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Öko-Institut e.V.
Institut für angewandte Ökologie
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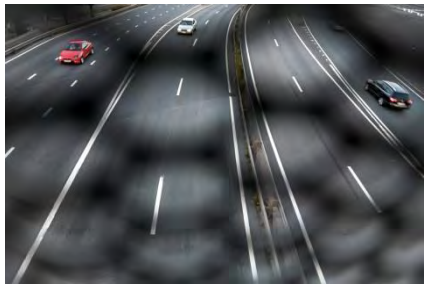
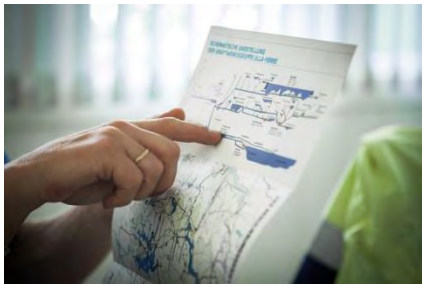
Where are we sailing to?

Comparative evaluation of the four proposals

How can international shipping contribute to climate protection?
Brussels, 12 September 2014

Dagmar Nelissen

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Aim

Evaluate measures by means of certain criteria.

⟶ Give a clear picture of pros and cons that have to be weighed against each other.

⟶ Give policy makers and other stakeholders basis for decision-making.

Scope of evaluation

1. Measures that are evaluated:

Measure	Abbreviation	Metric
Annual Efficiency Ratio	AER	CO_2 / (**dwt***nm)
Fuel Oil Reduction Strategy	FORS	Tonnes of fuel consumed
Individual Ship Performance Indicator	ISPI	CO_2 / nm
United States` proposal	US proposal	Energy consumed / hours in service

2. Evaluation on environmental grounds.

Main criteria for evaluation

1. Scope
2. Implementation time
3. Incentivised abatement measures
4. Potential to remove barriers
5. Environmental effectiveness

1st criterion: Scope

Which part of fleet can potentially be covered by measure?

Can be applied to all ship types	Application to all ship types not straightforward
FORS	AER: - Ship types covering little distances
US proposal	ISPI: - Ship types covering little distances - EIV formula not developed for all ship types

2nd criterion: Implementation time

1. Scheduled/necessary implementation time

Data collection & pilot phase scheduled	Data collection phase necessary	Data collection but no data collection phase needed
US proposal	AER, ISPI, US proposal	FORS

2nd criterion: Implementation time

2. Factors that could delay/speed up implementation

	Baseline	Non-established design elements	Reward for early movers
AER	Has to be established.		
FORS	Baseline is available.		Yes.
ISPI	Has to be established.	EIV formula must be established for some ship types.	Yes.
US proposal	Has to be established.	‚Hours in serivce' need to be defined.	

3rd criterion: Incentivised abatement measures

1. Are both technical and operational measures incentivised?

All four measures incentivise both.

3rd criterion: Incentivised abatement measures

2. Does measure provide undesired environmental incentives?

Lower capacity utilization:

- AER, ISPI, US proposal: taken as efficiency improvement, but spreading of transport work over trips is probably no cost effective measure.

-FORS: lowers fuel consumption per trip, however spreading of transport work over trips is not a compliance strategy due to fuel consumption target on ship level.

3rd criterion: Incentivised abatement measures

3. Are measures more/less rewarded than emission reduction achieved by them?

Fuel switching: not incentivised by US proposal.

Slow steaming:

Ship has	Δ metric of AER, ISPI	FORS	US proposal
no extra capacity	< Δ emissions on ship level	= Δ emissions on ship level	= Δ emissions on ship level
some extra capacity			> Δ emissions on ship level
sufficient extra capacity	= Δ emissions on ship level		

4th criterion: Potential to remove barriers

1. **Can measure reduce split incentive problem between ship owner and charterer?**

   All proposed measures require ship owners to take CO_2 abatement measures.

   All measures thus contribute to overcome split incentive problem.

2. **Can measure reduce lack of transparency for charterers?**

   All proposed measures require ship owners to take CO_2 abatement measures.

   Ship owners want to earn back investement via higher charter rates.

   Ship owners have incentive to credibly prove efficiency improvement.

5th criterion: Environmental effectiveness

1. **Are CO_2 emisssions of ‚baseline fleet' reduced?**

   AER, ISPI, US proposal: not necessarily (relative standards).

   FORS: yes.

2. **Are CO_2 emissions of total fleet reduced?**

   No measure limits total CO_2 emissions of fleet.

5th criterion: Environmental effectiveness

3. Are there design elements that make achievement of environmental target uncertain?

FORS: -Target not directly related to emissions.

US proposal: -Target not directly related to emissions.

- Incentive regarding Slow Steaming.

- Verification of hours in service.

Conclusions

1. Evaluation on environmental grounds:

- There is no „perfect candidate“.
- Some issues can be solved by carefully designing the measure.
- However, each measure has environmental drawback that total fleet emissions could rise.
- Even emissions of ‚baseline fleet‘ could rise if relative standard was applied.
- Environmental effect highly depends on baseline and target.

2. Evaluation on economic grounds needed too!

- Environmental benefits must be weighed against complicane costs.

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Thank you for your attention!

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