

An exploration of recent UK coastal shipping activity and potential future drivers of traffic

BPA Coastal Shipping Seminar, Thursday 29 November 2018

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Agenda

Definitions and sources

- Coastal shipping
- Inwards and Outwards are not the same as Import and Export
- Sources used in this research

Recent Coastal Shipping activity (2010 to 2017)

- (Not focusing on Lo-Lo or Ro-Ro)

Potential future drivers

- Demographics
- Policy
- Economic
- Energy
- Environment
- Technology

Improving the competitiveness of Coastal Shipping

- A summary drawn from a literature review

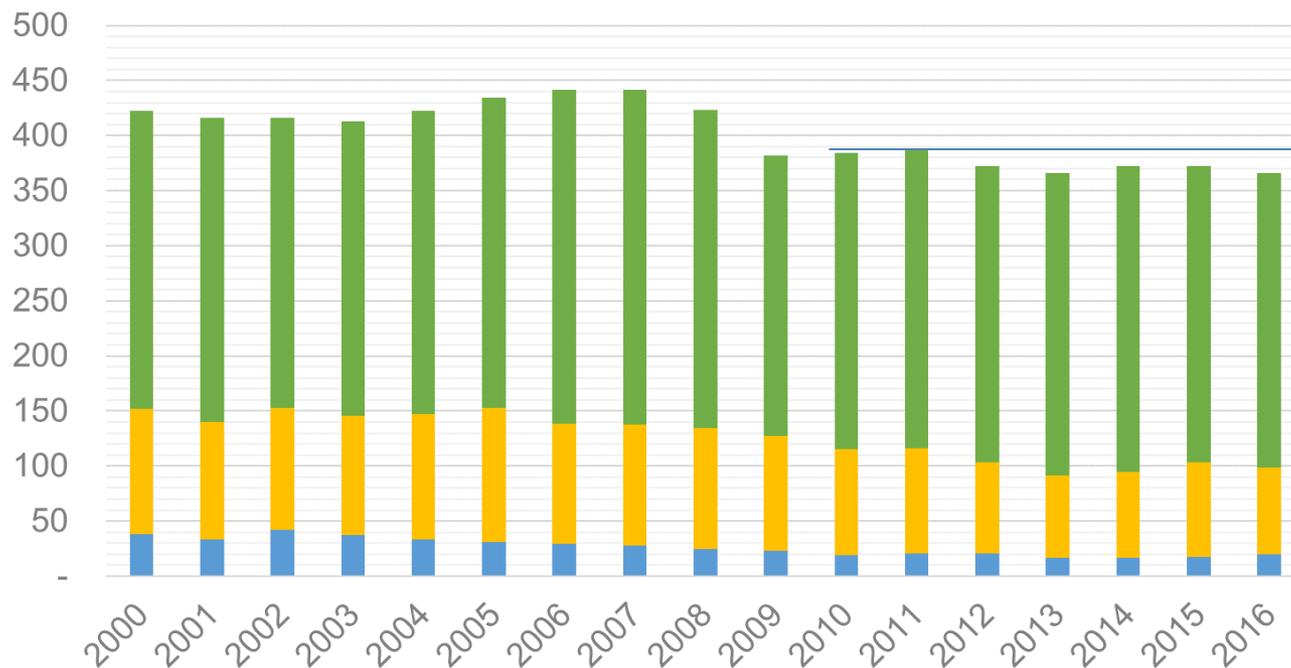
Appendix - Sources used in literature review

Definitions and sources

- We will use the EUs definition of Coastal Shipping:
“maritime transport of goods between ports in the EU-[28] (sometimes also including candidate countries and EFTA countries) on one hand, and ports situated in geographical Europe, on the Mediterranean and Black Seas on the other hand”.
- We differentiate between 3 types of coastal shipping:
 1. Domestic one-stop coastal shipping: the movement of goods between the UK and offshore areas
 2. Domestic two-stop coastal shipping: the movement of goods between two ports in the UK
 3. International coastal shipping: the movement of goods between a UK port and another port situated in geographical Europe, on the Mediterranean and Black Seas
- Inward and Outward movement figures
These include domestic one-stop and domestic two-stop movements as well as Imports and Exports.
- Terminology
The terms coastal shipping, short sea shipping and motorways or highways of the sea were often used interchangeably within the literature reviewed.
- Data sources
Unless mentioned, all data has been obtained from the Department for Transport and covers the period 2000 to 2017. Other sources include HM Revenues & Customs, Office of National Statistics, Department for Business, Energy & Industrial Strategy, and Eurostat. Literature review sources are contained in the appendix.

UK Coastal shipping tonnage moved

Coastal shipping tonnage transported in million tonnes



In absolute tonnage, coastal shipping has fallen 18 million tonnes, or 4% between 2010 and 2016.

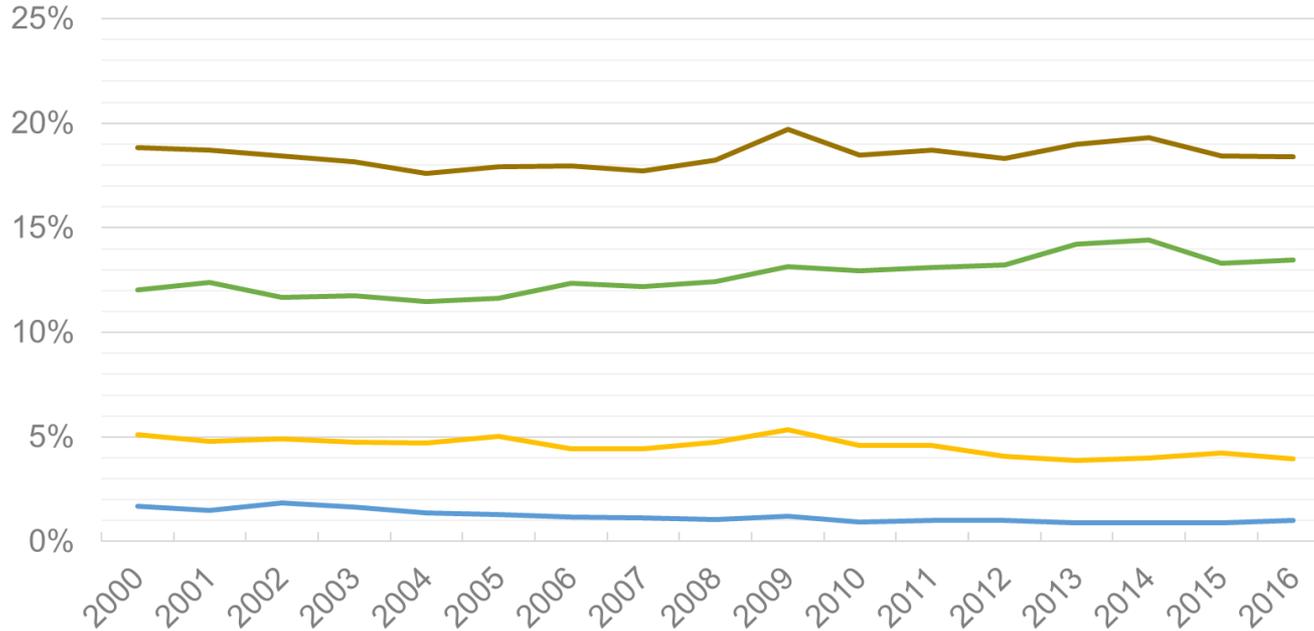
Key

■	Domestic one-stop
■	Domestic two-stop
■	International coastal
All coastal	

	2010	2016	% Change
Domestic one-stop	19.5	20.0	2.7%
Domestic two-stop	95.8	78.6	-17.9%
International coastal	269.1	267.3	-0.7%
All coastal	384.3	365.9	-4.8%

UK Coastal shipping share of total UK tonnage moved(rail,air,road,sea)

Coastal shipping share of total UK tonnage transported

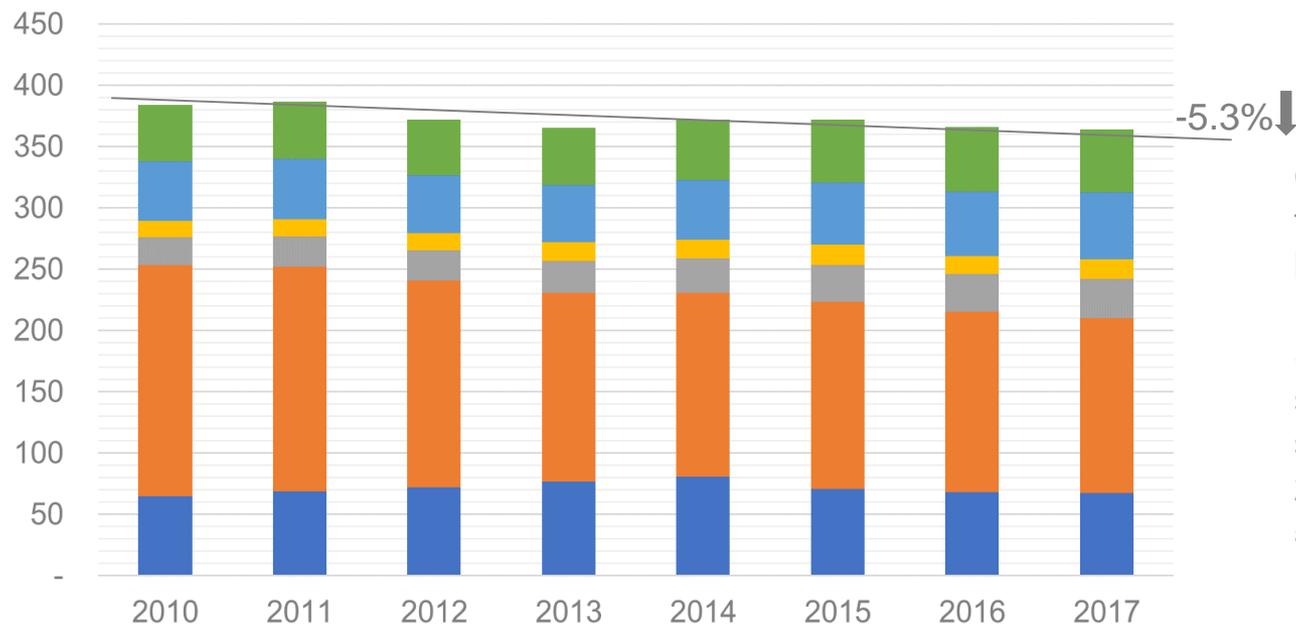


Coastal shipping has maintained a steady share of all tonnage transported (rail, air, road and sea) into, out of and around the UK (~18% to 19%).

Key	2010	2016	Change
Domestic one-stop	0.9%	1.0%	0.1%
Domestic two-stop	5.4%	4.0%	-1.4%
International coastal	13.2%	13.4%	0.2%
All coastal	18.5%	18.4%	-0.1%

Looking at coastal shipping since 2010, by type of cargo

Coastal shipping tonnage transported in million tonnes



Coastal shipping lost a further 2 million tonnes between 2016 and 2017.

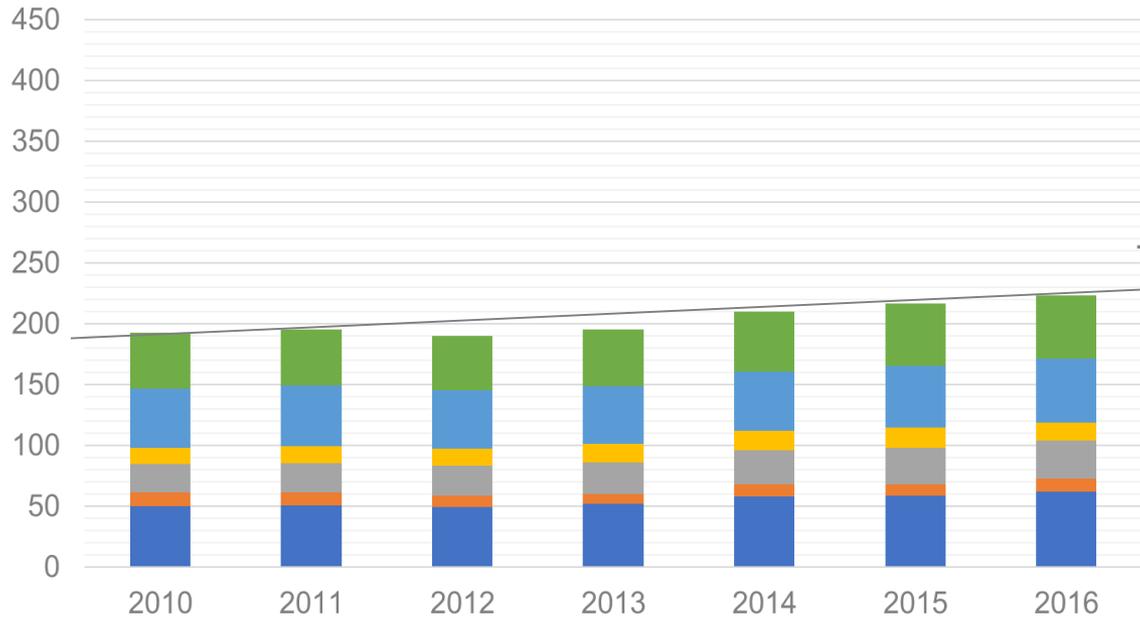
So overall, there has been a small reduction in coastal shipping between 2010 and 2016 (20 million tonnes, 5.3%).

However...

Key	Million tonnes in	2010	2017*	% Change
Dry Bulk		64.9	67.6	4.2%
Liquid Bulk		188.4	142.5	-24.4%
Lo-Lo		22.8	32.1	40.9%
Other General Cargo		13.5	16.1	19.5%
Ro-Ro Non-Self Propelled		48.8	54.4	11.7%
Ro-Ro Self Propelled		46.0	51.4	11.7%
Total		384.3	364.0	-5.3%

The decline in UK coastal shipping is almost entirely fossil fuels

Coastal shipping tonnage transported excluding coal, oil and gas in million tonnes



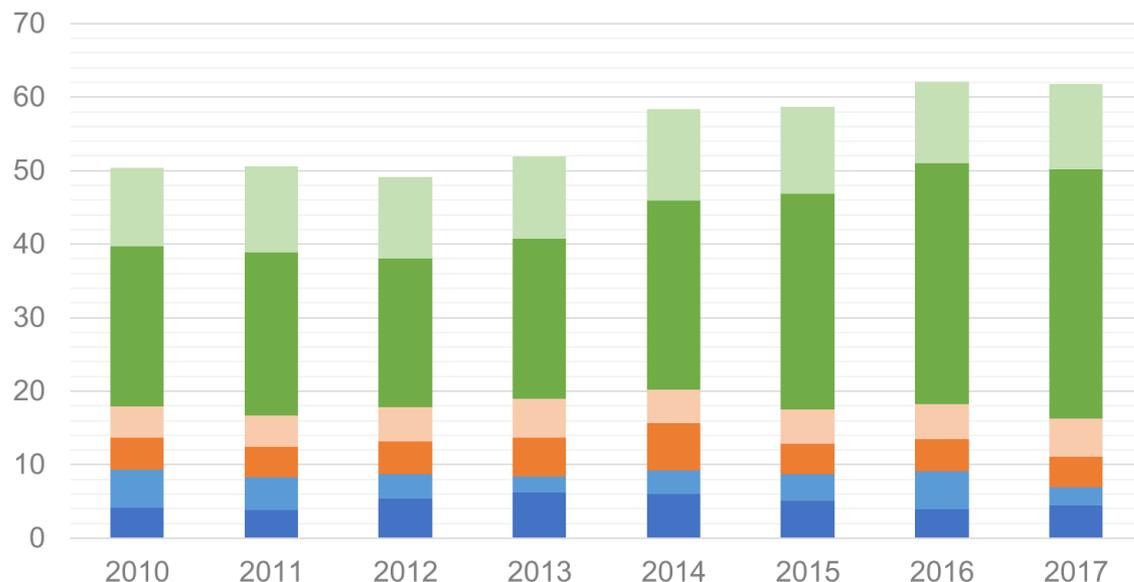
+17.3% ↑

Removing fossil fuels shows growth across the coastal shipping of almost all cargo types, with coastal shipping of non-fossil fuels growing 34 million tonnes or 17% since 2010.

Key	Million tonnes in	2010	2017	% change
Dry Bulk		50.4	61.8	22.5%
Liquid Bulk		11.4	10.3	-9.2%
Lo-Lo		22.8	32.1	40.9%
Other General Cargo		13.5	16.1	19.5%
Ro-Ro Non-Self Propelled		48.8	54.4	11.7%
Ro-Ro Self Propelled		46.6	51.4	11.7%
Total		192.7	226.0	17.3%

Dry bulk(exc. coal), the largest cargo type with the fastest growth

Tonnage of dry bulk moved by coastal shipping, excluding coal



Other than agricultural products, which showed an unusually low movement in 2017 compared to 2010 to 2016, other dry bulks showed good growth between 2010 and 2017.

Inward movement of “other dry bulk” is particularly strong...

	Cargo Description	Total million tonnes		Change between 2010 and 2017	
		2010	2017	Million tonnes	%
Inwards	Agricultural products	4.2	4.5	0.3	7.9%
	Ores	4.3	4.2	-0.2	-4.2%
	Other dry bulk	21.8	33.8	12.0	55.1%
Outwards	Agricultural products	5.2	2.4	-2.8	-53.9%
	Ores	4.2	5.3	1.1	25.2%
	Other dry bulk	10.7	11.6	0.9	8.7%
Grand Total		50.4	61.8	11.3	22.5%

Digging deeper into Other Dry Bulk

- Inward movement of other dry bulk showed a growth of 12 million tonnes, or 55% since 2010 largely by construction.
- All major ports (as defined by Department for Transport) handling 0.5 million tonnes or more of “other dry bulk” has seen growth in “other dry bulk” since 2010.

Major port	Million tonnes of other dry bulk		Change	
	2010	2017	Tonnage	%
London	7.1	13.0	5.9	82.5%
Glensanda	5.8	6.1	0.3	5.0%
Medway	2.2	2.8	0.6	27.1%
Belfast	1.6	2.5	0.8	50.1%
Hull	0.7	1.8	1.1	157.0%
Grimsby & Immingham	1.0	1.8	0.8	81.3%
Shoreham	1.3	1.5	0.2	13.2%
Bristol	1.1	1.5	0.3	27.8%
Tees & Hartlepool	1.0	1.3	0.3	25.8%
Liverpool	0.6	1.3	0.7	128.3%
Southampton	1.0	1.2	0.2	25.5%
Ipswich	0.7	1.1	0.4	54.0%
Manchester	0.8	1.1	0.3	30.4%
Plymouth	0.6	0.8	0.2	36.2%
Newport	0.4	0.7	0.3	79.6%
Tyne	0.4	0.7	0.3	81.8%
Great Yarmouth	0.2	0.6	0.4	162.8%
Forth	0.4	0.5	0.1	33.0%

Note Other Dry Bulk covers:

- cement lime etc.
- chemicals
- crude and manufactured fertilisers
- crude minerals
- iron and steel
- material shipped for dumping at sea
- non-ferrous metals
- other non-metallic mineral manufactures
- petroleum products and gas
- sea dredged aggregates
- wood lumber and cork
- and other dry bulks.

Possible future drivers of UK coastal shipping

Just a few key pointers:

- Demographics
 - Policy
 - Economic
 - Energy and the Environment
 - Technology
-
- Traffic as always will be driven by UK economic activity and how the balance of activities alter in relation to the ever developing and evolving economies around the world. Changes in demographics, economic activity and climate change will affect the distribution of the centres of production and consumption.
 - Population and GDP have long been established as drivers of marine traffic. The balance of economic activity will continue shifting east. Some forecasts say that by 2050 western economies will represent under 50% of global GDP. Populations are set to grow. India....
 - The UK trade in goods will not keep pace with the growth in eastern economies. However that is not to say that it will decline either. What is certain is that as large corporations and businesses do what they do best: respond, adapt and evolve in response to market forces, their requirements of the logistics networks and the nature and mix of the goods they need to transport will change.

Possible future drivers of UK coastal shipping

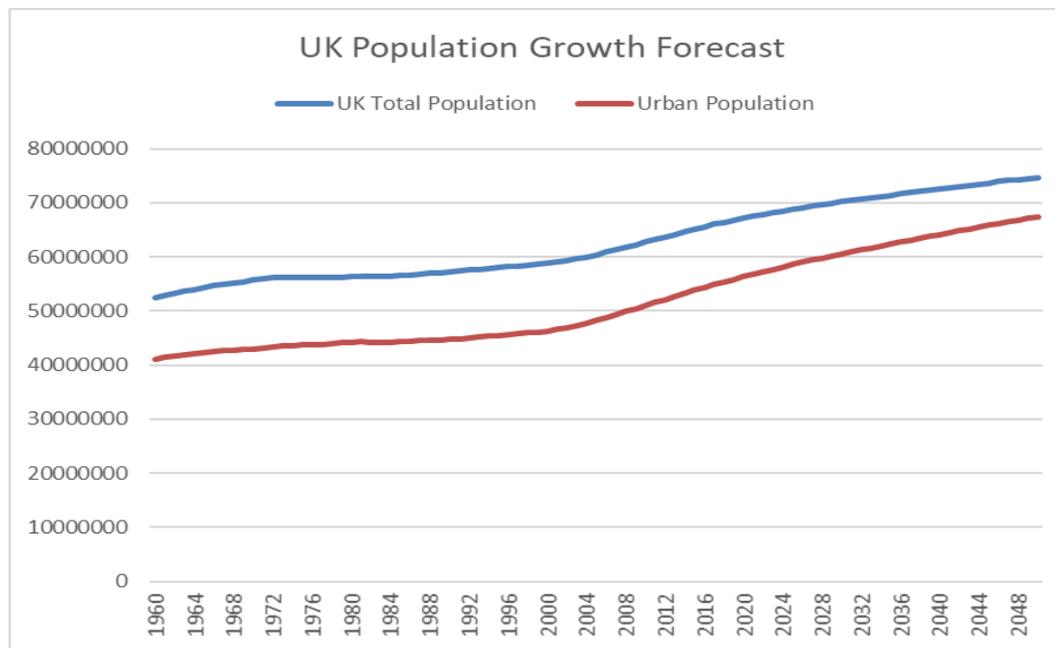
- In the UK Off Shore will grow as will construction related traffic due to housebuilding and infrastructure projects.
- Competition between the modes and within coastal shipping (the vessels, ports and the necessary road and rail networks) will drive their services to enable their customers to supply goods to and from the UK.
- Climate change will alter the vessel routes and also the centres of food production. These will change the requirements of the shipping industry. Extreme weather events will change the risk profiles of the different transport modes. This will be different by geography.
- What can organisations in coastal shipping do? 17 coastal shipping research papers were reviewed. All evidence that the many factors such as port infrastructure costs, geography, vessel energy efficiency, port efficiency, port capacity, port connectivity and fuel pricing vary in their importance by the different cargo types, for different volumes and for different journey distances, origins and destinations. We have chosen to identify the future drivers and inhibitors that can be more easily influenced by the industry.

Possible future drivers of UK coastal shipping

Demographics

The consistent view in all of the material reviewed is that population growth is aligned with the growth of Coastal Shipping.

UK population is expected to grow and become more urbanised (World Bank UK population forecast). **This will in all likelihood be a force acting to drive up Coastal Shipping.**



Source: The World Bank

EU Centric

1. Motorways of the Sea, European Commission, Mobility and Transport (undated)
https://ec.europa.eu/transport/modes/maritime/motorways_sea_en
2. Marco Polo Programme, European Commission (undated) https://ec.europa.eu/transport/marcopolo/about/index_en.htm
3. TEN-T Guidelines Regulations EU/2013/1315
4. Transport White Paper: Road map for a single European Transport Area, European Commission Mobility and Transport COM/2011/0144
5. Horizon 2020: Energy and Transport – compendium of projects implemented by the IENA, European Commission (2017)
6. Maritime Spatial Planning Directive EU 2014/89
7. MARPOL Convention EU 2015/757 updated 2015
8. <https://ec.europa.eu/inea/en/connecting-europe-facility/motorways-sea-one-stop-help-desk/mos-financial-support/marcopolo>
9. 'Analysis of Recent Trends in EU Shipping and Analysis and Policy Support to Improve the Competitiveness of Short Sea Shipping in the EU' European Commission (2015)
10. Commission Staff Working Document: on the implementing the EU Maritime Transport Strategy – 2009-2018, European Commission (2016)
11. Motorways of the Sea: Detailed Implementation Plan, European Commission (2016)
12. CPMR Atlantic Arc Commission Technical Note on Brexit (2017) <https://cpmr-atlantic.org/download/note-technique-sur-les-consequences-du-brexit-pour-les-regions-de-larc-atlantique/?wpdmdl=4138&refresh=5be42afe0c42b1541679870&ind=1499159713845>
13. Framework for Port Services and Financial Transparency EU 2017/352
14. Delivering TEN-T: Facts & Figures, European Commission September 2017
15. North Sea Commission Technical Note on Brexit (2018) <https://cpmr-northsea.org/download/brexit-impact-in-the-north-sea-region-1/?wpdmdl=1774&ind=1522850916588>
16. European Commission Motorways of the Sea 2017
https://ec.europa.eu/transport/sites/transport/files/101_web_final_ii_mos_dip_2018.pdf
17. CEF UK Transport Grants 2014-2017
https://ec.europa.eu/inea/sites/inea/files/cefpub/eu_investment_in_transport_in_united_kingdom-ten-t_days_2018.pdf
18. The Infrastructure Investment Needs and Financing Challenge of European Ports, European Sea Ports Organisation (2018)
19. Motorways of the Sea: Detailed Implementation Plan, European commission April 2018

Policy

EU Centric - continued

15. European Commission Notice to Stakeholders: Withdrawal of UK and EU Rules in the field of Maritime Transport
https://ec.europa.eu/info/sites/info/files/file_import/maritime_transport_en.pdf

UK Centric

1. North Sea Commission Technical Note on Brexit (2018) <https://cpmr-northsea.org/download/brexit-impact-in-the-north-sea-region-1/?wpdmdl=1774&ind=1522850916588>
2. European Commission Motorways of the Sea 2017
https://ec.europa.eu/transport/sites/transport/files/101_web_final_ii_mos_dip_2018.pdf
3. CEF UK Transport Grants 2014-2017
https://ec.europa.eu/inea/sites/inea/files/cefpub/eu_investment_in_transport_in_united_kingdom-ten-t_days_2018.pdf
4. The Infrastructure Investment Needs and Financing Challenge of European Ports, European Sea Ports Organisation (2018)
5. Motorways of the Sea: Detailed Implementation Plan, European commission April 2018
6. European Commission Notice to Stakeholders: Withdrawal of UK and EU Rules in the field of Maritime Transport
https://ec.europa.eu/info/sites/info/files/file_import/maritime_transport_en.pdf
7. TEN-T Projects with British Benefit
https://ec.europa.eu/inea/sites/inea/files/cefpub/eu_investment_in_transport_in_united_kingdom-ten-t_days_2018.pdf

This is just a selection of useful sources to help understand existing policies, developing policies and potential future policy.

What is clear is that the EU and the UK intervene in the Transport systems.

The complex relationships between the different modes mean they compete and compliment each other. Intervention heavily weighted to any particular mode will provide advantage to that mode.

Possible future drivers of UK coastal shipping

Energy – Fuel

Coastal Shipping fuel costs are likely to rise relatively against the competing modes and so, where a true choice exists between modes, this will impact on Coastal Shipping.

EU papers highlighted energy prices and fuel costs having a short term impact on the volume of coastal shipping. The costs are driven by rising prices and emission controls. The roles these play differs between cargo types, distances to be travelled and volume of goods transported (Brooks and Trifts, 2008).

- IMO agreement to cut GHG by 2050 by 50%. – “a pathway of CO2 emissions reduction consistent with the Paris Agreement temperature goals”
- Emission Control Areas (ECAs) and Super Emission Control Areas (SECAs) Areas in which stricter controls were established to minimize airborne emissions from ships
- IMO’s energy efficiency design index sets out compulsory energy efficiency standards for new ships. May increase cost of new vessels. (EU, 2015)

Possible future drivers of UK coastal shipping

Environment – Climate change

- Will open up new arctic sea routes which may change the make-up of ports as a whole around the UK. Possible changes for East coast ports with vessels from China.
- Will drive changes in agricultural patterns that will change the requirements for global ship movements.
(https://commons.wmu.se/cgi/viewcontent.cgi?article=1275&context=all_dissertations)

Possible future drivers of UK coastal shipping

Technology

Advanced technology and information contribute towards co-modality by improving infrastructure, traffic and fleet management, facilitating better goods tracking (EU, 2015).

Autonomous shipping:

- Norwegian companies Wilhelmsen and Kongsberg are joining forces to establish the world's first autonomous shipping company.:
<https://worldmaritimenews.com/archives/248731/worlds-1st-autonomous-shipping-company-in-the-making/>
- Autonomous ships: Reduced cost of crew, increased safety and flexibility.
(<https://arxiv.org/ftp/arxiv/papers/1806/1806.01696.pdf>).
- Big Data' driven learning to continuously improve efficiency of transport (Perera And Mo, 2016)
- The YARA Birkeland Autonomous Container Vessel plans to be operational on a sea route between Brevik, Herøya and Larvik ports in southern Norway by 2020.
(<https://www.martek-marine.com/blog/automation-maritime-future/>)

Possible future drivers of UK coastal shipping

Technology - An interesting analysis on the introduction of autonomous transport modes.

A Quantitative Analysis of Possible Futures of Autonomous Transport (2018) - (<https://arxiv.org/ftp/arxiv/papers/1806/1806.01696.pdf>).

Executive summary of paper:

- Gains in autonomy are likely to provide significant decreases in costs, but will be more impactful for the modes of transport that are currently more expensive, such as Air Cargo transport
- Lowest cost modes like ocean freight and IWT shipping are likely to maintain healthy cost-competitiveness with autonomous versions of other modes of transport even if they adopt autonomy

Because of this, the paper suggests that a wait and see strategy may be good in short term to de-risk disruption and possibly benefit from disruption in other transport modes.

NB This paper used US focused data. A lot of assumptions were made in the data which should be considered when reviewing results.

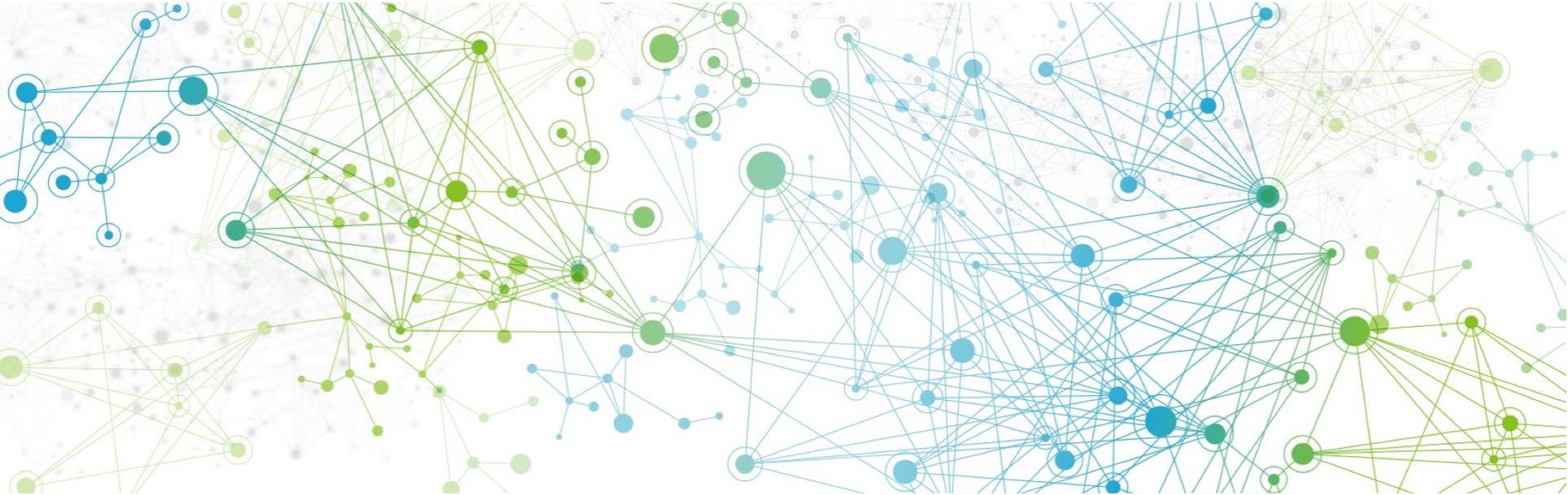
Improving the competitiveness of Coastal Shipping

The following six points were identified from a review academic and EU coastal shipping research and white papers. 17 papers were selected taking into account the frequency of reference by other papers, search rankings and how recent the publication (from 2009 onwards with the most recent published in 2018). These are listed in the appendix.

Key fundamental areas identified by businesses to focus on to improve the competitiveness of the coastal shipping service (time, cost and quality) were:

1. Reduce the complexity of documentary and administrative procedures (5 papers)
2. Increase reliability in relation to the published timetable (6 papers)
3. Reduce the risk of damage to goods (4 papers)
4. Increase intermodal standardisation and harmonisation to deliver 'one service' and to reduce delays and cost (3 papers)
5. Improve compatibility and integration of information technology/information systems in the logistics solution to deliver 'one service' (3 papers)
6. Increase the strength, efficiency and coordination of the physical modal transfer connections and the organisations involved (4 papers)

Technologies to help with these are constantly being developed.



For more information contact:

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Appendix - Literature review sources

1. (Medda & Trujillo, 2010) – Short-sea shipping: An analysis of its determinants - https://www.researchgate.net/publication/248989077_Short-sea_shipping_An_analysis_of_its_determinants
2. (EU Commission, 2002) – Short Sea Shipping. Commission of the European Communities, Energy and Transport DG.
3. (Chernyavska, 2006) – The economics of Short Sea Shipping (SSS)
4. (Den Bois & Wiegman, 2018) – Short sea shipping: a statistical analysis of influencing factors on SSS in European countries - <https://jshippingandtrade.springeropen.com/track/pdf/10.1186/s41072-018-0032-3>
5. (EU Commission, 2015) – Analysis of recent trends in EU shipping and analysis and policy support to improve the competitiveness of short sea shipping in the EU - <https://ec.europa.eu/transport/sites/transport/files/modes/maritime/studies/doc/2015-june-study-sss-final.pdf>
6. (Perakis and Denisis, 2008) - A survey of short sea shipping and its prospects in the USA. – [Paywall – counts not made]
7. (Paixao-Casaca and Marlow, 2005) - The competitiveness of short sea shipping in multimodal logistics supply chains: service attributes - [Paywall – counts not made] - <https://www.tandfonline.com/doi/abs/10.1080/03088830500301469>
8. (Brooks and Trifts, 2008) - Short sea shipping in North America: understanding the requirements of Atlantic Canadian Shippers - https://www.researchgate.net/publication/230737925_Short_Sea_Shipping_in_North_America_Understanding_the_Requirements_of_Atlantic_Canadian_Shippers
9. (Hjelle, 2010) - Short sea shipping's green label at risk - [Paywall – counts not made]
10. (Paixao-Casaca and Marlow, 2007) - The impact of the trans-European transport networks on the development of short sea shipping. - https://www.researchgate.net/publication/5223650_The_Impact_of_the_Trans-European_Transport_Networks_on_the_Development_of_Short_Sea_Shipping
11. (Paixao-Casaca and Marlow, 2009) -) Logistics strategies for short sea shipping operating as part of multimodal transport chains [Paywall – counts not made]
12. (Garcia-Menendez and Feo-Valero, 2009) - European common transport policy: empirical evidence based on modal choice models. [Paywall – counts not made]
13. (Gouvernal et al., 2010) -) Short sea and deep sea shipping markets in France. [Paywall – counts not made]
14. (Bendall and Brooks, 2011) - Short sea shipping: lessons for or from Australia. - Short sea shipping: lessons for or from Australia
15. (Morales-Fusco et al., 2013) - Short Sea shipping in supply chains. A strategic assessment - https://www.researchgate.net/publication/259811190_Short_Sea_Shipping_in_Supply_Chains_A_Strategic_Assessment
16. (Baindur and Viegas, 2011) and 17. (Martell et al., 2013)