Economic Impact of SECA Regulations on Clean Shipping in the BSR

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First Empiric Results from EnviSuM Project

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EnviSuM Project

- **EnviSuM - Environmental Impact of Low Emission Shipping: Measurements and Modelling Strategies** (Sponsored by European Regional Development Fund).

- **Aim:** Addresses measurement and modelling strategies to assess present and future cost and the health and environmental effects of ship emissions in view of the IMO emission regulations

- **Goals**

  - ✓ To enhance clean shipping

  - ✓ Secure a level playing field for the maritime actors

  - ✓ To connecting different maritime stakeholders of the Region in cross sectorial collaboration and events

Introduction

- Sulphur Emission Control Area(s) (SECA) was created in May 2005 to enforce a stricter control to minimise airborne emissions (SOx ,NOx, PA) from ships.
- Regulation stipulates that Marine fuel must not have more than 0.1% Sulphur content.
- The success of any new regulation and the regulatory innovations that stem from it is dependent on the following:
  - ✓ acceptance by the professionals in the sector (stakeholders)
  - ✓ practical knowledge and know how
  - ✓ identification of new business opportunities
  - ✓ user acceptance

IMO (2008)

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Objective:

To study the various measures taken by stakeholders towards Sulphur emission reduction and stakeholders impressions of the financial impact of SECA regulations on their businesses and on the Baltic sea region.

How does the SECA regulation impact the maritime business in BSR?

What are the reactions to these impacts?

How will SECA impact blue growth and innovation activities in the BSR?

Clean shipping and Blue growth

Clean shipping

Ship

- welcome in every port
- causes no negative impact to the environment
- zero emission target

Port

- highly efficient
- excellent environmental services
- strong incentives that facilitate CS

Cargo

- excellent corporate footprint
- owners include environmental issues in their decision making process when

Integrated & Concerted actions → **Sustainability (blue growth)**

NSF (2008) ; Stipa (2013)

Sulphur Emission Regulations – Chronology

2005	Marpol Annex VI
2006	Baltic sea SECA
2007	North sea SECA
2009	EU legislation
2010	SECA limit dropped to 1.0% (Limited to BSR & North sea)
2011	Global cap dropped to 3.5%
2012	North America SECA
2015	SECA limit drop to 0.1%
2016	China SECA
2020	Global cap 0.5%

IMO (2008, 2009, 2013, 2014, 2015,2016) ; EU (2012) ; North (2016)

Maritime activities on the Baltic waters

- Baltic Waters is the Baltic Sea with the Gulf of Bothnia, the Gulf of Finland and the entrance to Baltic Sea bounded by the parallel of the Skaw in the Skagerrak.
- Narrow and shallow.
- Accommodates about 15% of world's cargo transportation.
- About 200 ports around Finland, Sweden, Denmark, Poland, Russia, Germany, Estonia, Latvia and Lithuania.
- Over 2000 different ships ply on the waters.
- Susceptible to high water pollution.

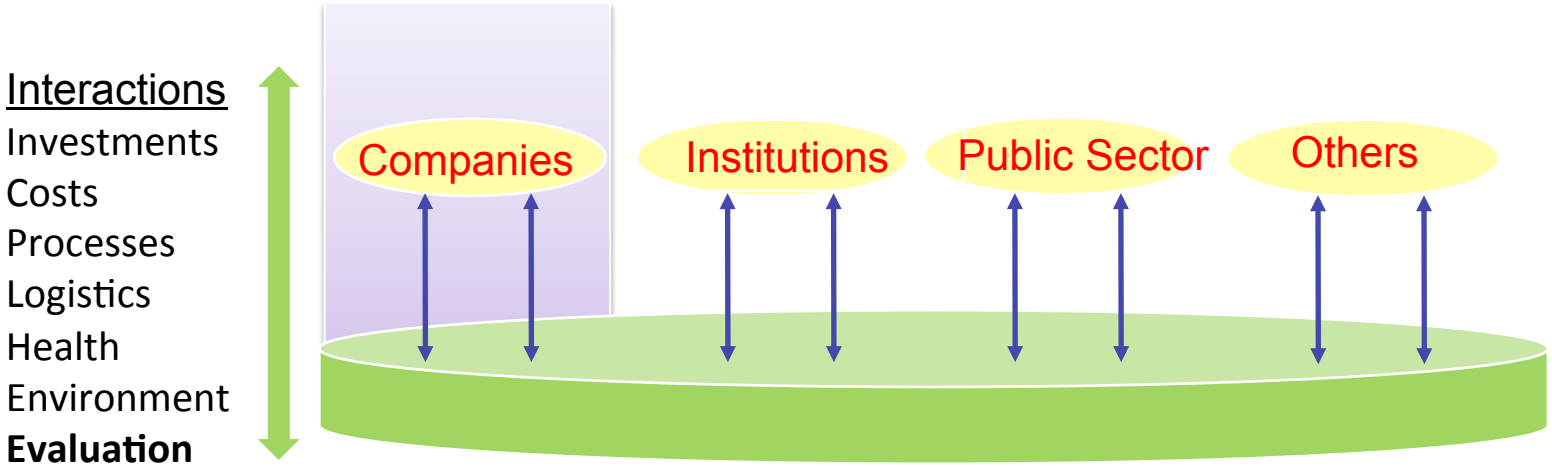
Nugraha (2009); Helcom (2012)

Research Design

BSR regions & their actors interact with SECA regulations

Maritime Stakeholders = VIEWS, ACTIVITIES & VISIONS

The stakeholders benefit/suffer/interact with SECA regulations



BSR = SECA platform/arena

Before → **SECA** → **After**

Empirics

Before SECA

- Previous studies & Secondary data
  - Desk top research (regional profiles)
  - Literature research
  - Analysis of older project reports
  - Case studies (old)

After SECA

- Primary data
  - Expert interviews
  - Workshops
  - Focus group meetings
  - Case studies (new)
  - Web-based Surveys

Activities

- Focus groups Workshops **Learning Café**
- Surveys
- Expert Interviews
- Case Studies

Output
Reporting

SECA at the moment

Shipping Companies

a. The use of Low Sulphur content fuel.
   - ✓ MGO/MGO/ULSFO
   - ✓ 2020 Global cap has become the game changer.

b. LNG as an alternative Fuel.
   - ✓ Seen as the total package for emission regulation compliance for SOx, NOx, and PM to CO2 and black carbon
   - ✓ 24 new builds and 3 LNG retrofitted ships and presently over 40 ships in production line with delivery date up to 2018

c. Scrubbers + HFO.
   - ✓ 5.4 % (73) of ships are equipped with the scrubber

Cases

I. Tallink, Estonia - Low Sulphur fuel strategy (Tallinnk Megastar)

II. Viking Line, Finland – LNG strategy (Viking Grace)

III. DFDS Seaways Denmark – Scrubber strategy (17 retrofitted ships)

SECA at the moment

Ports

LNG infrastructure

- ✓ Terminals are presently going through upgrades
- ✓ Port of Stockholm was the first in BSR and the world to take the LNG initiative
- ✓ Ship to ship, tank truck, bunkering boat terminals available

On-shore Power Supply

- ✓ Promoted for ports that are close to residential areas
- ✓ Gothenburg, Lübeck, Helsinki, Ystad, and Stockholm

Incentives for shipping companies

- ✓ Ports of Gothenburg, Rostock, and Riga uses the ESI and CSI for LNG/OPS

Compliance monitoring and Control

- ✓ Over 95% compliance
- ✓ Inspections, fuel samplings, surveillance aircraft
- ✓ Attention are given to ships without any abatement technology

What impact does the SECA regulations have on the maritime businesses and the BSR?

		Overall	*Blue growth*	*Costs*	*Pricing*	*Development*	*Innovation*	*FDI*	*Cargo flows*	*Modal split*	*Branding*
Overall:	***Mean***	**0,308**	**0,327**	**0,346**	**-0,019**	**0,231**	**1,019**	**0,135**	**-0,096**	**0,038**	**0,827**
	StdDev	**1,101**	**0,975**	**0,938**	**0,720**	**0,846**	**0,747**	**0,899**	**0,741**	**0,784**	**0,726**
Ship owners	***Mean***	0,444	0,444	0,667	0,333	0,333	0,889	-0,111	-0,111	0,444	0,667
	StdDev	1,066	1,066	1,054	0,943	0,816	0,875	0,567	0,737	0,831	0,471
Ports	***Mean***	-0,091	-0,091	0,455	-0,364	-0,182	0,818	-0,364	-0,545	-0,364	0,818
	StdDev	0,793	0,668	0,891	0,881	1,029	0,716	0,643	0,498	0,643	0,716
Supply	***Mean***	0,214	0,571	0,214	0,071	0,500	1,000	0,071	0,071	0,071	0,786
	StdDev	1,206	0,904	0,860	0,457	0,732	0,756	0,884	0,703	0,703	0,773

Correlation: Consolidated Impressions

	Overall	*blue growth*	*costs*	*pricing*	*development*	*innovation*	*FDI*	*cargo flows*	*modal split*	*reputation*
Overall										
blue growth	60,5%									
costs	-15,9%	-25,0%								
pricing	-16,2%	0,9%	35,1%							
development	27,5%	32,8%	-0,4%	19,7%						
innovation	22,7%	38,8%	4,5%	-3,5%	29,7%					
FDI	50,2%	41,0%	-30,6%	0,4%	21,2%	31,1%				
cargo flow	20,1%	7,0%	-3,5%	17,7%	3,5%	-17,1%	22,2%			
modal split	0,9%	0,9%	-12,3%	27,4%	-12,9%	-6,7%	12,9%	63,6%		
Reputation	45,1%	46,0%	-5,3%	-22,7%	28,4%	57,3%	41,8%	-3,1%	-15,7%	

Three variables accounted for 60% of overall impact of SECA regulations on the maritime businesses and the BSR?

- Impact on blue growth in BSR
- Influence the Reputation/branding of BSR
- Influence on FDI

Hereon- Conclusions

- SECA has in no doubt enhanced clean shipping.
- Over 95% emission reductions achieved so far in the BSR.
- BSR is in forefront of clean shipping campaigns.
- There are plans to use LNG powered engines for new ships.
- Old ships are tipped for scrubber retrofit.
- Until now most stakeholders are doing little but if the oil price goes up a new direction is eminent.
- Overall Anova analysis implied no significant difference in the general responses of the respondents except in the modal split where the Port evaluation with an error probability of less than 3% is negative when compared to the ship owners positive responses (Research will progress to probe the reasons).

However,

- There is a long term effect - No level playing among stakeholders.
- No pressure to designate Mediterranean sea as SECA.
- As a residual oil, what happen when HFO is no longer in use?
- Technology push effect-The European technology will have an advantage if scrubbers are chosen but how many ship owners can afford it?

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Thank you!

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