



**SEAS AT RISK**

for the protection and restoration of the marine environment

# **Speed Limits for Ships**

## **Possible EU Options for tackling GHG Emissions from Ships**

ECCP Ship Working Group 2  
22nd June 2011



This presentation and the associated paper are based on the preliminary findings of a study commissioned jointly by Seas At Risk and T&E and undertaken by CE Delft. Other sources are referenced.

## Context

- Huge task for all sectors if climate change is to be kept below dangerous levels
- Progress slow everywhere and especially in the shipping sector – no legally binding measures
- Scale of task means **all possible avenues** for reducing GHG emissions must be exploited to the full

## Why speed limits for ships

- Provides deep emission cuts fast
- Applies to all ships (unlike EEDI)
- Speed limit cuts are **in-sector** (unlike ETS)
- Top of IMO GHG Study range (25-75%) is only possible with speed reduction
- Other studies show potential of speed: Corbett 2009 and containers; CE Delft 2009 for SAR; Lindstad *et al*, 2011
- Holds significant other environmental advantages: SO<sub>x</sub>, NO<sub>x</sub>, BC etc
- Voluntary slow steaming helpful but we must capture these savings in long term

## Possible options

- Limits set globally via the IMO would capture greatest quantity of GHG emissions and ensure all shipping treated equally and this option is being investigated by the joint SAR/T&E study
- Study also looks at a number of regional EU option that could be established and enforced via an EU legal instrument...

## Option 1: Speed limits for all ships in EU territorial waters as a condition of entry to EU ports

- Small share of total emissions so climate benefits limited
- Air pollution benefits substantial
- Clear legal situation

## Option 2: Speed limits for all ships sailing between EU ports as a condition of entry to EU ports

- Significant CO<sub>2</sub> gain as over half of emissions on voyages to EU ports are from intra-EU voyages
- Equally important air pollution gains
- Clear legal situation (assuming trip does include the territorial waters of a non-EU state)

## Option 3: Speed limit for all ships sailing to EU ports as a condition of entry to EU ports

- By far the greatest benefit in terms of CO<sub>2</sub> emissions (and air pollution)
- But by applying the limit to foreign-flagged vessels sailing on the high seas the legal situation is less clear



## Option 4: Speed limits in EU harbours

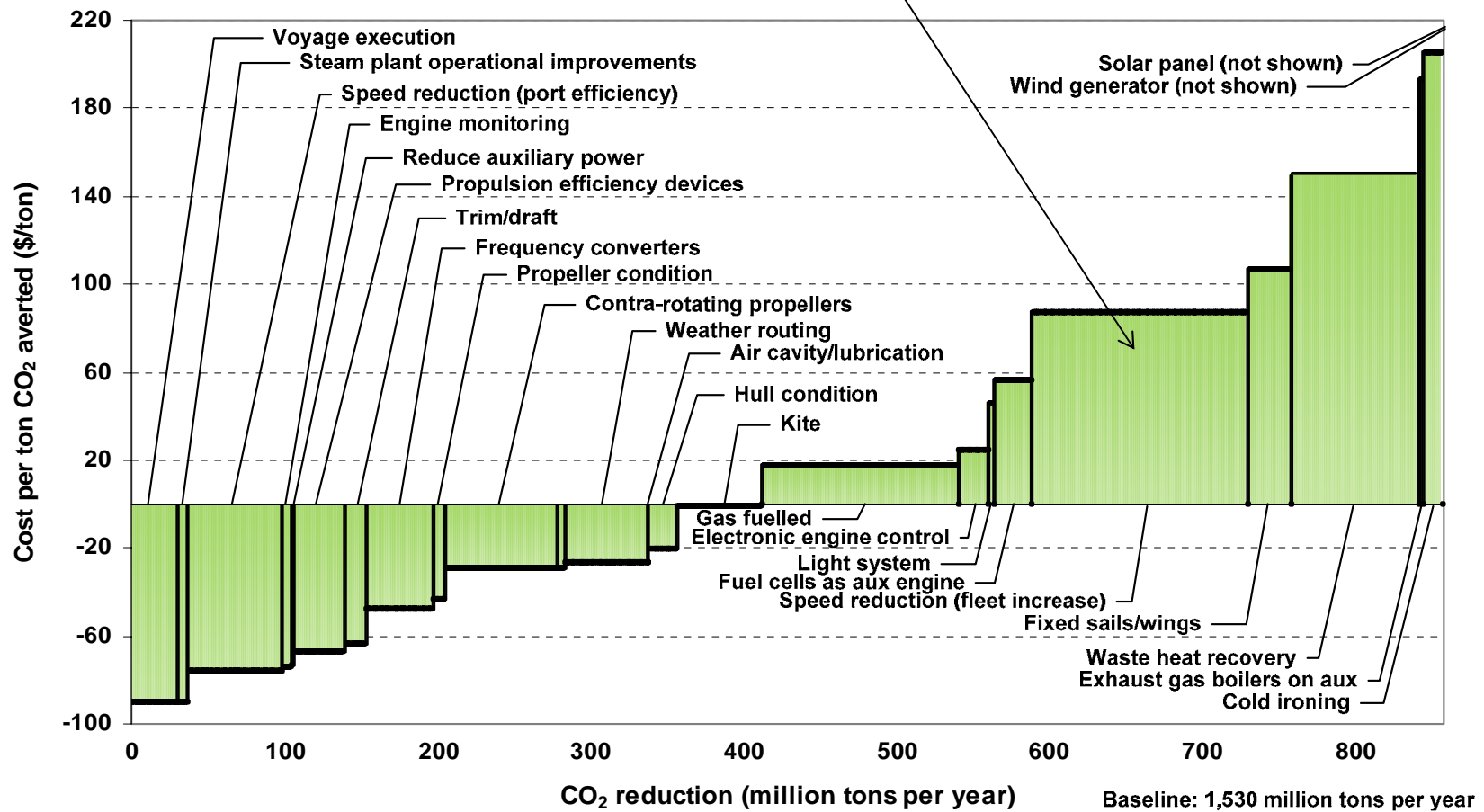
- Proximity of harbours to large population centres make air pollution gains important
- This should be taken into account when considering wider benefits of ship speed limits
- Measures must avoid competition issues between ports

Note we are not considering the application of a speed limit to EU flagged vessels only, because of the problem of vessels being able to reflag to non-EU countries

## Issues surrounding speed limits for ships

- The cost
- Jurisdiction
- What do we mean by a speed limit?
- The need for more ships
- Modal shift
- Safety
- Technical constraints
- Monitoring compliance
- Inventory costs
- Logistics chain

## Old MAC Curve: \$85/tonne



## Costs: A recent study

Study by Lindstad *et al* (2011):

- Includes newbuilding and inventory costs
- Uses combination of vessels representative of 80% of deep water trades
- Resistance by wind & wave action is factored in

Concludes that the cuts in emissions possible at a zero abatement cost are as follows:

RoRo:	17%	17.7knts (down 13%*)
Bulk:	14%	12.5knts (down 13%*)
Container:	53%	12.0knts (down 52%*)

\* On design speed.

Reductions in greenhouse gas emissions and cost by shipping at lower speeds

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The paper presents investigations on the effects of speed reductions on the direct emissions and costs of maritime transport. The focus has been directed to identifying emissions and cost for the global fleet as a function of speed under various priorities

## Jurisdiction

- Feasibility of speed limits relies on effective enforcement but...
- Effective enforcement is only possible via port State control and denial of entry
- No problem at global level or in territorial waters but there are varying views about an individual state applying it to foreign flagged vessels on the high seas or in another state's territorial waters
- Study will look into this further and review a number of unchallenged precedents

## What do we mean by “speed limit”?

- One speed or several per ship type/size?
- Speed over the ground or speed through the water?
- Maximum speed or “average speed”?

## Need for more ships

- Yes, if no overcapacity
- May need to phase in speed limits to avoid ship building capacity issues (Lindstad, 2011)
- Cost implications (build & operation) vary by ship type and fuel price (see also Lindstad, 2011)
- Newbuild CO<sub>2</sub> debt paid back quickly
- Newbuilding benefits shipbuilding countries
- Crew supply issues needs more investigation but phase-in might help with any problems



## Modal shift

- System must be carefully designed to avoid this
- For many goods this is not an option or a problem
- Could exempt short-sea routes or if using an average speed approach allow a “grace period”
- Grace period would also deal with problem of fitting service speeds to vessel capacity and number of sailing on these routes
- Time-sensitive cargoes on long routes could use faster ships paying a levy (Lindstad, 2011); this would be revenue raising

## Safety

- Speed must be set at level that allows safe operation
- Average speed approach would help deal with the occasional need to travel faster, e.g., to avoid pirates or deal with weather issues
- The effect of an increase in the number of vessels afloat must be seen alongside the effect of their reduced speed

## Technical constraints

- More study needed, but...
- Greater the speed reduction more extensive the necessary modification necessary
- Substantial reductions will require engine de-rating and slow steaming upgrade kits
- In longer term ships would get redesigned
- Situation complicated if speed limits are not global

## ULYSSES Project

- EU co-funded project to demonstrate that ultra slow steaming is feasible
- Before 2020, greenhouse gas emission cuts of 30% compared to 1990 levels,
- Beyond 2050, greenhouse gas emissions cuts of 80% compared to 1990 levels
- Initial focus on tankers and bulk carriers
- Phase 1 existing vessels 10 knots, 2020
- Phase 2 new vessels built 2020, 7.5 knots
- Phase 3 new vessels 2050, 5 knots
- [www.ultraslowships.com](http://www.ultraslowships.com)

## Monitoring compliance

- A traditional blight of shipping regulations
- How this is done depends on definition of speed
- Speed through water a problem
- Speed over ground easier and via existing technologies (LRIP, AIS, S-AIS)... S-AIS seems best suited but coverage not yet global
- An average speed limit approach would simplify monitoring

## Inventory costs and logistics chain

- Differing views on inventory costs... effect will vary with type/value of cargo (note conclusions of recent study by Lindstad *et. al.*)
- Logistics chain adjustments... we'll look at this in more detail but speeds went up in the first place and have dropped voluntarily without an avalanche of reported problems
- Increased port congestion has also been mentioned as a possible problem but speed limits will not increase the volume of cargo or the number of port visits

## Summary

- Speed limits could deliver deep fast cuts in emissions
- Unlike MBMs all these cuts are **in-sector**
- Voluntary slow steaming demonstrates feasibility
- Speed limits would secure GHG emission gains
- Alternative: speed and emissions creep back up
- Global system best but EU options effective
- Low cost compared to other options
- Concerns are real and some need further study but initial indications suggest these can be mitigated by careful design of speed limit scheme

“I was talking to more than one shipping person in Vancouver who, while acknowledging the useful fuel savings from **slow steaming**, which could be attributed as much to environmental responsibility as soaking up unwanted capacity and helping to stabilise rates, suggested that this would be a **temporary strategy**. Never mind the huge overcapacity from excessive ordering of ships, and all this brave talk about planet-saving, just a little bit of economic cheer on the shore and the shippers would be shouting for the **throttles to be opened**, and shifting all their cargo to the first line to oblige them!”

Michael Gray, Lloyd's List  
20<sup>th</sup> June 2011





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Thank you

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