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Linking emissions trading systems

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Report

Summary

Carbon pricing is a necessary element in spurring climate change mitigation action. In this report we argue that emissions trading, as an established and well recognised policy instrument for controlling greenhouse gas emissions, is increasingly popular and spreading around the world.

As they develop, emissions trading systems should be designed so that they are compatible with each other. Aligning design elements early on will help improve the prospects of linking different systems in future and, therefore, maximise opportunities for cost-effective emissions reductions.

As the world's oldest and largest market, the EU Emission Trading System will play a critical role in facilitating linking between different markets. Before it can do this, however, it must be seen as a credible market. The issue of surplus allowances must be addressed urgently which is why we support moves to remove these allowances from the system as soon as possible.

It is vital that these developments are compatible with a new global climate agreement. The use of carbon markets will greatly improve the prospects of keeping global average temperatures below 2°C. Any agreement reached at the UNFCCC COP 21 in Paris at the end of 2015 should promote the use of carbon markets and facilitate the future linking of emissions trading systems.

1 Introduction

1. An emissions trading (or cap-and-trade) system is a market mechanism that aims to reduce greenhouse gas emissions. Increasing numbers of emissions trading systems are being established around the world. There is currently no likelihood of establishing a global emissions trading system in the near future. The concept of a total safe level of global emissions was introduced by the Intergovernmental Panel on Climate Change's (IPCC) Fifth Assessment Report in 2013 which highlighted the desirability of working towards this goal in the long term. In recent years there has been a shift in focus from a "top-down" approach to international emissions trading to a more "bottom-up" regional, national or subnational approach. This means that disparate emissions trading systems would in the future need to be "linked" in order to facilitate the development of a global market.

2. In this report we review the rise of emissions trading systems around the world. We explore the benefits of linking emissions trading systems. We then assess the EU ETS, as an important market in which the UK participates. Finally we discuss the importance of a new global climate agreement.

3. The terms of reference for the inquiry can be found online.[1] We held four public hearings, with academics, business groups and the Parliamentary Under-Secretary of State, and received a range of written evidence which is published on our website. A full list of witnesses can be found at the end of this report. As part of our investigation we also visited Beijing, Wuhan and Guangdong in China to see first-hand the progress the Chinese are making in establishing a national emissions trading system. An outline of the visit, along with visit notes can be found in the Annex. We are extremely grateful to all those who gave evidence to this inquiry and especially for all those who gave us their time during our visit to China.

1 Energy and Climate Change Committee, *Call for evidence on Linking Emissions Trading Systems* (March 2014)

2 The rise of emissions trading

4. Pricing of goods and services should cover their full cost and benefits–economic, social and environmental. A "carbon price" is a value that reflects the impact of carbon dioxide (or equivalent) emissions from the product or service on the environment.[2] The World Bank told us that "putting a price on carbon is a necessary element in spurring climate change mitigation action".[3] A carbon price can be implemented through the use of an emissions trading system, a carbon tax or some other regulation such as an emissions standard. Carbon pricing is increasingly being adopted around the world. In its 2014 report, *State and trends of carbon markets*, the World Bank reported:

> Today, about 40 countries and over 20 sub-national jurisdictions are putting a price on carbon. Together, these carbon pricing instruments cover almost 6 gigatons of carbon dioxide equivalent (GtCO2e) or about 12 percent of the annual global GHG [greenhouse gas] emissions.
>
> […] A total of eight new carbon markets opened their doors in 2013 alone. With these new joiners, the world's emissions trading schemes are worth about US$30 billion.[4]

This growth reflects increasing pressure from a variety of businesses and policymakers to implement carbon pricing policies.[5] Ahead of the UN Secretary-General's Climate Summit in September 2014, for example, the World Bank launched a new Carbon Pricing Leadership Coalition. 74 countries, 23 subnational jurisdictions and more than 1,000 companies responsible for 54 percent of global greenhouse gas emissions expressed support for putting a price on carbon.[6]

5. There is a lively debate about which carbon pricing method is best.[7] While each approach has its merits, emissions trading systems have one advantage which none of the alternatives can match. By setting the cap at a particular level an emission trading system can guarantee that emissions do not exceed that level so all other measures designed to reduce emissions are rendered superfluous. By contrast, using carbon taxes to set a carbon price does not guarantee any level of emissions reduction because the emitters may simply pay the tax and carry on emitting (for more information about how an emissions trading system works see box 1). A further important advantage of an emissions trading system over other measures is that it lets the market, rather than government, determine the price of carbon. Emissions trading enables participants in the system to identify the most cost

2 Oral evidence taken on 5 November 2013, HC (2013-14) 807, Q4 (Professor Lord Stern)

3 LTS 014 (World Bank Group)

4 World Bank Group, *State and trends of carbon pricing* (2014), Washington DC, p14-15

5 Q18 (Mr Forrister) Q71 (Professor Stavins)

6 "*73 Countries and Over 1,000 Businesses Speak Out in Support of a Price on Carbon*", World Bank feature story, 22 September 2014

7 Qq94-96 (Sir David), Qq101-104 (Sir David), Qq147-149 (Mr Svenningsen), Q158 (Mr Hone), LTS 011 (SSE), LTS 014 (World Bank Group)

effective way of reducing their emissions.[8] For these reasons, emissions trading is considered both more effective and more palatable politically than carbon taxes.[9] David Hone, Chief Climate Change Adviser at Shell said "there is no other instrument that has the same impact and does the job as effectively".[10] While most emissions trading systems are still in their infancy, Professor Robert Stavins, a carbon market expert based in Harvard, argued that "cap-and-trade systems have emerged as a preferred climate policy instrument in many jurisdictions".[11] The European Commission outlined emissions trading systems around the world at different stages of development (see table 1). On the other hand, emissions trading systems usually require a system of allocating allowances which can be complex and prone to lobbying and abuse, whereas carbon taxes could be simpler if taxes are confined to the point of production or import of fossil fuels.

Box 1: how an emissions trading system works

An emissions trading (or cap-and-trade) system sets an enforceable limit, or cap, (which usually reduces over time) on the amount of greenhouse gas emissions that can be released from a group of emitters. Emitters acquire permits (also called allowances or credits), usually through an auction, for every unit of emissions released, with the total amount of the permits available set by government. Emitters can then sell permits they do not need, or buy in permits from other firms who have been able to reduce their emissions. Prices fluctuate according to the relative balance of supply and demand for permits. Companies can weigh the cost of buying permits against the cost of measures to reduce emissions and so avoid the need to hold permits.

Table 1: Emissions trading systems around the world at different stages of development as at September 2014

Fully operational	Pilot phase	Considered or under development
Alberta	Beijing	British Columbia
Australia (likely to be repealed)	Chongqing	China (domestic nationwide scheme)
California	Guangdong	Manitoba
EU ETS	Hubei	Mexico
Korea (implementation starting)	Kazakhstan	Ontario
New Zealand	Shenzhen	Oregon
Quebec	Shanghai	Turkey
Regional Greenhouse Gas Initiative (RGGI)	Tianjin	Ukraine
Switzerland		Washington
Tokyo (voluntary)		

Source LTS 017 (European Commission)

6. Carbon pricing provides governments with a new source of revenue. The revenue can be used to reduce other taxes or support innovation in new low-carbon technologies. Jeremy Oppenheim, Global Programme Director of the New Climate Economy and Director of McKinsey & Co, said:

8 Q141 (Mr Svenningsen), Qq151-153 (Mr Hone)

9 Q69 (Professor Stavins), Q96 (Sir David), Q141 (Mr Svenningsen)

10 Q151 (Mr Hone)

11 Q30 (Dr Taschini), Q68 (Professor Stavins), Qq153-154 (Mr Hone), Q189 (Mr Meadows), LTS 001 (Professor Stavins)

> Understanding and thinking through not just carbon markets as a standalone item but carbon markets and the revenue generation within the context of good fiscal policy more broadly would seem to me to be a real opportunity.[12]

Lord Stern, IG Patel Professor of Economics and Government at the London School of Economics, said that "to miss the opportunity of taxing bads, to disincentivise those bads and to raise public revenue and protect public services, seems to fail Economics 101".[13] Progress on this has been made in the EU. Damien Meadows, Advisor on European and International Carbon Markets in DG Climate Action at the European Commission, highlighted that the EU Emissions Trading System (EU ETS) has raised €2.1 billion, which has been used to support innovation in low-carbon technologies such as carbon capture and storage.[14] In 2013, EU member states earned €3.6 billion in auction revenue. Some countries used this money to tackle climate change.[15] In the UK, we learnt from the Parliamentary Under-Secretary of State, Amber Rudd MP, that DECC had not considered in detail the best use for revenue generated from emissions trading.[16] The Prime Minister, David Cameron, has said that it was an "interesting area to examine".[17]

7. The world's two largest economies are now starting to adopt carbon pricing and specifically emissions trading. In the US, the Regional Greenhouse Gas Initiative (RGGI) and the California Emissions Trading System have been established in nine States. President Obama's intervention to regulate emissions from power stations could see other States adopt emissions trading.[18] China, is currently running seven pilot emissions trading systems. It is planning to implement a national system (see Annex). Dirk Forrister, CEO and President of the International Emissions Trading Association (IETA), said that "the biggest change that has happened to the benefit of emissions trading as a tool is China's acceptance of it".[19] He described how the EU, the US and China were "essential" for the future development of emissions trading:

> Those are the three big jurisdictions that really matter emissions-wise on how we deal with this problem. Others can be added later, but if you get North America, Europe and China all moving in the direction of emissions trading, those are the guys that you need to have in a system to make it meaningful.[20]

8. As part of our inquiry we visited Beijing, Wuhan and Guangdong in China and saw first-hand the rapid progress they were making establishing emissions trading. This built on our previous visit to China in 2012 where we met officials designing the Guangdong emissions trading system. At that time emissions trading in China was only at the very

12 Oral evidence taken on 26 November 2014, HC (2014-15) 666, Q30 (Mr Oppenheim)

13 Oral evidence taken on 26 November 2014, HC (2014-15) 666, Q30 (Lord Stern)

14 Q181 (Mr Meadows)

15 Q192 (Mr Meadows)

16 Q211 (Ms Rudd)

17 Evidence taken before the Liaison Committee on 16 December 2014, HC (2014-15) 887, Q4 (Mr Cameron)

18 Executive Office of the President, *The President's climate action plan* (June 2013), p6

19 Q30 (Mr Forrister)

20 Qq30-34 (Mr Forrister)

early stages. Over the subsequent three years we have maintained a useful dialogue with these officials and have been impressed by the progress they have made in successfully establishing and operating a trading system which effectively engages businesses. Sir David King, the Foreign Secretary's Special Representative for Climate Change, agreed that the development of the pilot schemes had been "surprisingly quick".[21] Mr Meadows said that the national system, which will likely replace these pilots, seemed to be "moving ahead rapidly" and that the implementation date had been brought forwards from 2020 to 2016.[22] During our visit we were repeatedly told that China would like to learn from the UK and the EU about the best way to design and implement emissions trading (see Annex). Sir David described the important work being done by the Foreign Office to support China develop its system.[23]

9. The UK has long been an advocate of carbon pricing. It established the world's first pilot emissions trading scheme between 2002 and 2006 which was described by the National Audit Office (NAO) as a "pioneering initiative".[24] They reported that this scheme "encouraged the development of the European scheme and influenced its design in some aspects".[25] The Government is now a "strong supporter" of the EU ETS which it described as "the cornerstone of cost-effective EU emissions reductions".[26] The Government also stated:

> Where ETSs do not exist, the UK has supported their creation. Where ETSs exist but are not wholly credible, the UK has, both directly and through the EU, actively encouraged them to become more robust.[27]

The Government added that it pursues these aims through the World Bank's Partnership for Market Readiness and the International Carbon Action Partnership (ICAP).[28] Sir David King emphasised the "leading role" the UK played in promoting emissions trading which was echoed by the Parliamentary Under-Secretary of State.[29]

10. ***Carbon pricing, and emissions trading in particular, is an effective method for reducing emissions. Emissions trading systems are increasingly popular and spreading around the world. These systems can provide a new revenue stream for governments which can offset other taxes or support innovation. We were surprised that the Government had not yet considered the best use of revenue generated from emissions trading. We were pleased to hear that the Prime Minister thought it was an area worth examining. We recommend the Government make an assessment of current and future***

21 Q98 (Sir David)

22 Q32 (Mr Forrister, Dr Taschini), Q139 (Mr Svenningsen), Q178 (Mr Meadows)

23 Q107 (Sir David)

24 National Audit Office, *The UK Emissions Trading Scheme: A New Way to Combat Climate Change*, 21 April 2004, HC (2003-04) 517, p5

25 As above, p2

26 LTS 005 (DECC)

27 As above

28 As above

29 Q108 (Sir David), Q206 (Ms Rudd)

emissions trading revenue and report on different options for using the revenue including the potential to reduce other taxes and support new low-carbon technologies.

3 Linking emissions trading systems

11. In its Fifth Assessment Report on the science of climate change the Intergovernmental Panel on Climate Change (IPCC) introduced the concept of a total safe level of global emissions.[30] This concept underlines the desirability of working towards a global emissions trading system with the potential to cap global emissions. How such a global market might be achieved is open to debate. Broadly speaking there are two main approaches: "top-down" and "bottom-up".

12. The top-down approach was promoted by the United Nations Framework Convention on Climate Change's (UNFCCC) Kyoto Protocol. In theory this is one of the most efficient approaches to implementing a global carbon market. In reality it has proved unpopular because it requires countries to accept externally determined limits on their total national carbon emissions.[31] The bottom-up approach is reflected in the recent move towards wider use of Intended Nationally Determined Contributions (INDCs) as the basis for deciding what level of emissions reductions can be achieved globally as part of a new negotiation track in the UNFCCC (see chapter 5). At the same time numerous emissions trading systems have begun to be developed in regional, national and subnational jurisdictions around the world. Some witnesses argued that it was a suboptimal approach to developing a global carbon market because it is less efficient and could encourage "carbon leakage"[32].[33] This criticism applies equally forcefully to other forms of carbon pricing and is not peculiar to emissions trading. Other witnesses thought it was easier to implement because it avoided countries having to give up power to the UN.[34] In its 2014 report, *Emissions trading status*, the International Carbon Action Partnership (ICAP) concluded:

> It is becoming clear that contrary to the expectations of policy-makers and analysts in the 1990s and early 2000s, a global carbon market is unlikely to come about in a harmonized, top-down fashion. Rather, it will emerge from the bottom up, building on a multitude of systems that do not follow one blueprint, but have found different answers to questions like cap-setting, allocation, scope, and flexibility provisions, based on their own local needs and conditions.[35]

13. In future, disparate emissions trading systems emerging at the regional, national or subnational level will need to be "linked" in order to facilitate the development of a global market. There are economic benefits to linking.[36] Dr Luca Taschini, Dahrendorf Research Fellow at the Grantham Research Institute on Climate Change and the Environment said

30 Intergovernmental Panel on Climate Change, *Summary for Policy Makers, Climate Change 2013: The Physical Science Basis* (2013), p27

31 Q12 (Dr Taschini), Q52 (Mr Austin), Q175 (Mr Hone), LTS 013 (UNFCCC)

32 Carbon leakage describes the situation that may occur if, for reasons of costs related to climate policies, businesses were to transfer production to other countries which have laxer constraints on GHG emissions.

33 LTS 006 (EEF), LTS 008 (Mineral Products Association)

34 Q59 (Mr Austin)

35 International Carbon Action Partnership, *Emissions Trading Worldwide*, Status Report 2014 (January 2014), p4

36 LTS 001 (Robert N. Stavins), LTS 009 (EDF Energy), LTS 013 (UNFCCC), LTS 015 (City of London Corporation)

that the benefits included creating a "bigger market" with "broader availability of abatement options" for participants. It would also reduce overall compliance costs and make the price of emissions credits more resilient to market shocks.[37] He also highlighted non-economic benefits which included "levelling the international playing field" for market participants and "contributing to the global cooperation in tackling climate change".[38]

14. Linking also presents risks.[39] It requires one party to share control over their trading system with another jurisdiction. Pooling control can create political uncertainty especially if one party later decides it no longer wants to be linked.[40] Dr Richard Leese, who represents a range of energy intensive industries, was concerned about the potential for carbon leakage which could be exacerbated by the bottom-up development of emissions trading and could see vulnerable industries that are sensitive to the price of energy move overseas.[41] While this was a concern for some witnesses, the Government and the European Commission made it clear that there was currently no evidence of carbon leakage within the EU ETS. Vulnerable industries in the EU ETS, they argued, were protected because they had been issued with allowances which exceeded their actual emissions.[42] Indeed, the carbon price in linked systems would converge so the impact on competitiveness between systems would reduce.

15. There are a number of ways in which trading can occur in linked systems. Emissions trading systems can have direct bilateral links where participants in one or both of the systems buy or sell emissions units to the other.[43] They can also have indirect multilateral links where two or more systems have access to a common international credit.[44] Finally, several countries can integrate by joining the same system.[45] The EU ETS has been responsible for most of the linking which has been achieved to date. In 2007 the EU incorporated Norway, Iceland and Liechtenstein into its trading system and it is currently exploring the possibility of linking with Switzerland.[46] It also planned to link with Australia's Emissions Trading System but this was put on hold after the Australian government announced plans, in November 2013, to repeal its climate legislation.[47] There are two examples of linked systems in North America. The Regional Greenhouse Gas Initiative (RGGI), which held its first auction in 2008, is a cooperative effort among nine

37 Q1 (Dr Taschini), Q163 (Mr Hone)

38 Q1 (Dr Taschini)

39 LTS 001 (Robert N. Stavins), LTS 005 (DECC)

40 Qq1-2 (Dr Taschini), Q163 (Mr Hone)

41 Qq41-43 (Dr Leese), QQ55-57 (Dr Leese), LTS 006 (EEF), LTS 008 (Mineral Products Association)

42 Q45 (Mr Pibworth), Qq186-187 (Mr Meadows), Q195 (Ms Rudd), Q200 (Ms Rudd)

43 LTS 003 (Grantham Institute on Climate Change and the Environment), LTS 005 (DECC), LTS 007 (A. Denny Ellerman), LTS 008 (Mineral Products Association)

44 LTS 001 (Professor Stavins), LTS 007 (A. Denny Ellerman), LTS 008 (Mineral Products Association)

45 LTS 017 (EU Commission)

46 LTS 016 (IETA)

47 LTS 016 (IETA), LTS 017 (EU Commission)

Northeastern and Mid-Atlantic States to cap and reduce CO_2 emissions from the power sector.[48] The California and Quebec cap and trade systems linked in 2014.[49]

16. Dr Denny Ellerman, a carbon-market expert based in Italy, argued that emissions trading systems "lend themselves to linking" because the allowances can be easily traded across borders. He went on to explain:

> The means to accomplish such trades and the practice of doing so with analogous financial products is already in place. All that is needed is agreement of the relevant parties to trade the allowances that each has created within their own domestic or local systems.[50]

Despite this, linking has proved difficult to achieve in practice because of the political and technical challenges that must be overcome in order to link two or more emissions trading systems together. David Hone argued that there needed to be similarities between the design elements of an emissions trading system in order for them to link.[51] These include:

- How strictly the **environmental integrity** of a system is maintained–through monitoring, reporting and verification (MRV) standards–so that a tonne of carbon in one system represents the same tonne of carbon in another system.[52] Environmental integrity is one of the most important considerations.[53] Dr Ellerman, highlighted that, "the primary and perhaps only, criterion for linkage is the integrity of the two systems to be linked".[54]

- Whether participants in the system are able to–through **registry systems and bank provisions** - carry over allowances between trading periods and, in some cases, to borrow from the future trading periods to comply with a current period.[55]

- How ambitious a system is and, therefore, at what level it sets its **emissions cap** and how strictly it enforces this cap.[56] It would be very challenging for systems with widely differing ambitions to link because the two systems might have very different carbon prices. A price differential makes linking extremely difficult because any change in price, as a result of the link, could negatively impact the systems.[57]

- Whether a system chooses to have an **absolute target versus a relative target** (the latter is sometimes referred to as carbon intensity target). It would be difficult to link systems that had different types of targets. When China develops its national trading system it

48 LTS 016 (IETA), RGGI, 'Welcome,' accessed 10 February 2015

49 Q2 (Mr Forrister), Q4 (Mr Forrister), Q9 (Mr Forrister), Q22 (Mr Forrister), Q159 (Mr Hone), LTS 015 (City of London Corporation), LTS 016 (IETA)

50 LTS 007 (A. Denny Ellerman)

51 Q164 (Mr Hone), LTS 003 (Grantham Institute on Climate Change and the Environment)

52 Q72 (Professor Stavins), Q144 (Mr Svenningsen), LTS 007 (A. Denny Ellerman)

53 LTS 015 (City of London Corporation)

54 As above

55 LTS 003 (Grantham Institute on Climate Change and the Environment)

56 As above

57 Qq14-15 (Mr Forrister, Dr Taschini), LTS 003 (Grantham Institute on Climate Change and the Environment)

will probably implement a relative target at first. This would make it impossible to link to the EU ETS, at least for the time being. In the future, when China's emissions peak they may be ready and able to implement an absolute target. Adopting an absolute target would improve the prospects of linking very significantly.[58]

- The **coverage and scope** of the types of participants (e.g. industry, transport, land) included in the system. Respondents to this inquiry argued that linked systems should combine similar sectors, to increase emissions reduction opportunities, and different sectors to protect sectors from price shocks.[59]

- How a system decides to control the market price of allowances through **cost containment measures** (e.g. price floors or ceilings). Combining an emissions trading system with a price floor (or tax) is considered by some as the best way to develop a carbon market because it ensures a minimum price of carbon but still provides participants with the flexibility to choose different emissions reduction options.[60] Cost containment measures, however, have the potential to complicate linking. Actions taken to control the carbon price (such as releasing more allowances into the market to stop the price rising above a certain level) could, for example, jeopardise the environmental integrity of the system.[61]

- Whether a system will allow participants to buy **offset credits** (e.g. Clean Development Mechanism (CDM))[62] created in other countries or jurisdictions to use to comply with the system.[63]

During our visit to China we saw first-hand some of the pilot systems which have begun exploring the potential to link with each other. Officials in China are already grappling with these issues, despite the short time the schemes have been operating (see Annex).[64]

17. Professor Stavins highlighted that while "some kinds of harmonisation might be helpful […] less harmonisation is necessary than is commonly assumed".[65] He stressed, however, that parties looking to link have to understand the "implications" of linking and the potential impact it could have on their emissions trading system and wider economy.[66] For this reason, Miles Austin, Executive Director of the Climate Markets and Investment Association, told us that "just to link trading schemes simply to link them is not a good

58 Qq4-5 (Mr Forrister, Dr Taschini)

59 Q164 (Mr Hone), LTS 003 (Grantham Institute on Climate Change and the Environment)

60 Q70 (Professor Stavins)

61 LTS 003 (Grantham Institute on Climate Change and the Environment)

62 The Clean Development Mechanism (CDM), defined in Article 12 of the Kyoto Protocol, allows a country with an emission-reduction commitment under the Kyoto Protocol (Annex B Party) to implement an emission-reduction project in developing countries. Such projects can earn saleable certified emission reduction (CER) credits, each equivalent to one tonne of CO2, which can be counted towards meeting Kyoto targets.

63 LTS 003 (Grantham Institute on Climate Change and the Environment)

64 LTS 016 (IETA), LTS 018 (Project Team of EU-Guangdong ETS Linkage Study)

65 Q76 (Professor Stavins)

66 Q76 (Professor Stavins)

idea. There needs to be certain fundamental conditions that have been met".[67] The Grantham Institute on Climate Change and the Environment have developed a method by which each party is able to assess whether the other is a good match.[68] If this approach was used, Dr Taschini argued then, on average, the advantages of linking would outweigh the disadvantages.[69] DECC considered that, "the clearest way to encourage consistent design features between ETSs is for those systems that are interested in linking with others to make their intentions clear at the earliest opportunity".[70] Linking is an evolutionary process that will only occur over a long time frame.[71]

18. Currently active negotiations to develop links are limited. Professor Stavins was, however, "fairly optimistic" about linking in the future because the pressures to do so would be great from both governments and businesses. If in the future there was a robust global climate agreement (see chapter 5) all parties would want to reduce their emissions and achieve their targets as efficiently and cheaply as possible. Linking, he argued, would facilitate this.[72] As a result there would be "more and more opportunities to link".[73] Some witnesses agreed that it would be preferable for systems to link in the context of an international agreement. But even in the absence of one we may still see jurisdictions looking to link.[74] Mr Hone described how this might occur:

> Over the longer term the expansion of these systems is going to be through linkage, and that is probably the area where there is most opportunity. We have seen it already: the California emissions trading system expanded by, in effect, linking with the proposals in Quebec. […]. You could imagine perhaps other jurisdictions in that area that are looking at emissions trading deciding to join that system rather than creating their own from the get-go. I think that sort of expansion is probably the direction these systems will go in—linkage between very big systems.[75]

19. In advance of a globally linked emissions trading system there would still be considerable benefit from linking the world's largest economies: China, the US and the EU. Other countries interested in emissions trading systems such as South Korea, Mexico and Brazil could then follow on.[76] During our visit to China, Chinese officials were clear that linking any of China's pilot systems or future national system was a long way off. However, they supported the idea of linking and, if possible, did not want to preclude linking in future (see Annex). Sir David King highlighted the work between the Foreign Office and

67 Q54 (Mr Austin)

68 LTS 003 (Grantham Institute on Climate Change and the Environment)

69 Q1 (Dr Taschini), LTS 005 (DECC), LTS 016 (IETA)

70 LTS001 (Robert N. Stavins), LTS 005 (DECC)

71 Q55 (Mr Austin), Q90 (Professor Stavins), Q159 (Mr Hone)

72 Q88 (Professor Stavins)

73 Q71 (Professor Stavins), LTS 016 (IETA)

74 Qq140-143 (Mr Svenningsen), LTS 013 (UNFCCC)

75 Q159 (Mr Hone)

76 Q12 (Mr Forrister), Q97 (Sir David)

Chinese officials to develop their emissions trading system "and a big part of that was about the possibility of linkage, creating a scheme that is compatible for linkage".[77]

20. Today there are a number of organisations working to promote and support linking of emissions trading systems. These include the International Emissions Trading Association (IETA), the World Bank's Globally Networked Carbon Markets (GNCM) Initiative and the International Carbon Action Partnership (ICAP).[78] The Government also emphasised its role in promoting and supporting the development of linking emissions trading systems:

> The Government has been active in encouraging the linking of ETSs. The UK has been positively engaged in all linking negotiations involving the EU's ETS, including those with Australia and Switzerland.[79]

21. ***As emissions trading systems develop and mature around the world there will be increasing opportunity for them to grow and expand so that emissions can be reduced in the most cost-effective way. This expansion is likely to occur by the linking of systems to one another. We recommend that the Government ensure that, when supporting other countries to develop their emissions trading systems, it promotes designs that are compatible with the EU ETS. Aligning design elements will help improve the prospects of linking in the future. The Government should focus on engaging with China and the US as the world's largest economies and because they have already embraced emissions trading.***

77 Q107 (Sir David)

78 Q12 (Mr Forrister), LTS 005 (DECC), LTS 014 (World Bank Group), LTS 016 (IETA)

79 LTS 005 (DECC)

4 The EU Emissions Trading System

22. The EU Emissions Trading System (EU ETS) is the world's first and currently largest emissions trading system covering 11,000 power stations and industrial plants in 31 countries. Proposals to include aviation have been made and will be implemented if the International Civil Aviation Organisation (ICAO) do not come forward with robust plans to cut emissions from aircraft.[80] It covers around 45% of the EU's greenhouse gas emissions. Launched in 2005, the first 'learning by doing' phase lasted until the end of 2007. The second phase ran from 2008 until 2012 and coincided with the first commitment period of the Kyoto Protocol (see chapter 5). The third and current phase will run from 2013 to 2020. This phase represents a significant departure form phase one and two, firstly because it includes a single EU-wide cap on emissions and secondly involves the use of auctioning, rather than providing allowances to participants for free, as the default method for allocating allowances.[81]

23. The EU ETS has demonstrated that an international market in carbon emission allowances can operate effectively. This achievement constitutes a significant measure of success. Martin Pibworth, Managing Director of Wholesale at SSE, described it as "pioneering".[82] David Hone said that it was a "very well-functioning system".[83] This view was supported by the European Commission and the Government. The Parliamentary Under-Secretary of State told us "it is doing very well in having a leading role in providing a structure that works".[84] Despite this, most stakeholders think it has failed to incentivise emissions reductions and decarbonisation of the economy, principally because the carbon price achieved has not been high enough to influence investment decisions. Dirk Forrister said this was because the market was "awash" with over 2 billion surplus allowances following the 2008 financial crisis which has led to a reduction in economic output and subsequently the demand for allowances.[85] Lord Stern said that the "ludicrously low" prices in the EU ETS were having no impact on emissions.[86] The Parliamentary Under-Secretary of State summed up its performance; "it is like a school report, good in parts; more to do".[87]

24. In January 2012, we published a report on the EU ETS and argued it was "going through a period of difficulty as tumbling prices have watered down the incentive for investment in low-carbon options".[88] We put forward a number of proposals for short term fixes and long term flexibility to reinvigorate the trading system. We recommended

80 European Commission, 'Reducing emissions from aviation,' accessed on 10 February 2015

81 European Commission, 'The EU Emissions Trading System (EU ETS),' accessed on 10 February 2015

82 Q41 (Mr Pibworth)

83 Q154 (Mr Hone), Q165 (Mr Hone)

84 Q179 (Mr Meadows), Q195 (Ms Rudd)

85 Q25 (Mr Forrister), Q114 (Sir David)

86 Q41 (Mr Pibworth), Qq165-166 (Mr Hone), Q179 (Mr Meadows), Q195 (Ms Rudd), Oral evidence taken on 26 November 2014, HC (2014-15) 666, Q30 (Professor Lord Stern)

87 Q195 (Ms Rudd)

88 Energy and Climate Change Committee, *The EU Emissions Trading System*, Tenth Report of Session 2010-2012 (17 January 2012), p47

action to increase the price of carbon by removing a significant volume of EU allowances and tightening the cap. We concluded that "if this can be achieved, the EU ETS can continue to be a significant force in promoting international action on climate change".[89] Three years on, very little has changed. Respondents to this inquiry were overwhelmingly supportive of reforming the EU ETS.[90] Reform could help it play a more prominent role as the central driver for EU decarbonisation.[91] Lord Stern told us that "making the ETS work well is fundamental" and if carbon went back to a more sensible price in Europe it "would create a very powerful signal worldwide".[92] The Prime Minister agreed that reform of the EU ETS was "essential" and that it was "essential that Britain lead this process of reform".[93]

25. Today there are two main proposals on the table to reform the EU ETS. The first involves postponing the auctioning of 900 million allowances. By temporarily 'back-loading' these allowances the European Commission hopes demand will increase and drive up the price of carbon.[94] The second involves long term structural change to address the ongoing imbalance between the supply and demand of allowances.[95] The Commission proposed introducing a market stability reserve (MSR) at the beginning of the next trading period in 2021.[96] Mr Forrister described how the MSR might work in practice:

> I think of it as being the allowance equivalent of a strategic petroleum reserve. It would be a reserve where excess credits are kept aside and brought to market in times when you are fearful about price spikes because the supplies are getting too tight. Conversely, you would withhold credits from auction in times when you felt like the market had plenty of liquidity and plenty of allowances in circulation.[97]

26. While some businesses would have preferred the permanent removal of allowances from the system, most businesses including EDF Energy, SSE and Shell, supported the introduction of the MSR as the best solution currently on the table.[98] Miles Austin asserted that "if we do not get the MSR in place the EU ETS will become internationally irrelevant".[99] Some went further arguing that the need for reform was so great that the MSR should be introduced in 2017 rather than 2021 as originally proposed by the Commission.[100] The Government supported the proposal to introduce the MSR earlier and

89 As above

90 LTS 005 (DECC), LTS 009 (EDF Energy), LTS 011 (SSE)

91 Q25 (Mr Forrister), Q41 (Mr Pibworth), Q46 (Mr Pibworth), Qq95-96 (Sir David), Q167 (Mr Hone), Q179 (Mr Meadows), Q197 (Ms Rudd), Oral evidence taken on 26 November 2014, HC (2014-15) 666, Q30 (Professor Lord Stern)

92 Oral evidence taken on 26 November 2014, HC (2014-15) 666, Q30 (Professor Lord Stern)

93 Oral evidence taken before the Liaison Committee on 16 December 2014, HC (2014-15) 887, Q4 (Mr Cameron)

94 Q167 (Mr Hone)

95 Q25 (Mr Forrister), Q28 (Dr Taschini),

96 Q179 (Mr Meadows), European Commission, 'Structural reform of the European carbon market,' accessed on 10 February 2015

97 Q25 (Mr Forrister)

98 Q49 (Mr Austin), Qq168-170 (Mr Hone), LTS 009 (EDF Energy), LTS 009 (SSE)

99 Q63 (Mr Austin)

100 Qq47-49 (Mr Pibworth, Mr Austin), Q197 (Ms Rudd)

the Commission made it clear that it would not stand in the way if the European Parliament and Council wish to apply the reserve earlier.[101] It may be difficult to get agreement, however, because some industries and countries are unhappy about the introduction of the MSR or any mechanism to remove allowances, raise the price of carbon and thereby impact on EU competitiveness.[102] As discussed in chapter 2 both the Government and the Commission were confident that these concerns were unfounded.[103]

27. The EU has played, and will continue to play an important role in promoting emissions trading and in eventually linking different systems.[104] Dr Denny Ellerman suggested that "although little noted as such, the EU ETS is the world's first and only multinational cap-and-trade system".[105] Damien Meadows said that "the provisions in the law are quite open for linking".[106] The EU ETS Directive provides for the possibility to link the EU ETS with other compatible systems.[107] The Commission set out some of the conditions which would need to be met:

> Compatibility in the EU ETS context has been understood to mean that robust registries, monitoring, reporting and verification systems, as well as enforcement systems are in place. [A prospective system] should also have a similar ambition level, including similar (qualitative and quantitative) limits on the use of international (and domestic) offsets. The key will be to ensure that the systems have the same basic environmental integrity and that a tonne of CO_2 in one system is a tonne in the other system.[108]

The Parliamentary Under-Secretary of State said that the Government wanted to ensure the EU ETS would "widen" and that "linking must be the goal".[109] The Government and others were clear however that the EU ETS would need to be reformed in order to make the EU a credible partner before linking could be considered.[110] Mr Meadows agreed that once the EU ETS was reformed other systems might express more interest in linking.[111] In the meantime countries continue to learn from the experience of the EU ETS, something we heard strongly and frequently expressed during our visit to China.[112]

28. ***The issue of surplus allowances in the EU Emissions Trading System (EU ETS) must be addressed urgently. We recommend that the Government focus on getting agreement in the European Parliament and Council to implement the market stability reserve (MSR) at the earlier date of 2017 rather than in 2021, as originally proposed by the***

101 Q114 (Sir David), Q180 (Mr Meadows), Q197 (Ms Rudd)

102 Qq48-49 (Dr Leese), Q197 (Ms Rudd)

103 Q45 (Mr Pibworth), Qq186-187 (Mr Meadows), Q195 (Ms Rudd), Q200 (Ms Rudd)

104 Q184 (Mr Meadows)

105 LTS 007 (A. Denny Ellerman)

106 Q183 (Mr Meadows)

107 LTS 016 (IETA)

108 LTS 017 (EU Commission)

109 Q198 (Ms Rudd)

110 Qq45-46 (Mr Pibworth), Q198 (Ms Rudd, Mr van Heyningen).

111 Q185 (Mr Meadows)

112 Q183 (Mr Meadows), LTS 007 (A. Denny Ellerman)

European Commission. Once it has been reformed the credibility of the EU ETS will increase along with the prospects of linking it to other systems in future.

5 Securing an international climate agreement

29. Established in 1992, the United Nations Framework Convention on Climate Change (UNFCCC) supports 195 member states to negotiate the best way to "stabilise greenhouse gas concentrations in the atmosphere at a level that will prevent dangerous human interference with the climate system".[113] This is currently defined as "keeping global average temperatures below 2°C".[114] Niclas Svenningsen, from the UNFCCC Secretariat, said that it "is the one place where we are able to bring together all the voices of all parties in the world".[115] Adopted in 1997, the UNFCCC's Kyoto Protocol promoted the use of a top-down emissions trading system designed to help those parties, who ratified the Protocol, to comply with their internationally binding emissions reduction targets.[116] The first commitment period ran from 2008 to 2012 and covered 55% of global emissions. 37 industrialised countries and the European Community committed to reduce emissions by five percent against 1990 levels. The second commitment period runs from 2013 to 2020 but so far covers only 12% of global emissions. Parties committed to reduce their emissions by at least 18 percent below 1990 levels.[117]

30. The Kyoto Protocol's first commitment period achieved its modest goal of reducing emissions by five percent and helped to build capacity in those participating countries which implemented carbon markets and other low-carbon policies.[118] However, it is unlikely to provide a model for future international climate agreements. The Protocol has suffered setbacks. Canada pulled out when it became clear that it would not achieve its targets. In addition, Japan, New Zealand and Russia, officially pulled out of the second commitment period. Sir David King was candid about the Protocol's potential to act as a model for future agreements:

> The reality of the situation is that the Kyoto proposal was a top-down mechanism attempting to put a global carbon market in place. That has not reached consensual agreement and we should not think that we can go back down such a route. In other words, I do not believe it is even possible to include a global regulatory process on carbon markets in what is agreed in Paris.[119]

The UNFCCC Conference of the Parties (COP) 21, to be held in Paris at the end of 2015, is potentially a very important milestone in international climate change policy. It is at this conference that parties will come together to try to reach a new international climate

113 LTS 013 (UNFCCC)

114 As above

115 Q127 (Mr Svenningsen)

116 As above

117 World Bank Group, *State and trends of carbon pricing* (2014), Washington DC, p14, UNFCCC, 'Kyoto Protocol,' accessed on 10 February 2015

118 Q127 (Mr Svenningsen)

119 Q118 (Sir David)

agreement (the Agreement) to replace Kyoto when it ends in 2020. The Government was clear that a successful Agreement would need to keep global average temperatures below 2°C.[120]

31. While some top-down elements of the UNFCCC architecture will probably continue, the main negotiations will proceed along a new negotiation track, favoured by the US, which promotes a more bottom-up approach.[121] Countries will submit Intended Nationally Determined Contributions (INDCs) based on what they think they are able to achieve. The Secretary of State for Energy and Climate change, Edward Davey MP, told us that these were unlikely to reach the ambition required to achieve the 2°C target:

> When we look at the INDCs that countries have come forward with how close we are to the level of carbon emission reductions needed to keep the world below the 2°C increase. I predict that when we do that analysis and we aggregate the INDCs, we will be well short of the carbon emissions needed to keep the world below the 2° C limit, well short. We do need more action. We need action before 2020, so-called pre-2020 mitigation, and we need to see more countries coming forward with more ambitious pledges.[122]

Nevertheless, developments such as the US-China joint announcement, in November 2014, on climate change where for the first time both countries made pledges to limit emissions give cause for optimism that more ambitious pledges from other countries will be forthcoming in future.[123]

32. A range of businesses and policymakers have argued that the Agreement could and should facilitate the future development of carbon pricing policies including emissions trading.[124] At a joint International Emissions Trading Association (IETA) and Harvard University event in New York, held one day before the UN Climate Summit, David Hone said:

> With the expected agreement in Paris almost certainly based on an aggregation of independent national contributions and approaches, linkage to create an eventual global carbon market is the only way forward we will have to capture the clear economic and environmental benefits that carbon pricing offers.[125]

Dirk Forrister added:

> With more and more regions bringing in emissions markets and other initiatives to tackle greenhouse gas emissions, it is crucial that the Paris

120 Q117 (Sir David), Q201 (Ms Rudd)

121 Q120 (Sir David)

122 Oral evidence taken on 7 January 2015, HC (2014-15) 667, Q10 (Mr Davey)

123 "*U.S.-China Joint Announcement on Climate Change*", The White House press release, 11 November 2014

124 Q138 (Mr Svenningsen), Q174 (Mr Hone), Q188 (Mr Meadows), LTS 009 (EDF Energy)

125 "*IETA brings policy makers, business together in support of carbon pricing*", IETA press release, 22 September 2014

> agreement establishes a framework to bring these efforts together and make them count.[126]

33. Professor Stavins described how the UNFCCC negotiations were actually moving towards a hybrid system which could benefit carbon markets and future linking:

> A diverse set of national negotiating teams seem to be gravitating toward a hybrid system, with top-down elements for establishing and reviewing targets, and bottom-up elements of pledge-and-review tied to national policies and actions. The growing network of decentralized, direct linkages among cap-and-trade systems can become an important element of such an international policy architecture.[127]

There was general support for this approach among witnesses.[128] The Parliamentary Under-Secretary of State, said this approach was "compelling".[129] Mr Svenningsen described it as the "holy grail".[130] He went on to explain:

> Having the minimum standards top-down is very, very helpful. But then also to strive for a very high level of flexibility for each party to first of all decide if they want to be part of these emissions trading schemes and adhere to these standards, and to operate the different emissions trading schemes and tools according to their own preferences.[131]

34. Professor Stavins suggested that linking emissions trading systems would enable cost effective action to tackle climate change. The more cost effective it is for countries to meet their commitments the more ambitious they are likely to be. Linking emissions trading systems, he argued, was one of the best ways to increase cost effective emission reductions.[132] As a minimum, Mr Hone argued, the Agreement should "provide some tools to allow longer term linkage and growth of carbon markets to take place and ideally to catalyse that type of activity and see it accelerate".[133] Professor Stavins said that if there was an Agreement then "it is very feasible to get some language into the agreement that facilitates linkage and does not obstruct it".[134] He argued that provisions for linking only needed to be "very brief" and "nothing more than a paragraph that would make it clear that such activities are within the framework".[135] The detail can then be worked out in

126 "*IETA brings policy makers, business together in support of carbon pricing*", IETA press release, 22 September 2014

127 LTS 001 (Robert N Stavins)

128 Q11 (Mr Forrister), Q190 (Mr Meadows)

129 Q208 (Ms Rudd)

130 Q139 (Mr Svenningsen)

131 Q139 (Mr Svenningsen)

132 Q77 (Professor Stavins), LTS 016 (IETA)

133 Q19 (Mr Forrister), Q174 (Mr Hone)

134 Q86 (Professor Stavins)

135 Q83 (Professor Stavins)

subsequent meetings.[136] The Government said it expected the Agreement to be clear about the use of market mechanisms.[137]

35. Even though the role of the UNFCCC in facilitating carbon markets and linking is likely to be limited under the bottom-up or hybrid approach, there are still a number of critical things it could do to facilitate progress towards a global carbon market.[138] These include allowing parties to meet their INDCs by transferring parts of their contributions to other parties and financing emissions reduction activities in other countries.[139] It could also play a critical role in providing basic standards including monitoring, reporting and verification, so that allowances are bought and sold in a transparent way and there is no prospect of double counting.[140] The UNFCCC's Framework for Various Approaches (FVA) could be key.[141] Mr Svenningsen said that the FVA was understood to be:

> A set of rules and guidelines, an umbrella, that would allow linking of Emissions Trading Schemes and the use of different kinds of market-based tools that result in the transfer of offsets across borders, to be recognised under UNFCCC.[142]

The FVA could help facilitate the linking of emissions trading systems because it would provide the criteria needed to verify reductions between systems.[143]

36. We heard that there were some fundamental things that the Agreement should avoid. The Agreement should not include, for example, a requirement that parties could only meet their INDCs through domestic action. This would inhibit the future linking of emissions trading systems.[144] Some countries would be keen to see this included.[145] The Secretary of State was confident that it was highly unlikely that it would be included in the final text of the Agreement.[146]

37. In the past the UK, alongside the EU, has played a key role in international climate negotiations.[147] In its September 2014 report, *Paris 2015: Securing our prosperity through a global climate change agreement*, the Government outlined its vision of a successful

136 Q59 (Mr Austin), Qq83-84 (Professor Stavins), Oral evidence taken on 7 January 2015, HC (2014-15) 667, Qq39-41 (Mr Betts, Mr Lyon)

137 Q204 (Mr Lyon)

138 Q52 (Mr Austin), Qq119-122 (Sir David)

139 Q80 (Professor Stavins), Qq175-176 (Mr Hone)

140 Q16-20 (Mr Forrister), Qq72-91 (Professor Stavins), Q144 (Mr Svenningsen), Oral evidence taken on 7 January 2015, HC (2014-15) 667, Qq39 (Mr Davey)

141 Q134 (Mr Forrister), LTS 013 (UNFCCC), LTS 016 (IETA)

142 Q!31 (Mr Svenningsen)

143 Qq135-137 (Mr Svenningsen)

144 Q78 (Professor Stavins), Q177 (Mr Hone), Q210 (Rudd), Oral evidence taken on 7 January 2015, HC (2014-15) 667, Q43 (Mr Davey, Mr Betts)

145 Q78 (Professor Stavins)

146 Oral evidence taken on 7 January 2015, HC (2014-15) 667, Q44 (Mr Davey)

147 Q110 (Sir David)

agreement which included promoting the use of carbon markets.[148] The Parliamentary Under-Secretary of State, said "carbon pricing is considered absolutely key to delivering on success".[149] In a similar vein the Secretary of State said "the key for carbon markets is that […] they are seen as a way of enabling people to meet their emissions reductions targets".[150]

38. ***The Government's focus in Paris at the end of 2015 will rightly be on securing a global climate agreement which will keep global average temperatures below 2°C. Carbon markets and emissions trading systems can play an important role in helping countries achieve their commitments in an efficient and cost effective way. We recommend, therefore, that the Government ensure the Agreement promotes use of carbon markets and facilitates the future linking of emission trading systems. It should also ensure that provisions which will preclude the future development of carbon markets are actively avoided.***

148 HM Government, *Paris 2015: Securing our prosperity through a global climate change agreement* (September 2014), p50

149 Qq203-207 (Ms Rudd), LTS 005 (DECC), LTS 015 (City of London Corporation)

150 Oral evidence taken on 7 January 2015, HC (2014-15) 667, Q39 (Mr Davey)

6 Conclusion

39. **Carbon pricing, and emissions trading in particular, is an established and well recognised policy instrument for controlling greenhouse gas emissions in a cost effective way because it provides flexibility to participants on how they want to reduce their emissions. A global carbon market would be the most favourable outcome in the long term because it is one of the most economically efficient ways to reduce emissions. However, attempting to achieve this benign outcome by means of a top-down process is extremely unlikely to succeed. Instead a bottom-up approach aimed at developing a network of regional, national and sub-national emissions trading systems, which gradually come together by linking, is much more likely. A global climate agreement that promotes carbon pricing and is favourable to linking represents the best chance of developing a global carbon market in the long term. The move towards a hybrid approach–which combines top-down elements for establishing and reviewing targets, with bottom-up elements of pledge-and-review tied to national policies and actions–in the international climate negotiations could significantly improve the prospects of linking carbon markets and is a welcome development. The world's largest economies, which have embraced emissions trading, China, the US and the EU will be the leading players in this process. As the first pioneering adopter of emissions trading and a strong advocate for market-based carbon pricing policies, the UK Government has an absolutely vital role to play in driving forward international linkage.**

Annex

China visit meeting notes

Sunday 19 October

Paul Lengthorn, Director, China, Mott MacDonald; Jan Van der Van, Director, Asia, Carbon Trust; Mark Hewlett, Associate, Atkins; Chas Pope, Director, China, Arup

Discussion on UK-China bilateral low carbon and climate change cooperation, and the opportunities and barriers facing British low-carbon businesses operating in China.

Monday 20 October

Renato Roldao, ICF international and partner organisations

Discussion of Euroaid's €5 million emissions trading system (ETS) capacity building project with the key implementing organisations.

- ICF International were supporting the design of a national ETS by providing knowledge and capacity to ensure any lessons learnt in the seven pilot ETSs were incorporated into the national ETS.
- The Chinese Government will replace the pilot ETSs with a national ETS.
- While technical differences between the pilots were small, linking them was impractical due to the diversity of experience including; the price and allocation of allowances, sector coverage, whether the cap is fixed or intensity based, and the level of enforcement.
- The national system will come into force in 2016. It will draw on the best attributes of each of the pilots. All parts of the country will likely be included by 2018 or 2020. It will cover the most economically developed parts of the country first. The pilot areas, for example, were considered to cover more than 40 per cent of China's gross domestic product (GDP).
- The Government will develop a national legal framework to ensure compliance.
- Linking a national ETS with systems in other countries has been a consideration. The Government would not want to make a system that was incompatible with others around the world.

Li Junfeng, Director-General, National Centre for Climate Change Strategy and International Cooperation (NCSC)

Discussion on emissions trading in China, climate change policy more generally and perspectives on the UNFCCC negotiations.

- The Chinese Government has given a clear signal that it will reduce its carbon intensity. China is able to control its emissions but there are economic risks in doing so. For

example, to displace coal with solar energy could cost up to 20 per cent of GDP. This makes it difficult to determine when its emissions will peak [On 12 November 2014 China announced that it intends to achieve the peaking of CO2 emissions around 2030].

- China recognises that there are various approaches to reducing emissions which differ greatly. The United Kingdom (UK) and the United States (US) are often held up as taking different approaches. Many people believe that China is following a US model to emissions reduction. The Chinese Government has not yet decided how it will reduce emissions. It is likely to give an indication of its approach in 2015. Achieving emissions reductions of even 1% a year will be very challenging.

- China would like to exploit its shale gas resources. There are several barriers frustrating exploitation including; water, infrastructure, sand and geology. In addition, more companies need to be allowed to explore for shale gas and the Government should encourage technical innovation.

- There is currently a debate about whether a market price (ETS) or a government price (tax) should be used to control emissions. Linking a Chinese ETS will be difficult without a global market.

Lu Hao, Chairman, National People's Congress (NPC) Environmental Protection and Resource Conservation Committee (EPRCC)

Discussion on the role of legislation in the establishment and linking of carbon markets, the status of China's draft climate legislation and the role of climate legislation over the long-term in the transition to a global economy.

- China's rapid development has led to severe environmental problems. The Chinese Government takes this issue seriously and has been making unremitting efforts to address the problem. It has introduced environmental pollution laws and tasked 10 cities and regions to tackle air pollution using industrial action plans. These will have co-benefits of addressing local pollution as well as climate change.

- The Government has recently passed a legally binding resolution to tackle climate change. It has set out targets that it is now trying to achieve. It aims to increase renewable energy capacity by 11.4 per cent. China is the largest installer of several renewable technologies including wind power. Challenges remain including, for example, integrating technologies into the electricity system and ensuring the provision of the renewable energy law is implemented.

- An ETS will be important to help address climate change and improve air quality in China. Introducing legislation for implementing a national ETS will be a key issue for consideration. But still at the very beginning stage of this work studying and debating different options. Believe that China should put carbon trading on its legislative agenda as soon as possible. During the legislative process we will draw on different experiences from inside and outside of China.

- They are interested to learn about the UK and EU's experience of developing legislation to address climate change.

Jiang Zhaoli, Director, Department of Climate Change of the National Development Reform Commission (NDRC)

Discussion on China's progress towards achieving its low carbon goals during the 12th Five Year Plan. Market mechanisms, including emissions trading pilots, progress towards the national scheme, and the prospects for linking with other countries was also discussed.

- In 2009 China committed to improve its carbon intensity by 40-45 per cent by 2020. The 12th 5 year plan set out how this would be achieved. So far the Chinese Government has made good progress and is confident it will meet its targets. It is optimistic that it could go even further in its 13th 5 year plan and may revise its targets. This ambition has been driven by a need to tackle China's severe environmental problems and climate change.

- Several factors have contributed to the progress made including; installing renewable and low-carbon energy technologies such as wind, solar, hydropower and nuclear; increasing forested areas; implementing caps on coal consumption in specific economic regions; and a general slowdown in manufacturing and exports.

- Emissions will continue to rise but this will slow as energy efficiency improves. This will not, however, be evenly distributed across the country. In some regions carbon intensity is rising. In order to meet China's national targets some regions that have already made progress on reducing their carbon intensity will have to shoulder more of responsibility.

- The seven ETS pilots were launched in 2011. Five pilots have now completed a trading cycle. Each pilot has a fixed cap. Different sectors (e.g. power, chemical, building, aviation etc) are treated differently and either have a grandfathering or benchmarking approach. China's pilots are already the second largest ETS in the world. The pilots have had 96-100 per cent compliance from companies because the penalties for non-compliance are severe. Lessons are, however, still to be learnt from the pilots. These include the need for; a strict ETS law to ensure compliance, a stricter accounting methodology and more third party verifiers. The most importance conclusion reached from the pilots is that they are possible and necessary. China has drawn upon experience from the EU ETS and the systems in the US.

- A national ETS will replace the pilots by 2016. Each pilot had to ensure that the value of an allowance was the same across each of the pilots. This will also ensure that existing allowances will be valid in the forthcoming national market.

- In future linking China's national ETS with other systems could be possible but will be dependent on whether an international agreement can be reached which ensures the nature of trading is the same between ETSs. Linking ETS also requires political trust that the systems have integrity.

Vicky Pollard, Counsellor-Environment and Climate Change, Delegation of the European Union to China; Gailius Draugelis, Head of Partnership for Market Readiness Programme, World Bank; Wu Qian, Consultant, Ecofys; Mr Mei, General Manager, Beijing Environment Exchange.

Discussion on the successes and challenges of the current emissions trading pilots, linking the pilots, and design and implementation of the national scheme.

Tuesday 21 October

Lu Lunyan, WWF; Li Rusong, Carbon Disclosure Project; Li Lailai, World Resources Institute; Guo Peiyuan, Syntao

Discussion of work to support the government and private sector implementation of emissions trading and the challenges still facing China in the low carbon transition.

- China has been discussing the potential to cap total emissions by 2030. This is unprecedented. Carbon trading is currently high up on the policy agenda. The focus is currently on increasing efficiency rather than overall reduction. It is currently difficult to determine how effective the pilots have been at either improving efficiency or reducing emissions.

- Development of China's seven pilot emissions trading systems have exceeded expectations and officials at every level are happy. The pilots have made the prospect of implementing a national trading system between 2016 and 2020 more concrete.

- Challenges to developing a national system remain. These include ensuring robust monitoring, reporting and verification systems are in place and trusted; scaling up or linking the different pilot systems; and ensuring compliance from participants at a local level.

- Removing the pilot systems and replacing them with a national system will be difficult because of China's size and because the pilot systems are already up and running. A hybrid system is most likely. How influential participants, such as the power sector, view the pilots and the development of a national system will be important.

- It is unlikely that linking will be approved by the central Chinese Government in the near future.

Xia Yong, Vice-Minister and Deputy Director, Legislation Affairs Office of the State Council

Discussion of the status of China's climate legislation, what is included in the legislation, how this will support the establishment of the national ETS and future plans for China's climate legislation framework.

- China is developing a law to tackle air pollution. This will include legal and technical measures to try and mitigate emissions. Liability will be placed on local governments who have responsibility for environmental protection.

- China is exploring the potential for a national emissions trading system. From a legal perspective implementing an ETS is difficult, especially monitoring, reporting and verification provisions. They want to make sure they get it right. They are currently learning from the experience of China's seven pilot systems as well as the experience of other countries. They are keen to learn from the UK's experience.

- It is currently difficult to say when a national system will be implemented because they are still learning from the experience of the pilots. Only when they are satisfied that the issues identified in the pilots have been solved will a national system be put in place. This includes ensuring that local governments strike the right balance between economic development and environmental protection.

- Agree that ETS should be compatible and potentially able to link up because climate change is a global problem.

Wednesday 22 October

Bin Zhao, Vice Director-General, Hubei Province

Discussion on the progress of Hubei's ETS and low carbon related policy.

- Hubei province is working on restructuring its economy and growth model encouraging the development of new industries such as renewable and service industries. This work is led by the Hubei Provincial group on climate change, chaired by the Governor of Hubei. Carbon per unit of GDP reduced by 3.5%. Higher than the national goal of 3%.

- Hubei is also one of the seven ETS pilots in China. Total volume of traded allowances was over 5 million tonnes in 2014.

- The UK is a world leader in developing a low-carbon economy and has a lot of experience. China has the largest market for the low-carbon economy. There is potential for new and continued cooperation between the UK and China on this issue.

Visit to Wuhan Optical Valley Exchange

Tour of the trade hall and discussion with officials and participating companies of their experience of Hubei's emissions trading system.

- Hubei emissions trading system is one of the seven Chinese ETS pilots. The local government has been very supportive of the ETS.

- In comparison to the other ETS pilots, Hubei had 46 per cent of all volume traded (the next largest was 13 per cent) and 29 per cent in value terms. The average daily transaction volume represents 50 per cent of China's total. Hubei is the nation's most dynamic ETS.

- The scheme currently covers 138 sizeable schemes. The threshold is for inclusion in the scheme is 16 tonnes (144,000 tonnes of CO2). Allowances are allocated either by 'grandfathering' or 'benchmarking'. Allowances will be auctioned in future.

- Hubei is the first ETS in central China. They would like to grow and expand in central China and establish China's first carbon financial centre. This market could be worth 50bn RMB. They would also like to move towards a national ETS.

- They are interested in collaborating with the UK.

Prof Feng Youmei, Deputy President, Dean, School of Medicine Wuhan University

Discussion of the Hubei ETS, next steps and how they plan to prepare for a national ETS.

- Hubei ETS is the only ETS in central China. It is the largest by volume in China and the third largest in the world. It covers about half of the emissions in the Hubei region.
- Hubei has a high growth rate and has a large industrial sector. Growth in emission has also been high.
- The Hubei ETS has a rigid cap and a flexible structure. It currently focuses on major enterprises in the power, cement, chemicals, glass and steel industries. It has a strict 'off set' policy and a strict default penalty. Currently 3 per cent of allowances are auctioned. Non-covered entities, such as banks and individuals are also able to trade. There is a price stability reserve. As such the price has tended to be stable. The average price is 23 RMB. Highest is 29 RMB. 20 RMB is the bottom price because that is the price the government sells at.

Meeting with Wuhan DRC at Eco City

Thursday 23 October

Xu Ruisheng, Vice Governor, Guangdong

Discussion of Guangdong's low carbon development.

- Guangdong is trying to move to a more low-carbon economy. It will have a general ecological plan for every city in the province. The plan will, however, try to strike the balance between economic development and ecological protection.
- The Guangdong ETS is in its pilot stage. They expect problems but are confident that the amount of trading in the ETS will increase over time.
- There is, however, a negative perception of the ETS in Guangdong which they would like to change.

Wu Daowan, Deputy Director-General, Guangdong Develop and Reform Committee (DRC)

Discussion of Guangdong's ETS and how it could be improved and expanded.

- The Guangdong ETS has successfully completed its first compliance period and is currently running its second. It has helped to raise awareness and acceptance of the ETS among businesses. They are trying to resolve any remaining issues with the ETS design as quickly as possible in order to make a contribution to the national ETS.
- They are currently exploring how the ETS could be expanded to including additional industries and attracting participants from the banking and financial sector. This will help reduce carbon but also move Guangdong industries up the value chain.

- The Guangdong and Shenzhen ETSs are currently exploring the potential to link with each other. The lessons learnt from this could help to inform the national system. Linkage has been endorsed by the national government.
- In addition to the ETS they are exploring other measures including, for example, carbon taxes to incentivise carbon reduction and a public awareness initiative on the importance of living a green lifestyle. They support using a package of approaches. The main one will, however, be defined by the central government.
- They recognised the importance of exchanging ideas on ETS and want to learn from the experience of developing the EU ETS.

Economic Information Commission and representatives from business.

Discussion on energy efficiency policy and targets set for businesses in Guangdong.

Visit to the new British Centre at the IFC building.

ETS seminar - Guangdong - Shenzhen ETS linkage Workshop

Discussion of the linkage project between Guangdong and Shenzhen ETS.

- If the Guangdong and Shenzhen ETS can be linked there will be benefits for both ETS. There are, however, many challenges before linking can be achieved. The markets are very different. There is a focus on increasing the knowledge of both markets to improve the prospects of linking in future. They are optimistic about the prospect of linking and want to put it into practise as quickly as possible.
- They hope that they will be able to link the two systems without making major changes to either ETS. They hope that prices will converge over time but this depends on the liquidity of both markets.
- As part of the project they have drawn on the experience from different international examples including the EU and Canada.

Reception at the British Consul Generals residence with government contacts, implementing partners and academics.

Friday 24 October

Visit to the UK Guangdong CCUS centre

Mr Lu Xiulu, Deputy Mayor, Dongguan City

Discussion of the challenges facing Dongguan's low-carbon transition.

Tang Jie, Vice Mayor, Shenzhen City

Discussion of the Shenzhen ETS and better understand their ambitions for expansion of the scheme.

- The Shenzhen ETS has been successful. Based on their experience, they believe that ETS is a more effective tool for reducing carbon emissions than taxes. China's experience of emissions trading has effectively resolved concerns that China will tackle climate change and maintain economic growth. Competitiveness concerns have been addressed.
- The ETS has started to encourage a transition to a more low-carbon economy. For example, there is a move away from high energy consumption products towards lower energy products. As a result, emissions intensity is declining. Emissions will soon peak and start to decline.
- The Shenzhen ETS is cooperating with London, the EU ETS and California on emissions trading.

XingAn GE, Vice president, China Emissions Exchange, Shenzhen

Discussion of the Shenzhen Emissions Exchange–one of China's first exchange platforms for voluntary greenhouse emissions trading–which has played a major role.

- The Shenzhen exchange was established in 2013. It is one of seven centres in China which is registered to facilitate trading.
- The Shenzhen pilot has successfully reduced the carbon intensity of its participants by a third. The ETS has tried to be innovative by, for example, issuing bonds and attracting international investors.
- In future they would like to see the Shenzhen ETS expand and contribute towards the establishment of a national ETS.
- Linking Shenzhen and Guangdong ETS would be very difficult. There are significant differences between the two markets. These considerations make it more likely that the national ETS will start from scratch rather than seek to link the existing pilot scheme.

Conclusions and recommendations

The rise of emissions trading

1. Carbon pricing, and emissions trading in particular, is an effective method for reducing emissions. Emissions trading systems are increasingly popular and spreading around the world. These systems can provide a new revenue stream for governments which can offset other taxes or support innovation. We were surprised that the Government had not yet considered the best use of revenue generated from emissions trading. We were pleased to hear that the Prime Minister thought it was an area worth examining. We recommend the Government make an assessment of current and future emissions trading revenue and report on different options for using the revenue including the potential to reduce other taxes and support new low-carbon technologies. (Paragraph 10)

Linking emissions trading systems

2. As emissions trading systems develop and mature around the world there will be increasing opportunity for them to grow and expand so that emissions can be reduced in the most cost-effective way. This expansion is likely to occur by the linking of systems to one another. We recommend that the Government ensure that, when supporting other countries to develop their emissions trading systems, it promotes designs that are compatible with the EU ETS. Aligning design elements will help improve the prospects of linking in the future. The Government should focus on engaging with China and the US as the world's largest economies and because they have already embraced emissions trading. (Paragraph 21)

The EU Emissions Trading System

3. The issue of surplus allowances in the EU Emissions Trading System (EU ETS) must be addressed urgently. We recommend that the Government focus on getting agreement in the European Parliament and Council to implement the market stability reserve (MSR) at the earlier date of 2017 rather than in 2021, as originally proposed by the European Commission. Once it has been reformed the credibility of the EU ETS will increase along with the prospects of linking it to other systems in future. (Paragraph 28)

Securing an international climate agreement

4. The Government's focus in Paris at the end of 2015 will rightly be on securing a global climate agreement which will keep global average temperatures below 2°C. Carbon markets and emissions trading systems can play an important role in helping countries achieve their commitments in an efficient and cost effective way. We recommend, therefore, that the Government ensure the Agreement promotes use of carbon markets and facilitates the future linking of emission trading systems. It should also ensure that provisions which will preclude the future development of carbon markets are actively avoided. (Paragraph 38)

Conclusion

5. Carbon pricing, and emissions trading in particular, is an established and well recognised policy instrument for controlling greenhouse gas emissions in a cost effective way because it provides flexibility to participants on how they want to reduce their emissions. A global carbon market would be the most favourable outcome in the long term because it is one of the most economically efficient ways to reduce emissions. However, attempting to achieve this benign outcome by means of a top-down process is extremely unlikely to succeed. Instead a bottom-up approach aimed at developing a network of regional, national and sub-national emissions trading systems, which gradually come together by linking, is much more likely. A global climate agreement that promotes carbon pricing and is favourable to linking represents the best chance of developing a global carbon market in the long term. The move towards a hybrid approach–which combines top-down elements for establishing and reviewing targets, with bottom-up elements of pledge-and-review tied to national policies and actions–in the international climate negotiations could significantly improve the prospects of linking carbon markets and is a welcome development. The world's largest economies, which have embraced emissions trading, China, the US and the EU will be the leading players in this process. As the first pioneering adopter of emissions trading and a strong advocate for market-based carbon pricing policies, the UK Government has an absolutely vital role to play in driving forward international linkage. (Paragraph 39)

Formal Minutes

Tuesday 10 February 2015

Members present:

Mr Tim Yeo, in the Chair

Ian Lavery	John Robertson
Mr Peter Lilley	Sir Robert Smith
Christopher Pincher	Graham Stringer

The following declarations of interest relating to the inquiry were made:

14 October 2014, 11 November 2014 and 25 November 2014

> Sir Robert Smith declared interests, as listed in the Register of Members' Interests, in the oil and gas industry, in particular a shareholding in Shell Transport and Trading (oil integrated).

Draft Report (*Linking emissions trading systems*), proposed by the Chair, brought up and read.

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

Paragraphs 1 to 39 read and agreed to.

Annex and Summary agreed to.

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

Ordered, That the Chair 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.

[Adjourned till Tuesday 24 February at 9.15 am

Witnesses

The following witnesses gave evidence. Transcripts can be viewed on the Committee's inquiry page at www.parliament.uk/ecc.

	Question number
Tuesday 14 October 2014	
Dirk Forrister, President and CEO, International Emissions Trading Association, and **Dr Luca Taschini**, Senior Dahrendorf Research Fellow, Grantham Research Institute on Climate Change and the Environment, London School of Economics	Q1-39
Miles Austin, Executive Director, Climate Markets and Investment Association, **Dr Richard Leese**, Director of Energy and Climate Change, Mineral Products Association, and **Martin Pibworth**, Managing Director of Wholesale, SSE	Q40-66
Monday 10 November 2014	
Professor Robert N. Stavins, Albert Pratt Professor of Business and Government, Harvard Kennedy School	Q67-93
Tuesday 11 November 2014	
Professor Sir David King, Foreign Secretary's Special Representative for Climate Change, Foreign and Commonwealth Office	Q94-126
Niclas Svenningsen, Manager DSI, Sustainable Development Mechanisms Programme, UNFCCC Secretariat	Q127-150
Tuesday 25 November 2014	
David Hone, Chief Climate Change Adviser, Shell Research Ltd	Q151-177
Damien Meadows, Adviser, DG Climate Action, European Commission	Q178-194
Amber Rudd MP, Parliamentary Under-Secretary of State, **Paul van Heyningen**, Head, Industrial Energy Efficiency, and **Ben Lyon**, Head of International Negotiations, Department of Energy and Climate Change	Q195-212

Published written evidence

The following written evidence was received and can be viewed on the Committee's inquiry web page at www.parliament.uk/ecc. LTS numbers are generated by the evidence processing system and so may not be complete.

1 A. Denny Ellerman (LTS0007)
2 City Of London Corporation (LTS0015)
3 DECC (LTS0005)
4 EDF Energy (LTS0009)
5 EEF, the manufacturers' organisation (LTS0006)
6 EU Commission (LTS0017)
7 Grantham Research Institute On Climate Change And The Environment (LTS0003)
8 International Emissions Trading Association (IETA) (LTS0016)
9 Mineral Products Association (LTS0008)
10 Prof. Robert N. Stavins (LTS0001)
11 Project Team Of Eu-Guangdong Ets Linkage Study (LTS0018)
12 SSE (LTS0011)
13 UNFCCC (LTS0013)
14 Viscount Monckton Of Brenchley (LTS0002)
15 World Bank Group (LTS0014)

List of Reports from the Committee during the current Parliament

All publications from the Committee are available on the Committee's website at www.parliament.uk/ecc.
The reference number of the Government's response to each Report is printed in brackets after the HC printing number.

Session 2010–12

First Report	Emissions Performance Standards	HC 523 (807)
Second Report	UK Deepwater Drilling–Implications of the Gulf of Mexico Oil Spill	HC 450 (882)
Third Report	The revised draft National Policy Statements on energy	HC 648
Fourth Report	Electricity Market Reform	HC 742 (HC 1448)
Fifth Report	Shale Gas	HC 795 (HC 1449)
Sixth Report	Ofgem's Retail Market Review	HC 1046 (HC 1544)
Seventh Report	A European Supergrid	HC 1040 (HC 1684)
Eighth Report	The UK's Energy Supply: Security or Independence?	HC 1065 (HC 1813)
Ninth Report	Solar Power Feed-In Tariffs	HC 1605 (HC 1815)
Tenth Report	The EU Emissions Trading System	HC 1476 (HC 1870)
Eleventh Report	The Future of Marine Renewables in the UK	HC 1624
Twelfth Report	Consumption-Based Emissions Reporting	HC 1646
First Special Report	Low carbon technologies in a green economy: Government Response to the Committee's Fourth Report of Session 2009–10	HC 455
Second Special Report	Fuel Poverty: Government Response to the Committee's Fifth Report of Session 2009–10	HC 541
Third Special Report	The future of Britain's electricity networks: Government Response to the Committee's Second Report of Session 2009–10	HC 629

Session 2012–13

First Special Report	The Future of Marine Renewables in the UK: Government Response to the Committee's Eleventh Report of Session 2010–12	HC 93
First Report	Draft Energy Bill: Pre-legislative Scrutiny	HC 275
Second Report	The road to UNFCCC COP 18 and beyond	HC 88 (HC 633)
Second Special Report	Consumption-Based Emissions Reporting: Government Response to the Committee's Twelfth Report of Session 2010–12	HC 488
Third Report	Low-Carbon Growth Links with China	HC 529 (HC 748)

Fourth Report	Pre-appointment hearing with the Government's preferred candidate for Chair of the Committee on Climate Change	HC 555
Fifth Report	Consumer Engagement with Energy Markets	HC 554 (HC 1036)
Sixth Report	Building New Nuclear: the challenges ahead	HC 117
Seventh Report	The Impact of Shale Gas on Energy Markets	HC 785

Session 2013–14

First Report	The Green Deal: watching brief	HC 142 (HC 607)
First Special Report	Building New Nuclear–the challenges ahead: Government Response to the Committee's Sixth Report of Session 2012–13	HC 106
Second Report	A Severn Barrage?	HC 194 (HC 622)
Second Special Report	The Green Deal: watching brief: Government Response to the Committee's First Report of Session 2013–14	HC 607
Third Special Report	The Impact of Shale Gas on Energy Markets: Government Response to the Committee's Seventh Report of Session 2012–13	HC 609
Third Report	UK oil refining	HC 340 (HC 718)
Fourth Report	Smart meter roll-out	HC 161 (HC 719)
Fifth Report	Energy Prices, Profits and Poverty	HC 108 (HC 717)
Sixth Report	Local Energy	HC 180 (HC 749)
Seventh Report	Pre-appointment hearing with the Government's preferred candidate for Chair of Ofgem	HC 645
Eighth Report	Levy Control Framework: Parliamentary oversight of Government levies on energy bills	HC 872
Ninth Report	Carbon capture and storage	HC 742

Session 2014–15

First Special Report	Levy Control Framework: Parliamentary oversight of Government levies on energy bills: Government Response to the Committee's Eighth Report of Session 2013–14	HC 590
First Report	Intergovernmental Panel on Climate Change Fifth Assessment Report Review of Working Group I contribution	HC 587 (HC 732)
Second Report	Innovate to accumulate: the Government's approach to low carbon innovation	HC 747 (HC 733)
Second Special Report	Carbon capture and storage: Government Response to the Committee's Ninth Report of Session 2013–14	HC 638
Third Report	The Green Deal: watching brief (part 2)	HC 348 (HC 882)
Fourth Report	Small nuclear power	HC 347