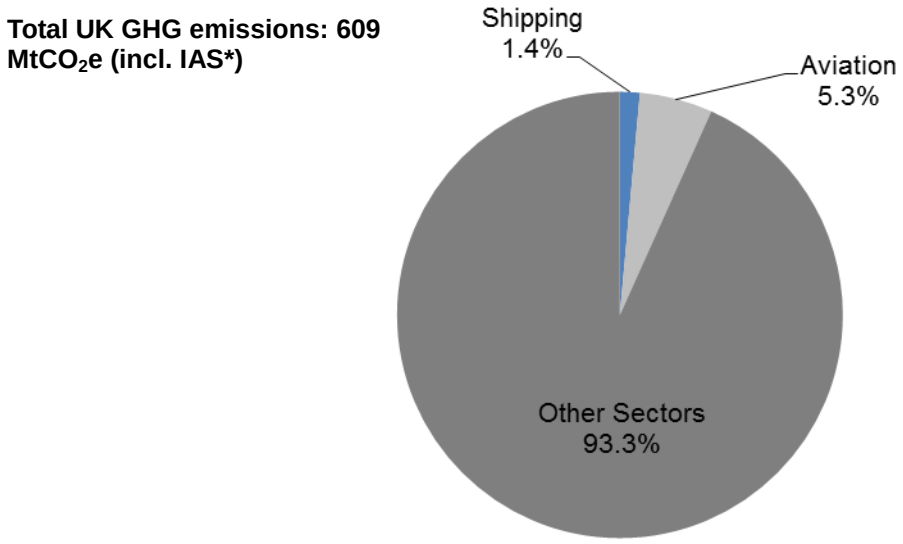
What does this sector include?

The shipping sector comprises emissions from domestic and international journeys. Only domestic journeys are currently covered by carbon budgets.

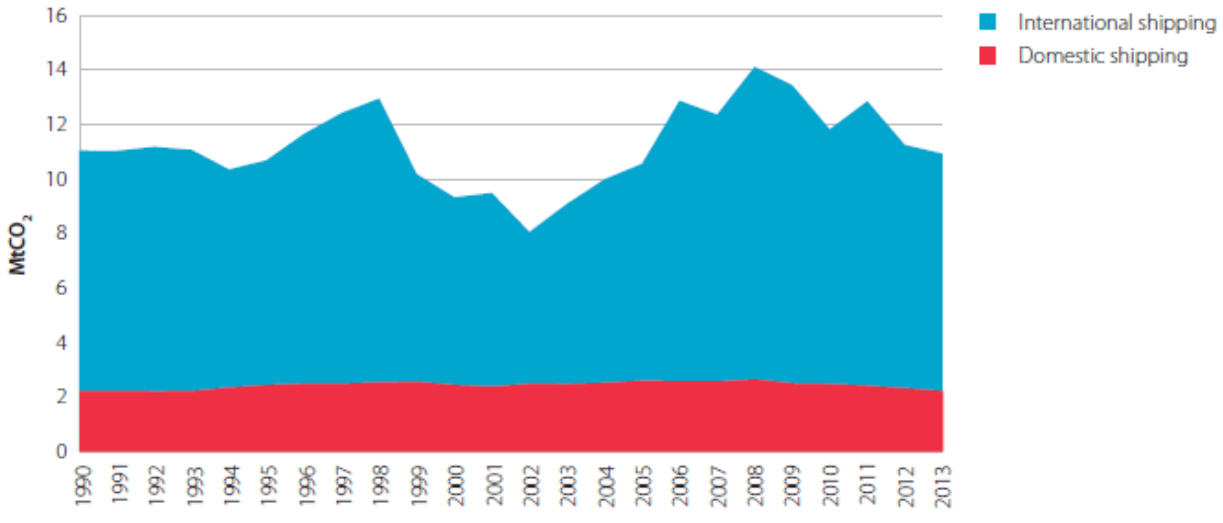
In 2013 the shipping sector accounted for 1% of total greenhouse gas emissions in the UK. The majority of shipping emissions are from international journeys (80% in 2013). Shipping emissions have been relatively flat, with 2013 emissions very similar to 1990 levels.

Figure 1. UK greenhouse gas emissions from shipping (2013)



Source: DECC (2015)
*International Aviation and Shipping

Figure 2. UK Shipping CO_2 emissions (1990 –2013)



Source: DECC (2015)

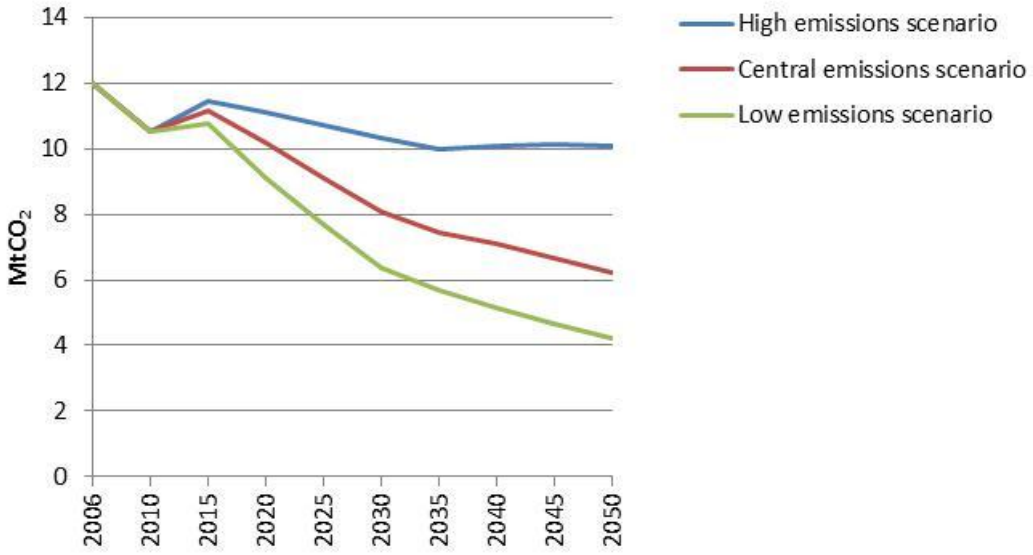
What can be done to reduce emissions in this sector?

There is scope to substantially reduce the carbon intensity of shipping, through a range of measures including:

- **Larger ships**. The carbon efficiency of ships improves significantly with ship size (e.g. the largest crude tankers are around ten times more carbon efficient than the smallest).
- **Technology improvements**. Such as upgrades to propulsion systems (including towing kites) and optimising hull designs and coatings.
- **Operational measures**. For example, reducing speeds, and use of software to optimise route planning given weather conditions and port congestion.
- **Biofuels and LNG**. These are technically feasible in ships but deployment may be limited. For biofuels, supplies of sustainable bioenergy may be scarce and more highly valued in other sectors. For LNG, practical constraints on use include low energy density, lack of refuelling infrastructure, and limited emissions saving potential compared to conventional fuels.

Figure 3 shows how shipping emissions could fall by 2050. With strong policy action to incentivise full take-up of emissions saving potential, emissions could be up to 65% lower than 2006 levels.

Figure 3. CCC international shipping emissions scenarios (2006–2050)



Source: CCC (2012) *Scope of carbon budgets – Statutory advice on inclusion of international aviation and shipping*

What is Government doing?

- **International Maritime Organisation (IMO) policy**. The IMO is the UN body which regulates shipping. The Government has supported the adoption of the IMO's Energy Efficiency Design Index (EEDI), which came into force in 2013 and aims to improve carbon efficiency of new ships by 30%. http://www.imo.org/ourwork/environment/pollutionprevention/airpollution/pages/technical-and-operational-measures.aspx#1

What is the CCC's position?

- **Shipping emissions in 2050**. Long-term aims for shipping emissions should reflect international approaches rather than unilateral UK action, given risk of emissions leakage. However, planning assumptions are useful to inform the strategy for meeting the overall 2050 emissions target.

- **An appropriate planning assumption for 2050 international shipping emissions** is to be around a third below 2010 levels. This assumes policy action that goes beyond the IMO's EEDI, but does not unlock the full range of abatement potential.

- **IMO's Energy Efficiency Design Index (EEDI).** There is significant cost-effective abatement potential beyond that required to meet the EEDI (e.g. up to 65% by 2050). The Government should therefore argue for stronger policies through the IMO or UNFCCC in order to unlock these savings.

Links to recent work by CCC

Review of UK Shipping Emissions – Scenarios for UK shipping emissions to 2050.
http://www.theccc.org.uk/publication/review-of-uk-shipping-emissions

International Aviation and Shipping Review – advice on inclusion of international aviation and shipping in carbon budgets.
http://www.theccc.org.uk/publication/international-aviation-shipping-review

2015 Annual Progress Report - Chapter 4 - Progress decarbonising the transport sector.
http://www.theccc.org.uk