



House of Commons
Environmental Audit
Committee

Reducing CO₂ and other emissions from shipping

Fourth Report of Session 2008–09



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written evidence*

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The Environmental Audit Committee

The Environmental Audit Committee is appointed by the House of Commons to consider to what extent the policies and programmes of government departments and non-departmental public bodies contribute to environmental protection and sustainable development; to audit their performance against such targets as may be set for them by Her Majesty's Ministers; and to report thereon to the House.

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Summary

Shipping and global climate change goals

The emission of greenhouse gases from shipping is a serious problem for international climate change policy. They are growing and there is a risk of considerable delay before they are brought under control. The advent of carbon budgets means it is no longer acceptable to argue that it is too hard to find an adequate basis for dealing with emissions from shipping. Emissions from shipping must be taken into account in the UK's carbon budgets. The Government must work out what the UK's share of global emissions from shipping should be. The Government should commission research on the level of emissions from international shipping that would be compatible with delivering the UK's objective of limiting global warming to 2°C.

Progress of international negotiations

The Kyoto Protocol handed developed economies the responsibility of working to curb emissions from shipping through the International Maritime Organization (IMO). Very little progress has been made. It is unlikely that a proposal will be agreed by the IMO in time to be tabled at the UNFCCC's next Conference of Parties in Copenhagen in December. A lack of urgency shown by industrialised nations and blocking actions by developing economies share the blame. The Government needs to maintain a constructive approach within the IMO, while actively seeking agreements to limit shipping emissions outside the IMO process.

The role of the UK in international negotiations

The Government's position on the use of emissions trading to tackle greenhouse gas emissions from ships lacks coherence. Ministers support the use of revenue from a trading scheme to fund climate change adaptation in developing countries but oppose the hypothecation of revenues for this purpose. The Government justifies emissions trading because this is said to impose a definite cap on emissions; at the same time, it argues that a trading scheme means that reductions can be guaranteed from other areas of the economy and one does not have to put a specific limit on emissions from shipping. The Government should explain how it proposes to transfer funding to support adaptation in developing countries if it maintains its objections to hypothecating revenues. It should clarify what the cap in a shipping emissions trading scheme should be.

Shipping emissions and the Climate Change Act

The Committee on Climate Change recommended that the Government should renegotiate the EU's 2020 climate change targets to include shipping; and that only once this was achieved should it take the UK's share of international shipping emissions into account in setting carbon budgets for the rest of the economy. The Government should not wait for agreement on the EU target, but should consider taking international shipping into account immediately.

The Government admits that the current calculation of the UK's share of international shipping emissions is an underestimate. If the UK's share of these emissions lies at the upper end of the Government's range of estimates then, overall, UK carbon emissions

might not have gone down at all since 1990. The Government should consult on how to improve the methodology it uses to calculate the UK's share of international shipping emissions.

Mitigating emissions from shipping

Government support for research and development should focus on technologies that can be retrofitted to existing ships, and offer a genuine alternative to fossil fuels, such as hydrogen fuel cells.

It should be technically feasible to establish an international emissions control regime that would accurately charge (or require carbon permits from) each ship according to its actual emissions, and securely enforce and verify compliance. In order for a scheme to be a success it must involve as many nations as possible, so as to reduce the scope for evasion. The Government should commission research on the relationship between levels of carbon pricing and impacts on emissions from shipping to ensure its policies are properly informed. The Government should introduce a system of port dues that vary according to the environmental performance of different ships.

Air quality and non-CO₂ contributions to climate change

The IMO has made encouraging progress on limiting the emissions of particulate matter and harmful gases other than CO₂. The Government must ensure that the tighter regulations agreed at the IMO are adhered to in practice. The Government should assess the case for mandating the provision of shore-side electricity for ships to improve air quality in the UK. The Government ought to consider extending stricter air quality regulations to all coastal waters around the UK.

Conclusion

Emissions from shipping cannot be allowed to grow uncontrolled. It will take several years before technical changes start to make a significant difference. Negotiating operational changes within the IMO may also take some time. We need to ensure that emissions from shipping are taken into account in the UK's carbon budgets. The industry, like any industry, needs a clear signal about the level of ambition it needs to have in respect of emissions of greenhouse gases. Clear targets to 2020 and 2050 will help engineers, operators and owners come up with appropriate solutions, provided the targets are backed up by the right incentives and sanctions and support for research and development.

Shipping ought to do relatively well out of a carbon-constrained world, given that it is the most carbon-efficient mode of transport. Modal shift towards shipping will only happen if policy is joined up and ensures that any regime that increases costs or imposes carbon limits on shipping does not act in isolation; doing so might lead to modal shift from sea to road or air.

Given the central importance of shipping to world trade, and to overall economic growth, there should be drastic acceleration of R&D into low- and zero-carbon propulsion systems. All parties connected to international shipping need more fully to address the challenge of climate change. To meet extremely challenging global emissions reductions targets in the next few decades, the absolute scope for emissions from shipping will have to be severely circumscribed.

Introduction

1. In 2006 we conducted a major inquiry into reducing carbon emissions from transport.¹ Emissions from shipping received very little coverage in the evidence we received, and our impression then was that “there may be insufficient attention, from both governments and NGOs, on this issue to generate the kind of pressure [...] required to generate a timely solution.”² In our Report, *Reducing Carbon Emissions from Transport*, we said emissions from shipping had been overlooked by the Government when setting out its climate change policies. The *UK Climate Change Programme Review* (CCPR), published in March 2006, contained little on shipping (what it said is reproduced in full in Box 1).

Box 1 The full content on shipping in the 2006 UK Climate Change Programme Review

The UK is also playing an active role in reducing emissions from **Shipping**.

In the medium to long term, technological improvements may deliver carbon savings. For example, developments in marine engine manufacturing, the use of propulsion systems other than diesel engines and alternative fuels could all offer ways to cut carbon dioxide emissions.

Working within the International Maritime Organization (IMO), the UK made a significant contribution at the latest Maritime Environment Protection Committee (MEPC) negotiations on the adoption of Interim Guidelines for Voluntary Ship CO₂ Emission Indexing for Use in Trials. Ships under the United Kingdom flag are being encouraged to participate in these trials, which will help identify a ship’s greenhouse gas index.

Source: Defra, *Climate Change—The UK Programme 2006*, Cm 6764, March 2006, p 73

2. The only concrete action point was the encouragement of UK shipping to participate in voluntary trials to help compile an index of the carbon efficiency of different ships. As part of this inquiry, we asked the Government how many UK ships had participated in such trials. It said:

Although the Maritime and Coastguard Agency provided guidance for UK flagged ships, in case they wished to take part, none ended up being involved in the trials of the CO₂ index.³

Size and nature of the problem

3. A recent study for the International Maritime Organization (IMO) estimated that international shipping was responsible for annual emissions of around 843 million tonnes of carbon dioxide (MtCO₂) in 2007, or around 3% of total man-made carbon emissions.⁴ To put this in perspective, “international shipping” would come just after Germany and just before the UK in a league table of emissions sources.⁵ Only six countries produce more greenhouse gases than international shipping. Shipping emissions are reported to have

1 Environmental Audit Committee, Ninth Report of Session 2005–06, *Reducing Carbon Emissions from Transport*, HC 981

2 Environmental Audit Committee, *Reducing Carbon Emissions from Transport*, para 11

3 Ev 84

4 Ev 21

5 Ev 1

doubled since 1990 and by 2050, in the absence of regulations to limit them, they are projected to grow by a factor of 2.4 to 3.⁶

4. Tackling emissions from shipping is complicated by the international nature of the industry. Ocean-going ships buy their fuel from locations all around the world, and burn it (thereby emitting CO₂) in journeys between different countries; this makes it difficult to measure and attribute their emissions to individual nation-states. Because of these difficulties, international shipping was excluded from the targets set by the Kyoto Protocol. The Kyoto Protocol handed developed economies the responsibility of working through the International Maritime Organization (IMO) to pursue curbs on shipping emissions. There has not yet been any agreement within the IMO on a scheme for capping global shipping emissions.

Focus of this inquiry

5. In this report we follow up our earlier inquiry and examine what efforts the Government is making in three main respects:

- Negotiations to tackle shipping emissions at an international level (within the IMO, the UNFCCC,⁷ and the EU);
- Measures by which the UK is to take into account its share of international shipping emissions in domestic carbon budgets (through the Climate Change Act 2008); and
- Support in the UK for operational improvements and technological R&D aimed at reducing emissions from shipping.

6 Ev 21

7 Adopted at the 1992 Rio Earth Summit, the United Nations Framework Convention on Climate Change has the goal of avoiding “dangerous” human interference with the climate system; it is the central international forum for negotiating global agreements on limiting greenhouse gas emissions.

Shipping and global climate change goals

6. Shipping emissions are a serious problem for international climate change policy, both because they are growing and because there is a risk of considerable delay before they are brought under control. Their growth contributes to the continuing increase in CO₂ emissions on a global scale. The longer carbon emissions continue to rise, the harder it will be to stabilise the level of greenhouse gases in the atmosphere at a “safe” level—since this depends on the volume of CO₂ already emitted in preceding years.⁸ A delay in establishing a global cap on shipping emissions means that steeper cuts in CO₂ will have to be made by other sectors of the global economy.

7. Witnesses from the Tyndall Centre for Climate Change Research stressed the urgency with which cuts in global carbon emissions are needed and pointed out that the shipping sector will have to make—ultimately very substantial—cuts of its own.⁹ Dr Terry Barker said the need to decarbonise *all* economic sectors, including shipping, had become more critical following recent scientific findings on the potential for dangerous climate change.¹⁰ To have a good chance of meeting the UK’s 2°C target, he said,

[...] all sectors will need to substantially decrease their carbon footprint and even completely decarbonise by 2050 or earlier. Comprehensive policies will need to be in place by 2012 with action to 2020 if the rise in [shipping and aviation] emissions is to be checked, let alone reversed.¹¹

8. In October 2008 the Committee on Climate Change recommended that the UK should cut its emissions by at least 80% by 2050, based on an implicit target for cutting worldwide emissions by at least 50%.¹² This was based on an assumption that global emissions must peak by as early as 2016.¹³ In January 2009, Lord Stern and a number of other leading figures from politics, economics, and climate change research, recommended that “cuts in [global] emissions of 50% by 2050 relative to 1990 should be the absolute minimum for target reductions and the aim should be to make cuts as close to 80% as possible if the cost is not prohibitive”.¹⁴ They concluded: “Scientific evidence shows world emissions must peak and decline in the next 10–15 years, to keep the door open for climate stabilization.”¹⁵

8 Scientific debate continues as to the lifetime of increases in atmospheric concentrations of CO₂ from current emissions, but a considerable proportion is expected to remain in the atmosphere for centuries, or even millennia. See “Carbon is forever”, *Nature Reports Climate Change*, 20 November 2008, www.nature.com/climate

9 Tyndall Centre for Climate Change Research, *Tyndall Briefing Note No. 26*, June 2008, p 1

10 Tyndall Centre for Climate Change Research, *Tyndall Briefing Note No. 26*, p 1

11 Tyndall Centre for Climate Change Research, *Tyndall Briefing Note No. 26*, p 1

12 Letter from Lord Turner of Ecchinswell to Secretary of State for Energy and Climate Change, Rt Hon Ed Miliband MP, 7 October 2008, www.theccc.org.uk/pdfs/Interim%20report%20letter%20to%20DECC%20Sof5.pdf

13 Committee on Climate Change, *Building a low-carbon economy—the UK’s contribution to tackling climate change*, December 2008, pp 21–5

14 World Economic Forum Global Agenda Council on Climate Change, *Shaping an Opportunity out of a Crisis*, January 2009, www.undp.org/climatechange/docs/GACmessage.pdf

15 World Economic Forum Global Agenda Council on Climate Change, www.undp.org/climatechange/docs/GACmessage.pdf

9. We are concerned that the shipping industry is reluctant to engage with the need to cut its own emissions in absolute terms. We heard widespread acknowledgement of the seriousness of climate change and the need for measures to improve the carbon efficiency of shipping. But there was an equally widespread belief that total emissions from shipping would continue to grow—and that they should be allowed to. The Chamber of Shipping (CoS) told us that “the shipping industry is absolutely committed to reducing its carbon footprint”, but that “in absolute terms, emissions from shipping will grow steadily for the foreseeable future”.¹⁶ The CoS explained: “This is because shipping [...] responds directly to growth in world trade (without which expansion in the world economy could not occur) and that growth is likely to be greater than the achievable carbon reductions.”¹⁷ Almost exactly the same points were made by the IMO Secretariat.¹⁸ The Chamber of Shipping has endorsed the idea of emissions trading¹⁹ but this was seen as a mechanism by which others could be paid to make reductions that the shipping industry could not make.²⁰

10. The written evidence we received from the Government said “shipping emissions must be tackled and [...] the shipping sector must operate under carbon limits.”²¹ But the ministers we spoke to, Joan Ruddock MP (Parliamentary Under-Secretary of State in the Department for Energy and Climate Change) and Jim Fitzpatrick MP (Parliamentary Under-Secretary of State at the Department for Transport), were unable to say whether this meant shipping should make an absolute (as opposed to relative) cut in its emissions.²²

11. Rather than dividing up global shipping emissions and attributing a share of them to each country, the Government, in line with much of the international community, appears to favour excluding them entirely from national emissions registers and targets, and treating them as belonging to a truly international sector.²³ Joan Ruddock MP explained to us that, domestically, the UK has agreed a target of an 80% cut by 2050 “because that is what we consider to be our contribution to a stabilisation goal of a 2°C temperature rise.”²⁴ The logic of treating shipping as a sector outside any national borders is that it ought to be incorporated into the same kind of projections that yielded national targets for the UK, and given its own emissions reduction targets.

12. The shipping industry would appear to welcome greater clarity on the targets for reducing emissions that the global shipping industry should face. Robert Ashdown, Head of Technical Division at the Chamber of Shipping, told us:

[...] I think that the UK could do more to talk about what it means in terms of targets. Not a single paper put into the IMO [by any national government] has discussed

16 Ev 30

17 Ev 30

18 Q57, Ev 20–1

19 “Leading the Way: the UK Chamber of Shipping response to global warming”, Chamber of Shipping press release, 15 December 2008

20 Q102

21 Ev 66

22 Qq252–5

23 Q282

24 Q254

what they think an appropriate target for shipping emissions reductions is. Because we do not know the target, that makes life very much harder for us in industry, to try and evaluate the most appropriate scheme for us because it may be that the most appropriate market-based instrument will be dependent upon the target of the emissions the government sets.²⁵

13. Policy must have a rational basis. Given the absence of a consensus within the international community, the Government should take the lead in determining what level of emissions from shipping would be compatible with delivering the objective of limiting the rise in global temperatures to 2°C. This should be used in turn to determine targets for emissions from shipping in 2020 and 2050. The Government should then use these global figures to inform its policies and actions by making an estimate of the UK's share of the global total. The Government should commission research on recommended targets for shipping emissions in 2020 and 2050, and for the trajectory of emissions that should link them.

Progress of international negotiations to tackle CO₂ from shipping

14. Under the Kyoto Protocol, industrialised nations, listed in Annex I to the United Nations Framework Convention on Climate Change (UNFCCC) were assigned binding targets, aimed at reducing their annual greenhouse gas emissions by an average of 5.2% by 2012, relative to 1990 levels. Developing economies, including Brazil, China, India, and South Africa (the “BRICS” nations), were not assigned national targets. This was in accordance with the UNFCCC principle of countries bearing a “common but differentiated” responsibility for making cuts in emissions, depending on their economic capacity. Emissions from international shipping and aviation were not included within any targets as there was no agreed methodology for attributing such cross-border emissions to individual countries. Article 2.2 of the Protocol stated that “The Parties included in Annex I shall pursue limitation or reduction of emissions of greenhouse gases not controlled by the Montreal Protocol²⁶ from aviation and marine bunker fuels, working through the International Civil Aviation Organization and the International Maritime Organization, respectively.”²⁷ The UNFCCC Conference of Parties will meet in Copenhagen in December 2009 to try to agree a successor to the Kyoto Protocol. It is unlikely the IMO will be able to present an agreed proposal to this meeting.

Progress towards an international agreement

15. The international nature of shipping has made it difficult to find an agreement to limit emissions that applies only to developed economies. Negotiations have been hampered by the difficulty encountered in reconciling the approach favoured under the Kyoto Protocol, which recognises “common but differentiated” responsibility, with the approach traditionally taken in the IMO, which has been to find solutions that are applied equally across the globe. The blame for this would appear to be shared between a lack of priority shown by Annex I nations and the blocking actions of developing nations within the IMO.

16. While we heard repeated tributes to the efforts of the IMO Secretariat to foster an agreement,²⁸ the evidence from Gillian Reynolds, Principal Environment and Sustainability Adviser at Lloyd’s Register, suggested that this interest in climate change in fact came very late in the day:

In 2005 most of the activity on [the environment ...] was almost exclusively directed to the SO_x and NO_x [air quality] issue. Then there came along the realisation of the seriousness of the greenhouse gas emission issue. For the past year or so IMO have been trying exceptionally hard to get discussion and agreement on this matter [...]²⁹

26 The Montreal Protocol is aimed at reducing emissions of gases which destroy the ozone layer; some of these are also greenhouse gases.

27 Kyoto Protocol to the United Nations Framework Convention on Climate Change, Article 2.2

28 Q208, Q258

29 Q208

Mark Major, a senior official at the European Commission, told us that it was not until 2006 that the IMO announced a timetable for discussion meetings on greenhouse gases leading to the Copenhagen Conference; and that in 2008, while the IMO had held three one-week meetings on this issue, there had only been talk about principles, with nothing concrete decided.³⁰

17. The increased interest shown by the IMO Secretariat in recent years may be a result of the threat by the European Commission that it would take unilateral action if progress was not made, and the possibility that the UNFCCC might adopt an agreement on shipping at Copenhagen independently of the IMO. Pressure might be applied if an agreement can be reached outside the IMO process and then imported into it. An agreement (possibly on a regional scale) might be faster and easier to achieve outside the IMO processes, and such external negotiations might pressure the IMO to make faster progress. **With a view to stepping up the pressure to achieve an IMO-wide agreement, we recommend the Government maintain a constructive approach within the IMO, while actively seeking agreements to limit shipping emissions outside the IMO process—notably within the European Union, and through the UNFCCC.**

18. Hopes that a proposal would be agreed by IMO members in time for agreement at Copenhagen faded last autumn; in early October 2008, a meeting of the IMO's Maritime Environment Protection Committee (MEPC) failed to make the progress required for the Copenhagen timetable. Dr Andre Stochniol, author of one of the main proposals under discussion within the IMO, told us that the issue was raised too late in the day in October 2008 for there to be proper discussion; the item will next be raised at the July 2009 MEPC meeting. He said, "This will be too late for the Copenhagen Protocol. The draft text for the Copenhagen Protocol needs to be ready by June 2009, one month before the next meeting".³¹

19. Miguel Palomares, Director of the Marine Environment Division of the IMO, was hopeful that the MEPC meeting in July 2009 could still make "great advances"; he suggested that the IMO might be able informally to present one or more proposals for consideration at the Copenhagen Conference.³² He admitted that progress had been difficult, and laid the blame at the feet of the Kyoto Protocol:

[...] I might say that the wording of [Article] 2.2 of the Kyoto Protocol itself might have been somewhat in the way of more speedy progress in this. The article starts by saying that the parties included in Annex 1 (that is industrialised countries) shall pursue limitation or reduction of greenhouse gas emissions from [...] shipping through the IMO. This is being read by some members as saying that *only* Annex 1 countries have the obligation to pursue this reduction [...]³³

Mr Palomares explained that this was considered to be contradictory to the IMO's principle of applying its regulations to all the world's shipping, irrespective of nationality.

30 Annex

31 Q30

32 Q80

33 Q68

Moreover, given the international nature of the industry, the attempt to restrict regulations to Annex I countries would face severe practical obstacles.³⁴

20. In Mark Major’s view there were no reasons in principle why such practical obstacles could not be overcome, and nor was there anything intrinsically incompatible between the principles of the Kyoto Protocol and those of the IMO.³⁵ He agreed that the key stumbling block so far had been the sensitivities of developing countries; they appeared unwilling to concede the principle that they—even in the form of ships under their flag—should be subject to national emissions targets, much less to discuss the details of what contribution each of them should make, prior to the Copenhagen Conference.³⁶ Gillian Reynolds had a similar view and told us: “For the past year or so IMO have been trying exceptionally hard to get discussion and agreement on this matter; but there has been [...] this well orchestrated union of non-Annex 1 countries preventing any progress on the matter.”³⁷ Joan Ruddock MP said the Government did not expect the IMO to agree a scheme that it could take to Copenhagen, as some countries were opposed to an agreement, preferring to wait until after Copenhagen, and all other expected agreements were secured.³⁸

21. No witnesses believed it was likely that a global scheme to tackle shipping emissions would actually be agreed at Copenhagen. The consensus of opinion was that it would be some years before a global scheme would be ready to come into force. Mark Major of the European Commission believed the Copenhagen Conference could make a useful contribution if it agreed the principle that international maritime emissions should be included in national totals, and indicated what size of cuts the global shipping industry should be making.³⁹ Phillip Andrews, a senior official from the Department of Energy and Climate Change, expressed a similar view.⁴⁰ Gillian Reynolds was hopeful that progress on extending national emissions targets to developing countries would lead to progress in tackling shipping emissions afterwards.⁴¹ Andre Stochniol thought the international community might miss out on the opportunity to bring shipping emissions under control until the Copenhagen Protocol were reviewed, some time in the 2020s.⁴² Others were more hopeful that a scheme could still be worked out in the intervening years within the IMO. Even so, Jim Fitzpatrick MP believed that once agreement on the principles of a global scheme had been reached, it would still take between two and three years to legislate for it within the IMO—and if a new IMO convention were required to do this, getting it ratified would take even longer.⁴³

22. Despite this prognosis, Jim Fitzpatrick MP explained that the Government was “not completely pessimistic or negative”, partly because:

34 Q68
 35 Annex
 36 Annex
 37 Q208
 38 Q258
 39 Annex
 40 Q260
 41 Q211
 42 Q30
 43 Q260

If we do not get an IMO agreement then the European position is reserved similar to our stance on aviation, which is if we cannot get a world agreement then we might have to look at devising a European scheme to at least start the ball rolling, much as we have done with aviation coming into the EU ETS in due course.⁴⁴

23. The European Commission is reviewing the potential measures that the EU could bring in unilaterally to curb shipping emissions, notably a proposal to include ships visiting EU ports in the EU Emissions Trading Scheme. (Further potential measures are outlined in the Annex to this Report.) Mark Major told us the Commission would focus on creating something that would build on the discussions that have taken place within the IMO, and could lead eventually to a global scheme.

The role of the UK in international negotiations

24. Several witnesses were critical of the Government's effort in advancing negotiations within the IMO on limiting emissions of greenhouse gases from shipping. Three submissions suggested that, while the UK *had* been active within the IMO in pushing for agreement on tackling air pollution, it was not among the leading voices on tackling climate change.⁴⁵ WWF suggested that one reason for this is that the UK delegation is led by representatives of the Maritime and Coastguard Agency (MCA) and the Department for Transport, who have historically dealt with more technical issues (such as ballast water), rather than by climate change specialists within Defra.⁴⁶ Gillian Reynolds said she had been a member of the UK delegation and had attended meetings since 1990. She told us the UK, which normally had a progressive stance on issues within the IMO, had been rather passive on the issue of cutting greenhouse gases.⁴⁷ She explained that there was a disjointedness between the different departments and agencies involved in the UK's delegation to the IMO—the Maritime and Coastguard Agency, Department for Transport, Department for Environment, Food and Rural Affairs (and now DECC), and HM Treasury.⁴⁸

25. These criticisms were vigorously contested by the Government. Jim Fitzpatrick MP told us: “It is our view that we have been the most vocal country in calling for detailed discussions on the merits of, for example, [emissions trading], and we have submitted several documents to the IMO over the last few years on these topics [...]”⁴⁹ He went on to say that a working group of officials from the Department for Energy and Climate Change, the Treasury, the Department for Transport and the Maritime and Coastguard Agency met every four to six weeks to discuss and develop policy on emissions from shipping. He explained that what the UK was doing at the IMO was overseen at a very senior level; the

44 Q258

45 Ev 3, 11, 54

46 Ev 3

47 Q212

48 Q212

49 Q262

working party reported to senior officials in the cross-Whitehall Climate Change and Energy Strategy Board, which reported directly to Cabinet.”⁵⁰

26. Although there are no concrete proposals on emissions from shipping from the UK, the UK is supporting a Swedish proposal.⁵¹ Phillip Andrews, from DECC, explained:

There is a tactical point [...] to our interventions, which is we try not to lead talks [...]: if others are bringing forward ideas we agree with, we should agree with them. We are seen as [having] very strong views on climate change; we are setting very strong targets; we are demonstrating the way. Frankly, we waving our flag can scare some of the more nervous countries on what we are actually proposing. If people are doing the work and delivering effective ideas we feel it best to come in behind them as part of consensus rather than be the ones looking to again push the UK kind of approach. [...]⁵²

27. In our view, those that argue that the terms of the Kyoto Protocol had from the start doomed any attempts to agree a global deal to failure are failing to recognise the range of options for unilateral and regional actions, such as efforts by the European Union to get EU-wide agreement on a scheme. Whatever the practical obstacles to be overcome, there is no reason in principle why the IMO could not introduce regionally-based schemes that target Annex I countries. In order to protect their negotiating position at Copenhagen developing nations have hindered discussion within the IMO. But the lack of progress towards an agreement reflects equally badly on Annex I countries. This is particularly true of countries, such as the UK, that have in other forums been vocal about the need to tackle climate change. It took until 2005 for the UK to submit a paper to the IMO on the use of emissions trading to tackle emissions from shipping emissions.⁵³ The UK has still not submitted a concrete proposal. Witnesses from the Chamber of Shipping praised the efforts and influence of the UK delegation within the IMO,⁵⁴ but thought “the UK could do more to refine an Emissions Trading Scheme.”⁵⁵

28. We deplore the ongoing delays in reaching a global agreement to tackle greenhouse gas emissions from shipping. We recommend the Government work with the European Commission to examine the merits and practicalities of its proposals, with the aim of achieving practical action as swiftly as possible. We recommend that the Government follow up its proposals to the IMO on emissions trading with some concrete proposals or makes clear what alternative solution it is working towards.

50 Q262

51 Q279

52 Q280

53 “Prevention of air pollution from ships—The potential of emissions trading to reduce carbon emissions from ships”, paper submitted by the United Kingdom to the IMO Marine Environment Policy Committee, MEPC 54/4/2, 16 December 2005

54 Q115

55 Q118

Shipping emissions and the Climate Change Act

Accounting for emissions from shipping

29. Appearing before us in June 2006, the then Secretary of State for Transport, the Rt Hon Douglas Alexander MP, told us that the Government's position was that it should channel its efforts into securing an international agreement on shipping, and not take domestic action in advance of such a deal, because of the practical difficulties in unilaterally cutting the UK's share of international emissions.⁵⁶ This policy was reaffirmed in the draft Climate Change Bill, published in March 2007, where the Government's proposal was that the UK's share of emissions from international shipping and aviation was to be excluded from the proposed system of legally binding carbon budgets (although there was to be a provision enabling them to be included at some future date).⁵⁷ In our Report on the draft Bill we characterised the Government's approach as saying: "We don't have the policy instruments to deal with this, so [let's] pretend it doesn't exist". Notwithstanding the practical difficulties, we recommended that international maritime (and aviation) emissions should be included within the system of UK carbon budgets from the outset.⁵⁸ Our recommendations on the draft Bill were rejected by the Government.⁵⁹

30. In October 2008 Lord Turner, Chairman of the Committee on Climate Change (CCC), wrote to the Rt Hon Ed Miliband MP, Secretary of State for Energy and Climate Change, to say that international shipping and aviation should not be included within the UK's carbon targets and budgets. But he did recommend that they should be included in the Government's carbon reduction strategy, implying that other sectors would have to make steeper cuts if emissions from shipping and aviation were not themselves being reduced.⁶⁰ Before the Climate Change Bill was passed it was amended to include a clause adding international shipping and aviation to a list of factors the Secretary of State must "take into account" when setting UK carbon budgets.⁶¹ This was widely understood to mean that other sectors of the economy would have to make steeper cuts if aviation and shipping did not make cuts in their emissions.⁶²

31. When the CCC's detailed advice was published this interpretation was borne out for aviation but not for shipping. Their advice was that the UK's share of international aviation emissions should not be formally included within UK carbon budgets, but the trends in these emissions should be taken into account in setting carbon budgets for the rest of the

56 See, for instance, Environmental Audit Committee, *Reducing Carbon Emissions from Transport*, Q719

57 Environmental Audit Committee, *Seventh Report of Session 2006–07, Beyond Stern: From the Climate Change Programme Review to the Draft Climate Change Bill*, HC 460, Qq126–7

58 EAC, *Beyond Stern: From the Climate Change Programme Review to the Draft Climate Change Bill*, para 96

59 Defra, *Taking Forward the UK Climate Change Bill: The Government Response to Pre-Legislative Scrutiny and Public Consultation*, October 2007, Cm 7225, para 1.31

60 Letter from Lord Turner of Echinswell to the Secretary of State for Energy and Climate Change, 7 October 2008

61 Climate Change Act 2008, section 10

62 Q3

economy.⁶³ The CCC took a different line on emissions from shipping. The recommendation is that the Government should *not* take international shipping emissions into account when setting carbon budgets for the rest of the economy—until emissions from shipping are included in the EU’s targets for greenhouse gas emissions:

It is [...] essential that international shipping emissions are allowed for in the setting of the UK’s carbon budgets. To the extent that these are not falling, for example, effort in other sectors should be higher to maintain an overall GHG emissions reduction target derived from a climate objective. But, whereas international aviation emissions are included in the EU’s 20% and 30% GHG targets, international shipping emissions are not included. The implication is that international shipping emissions are not accounted for in our carbon budget proposals, which are derived from the EU’s targets.⁶⁴

32. The CCC recommended that the UK should press for the EU to include the EU’s share of international shipping in its 2020 emissions targets. Only once such agreement was reached should the UK tighten its carbon budgets to reflect the extra effort needed by the rest of the economy to account for shipping emissions.⁶⁵ The CCC recommended it should report annually on the proportion of international shipping emissions that could be attributed to the UK.⁶⁶

33. The Committee on Climate Change’s rationale for recommending that the Government should not take action in advance of agreement by the EU was as follows:

- i. It is not clear how to measure the UK’s share of international shipping emissions;
- ii. If the UK were to act unilaterally, resulting in a tightening of its carbon budgets, it might cut its emissions more steeply than required to meet its share of the EU’s 2020 target. The result of this might be that other EU Member States act as “free riders” on the additional efforts of the UK, thus choosing to do less than was required of them to meet the EU target. As the CCC put it: “In this event, there would be a financial implication for the UK with no environmental benefit”;
- iii. Even if other EU Member States were not to relax their targets in response, unilateral action from the UK would only have a small environmental impact.⁶⁷

34. We are not entirely convinced by the CCC’s objections to unilateral action, either that the UK would suffer financially for no net environmental benefit, or that the environmental benefit would only be small. Crucially, the CCC seems to be ignoring the possibility that, by acting in advance of other nations, the UK could help to break diplomatic logjams and encourage other countries to follow suit. **We agree with the Committee on Climate Change that the Government should work to secure the inclusion of shipping emissions within the EU’s climate change targets. But we do not**

63 Committee on Climate Change, *Building a low-carbon economy*, p 323

64 Committee on Climate Change, *Building a low-carbon economy*, p 332

65 Committee on Climate Change, *Building a low-carbon economy*, p 307, p 332

66 Committee on Climate Change, *Building a low-carbon economy*, p 332

67 Committee on Climate Change, *Building a low-carbon economy*, p 332

see why shipping should be treated differently from aviation. We recommend the Government consider taking international shipping emissions into account in setting UK carbon budgets from day one, in a similar fashion to emissions from international aviation.

35. This recommendation raises a number of questions, not least: what is the size of the UK's share of international shipping emissions (and how to measure them, and ensure this is consistent with the totals for other countries)? The Committee on Climate Change is certainly right to say there is no clear agreement on how to measure the UK's share of international shipping emissions. This matters so much because of the wide discrepancy between results, depending on which methodology is chosen; according to the Government, the UK's share has an estimated range of between 7 and 24MtCO₂.⁶⁸

Measuring emissions from shipping

36. The method currently used is based simply on the records of fuel sold from international shipping fuel bunkers in the UK and dependent territories. (This is in keeping with international convention: although international shipping emissions are excluded from its Kyoto and domestic targets, the Government is obliged to record these figures in an annex to its national emissions accounts.) On this basis, the UK's share of international shipping emissions stood at 6.9MtCO₂ in 2007, virtually unchanged from its emissions of 6.7MtCO₂ in 1990.⁶⁹ If figures for bunker fuel sales globally were reliable (which they are not) then fuel sales could provide a reasonable estimate of global emissions from shipping. But they are not suitable for apportioning emissions to different countries; bunker fuel sales in the UK are not a guide to the UK's share of global emissions. Ships may choose to refuel in a particular country for a number of reasons; some ships visiting the UK may not take on a full load of fuel here if they have just refuelled in another European port.

37. This underlines the importance of measuring and acting on the UK's share of international shipping emissions. Only if we have accurate figures for international shipping (and aviation) emissions can we know whether UK carbon emissions have actually gone down since 1990. There was some confusion over this point during our evidence session,⁷⁰ and we asked the Ministers to send us a written note. Their supplementary evidence included the figures presented in Table 1, and stated categorically: "both on a CO₂ only basis, [...] for all GHGs, and based on bunker fuel methodology, UK emissions have reduced".⁷¹

68 Ev 67–8

69 Greenhouse gas emissions arising from use of fuels from UK 'international bunkers', Defra, www.defra.gov.uk/environment/statistics

70 Qq 299–301

71 Ev 85

Table 1 UK emissions including international shipping and aviation

UK Emissions with and without international aviation and shipping, calculated by bunker fuel sales								
Year	Kyoto total	International aviation	CO ₂ Only (MtCO ₂)			All Kyoto GHGs (MtCO ₂ e)		
			International shipping	Kyoto total and International aviation and shipping	Kyoto total	International aviation	International shipping	Kyoto total and International aviation and shipping
1990	593.5	15.7	6.7	615.9	774.9	15.9	6.7	797.5
2006	555.9	35.6	6.8	598.3	653.8	36.0	6.9	696.6
1990–2006 (absolute)	-37.7	19.9	0.1	-17.7	-121.1	20.1	0.1	-100.9
1990–2006	6.3%	126.2%	1.9%	-2.9%	-15.6%	126.2%	1.9%	-12.7%

Source: Ev 85

38. We agree with the Government that, including the UK's share of international shipping and aviation emissions as they are currently measured, UK CO₂ has gone down by around 18 million tonnes from 1990 to 2006, a fall of around 2.9%. This itself would put UK emissions a long way short of the Government's target of cutting CO₂ emissions by 20% by 2010. We also agree with the Government that the method of calculating the UK's share of international shipping emissions is unreliable. Joan Ruddock told us: "[I]t undoubtedly underestimates the emissions from shipping [...] I know there was a period in which measuring from bunker fuels we seemed to be on a plateau but actually we know that trade was growing."⁷² If the UK's share of international shipping emissions were 24MtCO₂, at the upper end of the Government's estimate (calculated using a different methodology to recording bunker fuel sales), total emissions in the UK would be around 18MtCO₂ higher in 2006 than the Government's evidence suggested, and UK carbon emissions would not have gone down at all since 1990.

39. The evidence we received discussed a number of alternative methodologies for measuring the UK's share of international shipping emissions. The Tyndall Centre suggested that, given the correlations between economic activity and demand for imports, a better reflection of a country's contribution to shipping emissions would come from dividing total emissions from global shipping (calculated from global bunker fuel sales) by each country's share of global GDP. For the UK, this would result in much larger figures (for 2005) of around 30MtCO₂, or around 5% of total UK CO₂ emissions.⁷³ WWF advocated a route-based system of accounting: e.g. emissions of ships on routes that end at a UK port would count to the UK. The Government confirmed it was looking at the merits of a number of different methodologies, including estimating the emissions arising from vessels' activities in UK waters.⁷⁴ None of these alternatives is without its problems (see Box 2). **The current methodology for calculating international shipping emissions underestimates actual emissions. The Government must produce a more accurate estimate, and state what effect this would have on total UK CO₂ emissions were it to be**

72 Q288, Q303

73 Based on global estimates, as per the IMO, of global shipping emissions of around 800MtCO₂.

74 Qq 288–292

taken into account. We recommend that the Government consult on the methodology it should use to calculate the UK's share of international shipping emissions.

Box 2 Difficulties with alternative methods for calculating national shares of global shipping emissions

Allocation of global shipping emissions to each country, in proportion to its share of global GDP: One problem with this is that there are not comprehensive figures for bunker fuel sales from all countries, thus the reported global emissions total, from which national totals would be calculated, is thought to be too low. Alternatively, a global total could be estimated—though this would be subject to uncertainty and controversy.

Another problem is that, under this proposal, there would be no link between the actions of a government (other than by reducing its share of global GDP) and the emissions that would be attributed to it. Thus there would be no direct incentive for any government to seek to accelerate the carbon efficiency of shipping over which it had some authority.

Allocating emissions to a country, based on the journeys made by each ship docking there (route-based allocation): The main problem with this methodology is that much shipping (e.g. container ships) may dock in several countries on a single journey. Jesper Kjaedegaard of Maersk explained: "Imagine a ship that comes in from, say, Asia calling at three or four ports in Asia, calling at one port in the Middle East and maybe one in Egypt before it reaches Europe, how do we assign the emissions on that particular voyage, to a particular port or a particular region? It would be very, very difficult to manage."

In addition, this method might encourage ship operators to make unnecessary calls in port in order to evade or reduce any financial penalties imposed on the basis of distance of individual journey legs between ports. For instance, the Government argued to us that this method could result in "the establishment of hubs just outside the states implementing the measures e.g. if implemented by the EU, at the African Mediterranean coast, this will lead to increased emissions, transport delays and increased shipping costs."

Allocations to a country, based on the emissions arising from shipping cargo from one port to another: The advantage of this proposal is that it would get around the difficulty discussed above, of ships calling at several ports, since it would track the whole journey of cargo containers, from whichever port they were loaded on, to whichever port they were unloaded. The chief disadvantage is that it would potentially be very complicated to administer.

Other allocation methods

Other suggested methods have their own problems. As previously referred to, allocation on the basis of bunker fuel sales may be inaccurate and is vulnerable to evasion, if ship owners decide to buy fuel in countries outside any carbon pricing or reduction regime. Allocation on the basis of nationality (or "flag") of shipping would be highly unreliable, given that ships can easily be "reflagged" to avoid state regulations. The Government also reports that one of the methods it is considering, vessel activity within national waters, is "data hungry and hence costly".

Source: Q103, Ev 68

40. Another key question is whether, in advance of any international market-based instrument, the Government should take direct action to reduce the UK's shipping emissions (rather than simply leave them alone, and make correspondingly greater cuts in emissions from the rest of the economy)? This idea received sharp criticism from the Chamber of Shipping. Robert Ashdown argued that any unilateral attempt by the UK to impose some form of carbon charge would simply lead to evasion:

It is very likely then that the container ships would no longer touch at the UK to deliver cargo; they would perhaps go into Rotterdam and then use feeder ships to bring the cargo across from Rotterdam so that you only then paid the carbon on the

very short journey across the North Sea. The entire leg from Asia up to Rotterdam would be exempt.⁷⁵

Jesper Kjaedegaard, Vice-President of the Chamber of Shipping, observed:

It would not be very good for Britain if we saw a lot of the bases in Aberdeen and Peterhead move to Bergen or Germany, simply because there is a fee for calling at Aberdeen and Peterhead but there is no fee for calling at Bergen. You can service the North Sea rigs out of both. So we want to make sure it is not detrimental to the British flag and the British bases.⁷⁶

Edmund Brookes, Deputy Director-General of the Chamber of Shipping, also raised the possibility that charges imposed on shipping might lead to “reverse modal shift”, with freight being moved around the UK by road instead of by coastal shipping.⁷⁷

41. In pursuing any policy mechanism designed to curb UK shipping emissions, it will be important to seek to work within a multinational scheme, in order to maximise effectiveness and minimise evasion. We recommend that the Government push for agreement within the EU on measures to tackle shipping emissions at a European level. It will also be important to test policies so that they avoid “reverse modal shift” from shipping to road freight. Until a European or global agreement is reached, we recommend that the Government should simply adjust the carbon budgets for the rest of the economy downwards to compensate for the volume of the UK’s international shipping emissions.

75 Q134

76 Q141

77 Q123

Mitigating emissions from shipping

The scope for cutting emissions

Cutting emissions through new technology

42. The majority of evidence we received argued that new technology has significant potential to improve ships' efficiency—for instance, through new designs for high-tech sails and wind turbines. A summary of some of the evidence we received is at Box 3.

Box 3 Technological possibilities for reducing CO₂ from shipping

Peter Lockley of WWF argued that, unlike the aviation sector, the shipping industry has a number of unrealised technological options to make substantial reductions in its emissions intensity. He drew our attention in particular to a new generation of “sky-sails”—essentially large kites “which run out in front of the ship and describe a figure of eight in order to maximise the pull on the ship.” While stressing that these have only been demonstrated on a small number of ships to date, he told us that “in the optimum conditions they save up to 57% of a ship’s fuel.”

Greenwave, the environmental shipping organisation, also extolled the virtues of wind power. Referring to wind turbines they were developing in the UK (which, similarly, could be retrofitted to existing ships), they told us that four such “full size wind engines can deliver the same thrust as a Boeing 737 at take off”; and that: “Average annual savings of 13% can be achieved representing around 900 tonnes of fuel per ship (for say a 60,000 tonne bulk carrier) equivalent to almost 3,000 tonnes of CO₂.”

Gillian Reynolds of Lloyd’s Register told us that the potential for technical measures to reduce CO₂ emissions has been estimated at up to 30% in new ships, and up to 20% in existing ships or ships constructed using present technology. Among the technologies which could improve fuel efficiency in the short-term, she highlighted recovery of waste heat from engines to heat crew quarters, new materials to coat hulls and reduce friction in the water, and improved energy efficiency of onboard electrical systems (e.g., lighting, air conditioning).

The Government has “recently commissioned a Shipping Emissions Abatement Techniques Review, which examines the technological and operational options for reducing air quality pollutant and carbon emissions, their applicability, impact costs and potential timescales for uptake.” The Department for Transport has also published a Low Carbon Commercial Shipping Study (2007) which concluded that the most promising low carbon technologies were improvements to current propulsion technologies; and wind-assisted propulsion.

Source: Q22; Ev 95, 55, 69; Low Carbon Commercial Shipping: Summary of results, Department for Transport, 10 January 2007, www.dft.gov.uk

43. While there was optimism about the potential for technological improvements to improve the efficiency of conventional oil-driven ships, there was much less confidence in the possibility of new sources of energy to displace fossil fuels altogether.⁷⁸ In fact, we received almost no evidence on alternative fuels whatsoever. As an example, when we asked Edmund Brookes of the Chamber of Shipping, “How much research is going on into alternative methods of powering ships, other than using fossil fuel?”, he replied: “There have been nuclear cargo ships in the past but I think that has proven not to be acceptable. I am not aware of particular research on things like fuel cells and that sort of thing.”⁷⁹

⁷⁸ For example, Gillian Reynolds told us hydrogen and biofuels might possibly emerge as a solution, but only in the long term, with wind and solar contributing, but only as a supplementary source of energy. Ev 55

⁷⁹ Q156

Operational efficiencies

44. We heard evidence of a number of operational changes that could make a significant impact on ships' emissions—things such as “enhanced weather routing, optimized trim and ballasting, hull and propeller cleaning, better main and auxiliary engine maintenance and tuning, speeding up ship unloading and slower steaming.”⁸⁰ On the latter point, Peter Lockley told us: “simply by travelling slower ships can save up to 40 per cent of fuel on some of the routes.”⁸¹ Jesper Kjaedegaard explained: “It is like your car, the last 20 miles of speed consumes far more than the first 50, and the same with a ship. If you [...] go down to 20–21 knots you are really saving something like 20–25 per cent of the oil.”⁸² The IMO has calculated that a speed reduction of just 10% across the global fleet by 2010 would result in over a 23% reduction in emissions.⁸³

Realising the potential to cut emissions

Government investment

45. We examined a number of ways in which the Government could accelerate the development and deployment of technological and operational improvements. We heard several appeals for government support, both for R&D into new technologies, and directly for ship owners, to help them meet the costs of making technological improvements.⁸⁴

46. All industries might naturally tend to make similar appeals. The Chamber of Shipping attempted to explain why marine technology was an especially deserving case for state support: “[Our] industry suffers from fragmentation. There is no major market leader that has a 20–25% share [and] the size of financial strength to fund the research and development [...]”⁸⁵ In a specifically British context, the environmental shipping organisation Greenwave made the further argument that investment in green technologies would aid regional economic revival by providing good quality jobs based around historic shipyards.⁸⁶ Regarding their own programmes, Greenwave told us: “we have, to date, been unable to identify any assistance from the government to support either our research or the marketing of the developed solutions.”⁸⁷

47. The Government told us that there were regular meetings with shipping companies, owners, manufacturers to discuss support for new technology.⁸⁸ But it was clear that little is happening domestically beyond these discussions.⁸⁹ There is no specific budget allocated to low-carbon marine technology, but funding is available from the Engineering and Physical

80 Ev 55

81 Q22

82 Q153

83 Oceana, *Shipping Impacts on Climate: A source with solutions*, July 2008, p 9

84 Ev 53, 97

85 Q156

86 Ev 97

87 Ev 96

88 Q310

89 Q311

Sciences Research Council, which “has awarded grants for the development of such technology, such as the Advanced Marine Electric Propulsion Systems (AMEPS) developed at Strathclyde University.”⁹⁰ The Department for Transport drew our attention to a review it had commissioned to analyse the most promising methods for abating emissions from shipping.⁹¹

48. We welcome the fact that the Department for Transport has commissioned a Shipping Emissions Abatement Techniques Review. We recommend it work together with the Technology Strategy Board to review the potential for UK universities and industry to develop these technologies, and exploit the economic opportunities arising from them.⁹² This review should identify where Government support could help British researchers, designers, and shipyards to become global leaders in technologies that can be applied worldwide. We recommend that particular attention should be paid to technologies that can be retrofitted to existing ships, as this could have the biggest impact in the short- to medium-term. We also recommend the Government encourage more research into technologies which offer a genuine alternative to fossil fuels: if shipping is to be decarbonised it needs truly alternative propulsion systems.

Putting a price on carbon to encourage emissions reductions

49. The IMO has discussed a number of ideas to encourage measures to reduce emissions, such as adopting ‘slower steaming’ or retrofitting wind turbines. Of these, the only ideas regarded as having the potential to create a binding international emissions reduction regime are the proposals for a ‘market-based instrument’—i.e. a scheme that puts a price on carbon. This could be a tax, a trading scheme, or hybrid of the two, and would create a financial incentive to cut emissions from shipping.⁹³ (see Box 4).

Box 4 The IMERS proposal for a hybrid levy-and-trading scheme

One of the main proposals under discussion at the IMO is for a hybrid tax-and-trading scheme. This is based on the design for an “International Maritime Emissions Reduction Scheme” (IMERS), proposed by Dr Andre Stochniol. Under this proposal, an emissions cap would be agreed for global shipping. Emissions charges (based on this emissions cap, combined with the market price for CO₂) would be imposed on ships’ journeys, calculated from the amount of fuel used. If emissions remained above the cap, these would be offset by the purchase of carbon credits from other sectors.

The emissions charges on ships’ journeys would be varied according to different routes to different countries, in order to achieve differentiation between developed and developing countries. Ship managers would be responsible for reporting the fuel used for the voyages ended in the previous month, with CO₂ emissions, and hence charges, calculated from these data. Those who pay for ships’ fuel, typically vessel charterers, would be responsible for payment of emission invoices issued on monthly basis. As an alternative, the fuel data could be based on the records from international fuel bunkers.

Dr Stochniol argues that this proposal would be hard to evade, weight charges towards those countries best able to pay them, and be faster and cheaper to establish than an emissions trading

90 Ev 85

91 Ev 69

92 The Technology Strategy Board is a non-departmental public body (NDPB), sponsored by the Department for Innovation, Universities and Skills. It describes its role as being to “stimulate technology-enabled innovation in the areas which offer the greatest scope for boosting UK growth and productivity” (www.innovateuk.org).

93 Q8

scheme.

Jim Fitzpatrick told us the Government had reviewed this proposal, but decided that “working out an emissions charge for a particular ship based on its cargo would be very complicated, given that many ships have different cargos with various origins and destinations at the same time, so we did not think that that would be a runner.”

Source: Ev 9-13; Q 279

50. The Government’s preference is for an emissions trading scheme. This would encourage ship owners and charterers to invest in new technology, and make operational efficiencies, by utilising the “polluter pays” principle. By placing a cap on the overall emissions from shipping (whether on a global or regional basis), a cost would be added to each unit of carbon a ship emitted; ships with lower emissions would gain a competitive advantage over those with higher emissions, which would have to pay more to buy extra carbon credits to cover their emissions. Although the Government has yet to bring forward within the IMO detailed proposals for a trading scheme, there are outline plans by the European Commission to include shipping within the EU Emissions Trading Scheme. One option would be to include shipping within Phase III of the EU Emissions Trading Scheme (EU ETS), whether from its start in 2013, or from some future year.⁹⁴ In our 2007 report on the EU ETS, we had recommended that the Government “explore with European partners the potential of including the maritime sector within a future phase of the EU ETS.”⁹⁵ The Government responded: “we intend to press the Commission to build a robust evidence of the economic impacts and practicalities involved in pursuing [...] expansion [of the EU ETS] to shipping.”⁹⁶

51. Several witnesses stressed the complications in each proposal, some seeming to suggest that the practical obstacles would be overwhelming.⁹⁷ But while it often seemed in our inquiry that the possibility of designing a viable scheme were hopeless, certain facts pointed towards there being a solid foundation for a practicable and effective solution. First, ships are required to hold their fuel receipts for the past three years; and all fuel suppliers are obliged to keep copies for the same length of time.⁹⁸ Second, two British companies—Martek Marine, and Cascade Technologies—told us they had developed technology that could be fitted to ships to measure their actual emissions, and to allow this information to be collected anywhere in the world in real time.⁹⁹ Indeed, the Chamber of Shipping told us there was no technical problem in recording the actual emissions from individual ships.¹⁰⁰ Third, all ships have to dock somewhere, which means governments have the opportunity to enforce compliance of individual vessels through port state control, as a condition of entry.¹⁰¹

94 Other potential options for EU action are also listed in the Annex.

95 Environmental Audit Committee, Second Report of Session 2006–07, *The EU Emissions Trading Scheme: Lessons for the future*, HC 70, para 46

96 Environmental Audit Committee, Eighth Report of Session 2006–07, *Emissions Trading: Government Response to Committee’s Second Report of 2006–07 on the EU ETS*, HC 1072, p 46

97 For example, Q68, Q103, Q134, Q216.

98 Q140

99 Ev 86–8, 93–5

100 Q125

101 Q49

52. **It is not technically difficult to measure emissions; the difficulty is the political question of how they are apportioned. We believe it would be technically feasible to establish an international emissions control regime—whether on a regional or global basis—that could accurately charge (or require carbon permits from) each ship according to its actual emissions, and securely enforce and verify compliance. A truly global regime would be ideal, but while this is negotiated and constructed we recommend the Government work with European partners to establish a scheme that applies across the European Union.**

53. The Government justifies its support for emissions trading in preference to fuel levies because, it says, trading schemes ensure a minimum level of carbon savings by placing a cap on emissions. Joan Ruddock MP said: “we do believe that the best way is to find some form of emissions trading where that is accompanied by a very specific cap. That is the only guaranteed way to get reductions.”¹⁰² But the Government won’t say what specific caps should be applied to shipping. Indeed, one of the papers the UK submitted to the IMO stated one of emission trading’s advantages was that it:

[...] avoids the need to address the unanswerable question as to “what should the shipping industry be allowed to emit”. The shipping industry will be a player in the emissions reductions markets as well as in all its existing markets, and its participants will themselves adjust their activities and emissions as they strive to be profitable in that context.¹⁰³

54. The experience of Phase I of the EU ETS was that too loose a cap meant the system failed to cut emissions at all. Whatever system is imposed to reduce emissions from shipping, there must be an effective overall cap. **The Government’s position on the use of emissions trading to tackle greenhouse gas emissions from ships is too vague. It promotes emissions trading because this is said to impose a definite cap on emissions but will not discuss what cap shipping should be given, nor what cap any wider schemes shipping is linked to should have. We recommend the Government clarify what cap should be imposed on emissions from shipping in any trading scheme.**

55. We examined one further issue common to all these proposals: whether *in practice* putting a price on carbon would actually drive any changes in behaviour or investment, and achieve any significant reductions in emissions from shipping. A number of witnesses—notably Terry Barker—argued strongly that once a market-based emissions scheme were applied to shipping, the industry would have an economic incentive to become more fuel-efficient and invest in greener technology.¹⁰⁴ However, the same proponents of carbon pricing also tended to argue that it would be relatively easy for ship owners to pass on the extra costs to importers; and that end-consumers would be unlikely to notice any difference. Dr Stochniol, for example, suggested that a 5% levy on shipping fuel would translate into an increase in final prices of goods transported by sea of only 0.1%—so that “when I import [a] car from Malaysia costing 5000 dollars, I will only have

102 Q275

103 “Prevention of air pollution from ships—The potential of emissions trading to reduce carbon emissions from ships”, paper submitted by the United Kingdom to the IMO Marine Environment Policy Committee, MEPC 54/4/2, 16 December 2005, p 4

104 Q178

to pay five dollars”.¹⁰⁵ Dr Barker was certain that even if it were easy to pass on the extra costs, ship owners would still respond to a carbon charge by seeking ways to reduce their emissions.¹⁰⁶ Nevertheless, if it were very easy simply to pass on the costs of a carbon charge, we would have some concerns about the effectiveness of any proposed carbon pricing scheme. **Given that carbon pricing lies at the heart of its strategy on shipping emissions, we recommend the Government commission research on the relationship between: (i) levels of charges; (ii) changes in ship owners’ investment decisions and operational practices; (iii) consumer behaviour; and (iv) the impact on emissions.**

The contribution of trading schemes to funding for adaptation

56. The Government’s position on proposals to use a market-based scheme to raise revenue for climate change adaptation in developing countries is not clear. Jim Fitzpatrick MP told us that one of the reasons the Government was in favour of an emissions trading scheme for shipping was because it could raise funds for climate change adaptation.¹⁰⁷

57. Elsewhere, according to Peter Lockley, the Government has argued *against* proposals for a scheme designed to work in this manner. He said that the Government’s position was inconsistent¹⁰⁸ because of the actions of HM Treasury:

The problem with the UK position is that they do not have a credible story to tell about how we would spend that money if we were to raise it, because they are opposed to any international form of taxation. Shipping is a global industry. We would advocate a global body to collect that revenue and then to feed it into a fund managed by the UNFCCC to do the climate work, the adaptation and mitigation. The UK explicitly stated they would be opposed to that because international taxation harms our national sovereignty, therefore they cannot really sell the proposal to the developing countries because the developing countries do not believe they will ever see the money [...]¹⁰⁹

58. In addition to concerns over the distribution of revenues by an international body, the Government also has objections to the principle of hypothecating revenues to any particular end. For example, Joan Ruddock MP told us:

I think one could not entirely close off the possibility that [...] there might be some hypothecation, but as a principle [...] hypothecation is something that we do not accept for ourselves and we do not believe it should be imposed in an international agreement.¹¹⁰

This seems at odds with Jim Fitzpatrick MP’s statement, which specifically cited the raising of funds for adaptation as one of the Government’s reasons for supporting a trading scheme.

105 Q44

106 Q180

107 Q279

108 Q16

109 Q10

110 Q278

59. Another argument against hypothecation made by the Ministers was that it is bound up with proposals for a levy on shipping fuel, rather than an emissions trading scheme. Joan Ruddock MP argued that a levy “is not accompanied by any limit [on emissions, ...] it simply takes money but says, ‘Go on growing’ [...]”, whereas emissions trading schemes impose a definite cap on emissions.¹¹¹ This might have been an argument against introducing a levy, but it was not an answer to the question we had asked, which was about why the Treasury was opposed to hypothecating revenues from a market-based instrument. After all, hypothecation is not solely an issue for carbon levies. Indeed, the Minister confirmed that the issues relating both to hypothecation as a principle, and to the distribution of revenues by an international body, would equally apply to auctioning permits under an emissions trading scheme.¹¹²

60. Government statements on the potential for an international scheme to curb shipping emissions to raise funds for climate change adaptation in developing countries are unclear. The Government appears to support this as an objective; but it also has concerns over the distribution of such funds by an international body, as well as appearing simply to oppose hypothecating revenues from emissions trading schemes for this purpose. We recommend the Government explain precisely what its position is, and how it proposes to overcome its objections—given that any proposed scheme, whether a levy or a trading scheme, will involve the collection and disbursement of international funds, at least partly for the express purpose of assisting developing nations with mitigation and adaptation.

The IMO Design Index and Operational Index

61. While the IMO Secretariat did not expect a proposal for a market-based scheme to be agreed in time to take to the Copenhagen Conference, it was more hopeful in the case of proposals for an Energy Efficiency Design Index and Operational Index;¹¹³ the Government shared this expectation.¹¹⁴ The Design Index is intended to help those who are commissioning new ships to compare the fuel efficiency implications of different design features—for instance, hull shape, choice of propeller, the use of wind turbines, and waste heat recovery systems. The proposal for the Operational Index is for a voluntary scheme, which would enable ship owners and operators to evaluate the performance of their fleets, with regard to fuel efficiency and CO₂ emissions.¹¹⁵

62. We heard some fairly disparaging evidence as to the likely impacts of both measures. Mark Major told us there had been considerable discussion at IMO meetings in 2008 about the Design Index; but that there had been no agreement on when it would come into force, which vessels it would be applied to, how it was going to be enforced, how it would be tightened, or what quantity of emissions it would abate.¹¹⁶ Peter Lockley cautioned that, in seeking to make the energy efficiency implications of a multitude of design features

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112 Q284

113 Ev 22

114 Ev 69

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comparable, the proposed Design Index might be too complex to be effective. In particular, he warned that “with a formula that complicated there would be a lot of possibility for gaming the system”.¹¹⁷ Gillian Reynolds said its impacts were uncertain, and what effects it would have would only be apparent in the long term, as it would only apply to new ships.¹¹⁸ This latter point was echoed, not just by Andre Stochniol,¹¹⁹ but by the IMO Secretariat itself, Miguel Palomares telling us: “we will have to wait to see the benefits of that until those ships are built and operating.”¹²⁰

63. Evidence we received on the merits of the proposed Operational Index was scarcely more promising. Mr Palomares was confident that it would be a useful tool, helping ship operators to monitor whether any operational efficiency measures they were taking were having an effect.¹²¹ However, Gillian Reynolds stressed that it was not going to be mandatory; and not just this, but it was only going to apply to individual ships.¹²² Godfrey Souter, Head of Branch, Shipping and the Marine Environment, at the Department for Transport, said the Government was pressing within the IMO for the Operational Index to be made mandatory for new ships.¹²³ When asked what impact this would have on emissions, he replied, “our aspiration is to drive efficiency by 10% by 2020 and 30% by 2050”, but admitted, “that is aspiration.”¹²⁴

64. We are unimpressed by the evidence we have heard on the ambition, rigour, and likely effectiveness of the proposed Energy Efficiency Design Index and Operational Index. The weakness of the latter is particularly disappointing, given that very simple operational measures (such as slower steaming) have a significant potential to reduce carbon emissions quickly, and often without large investments. We commend the Government’s efforts towards getting agreement on making the Operational Index mandatory for all new ships. We recommend that the Government, working with the European Commission, explore other measures to encourage or compel shipping operators to improve efficiency. We note, for example, that in California the Ports of Los Angeles and Long Beach have implemented a speed reduction programme, providing financial incentives for ships that remain below a certain speed within 20 nautical miles.¹²⁵ This could provide a model for cutting speeds within UK or EU coastal waters.

Portside regulations

65. We heard from Mark Major that among the options under consideration by the European Commission was a proposal to vary port dues (the charges levied by ports to allow ships to dock), according to the environmental performance of different ships;

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125 Oceana, *Shipping Impacts on Climate: A source with solutions*, p 9

though he cautioned that this might be complex to implement.¹²⁶ We asked representatives from the UK's major ports what they made of this proposal. Alan Cartwright (of the Port of London Authority, and an advisor to the UK Major Ports Group) thought they could work, but that it would be difficult to mandate it in this country since British ports are private enterprises, not state-controlled like many of their continental counterparts.¹²⁷ Howard Holt (of Dover Harbour, and the British Ports Association) posed the more fundamental question of whether giving greener ships priority would have a beneficial impact overall, if it meant dirtier ships remained in port, emitting pollution, for longer.¹²⁸ On the basis of this evidence, we believe further research is needed. **We recommend that the Department for Transport review the benefits, practicalities and costs of variable port dues, according to the environmental performance of different ships. In doing this, it should work with the European Commission, with the aim of harmonising policy across EU ports.**

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Air quality and non-CO₂ contributions to climate change

66. The harmful effects of shipping emissions extend beyond carbon dioxide. Ships also emit sulphur oxides (SO_x), nitrogen oxides (NO_x), black carbon and particulate matter. NO_x and black carbon are significant contributors to global warming. NO_x emissions lead to the creation of ozone, a powerful greenhouse gas, in the lower atmosphere; black carbon (commonly known as soot) both directly warms the atmosphere and indirectly contributes to global warming by reducing the Earth's albedo (thereby increasing the amount of solar radiation that is absorbed by the earth rather than reflected back into space), especially where it settles on ice. Ocean-going ships are responsible for approximately 30% of global NO_x emissions,¹²⁹ and 1.7% of global anthropogenic emissions of black carbon.¹³⁰ In addition, both SO_x and NO_x exacerbate the acidification of the oceans (itself one of the direct effects of increased concentrations of carbon dioxide) by contributing to acid rain.¹³¹

67. Emissions from shipping fuel are also associated with a variety of adverse effects on public health. A recent study by James Corbett and others estimated that shipping-related emissions of particulate matter are “responsible for approximately 60,000 cardiopulmonary and lung cancer deaths annually, with most deaths occurring near coastlines in Europe, East Asia, and South Asia.”¹³² The study suggested that: “Under current regulation and with the expected growth in shipping activity, we estimate that annual mortalities could increase by 40% by 2012.”¹³³

68. This was one area in which we were able to observe grounds for considerable optimism. Miguel Palomares of the IMO told us: “The 60,000 deaths that [have been] attributed to ship exhaust gases have been contested in any case, but, come what may, we are very, very confident that this would be reduced drastically in the near future.”¹³⁴ The reason for his confidence was the agreement in October 2008 of the IMO's Marine Environment Protection Committee to introduce stricter controls on the emission of SO_x and NO_x. Describing the impacts of these changes, Mr Palomares told us:

These are going to be very drastic indeed. In particular, in the case of sulphur emissions, the global cap at the moment stands at 4.5 per cent sulphur content in the fuel. That progressively will be reduced up to 2020, when the maximum sulphur content in fuel will be 0.5 of a per cent. In emissions control areas like the North Sea, the English Channel, and the Baltic, this will be reduced by 0.1 of a per cent by 2015.¹³⁵

129 Oceana, *Shipping Impacts on Climate: A source with solutions*, p 9

130 Oceana, *Shipping Impacts on Climate: A source with solutions*, p 7

131 Oceana, *Shipping Impacts on Climate: A source with solutions*, p 8

132 James Corbett et al, “Mortality from Ship Emissions: A Global Assessment”, *Environ. Sci. Technol*, vol 41 (2007), p 8512

133 Corbett et al, “Mortality from Ship Emissions: A Global Assessment”, p 8512

134 Q99

135 Q95

Compliance with these regulations can be achieved by cleaning either the inputs to a ship's engines (i.e. switching to low sulphur fuel) or its outputs (by means of on-board scrubbers, devices which remove unwanted gases and particles from exhaust emissions). Mr Palomares was confident these changes would also reduce shipping's impacts on global warming, as well as reducing its contributions to ocean acidification (via acid rain) to negligible levels.¹³⁶

69. While all the witnesses we spoke to welcomed these new regulations, they were divided on the practicalities of implementation. Peter Lockley cautioned that some IMO member states were already raising concerns over the costs of implementation, and warned that this might lead to pressures to weaken the regulations.¹³⁷ The Chamber of Shipping gave some weight to his concerns by warning:

An unwelcome consequence [of these regulations] for shipping in northern Europe will be an effective doubling of bunker fuel prices from 2015. It is our concern that this will lead to 'modal back-shift'—i.e. a decrease in the amount of intra-European sea-transport and a corresponding rise in the use of road transport. Should this occur it will clearly have a detrimental impact on overall carbon emissions.¹³⁸

70. Jim Fitzpatrick MP told us that “the Maritime and Coastguard Agency will be carrying out a research project in the new year to quantify the cost and benefits” of the regulations.¹³⁹ Godfrey Souter said that, leaving costs on one side, shipping companies had the ability to comply with the new targets.¹⁴⁰ Both the Minister and Mr Souter were firmly convinced that these measures would lead to a significant reduction in the non-CO₂ contributions of shipping to global warming.¹⁴¹

71. We welcome the progress made within the IMO on limiting the emissions of particulate matter and harmful gases other than CO₂. This gives us confidence that shipping's environmental impacts from these emissions—on climate change, ocean acidification, and public health—are being significantly reduced. The Government must ensure that the tightening of regulations agreed at the IMO last year is conformed to in practice. The Government ought to investigate the concerns raised by the UK shipping industry that increased costs arising from these regulations will lead to freight being transferred from sea to road; but this must not be used as an excuse for watering down these regulations. Given the superior carbon efficiency of shipping over road transport, any 'reverse modal shift' from sea to road would suggest that road freight was not paying a fair share for its contribution to climate change; the policy response ought that road freight bears its proper share of the costs of its greenhouse gas and other emissions.

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Cold ironing

72. The effects of shipping emissions on air quality are inevitably felt most in ports and in the communities that surround them. Ships in port run their engines in order to power their on-board systems, continuing to emit pollutants while in berth. Peter Lockley proposed that “the ports’ authorities themselves could tackle that problem, for instance by providing onshore electricity, preferably renewable electricity, directly into the ships so that they did not have to run their engines.”¹⁴² The provision of shore-side electricity to berthed ships is known as ‘cold ironing’.

73. Representatives of ports and of the shipping industry argued that ‘cold ironing’ would make little impact on carbon emissions if the electricity were taken from the national grid; Howard Hold told us: “In the UK, where we generate a lot of our power by coal, are we not just transferring that from the port to Stoke-on-Trent, or somewhere else?”¹⁴³ They also raised a number of practical concerns—not least about the cost of building new infrastructure; but also about the lack of an international standard for electrical connections to ships—but agreed that it was possible in principle.¹⁴⁴ Alan Cartwright suggested that:

[...] where significant port developments are going ahead, for example London Gateway, Bristol, other areas where they are doing that, then it is sensible for them to put that infrastructure in, trusting that there is a power supply that can be provided with some kind of environmental benefit.¹⁴⁵

74. Government policy on ‘cold ironing’ appears to be undergoing revision. The Department for Transport’s Ports Policy Interim Review states categorically that:

[...] we would like to see ports work harder to reduce emissions from ships while alongside by the provision, where feasible, of shore-side fixed electrical power supplies to replace ships’ generators while in port (a practice known as ‘cold ironing’). This can substantially reduce emissions. [... **W]e will in future expect newly developed terminals to make advance provision for ‘cold ironing’ facilities. We will also expect major ports to formulate plans for introducing such facilities at existing terminals once a standard [on electrical connections] has been agreed.**¹⁴⁶

In evidence to us, however, Jim Fitzpatrick MP said: “the jury is still out on the quantification of savings that can be made through cold ironing, and the latest information we have suggests that it would not be substantial [... O]bviously that does contradict the Ports Policy Review document that we published some little time ago.”¹⁴⁷ He told us that

142 Q25

143 Q244

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146 Department for Transport, *Ports Policy Review Interim Report*, 19 July 2007, p 9

147 Q316

more work was needed on its economic costs and environmental benefits before the Department could reach a definitive conclusion.¹⁴⁸

75. The provision of electricity to ships in berth is not a priority for climate change policy. Until grid electricity is decarbonised it would have little impact on carbon emissions, unless ports installed new renewable energy generating infrastructure; while this would be welcome, there might be considerable practical and economic obstacles in doing so, especially at existing facilities. Cold ironing has the potential to make improvements in local air quality and consequently public health. But this potential benefit might be diminished by the general improvement in air quality impacts from shipping—especially in the North Sea—expected to arise from new IMO regulations. **We recommend the Government assess the case for mandating cold ironing to improve air quality in the UK, taking into account the projected air quality benefits of recent IMO regulations. The Government should include this issue in its forthcoming national policy statement on ports. The Government should also consider the potential benefits, as an alternative to cold ironing, of extending the stricter regulations that will apply to the North Sea to other coastal waters around the UK.**

Conclusion

76. Tackling the climate change impacts of shipping is necessarily complex. An international industry, its sources of emissions are, by definition, highly mobile; not only this, but registration of ships can be transferred swiftly from country to country. Its emissions are generated in journeys between different nations (often of markedly different levels of wealth), making it difficult to calculate the size of emissions that should be attributed to each country. Yet there can be no excuse for the lack of progress within the IMO in the years since the Kyoto Protocol was signed. That the IMO has yet to reach agreement even over the type of emissions control regime to take forward, let alone decide any details—much less bring any scheme into implementation—suggest that it is not fit for purpose in this vital area.

77. None of the obstacles discussed as reasons for the lack of progress within the IMO is insurmountable. It is perfectly feasible to track the emissions of individual ships, given they are obliged to keep their fuel receipts, and that it is straightforward to calculate CO₂ emitted from fuel consumed. Nor should it be too difficult to calculate how much carbon has been emitted on individual legs of a ships' journey, for the purpose, for instance, of varying carbon charges according to the port of destination. Most of all, ships must physically enter a port at some point; it is not as though this were an industry beyond the control of individual governments. If the EU, for instance, were to introduce one or more schemes to curb emissions from shipping, the European market for imported goods would not disappear. Vessels would continue to visit European ports; in doing so, the EU, through local port authorities, would have the ability to impose compliance with an emissions trading scheme or levy, or with regulations mandating certain technological or operational measures designed to improve carbon efficiency. There are many details that would need to be considered in designing a policy instrument, not least the potential means by which ship owners might try to evade charges or regulations. But it is clear that a policy instrument, even if imperfect, is an entirely practical proposition; and an imperfect scheme would be much better than no scheme at all.

78. Ship owners ought to have a positive attitude towards carbon reduction policies—so long as these were applied equally to other transport modes. Mark Major argued strongly that shipping ought to do relatively well out of a carbon-constrained world, given that it is the most carbon-efficient mode of transport. Terry Barker stressed the potential for large amounts of air freight to be transferred to ships, with accompanying carbon savings. In order for modal shift towards shipping to be realised, joined up policymaking would be required, so as to ensure that any regime that increases costs or imposes carbon limits on shipping does not act in isolation, which could lead to modal shift back from sea to road or air.

79. Shipping may be the most carbon-efficient mode of transport, but absolute levels of CO₂ in the atmosphere (and oceans) matter more than the efficiency with which they are produced. All parties, within the shipping industry and responsible for shipping policy, need to respond more urgently to the challenge of climate change. This means developing a future path for global emissions cuts that is consistent with avoiding dangerous climate change, and making shipping fit within these efforts. If globally we are to meet extremely

challenging emissions reductions targets in the next few decades, the absolute scope for emissions from shipping is necessarily going to be severely circumscribed. Given the central importance of shipping to world trade, and to overall economic growth, it should be a vital interest, not merely of the shipping industry, but of all industries and all governments, drastically to accelerate R&D into low- and zero-carbon propulsion systems.

Conclusions and recommendations

Shipping and global climate change goals

1. Policy must have a rational basis. Given the absence of a consensus within the international community, the Government should take the lead in determining what level of emissions from shipping would be compatible with delivering the objective of limiting the rise in global temperatures to 2°C. This should be used in turn to determine targets for emissions from shipping in 2020 and 2050. The Government should then use these global figures to inform its policies and actions by making an estimate of the UK's share of the global total. The Government should commission research on recommended targets for shipping emissions in 2020 and 2050, and for the trajectory of emissions that should link them. (Paragraph 13)

Progress of international negotiations to tackle CO₂ from shipping

2. With a view to stepping up the pressure to achieve an IMO-wide agreement, we recommend the Government maintain a constructive approach within the IMO, while actively seeking agreements to limit shipping emissions outside the IMO process—notably within the European Union, and through the UNFCCC. (Paragraph 17)
3. We deplore the ongoing delays in reaching a global agreement to tackle greenhouse gas emissions from shipping. We recommend the Government work with the European Commission to examine the merits and practicalities of its proposals, with the aim of achieving practical action as swiftly as possible. We recommend that the Government follow up its proposals to the IMO on emissions trading with some concrete proposals or makes clear what alternative solution it is working towards. (Paragraph 28)

Shipping emissions and the Climate Change Act

4. We agree with the Committee on Climate Change that the Government should work to secure the inclusion of shipping emissions within the EU's climate change targets. But we do not see why shipping should be treated differently from aviation. We recommend the Government consider taking international shipping emissions into account in setting UK carbon budgets from day one, in a similar fashion to emissions from international aviation. (Paragraph 34)
5. The current methodology for calculating international shipping emissions underestimates actual emissions. The Government must produce a more accurate estimate, and state what effect this would have on total UK CO₂ emissions were it to be taken into account. We recommend that the Government consult on the methodology it should use to calculate the UK's share of international shipping emissions. (Paragraph 39)
6. In pursuing any policy mechanism designed to curb UK shipping emissions, it will be important to seek to work within a multinational scheme, in order to maximise

effectiveness and minimise evasion. We recommend that the Government push for agreement within the EU on measures to tackle shipping emissions at a European level. It will also be important to test policies so that they avoid “reverse modal shift” from shipping to road freight. Until a European or global agreement is reached, we recommend that the Government should simply adjust the carbon budgets for the rest of the economy downwards to compensate for the volume of the UK’s international shipping emissions. (Paragraph 41)

Mitigating emissions from shipping

7. We welcome the fact that the Department for Transport has commissioned a Shipping Emissions Abatement Techniques Review. We recommend it work together with the Technology Strategy Board to review the potential for UK universities and industry to develop these technologies, and exploit the economic opportunities arising from them. This review should identify where Government support could help British researchers, designers, and shipyards to become global leaders in technologies that can be applied worldwide. We recommend that particular attention should be paid to technologies that can be retrofitted to existing ships, as this could have the biggest impact in the short- to medium-term. We also recommend the Government encourage more research into technologies which offer a genuine alternative to fossil fuels: if shipping is to be decarbonised it needs truly alternative propulsion systems. (Paragraph 48)
8. It is not technically difficult to measure emissions; the difficulty is the political question of how they are apportioned. We believe it would be technically feasible to establish an international emissions control regime—whether on a regional or global basis—that could accurately charge (or require carbon permits from) each ship according to its actual emissions, and securely enforce and verify compliance. A truly global regime would be ideal, but while this is negotiated and constructed we recommend the Government work with European partners to establish a scheme that applies across the European Union. (Paragraph 52)
9. The Government’s position on the use of emissions trading to tackle greenhouse gas emissions from ships is too vague. It promotes emissions trading because this is said to impose a definite cap on emissions but will not discuss what cap shipping should be given, nor what cap any wider schemes shipping is linked to should have. We recommend the Government clarify what cap should be imposed on emissions from shipping in any trading scheme. (Paragraph 54)
10. Given that carbon pricing lies at the heart of its strategy on shipping emissions, we recommend the Government commission research on the relationship between: (i) levels of charges; (ii) changes in ship owners’ investment decisions and operational practices; (iii) consumer behaviour; and (iv) the impact on emissions. (Paragraph 55)
11. Government statements on the potential for an international scheme to curb shipping emissions to raise funds for climate change adaptation in developing countries are unclear. The Government appears to support this as an objective; but it also has concerns over the distribution of such funds by an international body, as well as appearing simply to oppose hypothecating revenues from emissions trading

schemes for this purpose. We recommend the Government explain precisely what its position is, and how it proposes to overcome its objections—given that any proposed scheme, whether a levy or a trading scheme, will involve the collection and disbursement of international funds, at least partly for the express purpose of assisting developing nations with mitigation and adaptation. (Paragraph 60)

12. We are unimpressed by the evidence we have heard on the ambition, rigour, and likely effectiveness of the proposed Energy Efficiency Design Index and Operational Index. The weakness of the latter is particularly disappointing, given that very simple operational measures (such as slower steaming) have a significant potential to reduce carbon emissions quickly, and often without large investments. We commend the Government's efforts towards getting agreement on making the Operational Index mandatory for all new ships. We recommend that the Government, working with the European Commission, explore other measures to encourage or compel shipping operators to improve efficiency. (Paragraph 64)
13. We recommend that the Department for Transport review the benefits, practicalities and costs of variable port dues, according to the environmental performance of different ships. In doing this, it should work with the European Commission, with the aim of harmonising policy across EU ports. (Paragraph 65)

Air quality and non-CO₂ contributions to climate change

14. We welcome the progress made within the IMO on limiting the emissions of particulate matter and harmful gases other than CO₂. This gives us confidence that shipping's environmental impacts from these emissions—on climate change, ocean acidification, and public health—are being significantly reduced. The Government must ensure that the tightening of regulations agreed at the IMO last year is conformed to in practice. The Government ought to investigate the concerns raised by the UK shipping industry that increased costs arising from these regulations will lead to freight being transferred from sea to road; but this must not be used as an excuse for watering down these regulations. (Paragraph 71)
15. We recommend the Government assess the case for mandating cold ironing to improve air quality in the UK, taking into account the projected air quality benefits of recent IMO regulations. The Government should include this issue in its forthcoming national policy statement on ports. The Government should also consider the potential benefits, as an alternative to cold ironing, of extending the stricter regulations that will apply to the North Sea to other coastal waters around the UK. (Paragraph 75)

Annex

Environmental Audit Committee Visit to Brussels, 4 November 2008

Participating Members:

Mr Tim Yeo, in the Chair

Mr Martin Caton

Colin Challen

David Chaytor

Mark Lazarowicz

Dr Desmond Turner

Joan Walley

Mark Major and Hans Meijer: The EU and efforts to reduce emissions from shipping

Mark Major and Hans Meijer are Policy Officers in the Clean Air and Transport Unit, DG Environment, European Commission.

Progress within the International Maritime Organization (IMO)

There have been almost no concrete outcomes on tackling greenhouse gases (GHGs) from shipping since Annex I parties to the Kyoto Protocol committed themselves to working through the IMO to address GHGs from international shipping. It was not until 2006 that the IMO announced a timetable for discussion meetings on GHG to conclude at a meeting of its Maritime Environment Policy Committee (MEPC) in July 2009. To illustrate the lack of progress, in 2008 the IMO had held three one-week meetings on this issue, but there had only been agreement on principles; nothing concrete has been decided.

It is often said that the reason for the lack of progress within the IMO is the conflict between the UNFCCC principle of “common but differentiated responsibilities” and the IMO principle of applying its rules to all shipping, irrespective of nationality. While proposals within the IMO for a global scheme are being blocked by developing countries, there is not necessarily a conflict of principles between the two regimes. Firstly—a wider point—the preamble of the UNFCCC refers to “cooperation by all countries [...] in accordance with their common but differentiated responsibilities and respective capabilities and their social and economic conditions”; some non-Annex-I countries have the capabilities to cut shipping emissions. Secondly, the IMO principle applies to all ships, not all nations. Thirdly, and most importantly, the blocking actions of developing countries within the IMO is simply a political strategy, a matter of them reserving their negotiating positions prior to the Copenhagen UNFCCC Conference. In other words, there are no reasons *in principle* why an effective global scheme could not be agreed within the IMO.

There has been considerable discussion at IMO meetings in 2008 about an Energy Efficiency Design Index for new ships; but there has been no agreement so far on when it is going to be applied, which vessels it will be applied to, how it is going to be enforced, how it will be tightened as it progresses, or what size of emissions it will mitigate.

Recently the IMO decided to block a proposal to make public reporting of ships' actual fuel consumption and carbon emissions mandatory. The IMO's position was that mandatory reporting would be difficult to enforce, and thus it was not worth introducing.

It seems to be the majority view within the IMO that any global scheme to limit GHG emissions will require a new convention (as opposed to being included as an annex to an existing IMO convention, e.g. as MARPOL Annex VII). This would probably mean that even once there was agreement within the IMO on such a global scheme, it would take a decade or more to be ratified and then come into effect.

Most national delegations to the IMO are members of their respective transport ministries, rather than environment departments; their focus is not primarily on climate change. There is a need for more/better co-ordination in national capitals delegations to the IMO often do not follow the same policy lines their governments take at the UNFCCC.

Many shipping industry representatives have observer status at the IMO; they are allowed to speak, though not to vote. As the IMO works by seeking as far as possible to achieve consensus agreement, rather than make decisions through voting, such observers can wield considerable influence on the IMO's work.

Copenhagen Conference

It is unlikely the Copenhagen Conference will come to any detailed agreements on shipping emissions. It could, however, make a big contribution simply by agreeing the principle that international maritime emissions should be included in national totals, and by indicating what size of cuts the global shipping industry should be making.

Action by the European Union

The European Commission (the Commission) is reviewing the potential measures that the EU could bring in unilaterally to curb shipping emissions; a proposal should be ready by October 2009. The Commission would focus on creating something that would build on the discussions that have taken place within the IMO, and which would lead towards an eventual global solution.

One option would be to include shipping within Phase III of the EU Emissions Trading Scheme. This may not be ready in time for the start of Phase III in 2013, but could be included some time between 2013 and 2020. Other options for action by the EU (these would not all be mutually exclusive, but could be complementary) could include:

- Varying port dues according to the environmental performance of individual ships (implementation might be complex);
- Regulations to mandate certain environmental standards for ships docking at EU ports (a problem with this is that it might simply displace worse vessels to other parts of the world, with no or little net improvement across the globe);
- Regulations to reduce the escape of greenhouse gases used as onboard refrigerants;
- Improving port infrastructure to reduce incidences of ships steaming unnecessarily fast to their destination, only to have to wait to be unloaded;

- Regulations or incentives to improve onboard energy management;

The legal power of the EU impose measures on ships is under evaluation.

Ships already have an obligation to carry bunker fuel certificates. It would be simple to add an obligation to quantify fuel consumption on each leg of a ship's journey. These figures could be monitored and recorded in each port. Hypothetically, this is something that could be introduced within the EU, and monitored by EU ports.

The shipping industry and its potential to mitigate emissions

So long as all transport modes are treated fairly, shipping will be one of the winners in a carbon-constrained world. Shipping is more carbon-efficient than other modes of transport; and for the majority of intercontinental freight transport there is no alternative to it.

The shipping industry should be able to pass on the extra costs associated with reducing emissions to importing companies, who should in turn be able to pass them on easily to final consumers. The extra cost will be very small relative to the overall costs of finished products to end consumers.

In recent years there has been talk within the IMO of measures to curb emissions that could be taken voluntarily; but the shipping industry universally rejected such options as ineffective.

Emissions reduction schemes that provide ship owners with a financial incentive to invest in new and more efficient technology should be good for the EU ship design, equipment supply and construction industries.

In recent years the global shipping industry has seen a rapid increase in shipping capacity, to cope with increased volumes of trade. The current economic slowdown has already resulted in an overcapacity. This should make slower steaming (which would make ships more fuel- and hence carbon-efficient) more attractive: rather than leaving a ship idle, ship owners could enter it into their supply loops, and simply run their entire fleets more slowly.

Air quality

The Commission has issued a statement on "cold ironing" (i.e. where ships switch their engines off in port, and power onboard systems via electricity provided by the port authority). Cold ironing can be very good for local air quality and reduce GHG emissions depending on local circumstances. However, it may be very expensive, with different ports having different demands; thus it would be very difficult to make mandatory across the EU.

Formal Minutes

Tuesday 12 May 2009

Members present

Mr Tim Yeo, in the Chair

Mr Martin Caton
Colin Challen
Martin Horwood

Mr Nick Hurd
Dr Desmond Turner
Joan Walley

Reducing CO₂ and other emissions from shipping

The Committee considered this matter.

Draft Report (*Reducing CO₂ and other emissions from shipping*), proposed by the Chairman, brought up and read.

Ordered, That the draft Report be read a second time, paragraph by paragraph.

Paragraphs 1 to 79 read and agreed to.

Annex and Summary agreed to.

Resolved, That the Report be the Fourth Report of the Committee to the House.

Ordered, That the Chairman make the Report to the House.

Ordered, That embargoed copies of the Report be made available, in accordance with the provisions of Standing Order No. 134.

Written evidence was ordered to be reported to the House for printing with the Report, together with written evidence reported and ordered to be published on 21 October and 18 November 2008, in the last Session of Parliament.

Written evidence was ordered to be reported to the House for placing in the Library and Parliamentary Archives.

[Adjourned till Tuesday 2 June at 10.00am

Witnesses

Tuesday 21 October 2008

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Peter Lockley , Head of Transport Policy, WWF-UK	Ev 4
Dr Andre Stochniol , Founder, International Maritime Emission Reduction Scheme (IMERS)	Ev 13

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Miguel Palomares and Eivind S Gagslid , International Maritime Organisation	Ev 23
Jesper Kjaedegaard , The Maersk Company, Vice-President, Edmund Brookes , Deputy Director-General, David Asprey , Head of Shipping Policy, Robert Ashdown , Head of Technical Division, Chamber of Shipping, Philip Naylor , General Manager, Carnival UK	Ev 33

Tuesday 18 November 2008

Dr Terry Barker , Programme Leader, Integrating Frameworks, Dr Alice Bows , Tyndall Senior Research Fellow, Tyndall Centre for Climate Change Research	Ev 47
Dr Gillian Reynolds , Principal Environment and Sustainability Adviser, Lloyd's Register and Fellow of the Institute of Marine Engineering, Science and Technology	Ev 56
Peter Barham , Sustainable Development Manager, Associated British Ports; Alan Cartwright , Marine Engineer, Port of London Authority and advisor on shipping emissions and MARPOL to UK Major Ports Group; Howard Holt , Head of Corporate Affairs, Dover Harbour Board and representative of the British Ports Association	Ev 61

Tuesday 25 November 2008

Joan Ruddock MP , Parliamentary Under-Secretary of State and Phillip Andrews , Head of Transport Emissions Team, Department of Energy and Climate Change (DECC), Jim Fitzpatrick MP , Parliamentary Under-Secretary of State, Godfrey Souter , Head of Branch, Shipping and the Marine Environment, and Simon Cockburn , Head of the UK's delegation to the IMO, Department for Transport	Ev 71
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List of written evidence

1	Dr Alice Bows, Tyndall Centre, MACE, University of Manchester	Ev 44
2	Dr Andre Stochniol, Founder, International Maritime Emission Reduction Scheme (IMERS)	Ev 9
3	Cascade Technologies Ltd	Ev 93
4	Chamber of Shipping	Ev 29
5	DECC and DfT	Ev 84
6	Department for Transport	Ev 66
7	Greenwave	Ev 95
8	International Maritime Organization (IMO)	Ev 20
9	Lloyd's Register	Ev 52
10	SEAA	Ev 89
11	Simon Brown, Director of Business Development, Martek Marine Ltd	Ev 86
12	WWF	Ev 1

List of unprinted evidence

The following memoranda have been reported to the House, but to save printing costs they have not been printed and copies have been placed in the House of Commons Library, where they may be inspected by Members. Other copies are in the Parliamentary Archives, and are available to the public for inspection. Requests for inspection should be addressed to The Parliamentary Archives, Houses of Parliament, London SW1A 0PW (tel. 020 7219 3074). Opening hours are from 9.30 am to 5.00 pm on Mondays to Fridays.

Dr Andre Stochniol, supplementary written evidence

Lloyd's Register supplementary papers:

- (i) Lloyd's Register-DNV paper on technical and operational options for reducing CO₂ emissions from shipping.
- (ii) Spreadsheet indicating the share of the world fleet calling at European ports in 2007 in terms of numbers of ships, dwt and gt.
- (iii) Abstract from a recent Lloyd's Register-Fairplay report to EC DG-TREN. Figures 92–97 indicate breakdown of world fleet in terms of Flag State, Country of owner and Country of operator, both in terms of gt and %gt.

List of Reports from the Committee during the current Parliament

The reference number of the Government's response to each Report is printed in brackets after the HC printing number.

Session 2008–09

First Report	Work of the Committee in 2007–08	HC 108
Second Report	Environmental Labelling	HC 243
Third Report	Pre-Budget Report 2008: Green fiscal policy in a recession	HC 102

Session 2007–08

First Report	Are biofuels sustainable?	HC 76-I & -II (HC 528)
Second Report	Reducing Carbon Emissions from UK Business: The Role of the Climate Change Levy and Agreements	HC 354 (HC 590)
Third Report	The 2007 Pre-Budget Report and Comprehensive Spending Review: An environmental analysis	HC 149-I & -II (HC 591)
Fourth Report	Are Biofuels Sustainable? The Government Response	HC 528 (HC 644)
Fifth Report	Personal Carbon Trading	HC 565 (HC 1125)
Sixth Report	Reaching an international agreement on climate change	HC 355 (HC 1055)
Seventh Report	Making Government operations more sustainable: A progress report	HC 529 (HC1126)
Eighth Report	Climate change and local, regional and devolved government	HC 225 (HC 1189)
Ninth Report	Carbon capture and storage	HC 654)
Tenth Report	Vehicle Excise Duty	HC 907 (HC 72)
Eleventh Report	The Exports Credit Guarantee Department and Sustainable Development	HC 929 (HC 283)
Twelfth Report	Greener homes for the future? An environmental analysis of the Government's house-building plans	HC 566
Thirteenth Report	Halting biodiversity loss	HC 743 (HC 239)

Session 2006–07

First Report	The UN Millennium Ecosystem Assessment	HC 77 (HC 848)
Second Report	The EU Emissions Trading Scheme: Lessons for the Future	HC 70 (HC 1072)
Third Report	Regulatory Impact Assessments and Policy Appraisal	HC 353 (HC 849)
Fourth Report	Pre-Budget 2006 and the Stern Review	HC 227 (HC 739)

Fifth Report	Trade, Development and Environment: The Role of FCO	HC 289 (HC 1046)
Sixth Report	Voluntary Carbon Offset Market	HC 331 (HC 418)
Seventh Report	Beyond Stern: From the Climate Change Programme Review to the Draft Climate Change Bill	HC 460 (HC 1110)
Eighth Report	Emissions Trading: Government Response to the Committee's Second Report of Session 2006–07 on the EU ETS	HC 1072
Ninth Report	The Structure of Government and the challenge of climate change	HC 740 (HC 276)
Session 2005–06		
First Report	Greening Government: the 2004 Sustainable Development in Government Report	HC 698
Second Report	Sustainable Timber	HC 607 (HC 1078)
Third Report	Sustainable Procurement: the Way Forward	HC 740
Fourth Report	Pre-Budget 2005: Tax, economic analysis, and climate change	HC 882 (HC 195)
Fifth Report	Sustainable Housing: A follow-up report	HC 779
Sixth Report	Keeping the lights on: Nuclear, Renewables, and Climate Change	HC 584 (HC 196)
Seventh Report	Sustainable Development Reporting by Government Departments	HC 1322 (HC 1681)
Eighth Report	Proposals for a draft Marine Bill	HC 1323 (HC 1682)
Ninth Report	Reducing Carbon Emissions from Transport	HC 981
Tenth Report	Trade, Development and Environment: The Role of DFID	HC 1014 (HC 197)
Eleventh Report	Outflanked: The World Trade Organisation, International Trade and Sustainable Development	HC 1455 (HC 354)
Twelfth Report	Transport Emissions: Government Response to the Committee's Ninth Report of Session 2005–06 on Reducing Carbon Emissions from Transport	HC 1718