Blue Modal Shift – Urban and Regional Waterborne Transport

Many of the systemic problems of land-based transport systems in densely populated areas can potentially be alleviated by increasing the proportion of waterborne transport. Negative external effects from land-based modes of transport, e.g. road and rail, will often not affect the costs of this type of transport. This makes the use of urban and regional waterborne transport economically unviable. Waterborne transport is energy efficient, requires relatively inexpensive infrastructure and has no apparent capacity limitations. Many older city centres are located adjacent to a body of water or along the coast. This indicates that a successful effort to shift the mode of transport from land to water could be relevant for some of the larger cities in Sweden.

Historically, regional and urban waterborne transport has not been competitive due to infrastructure overcapacity on land and the lower degree of internalising external costs of land-based transports. SSPA is at the forefront of this development through its involvement in a number of ongoing and initiated research and innovation projects.

The negative external effects of land-based transport systems are well known; emissions of greenhouse gases and other pollutants e.g. NOx, SOx, PM, noise and vibration, increased risk of accidents in line with the increase of vehicles in traffic and congestion. Congestion is a problem in itself, reducing both quality of life for passengers and quality of service for goods, but it also exacerbates many of the other issues mentioned above, as more and more vehicles are forced to spend more time on the roads to fulfil the same transport needs. Furthermore, the negative impact of these externalities is much more immediate and powerful in densely populated areas such as city centres and along the coast where many people and businesses are located. The economic impact of these externalities is not only evident in the costs associated with poorer health and environment, but also through the costs associated with an ineffective and inefficient transport system as a result of congestion.

These issues relating to quality and efficiency could potentially be managed through additional expansion of infrastructure capacity on land, the prohibitive costs and limitations of existing urban landscape notwithstanding. However, that would do little to address the long list of other issues relating to poor environmental performance and sustainability of the existing transport system. Finding ways to address the capacity issues stemming from increased demand and competition for urban and coastal land space by accomplishing a Blue Modal shift at urban and regional level may hold the key to solving both problem categories at the same time.

**Blue Modal Shift**

With increasing competition for infrastructure capacity and land, a rapid increase in research and development is re-emerging based on the idea of a Blue Modal Shift for urban and regional transport. Many of the critical stakeholders claim that the development of purposive and innovative urban/regional waterway concepts and business models may hold the key to unlocking the vast potential of waterborne transport in order to address the sustainability challenges of modern society.

In light of the new challenges faced by a society aiming for sustainable development and growth, Blue Modal shift is a real possibility given the development of purposive concepts and business models. There is also substantial potential for increasing the already high environmental performance of waterborne transport through technical development e.g. use of renewable, clean energy, optimisation of hulls and propellers, ICT-tools for increased efficiency etc. This potential should not be neglected when developing new concepts, applications and business for increasing the proportion of urban and regional waterborne transport.

The negative external effects of land-based transports. SSPA is at the forefront of this development through its involvement in a number of ongoing and initiated research and innovation projects.

The **NÖKS II project**

In the NÖKS II project – Närsjöfart i Öresund – Kattegat – Skagerrak, SSPA coordinates a total of 21 partners in three countries. The project’s main objective is to contribute to a more environmentally friendly and low-carbon transport system in the region, while also developing and enhancing the maritime transport system and encouraging the transfer of freight from road to sea. This will be achieved by developing solutions, tools and techniques to improve the quality and environmental performance of shipping services through the development of cost-effective, secure, flexible and competitive short sea shipping concepts. The efforts in developing these concepts and the innovative application of technologies that contribute to encouraging this modal shift have been divided into three main tasks, which effectively satisfy the different needs identified by the partners.
An example of a ferry capable of transporting cars, trailers and containers, with little need for infrastructure investments in ports, and thus high flexibility. Photo courtesy of Fjord 1.

and realise the potential of cross-border regional cooperation.

Volumes that are immediately available for this type of modal shift are those with a departure point or destination located near the coast or those volumes that are transported along the coast by rail and road. To find the solution to this challenge, we need to both identify transport demands with a quality and price requirement close to what can feasibly be produced in a shipping context and develop adequate short sea shipping concepts that are able to meet these requirements.

The objective of NÖKS is to contribute to a development that leads to a modal shift from the comparatively more congested and more accident-prone modes of transport with lower environmental performance to shipping. This implies the need to develop viable innovative concepts from both a technical and economic point of view and to produce a quality of services that can attract cargo volumes in competition with the faster and more flexible land based modes of transport.

The project is divided into three major tasks. The first main task focuses on developing ports. The second main task aims to develop the concept of a fine-grid, flexible and competitive distribution system adapted for short sea shipping and, in some cases, inland waterways. This involves developing vessel concepts and logistics solutions. In the final work package, the aim is to increase performance of the short sea shipping system by developing innovative ICT logistics concepts. The project will end in the second half of 2018.

Project partners:
- SSPA Sweden AB (Lead partner)
- Høgskolen i Buskerud og Vestfold (Norwegian coordinator)
- CELOG, Aalborg Universitet (Danish coordinator)
- Kongsberg Simulation
- Swedish Maritime Technology Forum
- Innovatum AB
- Swedish Maritime Administration
- Kystverket Sørøst
- Port of Aalborg Business Intelligence Aps
- Royal Arctic Logistics A/S
- Arctic Group A/S
- Aalborg Havn A/S
- Grenland Havn IKS
- Vestfold Fylkeskommune
- Vest-Agder Fylkeskommune
- Telemark Fylkeskommune
- Kristiansand Havn KF
- Borg Havn IKS
- Larvik Havn KS
- Norlines as
- Maritimt Forum

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