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The Promise of Maritime Heritage for Port Cities: Challenges, Concepts and New Approaches

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Maritime heritage – an ensemble of ships, ports, waterways, buildings and maritime skills – is one of the oldest and most vital forms of heritage. It has been key to the growth of port cities around the world. Maritime skills, which include the techniques and materials used to build and use watercraft, from dugout canoes to container vessels, have made it possible to transport goods, animals and people, bringing wealth to deltas and coastal areas. This article argues that maritime heritage holds cultural, historical and environmental value and can drive sustainable spatial and economic development. In the heritage sector, maritime heritage is a relative newcomer compared to built and natural monuments. However, especially in the context of climate change, it offers valuable lessons on adaptation and sustainability. Six examples from the Netherlands demonstrate how preserving maritime heritage can be compatible with climate adaptation and energy transition, including, for example, using wooden fishing vessels and tugboats in cities, towing vessels for slow tourism, and sailing vessels for combined passenger and goods transport. The article calls for additional studies of how the conservation of maritime heritage can encourage sustainable development.

Keywords: *development, sustainability, lifestyle, circularity, clean transport*

< Fig.1 Sleepvaart museum Maassluis, with visible sea-steam tug Furie (Source: kees torn, 2015. Wikimedia Commons, CC BY 2.0).

The Layered Meanings of Maritime Heritage

The Netherlands, situated in a delta of major European rivers and along the North Sea, has long been renowned for its trade, transport and maritime heritage. Historically, shipping played a crucial role in the country's spatial development and prosperity. Villages and cities have flourished because of their strategic locations along waterways. Ports, shipping and towing canals formed a waterway network in the Netherlands that remains vital to national and international economies.

The unique historic ships of the "Brown Fleet" – traditional sailing vessels now used for passengers and groups – and harbors that have been turned into museums enhance the Dutch cultural landscape, maintaining the maritime character of harbor villages and port cities. These heritage sites preserve the past and present new functions and innovative solutions for the future. Maritime heritage offers many social, ecological and economic benefits for boat owners, citizens, urban and spatial developers and government authorities. This requires that the potential of maritime heritage is recognized and utilized.

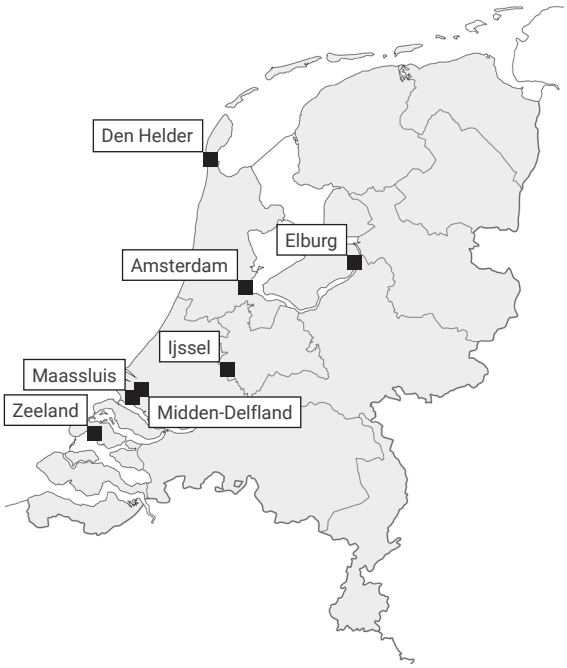
Historic ships are most often privately owned or safeguarded by museums, but they rely on public facilities like moorings, harbors, waterways, bridges and locks. Provinces and municipalities can support this rich maritime heritage by providing these essential facilities. Additionally, they can leverage the layered meanings of historic ships and maritime ensembles – both in content and relational aspects – to develop their environmental visions and spatial plans.

Methods like Urban Genesis (Stadsgenese) (Grond et al. 2021), the Sector-Factor-Vector-Approach (Janssen et al. 2017) and the Transformation Framework (Meurs et al. 2022) can help integrate maritime heritage in spatial visions and make development plans more comprehensive and well-founded. Through provincial or municipal regulations, authorities can protect and secure sailing monuments and maritime ensembles, enabling them to contribute to urban and spatial development.

A. The Urban Genesis is a method that uses a place's history of culture and natural systems to guide climate adaptation and urban development.
B. The Sector-Factor-Vector-Approach to heritage is a dynamic framework that frames three approaches to heritage. It argues that heritage is more than a monument-based sector and should also be a factor and a vector for dynamic engagement reflecting different times and cultures.
C. The Transformation Framework refers to the Dutch Heritage Department's guidelines for transforming cultural heritage into integrated spatial designs with high spatial quality. The method aspires to embrace change while preserving the genius loci, or local character. The goal is a value-driven spatial plan (D'Agostino and Hein 2024).

Conserving maritime heritage is important from spatial, cultural and historical perspectives. It offers opportunities to create a meaningful living environment while addressing current challenges related to mobility, leisure, energy and climate. This is important not only for shipowners but also for all residents of port cities and harbor villages and municipal and regional authorities.

Let's consider six innovative maritime heritage examples located in the Netherlands (fig. 2), using the methods mentioned above: *botters* in Elburg (A), tugboats in Maassluis (B and C), houseboats in Amsterdam (B), towing vessels



^ Fig. 2 The Netherlands with six harbors described (Source: Adapted from "Location Map of the Netherlands." Wikimedia Commons, CC BY-SA 3.0,).

in the Hollandsche IJssel (A), the "Beurtvaart" in Zeeland (A and B) and sailing cargo vessels in Den Helder (B).

Maritime Heritage as a Flywheel for Sustainable Development

The municipal and regional authorities of Elburg have been pursuing sustainable urban growth by incorporating in their municipal and regional policy the maritime ensemble of the harbor – which includes wooden vessels called *botters* that were once used for fishing, harbor buildings and the *botter* wharf (fig. 3). The municipality of Elburg has officially recognized historic vessels as "municipal sailing monuments." Both the municipality and the province financially support the *botters* and the *botter* wharf, making it possible to maintain them and restore or recover old and neglected *botters*. This aligns with Method A, Urban Genesis: the local fishing culture and the maritime landscape have been the starting point for harbor redevelopment. There were hardly any *botters* left in Elburg after the construction of the Afsluitdijk, which turned the salty Zuiderzee into a freshwater lake, IJsselmeer. This maritime ensemble can thus serve as a flywheel for the urban and economic development of the local harbor area and help make this old fishing village attractive to tourists (https://botterselburg.nl/pagina/11/museum-en-werf/).

Maritime Heritage and the Future of Maassluis

Maassluis has a famous maritime towage and salvage history. This heritage remains visible in the city and offers an outstanding opportunity for a long-term plan to bring the city center up to date and help it remain attractive to residents, entrepreneurs and visitors.

The center of Maassluis is a nationally protected cityscape (Rijksdienst voor het Cultureel Erfgoed n.d.), which means that the cultural and historical values of the buildings, harbors, quays, bridges and locks in this area must be preserved. Yet the area looks worn. City authorities have become concerned about the increasing vacancy of retail premises. The rich maritime heritage is in decay: there is little activity, the traditional vessels are not accessible and maintenance has been neglected. The three museums are only open for limited hours and there is no coordination of activities. The quays need to be refurbished. The city can use an economic boost: tourism is minimal, and the city has few employment opportunities.

Yet, Maassluis has much to offer. It derives its character from its maritime past, which can still

^ Fig. 3 *Botters* in the Elburg harbor (Source: Martine van Lier, 2021).

be recognized in its picturesque harbor, with its museum vessels, traditional tugboats, and salvage boats, the National Towage Museum and Museum Maassluis. The city wants to strengthen the historic harbor and city center with an area-oriented approach. The local council, therefore, has accepted a 10-year plan, "Maritime Historic Maassluis," developed by the Erfgoedkwartiermakers Coöperatie (Heritage Pioneers Cooperative). The plan aims to boost the center and the harbor by using the towage and salvage history and making the maritime heritage technically and organizationally sustainable. The goal is a sustainable and dynamic historic harbor and center with a flourishing Living Lab called Loods M – a knowledge center where the sustainability of the maritime heritage will be realized and where the museums will be located. At Loods M, maritime heritage will involve opportunities to experience, learn and innovate. The plan is based on Method B, the Sector-Factor-Vector-Approach, protecting the heritage vessels as municipal sailing monuments, using the maritime heritage for social as well as economic values and taking the vessels as the starting point of inspiring sustainable innovations. The plan is also based on Method C, the Transformation Framework, using the harbor with tugboats and salvage vessels as part of the genius loci to develop a broader multi-value-driven spatial plan.

The project involves four key areas of action: cooperation between the engaged professionals and volunteers, the development of a community sailing program, the establishment of Loods M and the establishment of an area cooperative that will anchor the collaboration between ships, museums, education and technical and retail businesses. Loods M (https://loodsm.nl/) aims to connect the area's history to an innova-

tive future. The bidbook for realizing the design for Loods M will be ready in September 2024.

Modeling Sustainability: Using Alternatives to Fossil Fuel

Living on the water without carbon-based fuels is possible on modern houseboats and historic vessels.[1] By using water, air and sun as primary energy sources, boats and other vessels can be heated in winter and cooled in summer. This system requires sufficient insulation, a water-to-water heat pump and thermal solar panels. The solar panels supply electricity, while the thermal tubes underneath supply hot water, and the water-to-water heat pump keeps the vessel at the desired temperature. However, the initial investment cost is still rather high. The collective acquisition can be a solution for residential collectives like museum harbors. By making vessels and houseboats more sustainable, collectives can point the way to the development of climate-adaptive floating villages, which offer future possibilities to live on water in delta landscapes (see the web page of *VLOT* Magazine for examples, https://www.vlotwaterwonen.nl/). These developments use maritime heritage as a vector, as proposed in Method B, the Sector-Factor-Vector-Approach: using these alternatives to fossil fuels inspires not only boat owners but also urban planners.

Lifestyle Changes: Slow Tourism

Towing canals formed a popular public transport system in Golden Age Holland. For over 250 years, towing vessels have been a reliable and comfortable means of transport for long distances. Along the canals were towpaths, where horses would walk while towing the vessels. A network containing 600 km of towpaths connected the cities in western and northern parts of the Netherlands and hundreds of towing vessels formed what is known as the "Intercity of the Golden Age" (Wellenberg et al. 2021). In the nineteenth century, the introduction of railways and trains marked the end of the towing system.

Recently, the municipal authorities of Midden-Delfland and a few shipping companies have embraced the Slow City Movement (www.cittaslow.org), which provides an international quality designation to municipalities committed to their landscape, regional products, hospitality, environment and heritage. A related phenomenon is known as "slow tourism." Shipping companies have succeeded in encouraging interest in once again using the old towing canals again: the canals are made accessible, towing vessels are restored or newly built and horses are trained. Traveling on towing vessels, passengers can experience the landscape more fully than when whizzing by in a car or train. In this way, sustainable recreation contributes to the heritage-inclusive development of rural areas. Regional recreation offers an alternative to mass tourism and tourism that requires polluting transport to faraway destinations. Also, in this example, in line with Method A, the Urban Genesis, the history of the towing culture, the maritime landscape of towing canals and the embrace of the Slow City Movement have been used to encourage climate adaptation through sustainable tourism.

1. In the Netherlands there are about 12,000 houseboats, including 2,500 historic vessels and 40 museum harbours. The use of water-to-water heat pumps and thermal solar panels is a recent development but can be found in a few mooring places and museum harbours, e.g., in Amsterdam, Rotterdam and Groningen.

Circular Economy: The Beurtvaart Rediscovered

The Zeeuwse Groene Compagnie (Zeeuwse Groene Compagnie) was started by two ship owners who have equipped their historic sailing vessel to carry freight and passengers once again. Inspired by the old system of the *beurtvaart* – freight and passenger transport sailing along a certain route according to a scheduled timetable – they developed an innovative concept: to transport regional products and passengers on fixed routes. The sailing vessel "Vrijbuiter," the first of five (https://www.vrijbuiterzeilen.nl), will use the wind as often as possible, but for maneuvering, they installed an electric engine with a salt battery as the energy source. In the harbors along their planned routes, solar panels placed on the roofs of harbor buildings supply electric energy to charging stations for the salt batteries. This initiative should stimulate area development in historic harbor villages and port cities by providing them with a new sustainable function, namely the transshipment of regional products. The crew is assisted voluntarily by the passengers. In the region of Zeeland, the maritime culture and the natural system of waterways are well suited to transport by sailing vessels and turns to Method A, the Urban Genesis. According to Method B, the Sector-Factor-Vector-Approach, the co-creation vector will sustain the maintenance of historic vessels, combining historical and economic values. Ultimately, this project is envisioned to boost the local economy and counteract the shrinking of rural communities.

Clean Shipping: Wind in the Sails at Sea

In 2007, three young ship captains, Jorne Langelaan, Arjen van der Veen and Andreas Lackner, in the maritime hub of Den Helder, in the province of North Holland, became inspired to find alternative means of transport for merchant shipping. They started the clean transport movement Fair Transport and to demonstrate their project's feasibility, they bought an old cargo vessel, took out the engine, put it under sails and began to offer climate-friendly cargo shipping. Today, this vessel, "Tres Hombres," has several sustainable sailing sister ships worldwide, forming a growing movement of cargo ships powered by wind. Using historical knowledge of using the wind as power, these ships have the potential to encourage the modern seafaring industry to use wind power and diminish the enormous greenhouse gas emissions of seafaring engines that use fossil fuels. The first contracts with shipbuilders to convert or build seagoing ships with sails, like the Ecoliner and the Trade Wings 2500, have recently been signed. If such efforts seem successful, this solution could help diminish air pollution in port cities. It could make the combination of housing facilities in port areas and moorings for converted freight and cruise ships more feasible. As indicated in Method B, the Sector-Factor-Vector-Approach, this use of maritime heritage to revitalize the seafaring industry, using the narrative and intangible heritage of sailing seamanship, is an example of the value of heritage in a changing physical and social context.

Conclusion: Maritime Knowledge and Craft as Motors of Sustainable Development

The examples above show how maritime heritage can be applied to the crucial transitions we now face. They demonstrate that historic ships can encourage sustainable tourism, circular economy practices, green shipping, and sustainable living on board and water. The three methods – Method A, which uses heritage for climate adaptation and urban development; Method B, which uses heritage for the protec-

tion of collections, re-using heritage for historical and economic values and co-creating with the sociocultural meanings of tangible and intangible heritage; the Transformation Framework, which embraces change while preserving local character – are suitable for developing sustainable plans with maritime heritage where maritime knowledge and craft drive sustainable development. Shipping and port cities have long been important agents of innovation, and their historical practices can inspire green futures. This is one reason it is important to preserve historic ships in their maritime context and not let maritime knowledge and craft be lost.

Policy Recommendations

- Shipping and port cities are, as they have been for centuries, important agents of innovation. Maritime heritage buildings, vessels, knowledge and craft should be considered living sources of inspiration for today's crucial transitions. Let's be receptive to the innovative power of maritime heritage.

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