





Heavy Duty Vehicles (Marine Vessels) – Future Work

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Mission Statement



To bring about a meaningful change to the fuel efficiency and GHG intensity of the UK HDV marine fleets

- However, significant market barriers exist
- Technology development alone is not enough
- Assumption: additional legislation and policy will take time to agree and implement
- Therefore, considering market measures



Market barriers



- A number of market barriers exist that could limit the uptake of cost effective fuel efficiency technologies.
 - One such barrier is the inability to accurately and transparently predict and then measure real-world fuel consumption benefits delivered through deployment of such efficiency technologies (both retro-fit and new build)
 - This inability to quantify and verify fuel savings leads to a lack of investment and hence technology implementation

Furthermore

- One of the major market barriers to efficiency investments within the maritime industry is the split incentive that exists between vessel owners and operators
- Owners are rarely responsible for the fuel costs for their ships, this cost is borne by the ship charterer who
 rents the ship for a number of months of years
- The volatility and uncertainty in ship earnings is high, and only partly related to the energy efficiency of the ship consequently its often the case that neither the vessel owner nor the charterer are motivated to invest in fuel efficiency technologies with payback periods much greater than a year



Strategy...



A common modelling framework and correlations could be used to generate fuel efficiency information for the consumer

Models and Data

<u>Facilitate investment in fuel</u> efficiency technologies

Create a better prediction and measurement capability and therefore, enable capital to be raised i.e. ETI 'VTAS' Project



Marine Shipping 'Market'

Characterised by:

- Complex market structures
- High degree of variety within sectors and between differing sectors

Hence, treated as a 'grey box'. I.e. not attempting to fully map and quantify variety – just dealing with the macro level inputs (coloured boxes)

GHG / Effici<mark>en</mark>cy Demand

Finish here...

Create pull for more efficient and lower GHG shipping

Create transparency in the cost of fuel and the Greenhouse Gas (GHG) intensity in the shipping services to the end consumer to create pull for improved fuel efficiency – effectively an accurate and bespoke labelling approach

Technology

Robust fuel efficiency benefit data that can be used to validate models

ETI at scale technology demonstrations

Demonstration of key fuel efficiency technologies (e.g Flettner Rotors) to create robust benefit data and mitigate subsequent implementation risks

Start here...

Information to validate performance claims and communicate practical implications of technology deployment



What we plan to do over the next 2 years...



Complete the Flettner Rotor, Waste Heat Recovery and High Efficiency Propulsion projects (all 2019)

- Demonstrate at scale on sea going vessels, the macro level inputs (color
- Communicate findings to industry and other stakeholders
- Provide input to, and case studies for, the Vessel Technology Assessment System (VTAS) project

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Models and Data

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Robust fuel efficiency benefit data that can be used to validate models

- Vessel Technology Assessment System (VTAS) Project to run from January 2018 to April 2019
- The intended outcome of the Project is to accelerate the deployment of viable GHG reducing technologies through accurate investment cases based on validated information
- Fully achieving this outcome will take several years beyond the end of the Project, thus a capability that exists beyond the ETI is required
- Therefore, the Project must lay the foundations for a future entity by providing the business plans, a credible exploitation route and the technical capabilities necessary to be successful in the longer term nitigate subsequent implementation risks

Start here.



What we would like others to do & think about



A common modelling framework and correlations could be used to generate fuel efficiency information for the consumer

Models and Data

Facilitate investment in fuel

- The ETI has run out of time to deal with the split incentive barrier
- However, it is a 'barrier' to the VTAS project outcome
- Any process by which the consumer can become better informed is welcomed by the ETI

 Hence, treated as a 'grey box'. I.e. not
- Only through increased transparency can change start to occur
- The VTAS project could create a platform of models and data that could be used to overcome the split incentive
- Timely and meaningful policy implementation always welcome

Robust fuel efficiency benefit data that can be used to validate models

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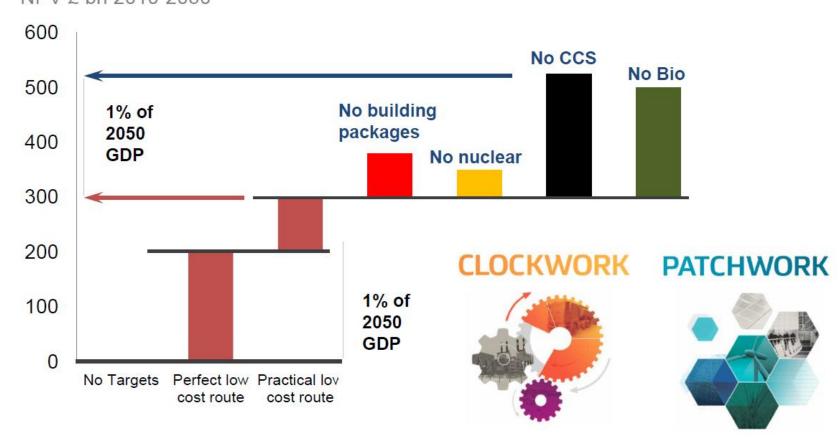
Information to validate performance claims and communicate practical implications of technology deployment



Energy system cost sensitivity



Additional cost of delivering 2050 -80% CO2 energy system NPV £ bn 2010-2050





What we plan to do over the next 2 years...



- Understand the opportunity for decarbonisation in the Maritime sector out to 2050
- To consider the costs vs abatement ratios that lower the total energy system cost in a range of scenarios (e.g. with and without carbon capture and storage technology)
- To consider the energy vectors that could be used to deliver the required cost vs abatement performances (e.g. how large a part could wind power play? Is hydrogen affordable?)
- To create a consistent narrative that takes us from where we are to where we want to be in 2050
- This is important as shipping is a truly global industry where common refuelling infrastructures are virtually essential



Summary



- The ETI's portfolio of technology development and demonstration projects are the foundation of the programme, these will complete in 2019
- However, market barriers may prevent mass market take up
- The ETI's VTAS project is designed to overcome one such barrier by leveraging the outputs generated by the demonstrations and creating an entity that can deliver information to the market post ETI
- Other barriers remain that need to be tackled post ETI, the major barrier being the split incentive
- Policy and / or transparency are likely to be key in mobilising a transition to lower carbon shipping
- Future work to inform debates on alternative energy vectors in the 2040 timeframe







Thank You

Speak to our specialists in the Heavy Duty Vehicles exhibition area for more details

