of the environmental, social and economic status of ports. The author developed an analytical tool in the form of a green port matrix. This matrix was used to assess the implementation of green port concept-related activities in the Polish ports covered by the study. Thanks to this, an assessment of individual ports was carried out, considering social, environmental and economic issues.

The research showed that ports are highly active in implementing measures in line with the green port concept, especially in the environmental component. However, despite its presence in port development policy, the green port concept is not sufficiently embedded in strategic port documents. According to port representatives, pro-environmental activities are mainly driven by economic and image-related motivations.

Based on the conducted research, two main groups of problems hindering the implementation of the green port concept were identified. The first one is financial and technological. These include high investment and modernisation costs for port equipment, outdated infrastructure and superstructure, and a lack of new (more environmentally friendly) technologies. The second problem, which is organisational and social in nature, relates to the concentration of ports' attention on other priorities, a lack of strategic planning, a shortage of qualified staff in this area, low awareness of the environmental impact of ports, lack of guidelines for the implementation of green port concepts (which makes it difficult to ensure consistency and comparability of actions), resistance among business partners to the implementation of new solutions generating additional costs, and lack of public interest in supporting green port initiatives. The success of implementing the green port concept is influenced by the increased financial and organisational capabilities of ports, as well as the wide availability of technological innovations.

Polish ports of key importance for the national economy show a varied level of advancement in implementing the green port concept. The ports of Gdynia and Gdańsk in the Tri-City turned out to be the leaders in pro-environmental activities. The Szczecin-Świnoujście port complex, despite a lower rating, is also taking significant steps towards implementing pro-environmental solutions, focusing on infrastructure modernisation and improving energy efficiency. The research showed that the highest scores were achieved in the environmental and economic components, and the lowest in the social component. In the case of the social component, the highest score was achieved by the port of Gdansk, while in relation to the environmental and economic components, the highest scores were achieved by the ports of Gdynia and Gdansk.

Polish ports face many socio-economic, technological, political-legal and environmental challenges, and the green port concept is seen as a contemporary direction for their development. The research shows that Polish ports are on a promising path of transformation towards green ports, but further intensive action is needed for them to fully achieve this status.