Carbon Capture and Storage and the London Protocol

Options for Enabling Transboundary CO_2 Transfer

International Energy Agency

WORKING PAPER

2011

Carbon Capture and Storage and the London Protocol

Options for Enabling Transboundary CO_2 Transfer

International Energy Agency

INTERNATIONAL ENERGY AGENCY

The International Energy Agency (IEA), an autonomous agency, was established in November 1974. Its primary mandate was – and is – two-fold: to promote energy security amongst its member countries through collective response to physical disruptions in oil supply, and provide authoritative research and analysis on ways to ensure reliable, affordable and clean energy for its 28 member countries and beyond. The IEA carries out a comprehensive programme of energy co-operation among its member countries, each of which is obliged to hold oil stocks equivalent to 90 days of its net imports. The Agency's aims include the following objectives:

- Secure member countries' access to reliable and ample supplies of all forms of energy; in particular, through maintaining effective emergency response capabilities in case of oil supply disruptions.
- Promote sustainable energy policies that spur economic growth and environmental protection in a global context – particularly in terms of reducing greenhouse-gas emissions that contribute to climate change.
- Improve transparency of international markets through collection and analysis of energy data.
- Support global collaboration on energy technology to secure future energy supplies and mitigate their environmental impact, including through improved energy efficiency and development and deployment of low-carbon technologies.
- Find solutions to global energy challenges through engagement and dialogue with non-member countries, industry, international organisations and other stakeholders.

IEA member countries:

Australia
Austria
Belgium
Canada
Czech Republic
Denmark
Finland
France
Germany
Greece
Hungary
Ireland
Italy
Japan
Korea (Republic of)
Luxembourg
Netherlands
New Zealand
Norway
Poland
Portugal
Slovak Republic
Spain
Sweden
Switzerland
Turkey
United Kingdom
United States

The European Commission also participates in the work of the IEA.

International Energy Agency
9 rue de la Fédération
75739 Paris Cedex 15, France

www.iea.org

Table of Contents

Acknowledgements 5
Executive Summary 6
1. Introduction 8
2. The London Protocol 10
2006 amendment enabling sub-seabed CO_2 storage 10
2009 amendment enabling transboundary export of CO_2 11
Status of ratifications and outlook 12
3. Options for addressing the Article 6 barrier 14
Option 1: Interpretative resolution 14
Option 2: Provisional application 16
Option 3: Subsequent agreement through an additional treaty 17
Option 4: Modification of the operation of relevant aspects of the London Protocol as between two or more contracting parties 19
Option 5: Suspension of the operation of relevant aspects of the London Protocol as between two or more contracting parties 20
Option 6: Conducting CCS through non-contracting parties 20
4. Summary of options to address the Article 6 barrier to deployment and conclusion 22
Annex 1: Contracting parties to the London Convention and London Protocol 24
Annex 2: Relevant provisions of London Protocol and VCLT 27
London Protocol 27
Article 2 (Objectives) 27
Article 4 (Dumping of wastes or other matter) 27
Article 6 (Export of wastes or other matter) 27
Article 21 (Amendment of the Protocol) 27
Article 22 (Amendment of the Annexes) 28
Annex 1 (Wastes or other matter that may be considered for dumping) 28
VCLT 29
Article 25 (Provisional application) 29
Article 30 (Application of successive treaties relating to the same subject matter) 29
Article 31 (General rule of interpretation) 29
Article 41 (Agreement to modify multilateral treaties between certain of the parties only) 30
Article 58 (Suspension of the operation of a multilateral treaty by agreement between certain of the parties only) 30
Annex 3: Contracting party involvement in international CCS initiatives 31
Acronyms, abbreviations and defined terms 33
References 34

List of tables

Table 1 Overview of options to overcome the Article 6 barrier to deployment, including advantages and disadvantages 22
Table 2 London Convention and London Protocol contracting parties 24
Table 3 London Protocol contracting party involvement in international CCS initiatives 31

Acknowledgements

This publication was prepared by the Carbon Capture and Storage Unit of the International Energy Agency (IEA). Justine Garrett was the lead IEA author for the publication. Sean McCoy and Juho Lipponen, CCS Unit Head, also provided significant input.

The IEA would like to thank Andrew Beatty, Ilona Millar and Kathryn McDougall of Baker & McKenzie's Sydney office as the consultants for this publication. Thanks must also go to Luke Warren from the Carbon Capture and Storage Association and Tim Dixon from the IEA Greenhouse Gas R&D Programme (Implementing Agreement for a Co-operative Programme on Technologies Relating to Greenhouse Gases Derived from Fossil Fuel Use) for their substantial support and guidance from inception of the project.

Executive Summary

The International Energy Agency (IEA) publication *Energy Technology Perspectives 2010* (*ETP 2010*) projects that in the absence of new energy policies or supply constraints, energy-related carbon dioxide (CO_2) emissions in 2050 will be twice 2007 levels. However, the *ETP 2010* BLUE Map Scenario also provides a least-cost strategy for reducing projected 2050 greenhouse gas emissions to half 2005 levels. Under the BLUE Map Scenario, carbon capture and storage (CCS) will need to contribute around one-fifth of total emissions reductions by 2050. CCS is therefore an essential part of the technology portfolio needed to achieve deep global emissions reductions.

To enable CCS to meet the one-fifth contribution set out by *ETP 2010*, about 100 CCS projects will be required by 2020 and over 3 000 by 2050.[1] As well as being a major technical, financial and logistical challenge, this is a significant regulatory challenge. For CCS to reach its emissions reduction potential, the 2009 IEA publication, *Technology Roadmap: Carbon capture and storage* (*CCS Roadmap*) recommends that international legal obstacles associated with global CCS deployment be removed by 2012 – including the prohibition on transboundary CO_2 transfer under the 1996 Protocol to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, 1972 (London Protocol).

The London Protocol has been interpreted by contracting parties as prohibiting the export of CO_2 from a contracting party to other countries for injection into sub-seabed geological formations. The protocol was amended by contracting parties in 2009 to allow for cross-border transportation of CO_2 for sub-seabed storage, but the amendment must be ratified by two-thirds of contracting parties to enter into force. Given the required number of ratifications, the number of ratifications to date, current contracting party interest in CCS and difficulties associated with the ratification process, it appears unlikely that two-thirds of contracting parties will be in a position to ratify the amendment in the near term. Raising awareness among relevant government ministries of the importance to global CCS deployment of ratifying international marine treaty amendments, including the London Protocol Article 6 amendment, was one of eight recommendations made by the Carbon Capture, Use and Storage (CCUS) Action Group at the Clean Energy Ministerial (CEM) (Abu Dhabi, April 2011).[2]

Consistent with the *CCS Roadmap* and CEM recommendation, this working paper outlines options that may be available to contracting parties under international law to address the barrier to deployment presented by Article 6, pending formal entry into force of the 2009 amendment. Five options based on international rules of treaty interpretation are considered. They include:

1. an interpretative resolution based on the general rule of interpretation;
2. resolving to provisionally apply the 2009 amendment;
3. subsequent agreement between contracting parties (bilateral or multilateral);
4. modification of the operation of relevant aspects of the London Protocol as between two or more contracting parties; and
5. suspension of the operation of relevant aspects of the London Protocol as between two or more contracting parties.

A sixth option – conducting CCS through non-contracting parties – is also considered.

The working paper concludes that the quickest and potentially most straightforward option would be for the contracting parties to pass a resolution at a meeting of the contracting parties

[1] 2009 IEA *Technology Roadmap: Carbon capture and storage*.

[2] See www.cleanenergyministerial.org/CCUS/index.html.

recommending provisional application of the 2009 amendment, pending ratification by a sufficient number of contracting parties. While a resolution to the effect that the London Protocol should not be interpreted as operating to prevent the transboundary movement of CO_2 from contracting parties would potentially also be a prompt option, contracting parties have agreed that the protocol could in fact be interpreted to prohibit export of CO_2 and have initiated a formal amendment process on this basis. They may therefore be reluctant to derogate from the formal process and agree to such a resolution. Other options remain available to the contracting parties if they cannot reach agreement.

1. Introduction

The International Energy Agency (IEA) considers carbon capture and storage (CCS) a crucial part of the portfolio of technologies needed to limit global warming through deep global emissions reductions. The IEA publication *Energy Technology Perspectives 2010* (*ETP 2010*) projects that in 2050, energy-related carbon dioxide (CO_2) emissions will be twice 2007 levels in the absence of new energy policies or emissions constraints. However, *ETP 2010* also demonstrates that the aggressive deployment of low-carbon technologies could *reduce* projected 2050 emissions to half 2005 levels – and that CCS could contribute about one-fifth of those reductions in a least-cost emissions reduction portfolio. Reaching that goal, however, will require CCS to move rapidly from its current research and demonstration phase into a large-scale, commercial phase of global technology deployment, with about 100 CCS projects to be operational by 2020 and over 3 000 by 2050.[3]

In parallel with ongoing efforts to demonstrate the technical and environmental viability and the safety of industrial-scale CCS projects, such rapid expansion and scale-up of CCS technology raises several regulatory issues. The 2009 IEA *Technology Roadmap: Carbon capture and storage* (*CCS Roadmap*) identifies three key regulatory actions and milestones that must be achieved for CCS to reach its emissions reduction potential. One of these is the need to overcome international legal obstacles by 2012 (Box 1).[4] In particular, the *CCS Roadmap* identifies as a required action the allowance of transboundary CO_2 transfer under the 1996 Protocol to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, 1972 (London Protocol).

Article 6 of the London Protocol, which prohibits contracting parties from allowing the export of wastes or other matter to other countries for dumping or incineration at sea, has been interpreted by contracting parties as prohibiting the export of CO_2 from a contracting party for injection into sub-seabed geological formations. The article was amended by the London Protocol contracting parties in 2009 to allow for cross-border transportation of CO_2 for sub-seabed storage, but the amendment must be ratified by two-thirds of contracting parties to enter into force. For reasons outlined in this working paper, it is unlikely that this will happen in the near term; while this is the case, it appears that Article 6 will constrain contracting parties that want to co-operate on offshore storage. This may restrict the options available to land-locked countries or countries that would like to develop international offshore storage hubs.

Raising awareness among relevant government ministries of the importance to global CCS deployment of ratifying international marine treaty amendments, including the London Protocol Article 6 amendment, was one of eight recommendations made by the Carbon Capture, Use and Storage (CCUS) Action Group at the 2011 Clean Energy Ministerial (Abu Dhabi, April 2011).[5] Subsequently, the CCUS Action Group identified a series of near-term actions required to meet or contribute to meeting the eight Clean Energy Ministerial recommendations. To build on its work with the *CCS Roadmap* and as one of these near-term actions, the IEA agreed to identify potential interim options to enable transboundary movement of CO_2 for storage while ratification of the Article 6 amendment progresses.[6]

---

[3] 2009 IEA Technology *Roadmap: Carbon capture and storage*.

[4] Page 36 of the *CCS Roadmap*, available at www.iea.org/roadmaps/ccs_roadmap.asp.

[5] See www.cleanenergyministerial.org/CCUS/index.html. The CCUS Action group recommendations to energy ministers were aimed at closing the gap between current actions and those required to deliver CCS on the scale and timeline required for CCS to achieve its greenhouse gas emission reduction potential. Contracting parties that are member governments of the CCUS Action Group are set out in Table 3 at Annex 3 to this working paper.

[6] Along with the IEA Greenhouse Gas R&D Programme, which has provided significant input into the development of this working paper (see Acknowledgements section above).

The purpose of this working paper is therefore to identify and consider options that might be available to contracting parties under international law to overcome the barrier to deployment presented by Article 6, pending formal entry into force of the 2009 amendment. The working paper is intended to complement efforts to advance the formal ratification process.

This working paper does not seek to address the transboundary movement of CO_2 associated with enhanced oil recovery (EOR), because this is unlikely to fall within the prohibition set out in Article 6 of the London Protocol, depending on the circumstances of a given project and quantities of CO_2 injected.[7]

Box 1 IEA *CCS Roadmap* regulatory actions and milestones

The 2009 IEA *CCS Roadmap*, which outlines the development and uptake goals required for CCS to effectively contribute to global climate stabilisation targets, identifies three key regulatory actions and milestones:

1. Review and adapt existing legal frameworks to regulate CCS demonstration projects by 2011 in OECD[8] countries, 2013 in early-mover non-OECD countries, and 2015 in all non-OECD countries with CCS potential.

2. All countries with CCS activities to review existing legal frameworks for their ability to regulate CCS, identify barriers or gaps, and create a comprehensive CCS regulatory framework, if required, by 2020.

3. Address international legal issues, including development of an international monitoring and verification protocol for CO_2 storage, and allowance of transboundary CO_2 transfer under the London Protocol by 2012.

This working paper aims to support the third *CCS Roadmap* action and sits within the context of broader IEA work on the regulatory aspects of CCS over the last decade. See the IEA website at www.iea.org/ccs/legal.asp for further information.

[7] This approach is consistent with that taken at the first meeting of the International Maritime Organization's (IMO) legal and technical working group on transboundary CO_2 sequestration issues, which considered EOR to fall outside the terms of reference of the working group (see International Maritime Organization (2008), *Report of the 1st Meeting of the Legal and Technical Working Group on Transboundary CO_2 Sequestration Issues*, LP/CO2 1/8 at paragraph 2.4). See also Article 1 paragraph 4.1.3 of the London Protocol, which provides that the "disposal or storage of wastes or other matter directly arising from, or related to the exploration, exploitation and associated off-shore processing of seabed mineral resources is not covered by the provisions of this Protocol", and the exceptions to the definition of "dumping" set out in Article 1 paragraphs 4.2.1 (disposal of wastes or other matter incidental to, or derived from the normal operations of platforms or other man-made structures at sea) and 4.2.2 (placement of matter for a purpose other than the mere disposal thereof).

[8] Organisation for Economic Co-operation and Development.

2. The London Protocol

The London Protocol was adopted on 7 November 1996 to update and eventually supersede the 1972 Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter (London Convention), one of the first international conventions controlling marine pollution and dumping of wastes and other matter in the sea.[9] The London Protocol is intended to create a more modern and stringent waste management system for the seas than that established by the London Convention, with greater emphasis on protection of the marine environment. It entered into force on 24 March 2006 and as at October 2011 had 40 contracting parties.

Article 2 (Objectives) provides that contracting parties must protect and preserve the marine environment from all sources of pollution and take effective measures to prevent, reduce and where practicable eliminate pollution caused by dumping or incineration at sea of wastes or other matter. Article 4 (Dumping of wastes or other matter) requires contracting parties to prohibit dumping of any wastes or other matter. This requirement is subject to an exception for those wastes or other matter listed in Annex 1 (Wastes or other matter that may be considered for dumping). Dumping of the wastes and other matter listed in Annex 1 is subject to certain conditions set out in the London Protocol, primarily in Annex 2.

The contracting parties to both the London Convention and London Protocol are detailed in Annex 1 to this working paper.

2006 amendment enabling sub-seabed CO_2 storage

Annex 1 of the London Protocol was amended in 2006 to add CO_2 streams from CO_2 capture processes for storage to the list of wastes or other matter that may be considered for dumping (paragraph 1.8 of Annex 1). New paragraph 4 of Annex 1 provides that CO_2 streams may only be considered for dumping if:

.1 disposal is into a sub-seabed geological formation; and

.2 they consist overwhelmingly of CO_2. They may contain incidental associated substances derived from the source material and the capture and sequestration processes used; and

.3 no wastes or other matter are added for the purpose of disposing of those wastes or other matter.

The amendments to Annex 1 entered into force on 10 February 2007.[10] As the amendments were made to an annex to the London Protocol, their entry into force was governed by Article 22 (Amendment of the Annexes). Under paragraph 4 of Article 22, amendments to the Annexes automatically enter into force for all contracting parties that have not objected to the amendment 100 days after the date of adoption at a meeting of contracting parties (or immediately on notification to the International Maritime Organization (IMO) of a contracting party's acceptance of the amendment prior to that time).[11] The relevant provisions of Article 22 are set out in Annex 2 to this working paper.

[9] "Sea" is defined in Article III of the London Convention to mean "all marine waters other than the internal waters of States". "Sea" is defined in Article 1 of the London Protocol to mean "all marine waters other than the internal waters of States, as well as the seabed and the subsoil thereof; it does not include sub-seabed repositories accessed only from land".

[10] For Canada, the amendment entered into force on 29 January 2007.

[11] No contracting parties declared to the IMO that they were unable to accept the 2006 amendment prior to the deadline specified in paragraph 4 of Article 22 and the amendment therefore entered into force for all contracting parties in 2007.

2009 amendment enabling transboundary export of CO_2

Article 6 of the London Protocol (Export of wastes or other matter) provides that "Contracting Parties shall not allow the export of wastes or other matter to other countries for dumping or incineration at sea". "Wastes or other matter" is defined broadly in Article 1 (Definitions) as "material and substance of any kind, form or description". The term "export" is not defined. At the first meeting of the IMO's legal and technical working group on transboundary CO_2 sequestration issues (IMO working group) in February 2008, delegations from nine contracting parties to the London Protocol considered how the transboundary movement of CO_2 for storage in sub-seabed geological formations relates to Article 6. The IMO working group considered that the term "export" used in Article 6 would include any movement of CO_2 from a contracting party to another country for the purpose of dumping at sea, regardless of whether the receiving country is a London Protocol contracting party or whether there is any commercial basis for the transfer.[12] Consequently, the IMO working group reached the conclusion that an amendment to Article 6 would be required to enable the transboundary movement of CO_2 from a contracting party. The report of the IMO working group meeting did not specify the basis for these findings, but was subsequently adopted by the third meeting of contracting parties in October 2008.[13]

The third meeting of contracting parties further agreed to give the political signal that the London Protocol should not constitute a barrier to transboundary movement of CO_2 streams, and to set up an intersessional correspondence group to consider the option of an amendment to Article 6, an interpretative resolution, or a combination of the two.[14] The decision to set up the intersessional group followed failure to reach a consensus view at the third meeting on whether it was necessary to amend Article 6, or whether an interpretative resolution would be sufficient, without excluding the possibility of amending Article 6 at a later stage.

At the fourth meeting of the contracting parties to the London Protocol (26-30 October 2009), Resolution LP.3(4) on the Amendment to Article 6 of the London Protocol (the 2009 amendment) was adopted on 30 October 2009. The 2009 amendment adds a new paragraph to Article 6:

2 Notwithstanding paragraph 1, the export of carbon dioxide streams for disposal in accordance with Annex 1 may occur, provided that an agreement or arrangement has been entered into by the countries concerned. Such an agreement or arrangement shall include:

2.1 confirmation and allocation of permitting responsibilities between the exporting and receiving countries, consistent with the provisions of this Protocol and other applicable international law; and

2.2 in the case of export to non-contracting parties, provisions at a minimum equivalent to those contained in this Protocol, including those relating to the issuance of permits and permit conditions for complying with the provisions of Annex 2, to ensure that the agreement or arrangement does not derogate from the obligations of contracting parties under this Protocol to protect and preserve the marine environment.

A Contracting Party entering into such an agreement or arrangement shall notify it to the Organization.

---

[12] International Maritime Organization (2008), *Report of the 1st Meeting of the Legal and Technical Working Group on Transboundary CO_2 Sequestration Issues*, LP/CO2 1/8 at 3.9. It is interesting to note that the IMO working group discussed but did not reach a conclusion on whether CO_2 taken out of the jurisdiction of one contracting party without being transferred into the jurisdiction of another (*i.e.* CO_2 that is transferred from internal to international waters) should be considered an export for the purposes of Article 6 (see paragraph 3.10 of the IMO working group report). However, it could be argued that this interpretation is unlikely given the Article 6 prohibition refers specifically to export "to other countries".

[13] International Maritime Organization (2008), *Report of the Thirtieth Consultative Meeting and the Third Meeting of Contracting Parties*, LC 30/16 at 5.24.

[14] See paragraphs 5.22 and 5.23.

It is not clear from the report of the fourth meeting of the contracting parties to what extent an interpretative resolution on transboundary movement of CO_2 (*i.e.* as opposed to a formal amendment to Article 6) was considered by contracting parties at that meeting.[15]

The amendment was adopted in accordance with Article 21 of the London Protocol (Amendment of the Protocol). Under Article 21, an amendment will enter into force for the contracting parties that have accepted it after two-thirds of the contracting parties have accepted the amendment. Annex 2 to this working paper sets out the relevant provisions of Article 21.

Status of ratifications and outlook

There are currently 40 contracting parties to the London Protocol (see Annex 1 of this working paper). In accordance with Article 21, 27 contracting parties must accept the 2009 amendment for it to enter into force.[16] If additional countries ratify the London Protocol, the number of contracting parties required for the amendment to enter into force will also increase.[17]

Achieving this number of ratifications is a significant challenge. In the two years since the 2009 amendment, only Norway has ratified. The Netherlands has also been taking steps in 2011 to ratify the amendment (see the Dutch entry in the second edition of the IEA's *Carbon Capture and Storage Legal and Regulatory Review*, released in May 2011)[18], but it is unclear whether any further contracting parties are considering ratification or taking action to ratify at this stage. Of the 40 contracting parties, 23 are involved in at least one of the principal international CCS initiatives, *i.e.* the Carbon Sequestration Leadership Forum, Clean Energy Ministerial Carbon Capture, Storage and Use Action Group, Global CCS Institute, IEA Greenhouse Gas R&D Programme and IEA CCS legal and regulatory initiatives (see Annex 3 of this working paper). However, of these 23 contracting parties, four are involved in only one initiative, which could be interpreted to mean that their interest in CCS is at an early stage and, thus, that ratification of the 2009 amendment may not be an immediate priority. The 19 contracting parties that are involved in two or more initiatives may represent a more accurate count of the number of contracting parties interested in CCS.

Of the contracting parties that are considering CCS and engaged in international CCS dialogue, not all are interested in offshore CO_2 storage or transboundary movement of CO_2 for offshore storage, making ratification of the Article 6 amendment a low priority. In addition, ratification of marine treaty amendments may fall outside the direct remit of energy ministers – the ministers who are most likely to be interested in facilitating CCS deployment – meaning that cross-government co-operation will probably be required for ratification to occur. In certain countries, ratification may also be contingent on laws and regulations governing export of wastes having first been amended for CCS purposes.

It seems clear that the 2009 amendment is unlikely to enter into force unless a concerted, international effort is made towards ratification. Even if awareness of the 2009 amendment increases and enough contracting parties become interested in CCS and transboundary movement of CO_2 for offshore storage to reach the required number of ratifications, it is worth noting the precedent of the 2007 amendments to the 1992 Convention for the Protection of the

[15] International Maritime Organization (2009), *Report of the Thirty-First Consultative Meeting and the Fourth Meeting of Contracting Parties*, LC 31/15. The report does note at paragraph 5.7 that the delegation of the United States stressed in discussions that it continued to believe that options other than an amendment merited continued consideration.

[16] Given that Article 21 refers to "two-thirds of the Contracting Parties" (*i.e.* and not two-thirds of contracting parties at the time of an amendment), it is assumed that this means two-thirds of contracting parties at any given time.

[17] Three countries have become contracting parties to the London Protocol since June 2010: Ghana, Nigeria and Yemen.

[18] IEA (2011), *Carbon Capture and Storage Legal and Regulatory Review*, 2nd edition, OECD/IEA, Paris, page 39. Available at www.iea.org/ccs/legal/review.asp.

Marine Environment of the North-East Atlantic (OSPAR Convention). These amendments, which were made to enable CO_2 injection into the sub-seabed, required ratification by seven OSPAR Convention contracting parties – or just under 50%.[19] The seventh contracting party to ratify the amendments, Denmark, submitted its ratification to the OSPAR secretariat only this year, meaning that the 2007 amendments have taken around four years to enter into force. Given that many more contracting parties are required to ratify the 2009 London Protocol amendments, it is likely that Article 6 will continue to present a barrier to transboundary CCS deployment in the foreseeable future,[20] even though contracting parties have given a clear political signal that the London Protocol should not constitute such a barrier.

[19] There are 15 government contracting parties to the OSPAR Convention plus the European Union.

[20] At the third meeting of contracting parties it was also noted that the current wording of Article 6 could be in conflict with other international instruments applicable to some contracting parties, such as the Directive 2009/31/EC of the European Parliament and of the Council of 23 April 2009 on the geological storage of carbon dioxide (International Maritime Organization (2008), *Report of the Thirtieth Consultative Meeting and the Third Meeting of Contracting Parties*, LC 30/16 at 5.18). Such potential conflict resulted from the objective of the EU CCS Directive to facilitate sub-seabed geological storage in the territorial waters of EU member states.[21] Any contracting party seeking to enable the transboundary movement of CO_2 through an interim solution pending formal entry into force of the 2009 amendment will need to ensure sufficient certainty is afforded to industry to facilitate commercial transitions relating to CCS operations.

3. Options for addressing the Article 6 barrier

This section considers five options that may be available to contracting parties under international law to facilitate transboundary transfer of CO_2 for offshore storage, pending formal entry into force of the 2009 amendment.[21] The options are based on the international rules of treaty interpretation as set out in the 1969 Vienna Convention on the Law of Treaties (VCLT) – the convention governing the law of agreements between states (of which the London Protocol is an example) – as well as precedents and commentaries. Political, diplomatic or other considerations may affect contracting party willingness to invoke any particular option. Recognising that such considerations are a matter for contracting parties, this working paper focuses on the relevant principles of international law, with the aim of raising options for further discussion and analysis by contracting parties. The five options that appear to be open to contracting parties under international law include:

1. an interpretative resolution based on the general rule of interpretation;
2. resolving to provisionally apply the 2009 amendment;
3. subsequent agreement between contracting parties (bilateral or multilateral);
4. modification of the operation of relevant aspects of the London Protocol as between two or more contracting parties; and
5. suspension of the operation of relevant aspects of the London Protocol as between two or more contracting parties.

A sixth option, of conducting CCS through non-contracting parties, is also considered.[22]

Option 1: Interpretative resolution

An interpretative resolution to enable the transboundary movement of CO_2 from a contracting party has previously been raised for consideration by London Protocol contracting parties, notably in the third meeting of contracting parties (see the discussion on the 2009 amendment under section 2 of this working paper).

Parties to international treaties may use what is referred to as the "general rule of treaty interpretation" to modify the application of a treaty. The benefit of this practice is that it enables parties to amend the application of a treaty without having to make a formal amendment, which is often a long, difficult process. The general rule of treaty interpretation may be of particular interest where – as in the case of the London Protocol – there appears to be a general consensus between parties on the relevant issue based on previous amendments or political signals made. The general rule of treaty interpretation is set out in Article 31 of the VCLT (General rule of interpretation). Paragraph 1 of Article 31 provides that a treaty is to be interpreted in good faith in accordance with the ordinary meaning to be given to the terms of the treaty in their context and in the light of its object and purpose. Paragraphs 2 and 3 expand on what is taken to be the context for the purpose of the interpretation of a treaty, and other factors to take into account. Under paragraph 3, any subsequent agreement between the parties regarding interpretation of the treaty or the application of its provisions, or subsequent practice in the application of the

[21] Any contracting party seeking to enable the transboundary movement of CO_2 through an interim solution pending formal entry into force of the 2009 amendment will need to ensure sufficient certainty is afforded to industry to facilitate commercial transitions relating to CCS operations.

[22] There may be a risk that a contracting party that engages in export of CO_2 for storage prior to formal entry into force of the 2009 amendment be challenged by another contracting party in legal proceedings before an international court or tribunal. However, that risk may be minimised where there is a clear legal intention on the part of contracting parties to enable transboundary transfer (through, for example, the passage of a resolution).

treaty establishing the agreement of the parties regarding its interpretation, are relevant factors. If expressly intended by the parties, an agreement or instrument made in connection with a treaty may form a part of the treaty. Any relevant rules of international law applicable in the relations between the parties are also to be taken into account. The exact terms of Article 31 are set out in Annex 2 to this working paper.

In view of paragraph 3 of Article 31, a resolution made at a meeting of London Protocol contracting parties could potentially be an effective manner of clarifying the application of Article 6 of the London Protocol. There are a number of examples where the general rule of interpretation has been used to modify the application of a treaty without making a formal amendment. The 1971 Ramsar Convention on Wetlands of International Importance (Ramsar Convention) had considerable limitations which have been dealt with primarily through the adoption of recommendations and resolutions concerning the interpretation and implementation of the treaty.[23] The Convention on International Trade in Endangered Species 1973 was modified by a resolution of the Conference of the Parties in 1986, despite the Convention having a formal amendment procedure.[24] The key benefit of this option is that it would be a prompt way of addressing the Article 6 barrier to deployment.[25]

In terms of the other requirements of Article 31:

- **Object and purpose of the London Protocol:** If CCS is undertaken in a responsible manner it does not pose a threat to the marine environment and is thus not inconsistent with the object and purpose of the London Protocol (see section 2 of this working paper). This interpretation would also be consistent with the 2006 amendments to Annex 1 of the London Protocol, which have entered into force.
- **Relevant rules of international law:** The overarching customary duty under international law to protect, reduce and control environmental harm could be considered relevant in this context. Climate change and ocean acidification – both a result of increased concentrations of CO_2 in the atmosphere – pose serious threats to the marine environment. IEA analysis suggests that CCS will be a critical component of the portfolio of low-carbon technologies required to significantly reduce emissions of CO_2 and halt the increase in atmospheric CO_2 concentrations.
- **Subsequent practice:** The International Law Commission[26] Commentaries (ILC Commentaries) on paragraph 3 of Article 31 emphasise that subsequent practice of parties in the application of a treaty is evidence of a common understanding of the meaning of its terms.[27] Arguably, the agreement made at the third meeting of the contracting parties that the London Protocol

[23] For example, at the Sixth Meeting of the Conference of the Contracting Parties in 1996, the Conference resolved to add subterranean karst and cave hydrological systems to the Ramsar wetland classification system (Convention on Wetlands, Proceedings of the 6th Meeting of the Conference of the Contracting Parties, Brisbane, Australia, 19-27 March 1996, Resolution VI.5). At the Tenth Meeting of the Conference of the Contracting Parties in 2008, the Conference resolved to create a summary table and chart of the general functions of national implementing agencies and related bodies and instructed parties, as a minimum, to appoint an Administrative Authority and a National Focal Point, among others (Convention on Wetlands, Proceedings of the 10th Meeting of the Conference of the Contracting Parties, Changwon, Republic of Korea, 28 October-4 November 2008, Resolution X.29).

[24] Aust, A., (2000), *Modern Treaty Law and Practice*, Cambridge University Press, Cambridge, p 214.

[25] The simplicity of this option would depend on the modalities of any resolution as determined by contracting parties.

[26] The International Law Commission (ILC) is a subsidiary body of the United Nations General Assembly. Article 1, paragraph 1, of the Statute of the International Law Commission provides that the "Commission shall have for its object the promotion of the progressive development of international law and its codification". In pursuing this objective, the ILC initiates studies and makes recommendations about treaty development and interpretation. ILC studies and commentaries are not sources of law, rather, they are "subsidiary means for the determination of rules of law." That is, the work of the ILC is similar in authority to the writings of highly qualified publicists.

[27] International Law Commission (1966), *Draft Articles on the Law of Treaties with commentaries*, II Yearbook of the International Law Commission 186, p. 221-2.

should not constitute a barrier to transboundary movement of CO_2 streams is evidence in support of the proposition that Article 6 of the London Protocol could legitimately be interpreted as not prohibiting the transport of CO_2 streams for disposal in accordance with Annex 1.

The key issue with respect to this option is the contracting parties having adopted Resolution LP.3(4) on the Amendment to Article 6 of the London Protocol in October 2009, thereby commencing the formal amendment process with respect to Article 6. This essentially amounts to a formal acknowledgement by contracting parties that Article 6 of the London Protocol could in fact be interpreted to prohibit the transboundary export of CO_2 for CCS projects; this is likely to inhibit a subsequent resolution to the effect that Article 6 should not be interpreted as prohibiting such export, which may also not be politically acceptable to contracting parties given Resolution LP.3(4). In addition, contracting parties may not wish to derogate from the formal amendment process, given that it has already been commenced.

Option 2: Provisional application

Article 25 of the VCLT (Provisional application) sets out a procedure by which treaties (or parts of treaties, where only a certain part of a treaty is required to meet the immediate needs of contracting parties[28]) can be applied provisionally before entering into force. Under Article 25, a treaty is applied provisionally if the treaty so provides or there is agreement between contracting parties (*i.e.* in a separate protocol or through exchange of letters). The text of Article 25 is set out in Annex 2 to this working paper.

The use of provisional application clauses in treaties has increased significantly in order to bring treaties that are subject to ratification into force in a timely manner. The ILC Commentaries on Article 25 provide that this practice occurs with some frequency in the situation where, for example, a treaty deals with urgent matters.[29] There is no such provisional application clause in the Amendment to Article 6 of the London Protocol, or in the London Protocol itself. However, where there is no provisional application clause in a treaty, parties may resolve to provisionally apply the treaty (or part of the treaty) by voting on a resolution to that effect.[30] Any party that does not vote will not be under such an obligation. If the contracting parties to the London Protocol so agree, the Article 6 amendment could be applied provisionally, pending ratification by a sufficient number of contracting parties. The key advantage of this option is that, similar to option 1, it would be a prompt way of addressing the Article 6 barrier to deployment.[31] This option is also more consistent with the 2009 amendment.

There are several examples where parties to an international treaty have agreed to provisional application. The General Agreement on Tariffs and Trade 1947 has been applied provisionally for decades by a Protocol of Provisional Application. Article 7 of the 1994 Agreement relating to the Implementation of Part XI of the 1982 United Nations Convention on the Law of the Sea (UNCLOS) provided that if the agreement had not entered into force by 16 November 1994, it would be applied provisionally to states that had agreed to its adoption, unless they notified the

[28] International Law Commission (1966), *Draft Articles on the Law of Treaties with commentaries*, II Yearbook of the International Law Commission 186, p. 210.

[29] International Law Commission (1966), *Draft Articles on the Law of Treaties with commentaries*, II Yearbook of the International Law Commission 186, p. 210.

[30] Aust, A., (2000), *Modern Treaty Law and Practice*, Cambridge University Press, Cambridge, p. 139.

[31] Again, the simplicity of this option would depend on the modalities of any resolution as determined by contracting parties.

depository otherwise. This was an implied consent to provisional application with an opt-out. Of the 79 signatories, 17 opted out.[32] The Energy Charter Treaty provides a further example.[33]

The VCLT does not specify whether provisional application may apply to an amendment to a treaty. However, the ILC Commentaries provide that part of a treaty may be brought into force to meet the immediate needs of parties and do not exclude amendments from the application of Article 25. Further, the Ramsar Convention provides an example of the provisional implementation of an amendment. At the Third Meeting of the Conference of the Contracting Parties in 1987, the conference resolved to provisionally implement amendments adopted at that meeting, with the following text: "The Conference of the Contracting Parties URGES the Contracting Parties to implement on a provisional basis the measures and procedures envisaged by the amendments adopted by the Extraordinary Conference of the contracting parties to that Convention until such time as they come into force pursuant to Article 10 bis of the Convention".[34]

There is no guidance in the VCLT or the ILC Commentaries as to a minimum vote or other requirements for provisional application under Article 25. However, if one takes the provisional application of the amendment to the Ramsar Convention as an example, if the contracting parties to the London Protocol resolve to implement the amendment on a provisional basis at a meeting of the parties in the usual way that a resolution is made, this would arguably be sufficient to allow interested contracting parties to engage in transboundary export of CO_2 under the London Protocol. Of course, the basis on which any resolution is made would ultimately need to be determined by London Protocol contracting parties. The logistics of the provisional application should also be agreed upon by the contracting parties at the meeting and set out in the text of the resolution. The *travaux préparatoires* to the resolution could refer, as factors in support of the provisional application of the amendment, to: the effects of climate change and ocean acidification on the marine environment; the role of CCS in reducing CO_2 emissions; the 2006 amendment to Annex 1 to enable injection of CO_2 in the sub-seabed; and the agreement by the contracting parties in 2008 that the London Protocol should not constitute a barrier to CCS.

Option 3: Subsequent agreement through an additional treaty

Article 30 of the VCLT deals with the application of successive treaties relating to the same subject matter, setting out the rights and obligations of parties to such treaties. Paragraphs 3 and 4 of Article 30 provide:

3. When all the parties to the earlier treaty are parties also to the later treaty but the earlier treaty is not terminated or suspended in operation […], the earlier treaty applies only to the extent that its provisions are compatible with those of the later treaty.
4. When the parties to the later treaty do not include all the parties to the earlier one:
   (a) as between states parties to both treaties the same rule applies as in paragraph 3;

[32] Aust, A., (2000), *Modern Treaty Law and Practice*, Cambridge University Press, Cambridge, p. 140.

[33] Article 45(1) of the Energy Charter Treaty provides, relevantly: (1) Each signatory agrees to apply this Treaty provisionally pending its entry into force for such signatory in accordance with Article 44, to the extent that such provisional application is not inconsistent with its constitution, laws or regulations. (2) (a) Notwithstanding paragraph (1) any signatory may, when signing, deliver to the Depository a declaration that it is not able to accept provisional application. The obligation contained in paragraph (1) shall not apply to a signatory making such a declaration. Any such signatory may at any time withdraw that declaration by written notification to the Depository. Provisional application only applied to states that signed the instrument when it was originally open for signature. At the time of signing, a state had the option of also filing a declaration stating that it was unable to apply the treaty provisionally. Initially, only Russia and Belarus applied the Energy Charter Treaty provisionally.

[34] Convention on Wetlands, Proceedings of the 3rd Meeting of the Conference of the Contracting Parties, Regina, Canada, 27 May-5 June 1987, Resolution 3.4.

(b) as between a state party to both treaties and a State party to only one of the treaties, the treaty to which both States are parties governs their mutual rights and obligations.

The full text of Article 30 is set out at Annex 2 to this working paper. Contracting parties to the London Protocol that wish to engage in the transboundary export of CO_2 could potentially conclude a treaty allowing them to do so and making provisions regulating CCS projects.[35] The benefit of this option is that contracting parties seeking to engage in transboundary export of CO_2 for storage could negotiate terms suitable to them, as between themselves.

It is important to note that the ILC Commentaries on Article 30 emphasise that any later treaty cannot deprive a state that is not a party thereto of its rights under the earlier treaty, as that would constitute a breach of the earlier treaty.[36] While a later treaty can suppress an earlier treaty in whole or in part, the operation of the later treaty must be confined to the states that become parties to it.[37] When drafting any subsequent treaty, it is therefore important to consider whether anything needs to be said about the earlier treaty and the relationship between the two.[38] For example, parties may wish to include a clause stating that for parties to it, the relevant treaty prevails over earlier treaties. This is ideal where a subsequent treaty is concluded between states that do not include all the parties to the earlier treaty.[39] Article 311 of UNCLOS, which sets out how the convention relates to other conventions and international agreements, provides an example.[40]

If certain contracting parties to the London Protocol were to enter into a subsequent treaty to enable transboundary export of CO_2, such a treaty (whether bilateral or multilateral) would need to clearly set out the relationship between it and the London Protocol. Further, it should not affect the rights of other contracting parties to the London Protocol that do not become parties to the subsequent treaty. It difficult to see how a subsequent agreement enabling export of CO_2 streams for disposal in accordance with Annex 1 and consistent with the 2009 amendment could be perceived as depriving a contracting party of its rights under the London Protocol. The rights of other contracting parties are unlikely to be affected, except perhaps if CO_2 streams are transported through their territory (in which case an agreement would need to be reached with

[35] An example of a subsequent agreement is the London Protocol itself. The London Protocol was intended to update and eventually supersede the London Convention. However, as is evident from Annex 1, many contracting parties to the London Convention have not ratified the London Protocol. Therefore, Article 23 of the London Protocol (Relationship between the Protocol and the Convention) provides: "This Protocol will supersede the Convention as between Contracting Parties to this Protocol which are also Parties to the Convention."

[36] International Law Commission (1966), *Draft Articles on the Law of Treaties with commentaries*, II Yearbook of the International Law Commission 186, p. 215.

[37] International Law Commission (1966), *Draft Articles on the Law of Treaties with commentaries*, II Yearbook of the International Law Commission 186, p. 215.

[38] Aust, A., (2000), *Modern Treaty Law and Practice*, Cambridge University Press, Cambridge, p. 173.

[39] Aust, A., (2000), *Modern Treaty Law and Practice*, Cambridge University Press, Cambridge, p. 176.

[40] Article 311 of UNCLOS (Relation to other conventions and international agreements) provides as follows: 1. This Convention shall prevail, as between States Parties, over the Geneva Conventions on the Law of the Sea of 29 April 1958; 2. This Convention shall not alter the rights and obligations of States Parties which arise from other agreements compatible with this Convention and which do not affect the enjoyment by other States Parties of their rights or the performance of their obligations under this Convention; 3. Two or more States Parties may conclude agreements modifying or suspending the operation of provisions of this Convention, applicable solely to the relations between them, provided that such agreements do not relate to a provision derogation from which is incompatible with the effective execution of the object and purpose of this Convention, and provided further that such agreements shall not affect the application of the basic principles embodied herein, and that the provisions of such agreements do not affect the enjoyment by other States Parties of their rights or the performance of their obligations under this Convention; 4. States Parties intending to conclude an agreement referred to in paragraph 3 shall notify the other States Parties through the depositary of this Convention of their intention to conclude the agreement and of the modification or suspension for which it provides; 5. This article does not affect international agreements expressly permitted or preserved by other articles of this Convention; 6. States Parties agree that there shall be no amendments to the basic principle relating to the common heritage of mankind set forth in article 136 and that they shall not be party to any agreement in derogation thereof.

that particular state). The disadvantage of this option is that it would require more time and effort than options 1 and 2.

Option 4: Modification of the operation of relevant aspects of the London Protocol as between two or more contracting parties

Article 41 of the VCLT deals with agreements to modify multilateral treaties between certain parties only. Under Article 41, two or more parties to a multilateral treaty may conclude an agreement to modify the treaty as between themselves alone if: (a) the possibility of such a modification is provided for by the treaty; or (b) the modification in question is not prohibited by the treaty and: does not affect the enjoyment by the other parties of their rights under the treaty or the performance of their obligations; and does not relate to a provision, derogation from which is incompatible with the effective execution of the object and purpose of the treaty as a whole. Article 41 is set out in Annex 2 to this working paper.

Article 41 allows for an "*inter se* agreement" between some parties, intended to modify the relevant treaty between themselves alone, provided that the conditions in Article 41(1)(a) or (b) are met.[41] If the treaty does not provide for modification, both the conditions in Article 41(1)(b) must be met.

The London Protocol itself does not contain any modification provisions. This means that while modification by agreement of certain parties is not specifically provided for, it is not prohibited. Depending on whether the remaining requirements of Article 41(b) are met, two or more contracting parties to the London Protocol could potentially conclude an agreement to modify Article 6 as between themselves, to enable transboundary movement of CO_2 under the London Protocol. The key benefit of this option is that contracting parties seeking to engage in transboundary export of CO_2 for storage could negotiate to do so between themselves. Modification of the London Protocol between two or more contracting parties so as to allow for transboundary export of CO_2 is unlikely to be perceived as incompatible with the object and purpose of the London Protocol as a whole, as it is consistent with the amendment that has already been made to Annex 1, the 2009 amendment, the views of the contracting parties and the overarching purpose of protecting the marine environment. Further, if two contracting parties enter into an arrangement for the export of CO_2 streams for disposal in accordance with Annex 1, the rights of other contracting parties are unlikely to be affected, except perhaps if CO_2 streams are transported through their territory (in which case an agreement would need to be reached with that particular state). The disadvantage of this option is that it is likely to require more time and effort than options 1 and 2. In addition, there remains a risk that other contracting parties may argue that such a modification would be incompatible with the object and purpose of the London Protocol or constitutes an adverse impact on the enjoyment of their rights.

[41] International Law Commission (1966), *Draft Articles on the Law of Treaties with commentaries*, II Yearbook of the International Law Commission 186, p. 235. It should be noted that in the Draft Articles there was an article that provided for the modification of treaties by subsequent practice in the application of the treaty. This was removed before the final version of the VCLT was settled.

Option 5: Suspension of the operation of relevant aspects of the London Protocol as between two or more contracting parties

Article 58 of the VCLT (Suspension of the operation of a multilateral treaty by agreement between certain of the parties only) provides that two or more parties to a multilateral treaty may conclude an agreement to suspend the operation of provisions of the treaty, temporarily and as between themselves alone, if: (a) the possibility of such a suspension is provided for by the treaty; or (b) the suspension in question is not prohibited by the treaty and: does not affect the enjoyment by the other parties of their rights under the treaty or the performance of their obligations; and is not incompatible with the object and purpose of the treaty. The full text of Article 58 is set out in Annex 2 to this working paper.

Given that many multilateral treaties function through the bilateral relations of parties, temporary suspension of either entire treaties or parts of treaties may occur between certain parties only, without the consent of all parties.[42] Thus, if two or more contracting parties to the London Protocol wish to engage in the transboundary export of CO_2, they could consider suspending Article 6 only insofar as it prohibits that activity as between themselves until the amendment comes into force.

Suspension is not contemplated by the London Protocol, which means that contracting parties would have to fulfil the requirements of Article 58(b) of the VCLT to be able to agree to a suspension. Given that suspension is not addressed, the London Protocol does not prohibit suspension. As with the provisions for modification, partial suspension in this manner is unlikely to be considered incompatible with the object and purpose of the treaty as a whole as it is consistent with the amendment that has already been made to Annex 1, the 2009 amendment, the views of the contracting parties and the overarching purpose of protecting the marine environment. The temporary suspension of a small part of the London Protocol is also unlikely to affect the rights of any contracting party, except perhaps if CO_2 streams are transported through their territory (in which case an agreement would need to be reached with that particular contracting party). Therefore it appears that it would be possible for two or more contracting parties to suspend the operation of Article 6 to the extent that Article prohibits the export of CO_2 streams for injection into the sub-seabed, pending sufficient numbers of parties ratifying the 2009 amendment. Again, the advantage of this option is that contracting parties seeking to engage in transboundary export of CO_2 for storage could negotiate to do so between themselves.

From a political perspective, however, the other approaches referred to (in particular, a resolution clarifying the application of Article 6 or a resolution implementing provisional application of the amendment) may be preferable to suspension, even if it is only to the extent that the export of CO_2 for disposal in the sub-seabed is allowed. In addition, similar to option 4, there remains a risk that other contracting parties may argue that such suspension would be incompatible with the object and purpose of the London Protocol or constitute an adverse impact on the enjoyment of their rights.

Option 6: Conducting CCS through non-contracting parties

While exporting CO_2 to or with non-contracting parties to the London Protocol may be considered an option, the February 2008 meeting of the IMO working group in February 2008 reached the conclusion that the export of CO_2 by a contracting party to another country for the

[42] International Law Commission (1966), *Draft Articles on the Law of Treaties with commentaries*, II Yearbook of the International Law Commission 186, p. 252; Aust, A., (2000), *Modern Treaty Law and Practice*, Cambridge University Press, Cambridge, p. 222.

purposes of sub-seabed injection would be prohibited by Article 6, regardless of whether the other country was a contracting party to the London Protocol.[43] As noted above, the report of the IMO working group was subsequently adopted by the third meeting of contracting parties in October 2008.[44]

[43] International Maritime Organization (2008), *Report of the 1st Meeting of the Legal and Technical Working Group on Transboundary CO_2 Sequestration Issues*, LP/CO2 1/8 at 3.9.

[44] International Maritime Organization (2008), *Report of the Thirtieth Consultative Meeting and the Third Meeting of Contracting Parties*, LC 30/16 at 5.24.

4. Summary of options to address the Article 6 barrier to deployment and conclusion

Table 1 provides an overview of each option addressed in section 3 of this working paper, including how and when the relevant option might be invoked, and sets out advantages and disadvantages of the different options.

Table 1: Overview of options to overcome the Article 6 barrier to deployment, including advantages and disadvantages

Option	How and when option might be invoked	Advantages	Disadvantages
1. **General rule of interpretation: amendment/ clarification of Article 6 by interpretative resolution**	By resolution at a meeting of contracting parties	Prompt way of clarifying the application of Article 6	• Contracting parties have agreed that Article 6 currently operates to prevent transboundary movement of CO_2, which is difficult to reconcile with this option • Contracting parties may not wish to derogate from the formal amendment process
2. **Provisional application of 2009 amendment by resolution**	By resolution at a meeting of contracting parties	• Prompt way of clarifying the application of Article 6 • More likely to receive support than option 1 as it is more consistent with the 2009 amendment and a more formal process	Contracting parties may not agree to provisional application
3. **Subsequent agreement through an additional treaty**	Contracting parties seeking to engage in transboundary export of CO_2 for storage could enter into negotiations for an agreement immediately	Contracting parties seeking to engage in transboundary export of CO_2 for storage could negotiate terms suitable to them, among themselves	• This would require more time and effort than options 1 and 2 • Other contracting parties may argue that such an agreement deprives the relevant contracting party of its rights under the earlier treaty
4. **Modification of relevant aspects of Article 6**	Contracting parties seeking to engage in transboundary export of CO_2 for storage could enter into negotiations for modification immediately	Contracting parties seeking to engage in transboundary export of CO_2 for storage could negotiate to do so between themselves	• This would require more time and effort than options 1 and 2 • Other contracting parties may argue that such a modification would be incompatible with the object and purpose of the London Protocol or constitute an adverse impact on the enjoyment of their rights
5. **Suspension of relevant aspects of Article 6**	Contracting parties seeking to engage in transboundary export of CO_2 for storage could enter into negotiations for suspension immediately	Contracting parties seeking to engage in transboundary export of CO_2 for storage could negotiate to do so between themselves	• This would require more time and effort than options 1 and 2 • Other contracting parties may argue that such a modification would be incompatible with the object and purpose of the London Protocol or constitute an adverse impact on the enjoyment of their rights • It is undesirable to decrease obligations under the London Protocol

6.	**Conducting CCS through non-contracting parties**	Immediate	This option would render any amendment, clarification or alteration of the London Protocol unnecessary	Contracting parties have determined that the export of CO_2 to non-contracting parties is also prohibited by Article 6

The quickest and potentially most straightforward option would be for the contracting parties to pass a resolution at a meeting of the contracting parties recommending provisional application of the 2009 amendment, pending ratification of the amendment by a sufficient number of contracting parties. Given that contracting parties agreed at their third meeting that Article 6 should not operate as a barrier to CCS, it seems unlikely that they would object to provisional application of the 2009 amendment (in turn agreed to at a meeting of the contracting parties). In addition, this option may be appealing to contracting parties as consistent with the 2009 amendment.

A clarifying resolution at a meeting of contracting parties to the effect that Article 6 of the London Protocol should not be interpreted as operating to prevent the transboundary movement of CO_2 from contracting parties would potentially also be a prompt way of clarifying the application of Article 6. However, given that the contracting parties have agreed that Article 6 could be interpreted to prohibit export of CO_2 and have initiated a formal amendment process on this basis, they may be reluctant to derogate from the formal process and agree to such a resolution.

If the contracting parties cannot reach agreement, those contracting parties wishing to engage in transboundary export could enter into a subsequent agreement (bilateral or multilateral). They could also modify or suspend Article 6 to the extent that it can be seen to prohibit transboundary export of CO_2. However, all three of these options would be likely to require more time and effort than a resolution of contracting parties. In addition, from a political perspective, contracting parties may see suspension in particular as less desirable.

Ultimately, contracting party willingness to invoke any of the options raised in this working paper is likely to depend on political, diplomatic or other considerations, in addition to the relevant principles of international law addressed.

Annex 1: Contracting parties to the London Convention and London Protocol

Table 2: London Convention and London Protocol contracting parties[45]

Contracting Party	Date of deposit of instrument: London Convention	Date of deposit of instrument: London Protocol
Afghanistan	2 April 1975	-
Angola	-	4 October 2001
Antigua and Barbuda	6 January 1989	-
Argentina	11 September 1979	-
Australia	21 August 1985	4 December 2000
Azerbaijan	1 July 1997	-
Barbados	4 May 1994	25 July 2006
Belarus	29 January 1976	-
Belgium	12 June 1985	13 February 2006
Benin	28 April 2011	-
Bolivia	10 June 1999	-
Brazil	26 July 1982	-
Bulgaria	25 January 2006	25 January 2006
Canada	13 November 1975	15 May 2000
Cape Verde	26 May 1977	-
Chile	4 August 1977	-
China	14 November 1985	29 September 2006
Costa Rica	16 June 1986	-
Cote d'Ivoire	9 October 1987	-
Croatia	8 October 1991 (succession)	-
Cuba	1 December 1975	-
Cyprus	7 June 1990	-
Democratic Republic of Congo	16 September 1975	-
Denmark	23 October 1974	17 April 1997
Dominican Republic	7 December 1973	-
Egypt	30 July 1992	20 May 2004
Equatorial Guinea	21 January 2004	-
Finland	3 May 1979	-
France	3 February 1977	7 January 2004
Gabon	5 February 1982	-
Georgia	-	18 April 2000
Germany	8 November 1977	16 October 1998
Greece	10 August 1981	-
Ghana	-	2 June 2010
Guatemala	14 July 1975	-
Haiti	28 August 1975	-

[45] As at October 2011.

Honduras	2 May 1980	-
Hungary	5 February 1976	-
Iceland	24 May 1973	21 May 2003
Iran	13 January 1997	-
Ireland	17 February 1982	26 April 2001
Italy	30 April 1984	13 October 2006
Jamaica	22 March 1991	-
Japan	15 October 1980	2 October 2007
Jordon	11 November 1974	-
Kenya	7 January 1976	14 January 2008
Kiribati	12 July 1979 (succession)	-
Libyan Arab Jamahiriya	22 November 1976	-
Luxembourg	21 February 1991	21 November 2005
Malta	28 December 1989	-
Marshall Islands	-	9 May 2008
Mexico	7 April 1975	22 February 2006
Monaco	16 May 1977	-
Montenegro	3 June 2006 (succession)	-
Morocco	18 February 1977	-
Nauru	26 July 1982	-
Netherlands	2 December 1977	24 September 2008
New Zealand	30 April 1975	30 July 2001
Nigeria	19 March 1976	1 October 2010
Norway	4 April 1974	16 December 1999
Oman	13 March 1984	-
Pakistan	9 March 1995	-
Panama	31 July 1975	-
Papua New Guinea	10 March 1980	-
Peru	7 May 2003	-
Philippines	10 August 1973	-
Poland	23 January 1979	-
Portugal	14 April 1978	-
Republic of Korea	21 December 1993	22 January 2009
Russian Federation	30 December 1975	-
Saint Kitts and Nevis	-	7 October 2004
Saint Lucia	23 August 1985	-
Saint Vincent and the Grenadines	24 October 2001	-
Saudi Arabia	-	2 February 2006
Serbia	3 June 2006 (succession)	-
Seychelles	29 October 1984	-
Sierra Leone	12 March 2008	10 March 2008
Slovenia	25 June 1991 (succession)	3 March 2006
Solomon Islands	7 July 1978 (succession)	-
South Africa	7 August 1978	23 December 1998

Spain	31 July 1974	24 March 1999
Suriname	21 October 1980	11 February 2007
Sweden	21 February 1974	16 October 2000
Switzerland	31 July 1979	8 September 2000
Syrian Arab Republic	6 May 2009	-
Tonga	8 November 1995	18 September 2003
Trinidad & Tobago	-	6 March 2000
Tunisia	13 April 1976	-
Ukraine	5 February 1976	-
United Arab Emirates	9 August 1974	-
United Kingdom	17 November 1975	15 December 2008
United Republic of Tanzania	28 July 2008	-
United States of America	29 April 1974	-
Vanuatu	22 September 1992	18 February 1999
Yemen	-	24 January 2011

Source: www.imo.org.

Annex 2: Relevant provisions of London Protocol and VCLT

London Protocol

Article 2 (Objectives)

Contracting Parties shall individually and collectively protect and preserve the marine environment from all sources of pollution and take effective measures, according to their scientific, technical and economic capabilities, to prevent, reduce and where practicable eliminate pollution caused by dumping or incineration at sea of wastes or other matter. Where appropriate, they shall harmonize their policies in this regard.

Article 4 (Dumping of wastes or other matter)

1 .1 Contracting Parties shall prohibit the dumping of any wastes or other matter with the exception of those listed in Annex 1.

.2 The dumping of wastes or other matter listed in Annex 1 shall require a permit Contracting Parties shall adopt administrative or legislative measures to ensure that issuance of permits and permit conditions comply with provisions of Annex 2. Particular attention shall be paid to opportunities to avoid dumping in favour of environmentally preferable alternatives.

2 No provision of this Protocol shall be interpreted as preventing a Contracting Party from prohibiting, insofar as that Contracting Party is concerned, the dumping of wastes or other matter mentioned in Annex 1. That Contracting Party shall notify the Organization of such measures.

Article 6 (Export of wastes or other matter)

Contracting Parties shall not allow the export of wastes or other matter to other countries for dumping or incineration at sea.

Article 21 (Amendment of the Protocol)

1 Any Contracting Party may propose amendments to the articles of this Protocol. The text of a proposed amendment shall be communicated to contracting parties by the Organization at least six months prior to its consideration at a Meeting of contracting parties or a Special Meeting of Contracting Parties.

2 Amendments to the articles of this Protocol shall be adopted by a two-thirds majority vote of the Contracting Parties which are present and voting at the Meeting of Contracting Parties or Special Meeting of Contracting Parties designated for this purpose.

3 An amendment shall enter into force for the Contracting Parties which have accepted it on the sixtieth day after two-thirds of the Contracting Parties shall have deposited an instrument of acceptance of the amendment with the Organization. Thereafter the amendment shall enter into force for any other Contracting Party on the sixtieth day after the date on which that Contracting Party has deposited its instrument of acceptance of the amendment.

4 The Secretary-General shall inform Contracting Parties of any amendments adopted at Meetings of Contracting Parties and of the date on which such amendments enter into force generally and for each Contracting Party.

5 After entry into force of an amendment to this Protocol, any State that becomes a Contracting Party to this Protocol shall become a Contracting Party to this Protocol as amended, unless two-thirds of the Contracting Parties present and voting at the Meeting or Special Meeting of Contracting Parties adopting the amendment agree otherwise.

Article 22 (Amendment of the Annexes)

1 Any Contracting Party may propose amendments to the Annexes to this Protocol. The text of a proposed amendment shall be communicated to Contracting Parties by the Organization at least six months prior to its consideration by a Meeting of Contracting Parties or Special Meeting of Contracting Parties.

2 Amendments to the Annexes other than Annex 3 will be based on scientific or technical considerations and may take into account legal, social and economic factors as appropriate. Such amendments shall be adopted by a two-thirds majority vote of the Contracting Parties present and voting at a Meeting of Contracting Parties or Special Meeting of Contracting Parties designated for this purpose.

3 The Organization shall without delay communicate to Contracting Parties amendments to the Annexes that have been adopted at a Meeting of Contracting Parties or Special Meeting of Contracting Parties.

4 […] amendments to the Annexes shall enter into force for each Contracting Party immediately on notification of its acceptance to the Organization or 100 days after the date of their adoption at a Meeting of Contracting Parties, if that is later, except for those Contracting Parties which before the end of the 100 days make a declaration that they are not able to accept the amendment at that time. A Contracting Party may at any time substitute an acceptance for a previous declaration of objection and the amendment previously objected to shall thereupon enter into force for that Contracting Party.

Annex 1 (Wastes or other matter that may be considered for dumping)

1 The following wastes or other matter are those that may be considered for dumping being mindful of the Objectives and General Obligations of this Protocol set out in articles 2 and 3:

[…]

.8 Carbon dioxide streams from carbon dioxide capture processes for sequestration.

[…]

4 Carbon dioxide streams referred to in paragraph 1.8 may only be considered for dumping, if:

.1 disposal is into a sub-seabed geological formation; and

.2 they consist overwhelmingly of carbon dioxide. They may contain incidental associated substances derived from the source material and the capture and sequestration processes used; and

.3 no wastes or other matter are added for the purpose of disposing of those wastes or other matter.

VCLT

Article 25 (Provisional application)

1. A treaty or a part of a treaty is applied provisionally pending its entry into force if:
   (a) the treaty itself so provides; or
   (b) the negotiating States have in some other manner so agreed.
2. Unless the treaty otherwise provides or the negotiating States have otherwise agreed, the provisional application of a treaty or a part of a treaty with respect to a State shall be terminated if that State notifies the other States between which the treaty is being applied provisionally of its intention not to become a party to the treaty.

Article 30 (Application of successive treaties relating to the same subject matter)

1. Subject to Article 103 of the Charter of the United Nations, the rights and obligations of States Parties to successive treaties relating to the same subject matter shall be determined in accordance with the following paragraphs.
2. When a treaty specifies that it is subject to, or that it is not to be considered as incompatible with, an earlier or later treaty, the provisions of that other treaty prevail.
3. When all the parties to the earlier treaty are parties also to the later treaty but the earlier treaty is not terminated or suspended in operation under article 59, the earlier treaty applies only to the extent that its provisions are compatible with those of the later treaty.
4. When the parties to the later treaty do not include all the parties to the earlier one:
   (a) as between States Parties to both treaties the same rule applies as in paragraph 3;
   (b) as between a State party to both treaties and a State party to only one of the treaties, the treaty to which both States are parties governs their mutual rights and obligations.
5. Paragraph 4 is without prejudice to article 41, or to any question of the termination or suspension of the operation of a treaty under article 60 or to any question of responsibility which may arise for a State from the conclusion or application of a treaty the provisions of which are incompatible with its obligations towards another State under another treaty.

Article 31 (General rule of interpretation)

1. A treaty shall be interpreted in good faith in accordance with the ordinary meaning to be given to the terms of the treaty in their context and in the light of its object and purpose.
2. The context for the purpose of the interpretation of a treaty shall comprise, in addition to the text, including its preamble and annexes:
   (a) any agreement relating to the treaty which was made between all the parties in connection with the conclusion of the treaty;
   (b) any instrument which was made by one or more parties in connection with the conclusion of the treaty and accepted by the other parties as an instrument related to the treaty.
3. There shall be taken into account, together with the context:
   (a) any subsequent agreement between the parties regarding the interpretation of the treaty or the application of its provisions;

(b) any subsequent practice in the application of the treaty which establishes the agreement of the parties regarding its interpretation;

(c) any relevant rules of international law applicable in the relations between the parties.

4. A special meaning shall be given to a term if it is established that the parties so intended.

Article 41 (Agreement to modify multilateral treaties between certain of the parties only)[46]

1. Two or more of the parties to a multilateral treaty may conclude an agreement to modify the treaty as between themselves alone if:

   (a) the possibility of such a modification is provided for by the treaty; or

   (b) the modification in question is not prohibited by the treaty and:

      (i) does not affect the enjoyment by the other parties of their rights under the treaty or the performance of their obligations;

      (ii) does not relate to a provision, derogation from which is incompatible with the effective execution of the object and purpose of the treaty as a whole.

2. Unless in a case falling under paragraph 1 (a) the treaty otherwise provides, the parties in question shall notify the other parties of their intention to conclude the agreement and of the modification to the treaty for which it provides.

Article 58 (Suspension of the operation of a multilateral treaty by agreement between certain of the parties only)

1. Two or more parties to a multilateral treaty may conclude an agreement to suspend the operation of provisions of the treaty, temporarily and as between themselves alone, if:

   (a) the possibility of such a suspension is provided for by the treaty; or

   (b) the suspension in question is not prohibited by the treaty and:

      (i) does not affect the enjoyment by the other parties of their rights under the treaty or the performance of their obligations;

      (ii) is not incompatible with the object and purpose of the treaty.

2. Unless in a case falling under paragraph 1 (a) the treaty otherwise provides, the parties in question shall notify the other parties of their intention to conclude the agreement and of those provisions of the treaty the operation of which they intend to suspend.

[46] The purpose of Article 41(2) is to protect other parties to the treaty against illegitimate modifications that are incompatible with the object and purpose of the treaty. International Law Commission (1966), *Draft Articles on the Law of Treaties with commentaries*, II Yearbook of the International Law Commission 186, p. 235.

Annex 3: Contracting party involvement in international CCS initiatives

Table 3: London Protocol contracting party involvement in international CCS initiatives

Contracting party	Carbon Sequestration Leadership Forum member	Clean Energy Ministerial Carbon Capture, Storage and Use Action Group member	Global CCS Institute member	IEA *Carbon Capture and Storage Legal and Regulatory Review* contributor	IEA Greenhouse Gas R&D Programme member	Project(s) in Global CCS Institute projects database	Number of int. CCS initiatives involved in
Angola							
Australia	•	•	•	•	•	•	6
Barbados							
Belgium							
Bulgaria			•				1
Canada	•	•	•	•	•	•	6
China	•	•	•			•	4
Denmark	•				•		2
Egypt			•				1
France	•	•	•	•	•	•	6
Georgia							
Germany	•	•	•	•	•	•	6
Ghana							
Iceland							
Ireland				•			1
Italy	•		•	•		•	4
Japan	•	•	•	•	•		5
Kenya							
Korea (Republic of)	•	•	•	•	•	•	6
Luxembourg							
Marshall Islands							
Mexico	•	•	•				3
Netherlands	•		•	•	•	•	5
New Zealand	•		•	•	•	•	5
Nigeria							
Norway	•	•	•	•	•	•	6
Saudi Arabia	•		•				2
Sierra Leone							
Slovenia							
South Africa	•	•	•	•	•		5
Spain				•	•	•	3

St. Kitts and Nevis							
Suriname							
Sweden			•		•		2
Switzerland				•	•		2
Tonga							
Trinidad and Tobago			•				1
United Kingdom	•	•	•	•	•	•	6
Vanuatu							
Yemen							
Number of contracting parties	16	11	19	15	15	12	23

Acronyms, abbreviations and defined terms

Acronyms

CCS	carbon capture and storage
CEM	Clean Energy Ministerial
EOR	enhanced oil recovery
IEA	International Energy Agency
ILC	International Law Commission
IMO	International Maritime Organization
OECD	Organisation for Economic Co-operation and Development

Abbreviations and defined terms

CCS Roadmap: IEA 2009 *Technology Roadmap: Carbon capture and storage*

CCUS Action Group: Carbon Capture, Use and Storage Action Group

CO_2: carbon dioxide

ETP 2010: IEA 2010 *Energy Technology Perspectives*

IEA Greenhouse Gas R&D Programme: Implementing Agreement for a Co-operative Programme on Technologies Relating to Greenhouse Gases Derived from Fossil Fuel Use

ILC Commentaries: International Law Commission Commentaries

IMO working group: IMO legal and technical working group on transboundary CO_2 sequestration issues

London Convention: 1972 Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter

London Protocol: 1996 Protocol to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, 1972

OSPAR Convention: 1992 Convention for the Protection of the Marine Environment of the North East Atlantic

Ramsar Convention: 1971 Ramsar Convention on Wetlands of International Importance

UNCLOS: 1982 United Nations Convention on the Law of the Sea

VCLT: 1969 Vienna Convention on the Law of Treaties

2009 amendment: Resolution LP.3(4) on the Amendment to Article 6 of the London Protocol

References

1947 General Agreement on Tariffs and Trade.

1947 Statute of the International Law Commission.

1969 Vienna Convention on the Law of Treaties.

1972 Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter.

1982 United Nations Convention on the Law of the Sea.

1994 Energy Charter Treaty.

1994 Agreement relating to the Implementation of Part XI of UNCLOS.

1996 Protocol to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, 1972.

Aust, A., (2000), *Modern Treaty Law and Practice*, Cambridge University Press, Cambridge.

Convention on Wetlands, Proceedings of the 3rd Meeting of the Conference of the Contracting Parties, Regina, Canada, 27 May-5 June 1987, Resolution 3.4.

Convention on Wetlands, Proceedings of the 6th Meeting of the Conference of the Contracting Parties, Brisbane, Australia, 19-27 March 1996, Resolution VI.5.

Convention on Wetlands, Proceedings of the 10th Meeting of the Conference of the Contracting Parties, Changwon, Republic of Korea, 28 October-4 November 2008, Resolution X.29.

IEA (2009), *Technology Roadmap: Carbon capture and storage*, OECD/IEA, Paris.

IEA (2010), *Energy Technology Perspectives*, OECD/IEA, Paris.

IEA (2011), *Carbon Capture and Storage Legal and Regulatory Review*, 2nd edition, OECD/IEA, Paris.

International Law Commission (1966), *Draft Articles on the Law of Treaties with commentaries*, II Yearbook of the International Law Commission 186.

International Maritime Organization (2008), *Report of the 1st Meeting of the Legal and Technical Working Group on Transboundary CO_2 Sequestration Issues*, LP/CO2 1/8.

International Maritime Organization (2008), *Report of the Thirtieth Consultative Meeting and the Third Meeting of Contracting Parties*, LC 30/16.

International Maritime Organization (2009), *Report of the Thirty-First Consultative Meeting and the Fourth Meeting of Contracting Parties*, LC 31/15.

International Maritime Organization (2009), *Resolution LP.3(4) on the Amendment to Article 6 of the London Protocol*.

University College London-Carbon Capture Legal Programme, *Protocol to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, 1996*, http://www.ucl.ac.uk/cclp/ccsprotocol.php.

International Energy Agency

Online bookshop

Buy IEA publications online:

www.iea.org/books

PDF versions available at 20% discount

Books published before January 2010 - except statistics publications - are freely available in pdf

International Energy Agency • 9 rue de la Fédération • 75739 Paris Cedex 15, France

iea

Tel: +33 (0)1 40 57 66 90

E-mail:
books@iea.org

International Energy Agency

9 rue de la Fédération
75739 Paris Cedex 15

www.iea.org