

Summary

Little innovation occurs in the maritime transport sector. This is due to the fact that the sector's innovation system does not function well. This lack of innovation makes it more difficult for the government to achieve its environmental objectives. The maritime sector itself is responsible for improving the innovation system. If the Ministry of Infrastructure and the Environment (IenM) wants to promote innovation within this sector, it can choose from a wide range of roles: director, legislator, buyer and launching customer, contracting authority, public-private partner and subsidy provider. IenM must arrive at an optimum mix of roles by testing the effectiveness and efficiency of each role. The assumption that government can only promote innovation through granting subsidies must be abandoned. The role of subsidy provider alone is insufficient and often unsuitable for allowing an innovation system to function well.

IenM has various subsidies available for innovation in the maritime sector, although some of them expired in 2010. Following the expiration of these subsidies, IenM's Maritime Affairs directorate asked the KiM Netherlands Institute for Transport Policy Analysis to research the role of IenM in maritime sector innovation. Innovation is a means of achieving policy objectives. The research was limited to the following maritime sub-sectors: sea shipping, seaports and inland waterway shipping, which are the transport sectors that IenM's maritime policy primarily focuses on. The research moreover specifically focused on innovations that involve improving environmental performance.

Limited degree of innovation within the maritime transport sector

The three researched sub-sectors consist of a relatively small number of large companies and a large number of smaller companies and one-man businesses. The large companies in particular are aware that innovation is important and also have the potential to achieve innovations. Owing to the large number of small companies, however, an awareness of the need and possibilities for innovation in the sector has been slow to emerge. This particularly applies to inland waterway shipping, given its traditionally conservative character, but also applies to sea shipping. The seaports, partly owing to their logistic function, are more innovative than the sea and inland waterway shipping sub-sectors.

Manufacturing and supply companies have achieved the most innovation in the maritime sector, with most of this innovation involving technological innovation. The environment is one of the most important innovation subjects in the maritime sector. Improvements made for the environment are primarily achieved by means of technological innovations.

Improvements possible within the innovation system

The Hekkert innovation system theory (2007) was used in this research. A main point of this theory holds that innovation can only occur if the following seven functions are adequately met: experiments by entrepreneurs, knowledge development, knowledge sharing, giving direction to the innovation process, creating markets, making resources available, and resistance to opposition and lobbying.

Almost all seven functions can be improved in the maritime sector.

- The 'experiments by entrepreneurs' function can be greatly improved in the inland waterway shipping sub-sector. For the seaports sub-sector, the ports of Rotterdam and Amsterdam are engaged in innovation.
- The 'knowledge development' function is sufficiently developed in terms of research.
- The 'knowledge sharing' function does not function well, owing to the unsatisfactory sharing of knowledge between knowledge institutes and the sector. Moreover, there is a need for higher education levels and improved connections between education and practice.
- The 'giving direction to the innovation process' is fulfilled by both the sector and the government. The sector has outlined the main themes of an innovation programme, but this must be worked out in more detail. The government has a number of available subsidies; however, there are too many minor regulations. The sector would welcome fewer regulations and greater uniformity, flexibility and clarity.
- The 'creating markets' function is proceeding arduously, as it is difficult to create new markets in the area of sustainable products. Moreover, the advantages in this are not always apparent to the individual entrepreneur.
- The 'making resources available' function is far from optimal. The sector makes few financial resources available for innovation. There is also a shortage of sufficiently educated personnel.
- The 'resistance to opposition and lobbying' function is not well developed. The successful lobbying for cleaner technologies proceeds laboriously.

IenM can play multiple roles

The maritime sector itself is primarily responsible for a well functioning innovation system. If IenM involvement is desired in order to achieve policy objectives, IenM can choose from a wide range of roles: director, legislator, subsidy provider, buyer and launching customer, contracting authority, and public-private partner.

For each role we indicate which function can be improved and how this can be achieved.

- Director: Improved knowledge sharing achieved by uniting the various parties or providing information about innovation. Give direction to the innovation process by bringing together the sector and knowledge institutes in order to determine which problems the maritime sector must address.
- Legislator: Give direction to the innovation process by establishing environmental standards, by letting pay the costs of environmental pollution, and by removing legislative obstacles to innovation.
- Subsidy provider: Offering subsidies for innovation and knowledge development contributes to the available financial resources. The role of financier can also include that of a guarantor that facilitates market introductions.
- Buyer and launching customer: Contributing to the creation of new markets by serving as the launching customer in the purchase of more environmentally friendly state-owned ships.
- (Innovative) contracting authority: Giving direction to the innovation process and making resources available.

- Public-private partner: Promoting experiments by entrepreneurs and creating new requirements, for example by constructing infrastructure as the public partner in public-private partnership projects.

Based on the coupling of functions and government roles as outlined above, it appears that for the innovation system to function well, the Ministry can play multiple roles. In practice, this would be more than one role. For IenM, the challenge is to arrive at an optimum mix of roles.

One key conclusion is that the traditional assumption that government can only promote innovation by granting subsidies must be abandoned. The role of subsidy provider alone is insufficient and often unsuitable for allowing an innovation system to function well. Moreover, this role can have a disruptive effect on the market. For innovation policy, the entire innovation system must be studied for each innovation, with determinations made as to which function operates insufficiently and what role the government can play in this. This KIM analysis of the entire sector is therefore too rudimentary for that purpose, although the research approach can serve as an example for others.