

Exporting CO₂ for Sub-Seabed Storage: The Non-Effective Amendment to the London Dumping Protocol and Its Implications

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Abstract

The vast amounts of fossil fuels available and the forecasts regarding their future utilisation can make carbon capture and storage/sequestration (CCS) an attractive option, despite the various challenges associated with the technology. In order to be viable, many CCS projects will have to be transboundary, in the sense that CO₂ will be stored in a country other than from where it was captured. The most attractive, or even the only available, storage option is often offshore. However, export of CO₂ for sub-seabed storage is prohibited as dumping by the 1996 London Protocol. An amendment to the Protocol that enables export was adopted in 2009, but is unlikely to enter into force. The article analyses the implications of this situation and explores possible options for States that see export of CO₂ for sub-seabed storage as an important policy option.

Keywords

carbon capture and storage – ocean dumping – 1996 London Protocol – CO₂ export

Introduction

It is well established that the globally available fossil fuel resources contain far more CO₂ than could be emitted without entailing a high risk of catastrophic climate disruptions.¹ The carbon embedded in oil and gas reserves

1 D Biello, 'How Much Is Too Much?: Estimating Greenhouse Gas Emissions' (April 29, 2009) *Scientific American*. Available at <http://www.scientificamerican.com/article/limits-on-green>

alone exceeds the carbon in the atmosphere. Stabilising climate change at 2°C above pre-industrial levels imposes a constraint under which only a fraction of fossil fuel reserves can be exploited, if exploitation means emitting the CO₂ to the atmosphere.²

Despite the recognised urgency of climate change,³ fossil fuels are not only the dominant source of energy; their use, including that of coal and lignite—the most CO₂-intensive fossil fuels—is also growing at a steady pace. Forecasts even tell of a continued rise in fossil fuel use for decades to come at the global level.⁴ Even regions with comparatively comprehensive climate change policies struggle to wean their economies off fossil fuel dependence.⁵ There are also few signs that the major players in the hydrocarbon industry would be seriously adapting to a future where climate policy precludes the extraction and use of technologically and economically available reserves.⁶

house-gas-emissions/; accessed 10 June 2014. See also MR Allen, DJ Frame, C Huntingford, CD Jones, JA Lowe, M Meinshausen and N Meinshausen, 'Warming caused by cumulative carbon emissions towards the trillionth tonne' (2009) 458 *Nature* 1163–1166.

- 2 IPCC, 'Climate Change 2014: Mitigation of Climate Change. Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change', O Edenhofer, R Pichs-Madruga, Y Sokona, E Farahani, S Kadner, K Seyboth, A Adler, I Baum, S Brunner, P Eickemeier, B Kriemann, J Savolainen, S Schlömer, C von Stechow, T Zwickel and JC Minx (eds) (Cambridge University Press, Cambridge, 2014), final Draft, Chapter 5.3.4.3; International Energy Agency (IEA), *Technology Roadmap: Carbon Capture and Storage* (IEA, Paris, 2013), at p. 8.
- 3 See, e.g., World Bank, 'Turn down the heat: why a 4°C warmer world must be avoided' (World Bank, Washington, DC, 2012); G-8, '2013 Lough Erne G8 Leaders' Communiqué, paras. 56–59. Available at <https://www.gov.uk/government/publications/2013-lough-erne-g8-leaders-communication>; accessed 3 June 2014.
- 4 According to a recent scenario by the IEA, global primary energy demand rises by over one-third in the period 2010 to 2035. Most of this increase is met by rising fossil fuel consumption, including a 21% increase in coal demand and a 50% increase in demand for natural gas. IEA, *World Energy Outlook 2012* (IEA, Paris, 2012) at p. 49.
- 5 The European Union (EU) provides a pertinent example. According to the EU Commission, projections show that even if climate policies are upscaled in order to shift the EU energy mix further towards lower carbon intensity, fossil fuels would still represent more than 50% of that mix in 2030. *Communication by the Commission on the Future of Carbon Capture and Storage in Europe*, COM(2013) 180 final, at p. 12; available at <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM:2013:0180:FIN>; accessed 20 April 2015.
- 6 M Szabo, 'Shell says fossil fuel reserves won't be 'stranded' by climate regulation' (*Reuters*, 19 May 2014). Available at <http://www.reuters.com/article/2014/05/19/shell-climatechange-idUSL6No054CB20140519>; accessed 4 June 2014.

Against this background it should be no surprise that capturing part of the CO₂ generated when burning fossil fuels and pumping it into the ground, i.e., carbon capture and storage/sequestration (CCS),⁷ can seem to be an attractive option, despite being a costly and cumbersome technology that facilitates continued dependence on fossil fuel. The International Energy Agency (IEA) puts this in more positive terms: it assesses CCS as being the only technology available today that has the potential to protect the climate while preserving the value of fossil fuel reserves and existing infrastructure.⁸

Whether deployment of CCS is desirable or not largely depends on whether one considers that sufficient reductions in CO₂ emissions will be attainable in its absence, i.e., mainly through the swift replacement of fossil fuels by other energy sources and gains in energy efficiency. Although CCS has many critics,⁹ the IEA sees it as a critical component in a portfolio of low-carbon energy technologies if governments decide to undertake ambitious measures to combat climate change.¹⁰ In a similar vein, the European Parliament has described CCS as “necessary in particular for decarbonising high CO₂-emitting industries”.¹¹

However, despite support from key climate policy actors, CCS is struggling to attract sufficient interest from industry and investors. In fact, the technology is facing several challenges: the most severe is probably the lack of a clear

7 In essence, CCS is a collective name for several partly alternative techniques and methods which, when combined, allow CO₂ from combustion processes to be sequestered and thus prevented from reaching the atmosphere. Technically, it comprises three main stages: capturing the CO₂ (pre- or post-combustion), transporting it to a suitable storage site and final storage/disposal. For each step, different potential technical solutions of varying economic and engineering feasibility exist. An elaborate description of the technical options may be found in: Intergovernmental Panel on Climate Change (IPCC), *IPCC Special Report on Carbon Dioxide Capture and Storage*, prepared by Working Group III of the IPCC (Cambridge University Press, Cambridge, 2005). An up-to-date assessment of the status of the various technologies is provided in IEA (n 2).

8 IEA (n 2) at p. 8.

9 See, e.g., E Rochon, ‘False Hope: Why Carbon Capture and Storage Won’t Save the Climate’ (Greenpeace International, May 2008) at p. 5. Available at <http://www.greenpeace.org/usa/press-center/reports4/false-hope-why-carbon-capture>; accessed 15 June 2014. For a critique of the international regulatory processes pertaining to CCS, see C Armeni, ‘Carbon Capture and Storage in the Sub-Seabed and Sustainable Development: Please Mind the Gap’ (2013) 27 *Ocean Yearbook* 1–28, at p. 15.

10 *Ibid.*, at p. 5.

11 European Parliament Resolution of 14 January 2014 on implementation report 2013: developing and applying carbon capture and storage technology in Europe (2013/2079(INI)), available at <http://www.europarl.europa.eu/sides/getDoc.do?pubRef=-//EP//TEXT+REPORT+A7-2013-0430+0+DOC+XML+V0//EN>; accessed 20 April 2015.

business case for investing in CCS in most jurisdictions,¹² at least outside the context of enhanced oil recovery (EOR) with CO₂,¹³ where storage is incidental to rather than the purpose of the operation.¹⁴ But cost is not everything. Significant problems also pertain to public perception,¹⁵ and to various regulatory and other policy factors.¹⁶ Despite much attention having been paid to the legal framework for CCS,¹⁷ the regulatory environment still creates significant obstacles and uncertainties that add to the perceived precariousness of investing in CCS. One significant obstacle, which has attracted surprisingly little qualified analysis,¹⁸ considering both its practical implications and its more conceptual dimensions, relates to the ability to transport captured CO₂ across State borders for final storage under the jurisdiction of a State other than the one where the CO₂ was captured. If such storage is intended to take place in a sub-seabed storage site, the export of the CO₂ is in many cases prohibited

12 *The Global Status of CCS: 2013* (Global CCS Institute, Melbourne, 2013) 60; EU Commission (n 5), at p. 16.

13 In EOR a gas or fluid such as CO₂ is injected into an oilfield in order to recover oil additional to that which could otherwise have been produced. For a description of EOR, see IPCC (n 7) at pp. 215–216.

14 However, EOR operations can also be used to store CO₂ in addition to the inevitable or ordinary result of EOR with CO₂. Marston has identified four different scenarios for CO₂ storage associated with EOR: incidental storage of CO₂ during EOR operations; incremental storage during EOR operations; incremental storage following termination of EOR operations; storage during buffering or balancing operations. PM Marston, *Bridging the Gap: an Analysis and Comparison of Legal and Regulatory Frameworks for CO₂-EOR and CO₂-CCS* (Global CCS Institute, Melbourne, 2013) at pp. 106–108. On the legal dimensions of enhanced hydrocarbon [or oil] recovery ('EHR' or 'EOR') see also R Macrory, C Armeni, C Clarke, S Docherty, E Van Der Marel, B Milligan, and R Purdy, *SCCS CO₂-EOR JIP: Legal Status of CO₂—Enhanced Oil Recovery* (UCL Carbon Capture Legal Programme, 2013); available at <http://www.sccc.org.uk/expertise/reports.html>; accessed 20 March 2014.

15 On public perception and public participation in relation to CCS projects see I Havercroft, R Macrory, and RB Stewart (eds), *Carbon Capture and Storage—Emerging Legal and Regulatory Issues* (Hart Publishing, Oxford, 2011), part six.

16 On the perception of the regulatory and policy environment and the extent to which it is supportive of CCS deployment, see *The Global Status of CCS: 2013* (n 12), at pp. 82 *et seq.*

17 For an overview see, IEA, *Carbon Capture and Storage Legal and Regulatory Review*, regularly published by the IEA at <http://www.iea.org/topics/ccs/ccslegalandregulatoryissues/ccslegalregulatoryreview/>.

18 One notable exception is A Raine, 'Transboundary Transportation of CO₂ Associated with Carbon Capture and Storage Projects: An Analysis of Issues under International Law' (2008) 2 *Carbon & Climate Law Review* 353–365. On the specific problems that pertain to export within and from the EU see D Langlet, 'Transboundary Dimensions of CCS: EU Law Problems and Prospects' (2014) 3 *Carbon & Climate Law Review* 198–207.

under international law, despite much activity, and increasing political agreement, to change this situation.

This article does not engage with the wider issue of where and when, if ever, CCS is a preferable policy option. It examines the problem that this ban on export of CO₂ for sub-seabed storage may pose to States and other actors who do find CCS a necessary or at least a desirable part of their climate change mitigation policy. Before addressing this issue in more detail, some brief remarks are made about what may be termed the transboundary dimension of CCS, including why export of captured CO₂ to offshore storage areas may in some regions be the key to making CCS viable.

Pertinent Dimensions of CCS

Export of Captured CO₂

In some regions, including the United States and China, domestically available capacity for storing CO₂ is likely to be extensive and widely distributed, and hence limit the need for long-distance and transboundary transport of captured CO₂. In other regions, including Western/Northern Europe, Japan, and Korea, there may be a strong need for linking CO₂ point sources with (often offshore) potential storage sites over larger distances and also across State boundaries.¹⁹ Irrespective of storage capacity, the need to attain a sufficient scale for any CCS project to make financial sense may also necessitate the linking of emissions sources across national boundaries.²⁰

Offshore CO₂ Storage

Although the costs associated with sub-seabed storage are generally higher than for storage on land, the legal preconditions for storing CO₂ below the seabed can become pertinent for a number of reasons. The first is that it may be the only available storage option. In some regions the majority of estimated

19 IPCC (n 2), Chap. 7.6.4.

20 See, e.g., the models/scenarios presented in *Carbon Capture and Storage in the Skagerrak/Kattegat region*, Final report, February 2012, available at <http://www.ccs-skagerrak.kattegat.eu/news/tabid/60/Default.aspx>; accessed 10 May 2014, and in S Teir, J Hetland, E Lindeberg, A Torvanger, K Buhr, T Koljonen, J Gode, K Onarheim, A Tjernshaugen, A Arasto, M Liljeberg, A Lehtilä, L Kujanpää and M Nieminen, *Potential for Carbon Capture and Storage (CCS) in the Nordic Region* (VTT Research Note 2556, 2010).

storage capacity is found offshore.²¹ In other cases, offshore storage may be the most viable option from a policy perspective due, *inter alia*, to issues of safety and, not least, public perception. If leakage were to occur from a storage operation, humans would be less affected by an offshore than by an onshore storage.²² It is thus logical that offshore storage also seems to be perceived less negatively than onshore storage by the general public.²³ Because the NIMBY syndrome does not apply offshore, far from populated areas, such storage operations are less likely to trigger strong public opposition. In sum, offshore storage is in many cases either the only physically available option, or at least the only politically feasible one, if CO₂ is to be captured and stored.

Preliminary Remarks on the Regulation of Sub-Seabed CO₂ Storage

The current analysis focuses on CO₂ storage in the exclusive economic zone (EEZ), which is the type of sub-seabed storage that is, for the foreseeable future, of most practical relevance.²⁴ The EEZ is in many respects open to all States.²⁵ This gives even geographically local risks a very tangible international dimension. The irreducible interconnectedness of the various parts of the oceans due to the constant movement of the water itself and many of its inhabitants also contributes to making risks and harm to the marine environment in the EEZ an immediate concern to others than the coastal State. Therefore sub-seabed storage of CO₂ is subject to much more extensive regulation under international law compared to onshore storage.²⁶

Many pieces of international law may come into play when offshore storage is considered. In addition to the 1982 United Nations Convention on the Law of the Sea (LOS),²⁷ various pieces of marine environmental law, waste law and

21 This applies, e.g., to Japan. IPCC (n 7), at p. 223 and in the Nordic region, Teir *et al.*, *ibid.*, at p. 73.

22 IPCC (n 7), at p. 34.

23 *Ibid.*, at p. 257.

24 IPCC (n 7), at p. 200.

25 See United Nations Convention on the Law of the Sea (LOS). Adopted 10 December 1982, Montego Bay; in force 16 November 1994, 1833 UNTS 397, Art. 58(1).

26 D Langlet, 'Safe Return to the Underground? The Role of International Law in Subsurface Storage of Carbon Dioxide' (2009) 18(3) *RECIEL* 286–303, at pp. 298 *et seq.*

27 LOS (n 25).

biodiversity law become pertinent.²⁸ However, it is the regulation of marine dumping that has attracted most attention, primarily because the international dumping regime has been seen not only as constituting an effective obstacle to the utilisation of important storage capacity, but also as an appropriate framework for managing the risks to the marine environment associated with sub-seabed storage.²⁹ Due to its continued far-reaching implications for offshore CO₂ storage, the regime on marine dumping is also the subject of this analysis, albeit with a particular focus on its implications for transboundary movements (export) of CO₂ for sub-seabed storage.

At the global level, marine dumping is foremost addressed by the 1972 London Dumping Convention³⁰ and its 1996 Protocol.³¹ However, the systemic logic requires these agreements to be viewed in the light of the more general provisions of the LOSC.

Dumping in the Law of the Sea Convention

States are required, under LOSC Article 210, to adopt laws and regulations, as well as to take other measures as may be necessary, to prevent, reduce and control pollution of the marine environment by dumping.³² The LOSC also makes it clear that dumping within the territorial sea and the EEZ or on the continental shelf may not be carried out without the express prior approval of the coastal State, which has the right to permit, regulate and control such dumping after due consideration of the matter with other States which by reason of their geographical situation may be adversely affected thereby.³³ That Article 210

28 For an overview of the role of international law in the regulation of CCS, including sub-seabed CO₂ storage, see Langlet (n 26).

29 *Report of the Twenty-Eighth Consultative Meeting of Contracting Parties to the London Convention and the First Meeting of Contracting Parties to the London Protocol*, 6 December 2006, LC 28/15, para. 67; available at <https://docs.imo.org/Search.aspx?keywords=%22LC%2028%2F15%22>; accessed 22 April 2015.

30 Convention on the Prevention of Marine Pollution by Dumping of Waste and Other Matter ('London Convention'), adopted 29 December 1972, London, in force 30 August 1975 (1972) 11 *ILM* 1294.

31 Protocol to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter ('London Protocol'), adopted 7 November 1996, London, in force 24 March 2006 (1997) 36 *ILM* 1.

32 LOSC (n 25), Art. 210(1–2).

33 *Ibid.*, at Art. 210(5).

does not amount to an outright ban is clear both from its wording, according to which reduction (as opposed to complete prevention) is a legitimate policy, and from the fact that it makes provision for coastal States to permit and regulate dumping.

Whether the injection of CO₂ into the seabed for permanent storage is to be considered dumping at all in this regard is not obvious from the LOSC which, as far as is relevant here, defines dumping as “any deliberate disposal of wastes or other matter from vessels, aircraft, platforms or other man-made structures at sea”.³⁴ Reasonable arguments can be made both for including and excluding it from the definition.³⁵ It can, e.g., be debated whether injection into the sub-seabed is disposal ‘at sea’, or if that implies that the dumping occurs in the water column or onto the seabed.

The LOSC provides for the global and regional elaboration of further international rules and standards consistent with itself, for the protection and preservation of the marine environment.³⁶ With respect to ‘pollution by dumping’, it is particularly explicit by stipulating that “States . . . shall endeavour to establish global and regional rules, standards and recommended practices and procedures to prevent, reduce and control such pollution”.³⁷ These rules and standards are to be re-examined from time to time as necessary. Article 210 also states that national laws, regulations and measures must be no less effective in preventing, reducing and controlling pollution of the marine environment by dumping than the global rules and standards,³⁸ thus establishing that the global standards are to define the obligations that apply to all of the LOSC’s Parties, not only those that are explicitly bound by such rules as Parties to specific regional or sectoral agreements.³⁹

This call for adopting more elaborate international rules on dumping had actually been heeded already before the adoption of the LOSC through the adoption of the 1972 London Dumping Convention. The LOSC itself

34 *Ibid.*, at Art. 1 (1) (1) (5).

35 See M Brus, ‘Challenging Complexities of CCS in Public International Law’ in MM Roggenkamp and E Woerdman (eds), *Legal Design of Carbon Capture and Storage* (Intersentia, Antwerp, 2009) 19–60, at p. 37.

36 LOSC (n 25), Art. 197.

37 *Ibid.*, at Art. 210 (4).

38 *Ibid.*, at Art. 210 (6).

39 On the establishment by the LOSC of dynamic ‘international minimum standards’ see C Redgwell, ‘From Permission to Prohibition: The 1982 Convention on the Law of the Sea and Protection of the Marine Environment’, in D Freestone, R Barnes, and D Ong (eds), *The Law of the Sea: Progress and Prospects* (Oxford University Press, Oxford, 2006) 180–191, at pp. 181 *et seq.*

gives no guidance on what constitutes 'global rules and standards', but the 17th Consultative Meeting of Parties to the London Convention considered the provisions of that Convention to constitute such rules and standards.⁴⁰ Whether the 1996 London Protocol, which has so far attracted only 45 Parties, would qualify as a global standard is highly questionable, especially as the combined merchant fleets of the Parties only add up to approximately 37% of the gross tonnage of the world's merchant fleet, indicating that a sizable number of influential maritime nations have yet to endorse the standards of the Protocol.⁴¹

Still, this strongly suggests that at least the London Convention serves as an elaboration of the pertinent provisions in the LOSC, and in fact becomes determinative of what constitutes dumping also with regard to the regime established by the LOSC itself.⁴² As a consequence the LOSC itself could hardly be more restrictive than the London Convention. We therefore turn our attention to the London Convention and its Protocol without thereby risking overlooking more demanding standards on dumping enshrined in the LOSC.

The London Convention and Its Protocol

Adopted in 1972, the London Dumping Convention was the first instrument to address marine dumping at an international level. Subject to some exceptions, dumping includes, as far as is relevant for current purposes, "any deliberate disposal at sea of wastes or other matter from vessels, aircraft, platforms or other man-made structures at sea".⁴³ The London Convention bans the dumping of

40 *Report of the Seventeenth Consultative Meeting of the London Convention*, 28 October 1994, Doc. LC 17/14, para. 2.5; available at http://www.imo.org/KnowledgeCentre/ReferencesAndArchives/IMO_Conferences_and_Meetings/London_Convention/LCandLDCReports/Documents/Report%20of%20LC%2017%20%20October%201994.pdf; accessed 22 April 2015.

41 IMO, *Status of Multilateral Conventions and Instruments in respect of which the International Maritime Organization or its Secretary-General performs depositary or other functions, as at 9 December 2014*, at p. 521; available at <http://www.imo.org/About/Conventions/StatusOfConventions/Documents/Status%20-%202014.pdf>; accessed 21 December 2014.

42 In fact the London Convention, and its definition of 'dumping', provided a model for the drafters of LOSC Art. 210. MH Nordquist, S Rosenne and A Yankov (eds), *United Nations Convention on the Law of the Sea 1982: A Commentary*, vol. IV (Martinus Nijhoff Publishers, Dordrecht, 1990) Commentary to Article 210, at p. 165.

43 London Convention (n 30), Art. III 1(a).

wastes or other matter listed in its Annex I.⁴⁴ In relation to dumping of other substances, it imposes a permit requirement.⁴⁵

The definitions and delimitations of the London Convention have led to considerable discussion and disagreement between the Parties as to whether and how the prohibition on dumping is relevant to sub-seabed injection of CO₂.⁴⁶ Among other things it is not obvious that CO₂ is covered by Annex I, although it does seem reasonable to consider it to fall under the heading of 'industrial waste'.⁴⁷ It may also be argued that injection of CO₂ into the seabed does not constitute dumping 'at sea' as understood in the London Convention.⁴⁸

Over the years the London Convention came to be seen as rather outdated. Among its flaws was that it does not incorporate the precautionary principle. It was also increasingly perceived as lacking a sufficient basis in science.⁴⁹ These and other perceived deficiencies led, in 1996, to the adoption of a Protocol to the London Convention which in fact amounts to a completely new instrument superseding the 1972 London Convention for those Parties for which the Protocol has entered into force.⁵⁰ The Protocol has, at the end of 2014, 45 Parties, whereas the Convention has 87.⁵¹ Among the Parties to the Protocol are Canada, China, France, Germany, Japan, Mexico, Norway, Republic of Korea,

44 *Ibid.*, at Art. IV 1.

45 A permit should only be issued after careful consideration of all the factors set forth in Annex III, including characteristics and composition of the matter and characteristics of dumping site and method of deposit. London Convention, Art. IV 2.

46 See, e.g., *Report of the Meeting of the CM Intersessional Legal and Related Issues Working Group on CO₂ Sequestration*, 13 April 2006, LC/CM-CO₂ 1/5, para. 3.18; available at <https://docs.imo.org/Search.aspx?keywords=%22LC%2FCM-CO2%201%2F5%22>; accessed 22 April 2015. Regarding the discussions on the relevance of the London Convention and subsequently also the Protocol to the regulation of sea-based CO₂ storage see A Sielen, 'The New International Rules on Ocean Dumping: Promise and Performance (2009) 21(2) *Georgetown International Environmental Law Review* 295-336, at pp. 516 *et seq.*

47 London Convention (n 30), Annex I, point 11.

48 Brus (n 35), at p. 38.

49 On these and other problems of the London Convention see Sielen (n 46), at p. 299.

50 According to Art. 23 of the Protocol, it supersedes the London Convention as between Contracting Parties to the Protocol which are also Parties to the London Convention. By adopting a Protocol which supersedes the London Convention, the Parties wanted to enable new, more protective, provisions to take effect, as between the Parties having ratified the Protocol, faster than would have been the case had they been introduced as amendments to the Convention. EJ Molenaar, 'The 1996 Protocol to the 1972 London Convention' (1997) 12(3) *International Journal of Marine and Coastal Law* 396-403, at p. 398.

51 IMO (n 41), at pp. 510 and 521.

South Africa, Spain and Sweden.⁵² Notable Parties to the London Convention which have not become Parties to the Protocol include Russia and the U.S.A.

The 1996 Protocol differs from the London Convention in a number of significant ways. Most important is perhaps that the previous 'permitted-unless-prohibited' approach to dumping is replaced by a general prohibition on dumping of any material or substance of any kind, with specific exceptions set out in an Annex.⁵³ Such 'reversed listing' was, at the time of the Protocol's adoption, already applied by several regional marine agreements, including the OSPAR⁵⁴ and Helsinki Conventions.⁵⁵ Of particular relevance to CCS operations is that 'dumping', as defined in the Protocol, covers any deliberate disposal into the sea of material or substances from vessels, aircraft, platforms or other man-made structures at sea, as well as any storage of material or substance in the seabed and the subsoil thereof from vessels, aircraft, platforms or other man-made structures at sea.⁵⁶ It is thus clear that geological storage of CO₂ in the sub-seabed constitutes dumping under the Protocol.

Enabling Sub-seabed Storage of CO₂

Already before the entry into force of the London Protocol it was recognised that the international dumping regime was highly relevant for the issue of sequestration of CO₂ in the sub-seabed, and the Parties to the London Convention agreed in 2004 that the consistency with the London Convention and the Protocol of such CO₂ sequestration required further consideration.⁵⁷ This work eventually resulted in an amendment being adopted by the first Meeting of the Parties to the Protocol in November 2006, whereby CO₂ sequestration in sub-seabed geological formations was added to the Protocol's Annex 1, i.e., to the substances that may be considered for dumping subject to a

52 *Ibid.*, at p. 521.

53 London Protocol, Art. 4.1.1 and Annex 1.

54 Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR Convention), adopted 22 September 1992, Paris, in force 25 March 1998 (1993) 32 *ILM* 1075.

55 Convention on the Protection of the Marine Environment of the Baltic Sea Area, adopted 9 April 1992, Helsinki, in force 17 January 2000, 2099 *UNTS* 197.

56 London Protocol, Arts. 4.1 and 4.3.

57 *Report of the Twenty-Sixth Consultative Meeting of the London Convention*, 17 December 2004, LC 26/15, para. 6.35; available at <https://docs.imo.org/Search.aspx?keywords=LC%2026%2F15>; accessed 22 April 2015.

permit issued in accordance with the assessment procedure of Annex 2.⁵⁸ The amendment entered into force in early 2007.⁵⁹ In the amendment decision the Parties express their serious concern about the implications for the marine environment of climate change and ocean acidification and identify CCS as an important interim solution as one of a portfolio of options to reduce levels of atmospheric CO₂.⁶⁰ The meeting also invited the Scientific Group of the London Protocol to develop specific guidance on the application of the Protocol's Annex 2 to CO₂ sequestration in sub-seabed geological formations. The Specific Guidelines for Assessment of Carbon Dioxide Streams for Disposal into Sub-seabed Geological Formations (the CO₂ Sequestration Guidelines) were subsequently developed and adopted by the Parties in late 2007.⁶¹ They address the elements identified in Annex 2, including waste characterisation, management options, site selection, potential impacts, permit conditions and monitoring.⁶²

58 Resolution LP.1(1) on the Amendment to Include CO₂ Sequestration in Sub-Seabed Geological Formations in Annex 1 to the London Protocol (adopted 2 November 2006), Doc. LC 28/15 (n 29), at para. 102 and Annex 6. Carbon dioxide streams may only be considered for dumping, if they consist overwhelmingly of CO₂ and disposal is into a sub-seabed geological formation. They may contain incidental associated substances derived from the source material and the capture and sequestration processes used. Also, no wastes or other matter may be added for the purpose of disposing of those substances. See Annex to Resolution LP 1(1) in Annex 6 to LC 28/15 (n 29). Of the then 29 Parties to the Protocol, 17 were represented at the meeting and of these 12 Contracting Parties (Australia, Canada, France, Germany, Mexico, New Zealand, Norway, Saudi Arabia, Spain, Sweden, the United Kingdom, and Vanuatu) voted in favour of the amendment, and five (Belgium, China, Denmark, Egypt, and South Africa) abstained. *Ibid.*, at para. 101. Among the reasons given against adopting the amendment at the meeting were remaining scientific uncertainties and that it was premature to amend the Protocol before specific technical guidelines were in place.

59 *Report of the Twenty-Ninth Consultative Meeting of Contracting Parties to the London Convention and the Second Meeting of Contracting Parties to the London Protocol*, 14 December 2007, LC 29/17, para. 4.1; available at <https://docs.imo.org/Search.aspx?keywords=LC%2029%2F17>; accessed 22 April 2015.

60 Preambular paras 2, 4 and 5.

61 Doc. LC 29/17 (n 59), para. 4.13 and Annex 4.

62 The Guidelines were revised in 2012 to take into account transboundary migration of CO₂ waste streams within sub-seabed geological formations after injection. *Report of the Thirty-Fourth Consultative Meeting of Contracting Parties to the London Convention and the Seventh Meeting of Contracting Parties to the London Protocol*, 23 November 2012, LC 34/15, para. 5.12 and Annex 8; available at <https://docs.imo.org/Search.aspx?keywords=LC%2034%2F15>; accessed 22 April 2015.

The Parties to the regional OSPAR Convention, aimed at protecting the environment of the North-East Atlantic, took a similar step, deciding in 2007 to amend the pertinent annexes to the OSPAR Convention, so as to enable CO₂ storage in the sub-seabed.⁶³ The OSPAR Parties also adopted guidelines on risk assessment and management of CO₂ storage activities.⁶⁴

Amending the Protocol to Enable Export of CO₂ for Storage

As our foremost interest here is with the transboundary elements of CCS, the most important provision in the Protocol is Article 6, according to which “Contracting Parties shall not allow the export of wastes or other matter to other countries for dumping or incineration at sea”. This provision has given rise to some discussion as to its significance for different kinds of transboundary movements of CO₂, either before or after injection into the sub-seabed. To clarify these issues the Parties established a Legal and Technical Working Group on Transboundary CO₂ Sequestration Issues in 2007.⁶⁵ That Working Group took the view that Article 6 of the Protocol prohibits the export of CO₂ streams from the jurisdiction of one Contracting Party to any other country.⁶⁶ Consequently, it concluded that an amendment to Article 6 was required in order to permit such movements and a text for a possible amendment was developed.⁶⁷

63 OSPAR Decision 2007/2 on the Storage of Carbon Dioxide Streams in Geological Formations.

64 Framework for Risk Assessment and Management of Storage of CO₂ Streams in Geological Formations (FRAM), found in OSPAR Guidelines for Risk Assessment and Management of Storage of CO₂ Streams in Geological Formations, Annex 1 in Meeting of the OSPAR Commission, Ostend, 25–29 June 2007, Summary Record, OSPAR 07/24/1-E (29 June 2007).

65 Doc. LC 29/17 (n 59), para. 4.9. The Working Group was to consider, *inter alia*, transboundary CO₂ transport above and below the seabed for CO₂ intended for sequestration in sub-seabed geological formations; transboundary CO₂ movement below the seabed in sub-seabed geological formations—deliberate and unintended; and whether as an outcome of their deliberations, any amendment of Article 6 is necessary. Only nine of the then 33 then Parties to the Protocol participated in the work of the Working Group.

66 Representatives of 10 Parties to the London Convention, of which nine were also Parties to the Protocol, took part in the work of the Legal and Technical Working Group. *Report of the 1st Meeting of the Legal and Technical Working Group on Transboundary CO₂ Sequestration Issues*, 3 March 2008, LP/CO₂ 1/8, para. 1; available at <https://docs.imo.org/Search.aspx?keywords=LP%2FCO2%201%2F8>; accessed 22 April 2015.

67 *Report of the Thirtieth Consultative Meeting of Contracting Parties to the London Convention and the Third Meeting of Contracting Parties to the London Protocol*, 9 December 2008,

The Working Group also considered transboundary migration of CO₂ streams in the sub-seabed. With respect to deliberate migration across boundaries, it reached no conclusion as to whether such migration would constitute export within the terms of Article 6. There was, however, general agreement that unintended migration of CO₂ streams within sub-seabed geological formations would not constitute export.⁶⁸

However, at the subsequent Meeting of the Parties, opinions differed as to whether the report of the Working Group constituted a sufficient basis for amending Article 6. There was also no consensus on the need for an amendment or whether an interpretative resolution would be sufficient. Against this background the meeting established an intersessional correspondence group to consider, *inter alia*, the option of an amendment of Article 6.⁶⁹ In addition to setting up this group, the Meeting of the Parties in December 2008 endorsed the recommendation to “give the political signal that the London Protocol should not constitute a barrier to the transboundary movement of CO₂ streams”, but that further work would be needed to achieve the best political and legal solution.⁷⁰ At the subsequent Meeting of the Parties in 2009, the Parties considered the report from the intersessional Working Group,⁷¹ as well as a proposal introduced by Norway, to amend Article 6.⁷² Eventually a revised text of the amendment was put to a vote, because all Parties did not agree to the appropriateness of adopting the amendment at the meeting.⁷³ The amend-

LC 30/16, para. 5.14; available at <https://docs.imo.org/Search.aspx?keywords=LC%2030%2F16>; accessed 22 April 2015. For further detail see LP/CO₂ 1/8 (n 66), paras. 3.11 to 3.15 and Annex 3.

68 LC 30/16 (n 67), para. 5.14. For further detail see LP/CO₂ 1/8 (n 66), paras. 3.16 to 3.21.

69 LC 30/16 (n 67), paras. 5.17, 5.20 and 5.23.

70 *Ibid.*, at paras 5.22 and 5.24.

71 *Report of the Intersessional Correspondence Group on Transboundary CO₂ Sequestration Issues*, 3 April 2009, LC 31/5, available at <https://docs.imo.org/Search.aspx?keywords=LC%2031%2F5>; accessed 22 April 2015.

72 *Proposal to amend Article 6 of the 1996 Protocol to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, 1972*, submitted by Norway, 23 April 2009, LC 31/5/1, available at <https://docs.imo.org/Search.aspx?keywords=LC%2031%2F5%2F1>; accessed 22 April 2015. The proposed amendment was based on wording developed by the Legal and Technical Working Group in 2008, which also took into account the work of the Intersessional Correspondence Group.

73 *Report of the Thirty-First Consultative Meeting of Contracting Parties to the London Convention and the Fourth Meeting of Contracting Parties to the London Protocol*, 30 November 2009, LC 31/15, paras 5.14–5.16; available at <https://docs.imo.org/Search.aspx?keywords=LC%2031%2F15>; accessed 24 April 2015.

ment was adopted as Resolution LP.3(4), with 15 Parties voting in favour,⁷⁴ one Party, China, voting against, and six Parties abstaining.⁷⁵ China issued a statement saying that the issue of CO₂ sequestration in transboundary sub-seabed geological formations “has many complicated legal and technical implications, the deep and thorough study and discussion of which still need to be carried out by all countries” and making clear that it was “not in favour of adoption of the proposed amendment to Article 6 in a hasty manner”.⁷⁶ The statement also expresses concern that the export of CO₂ might open a door for export of other wastes in contradiction with the objective of the London Protocol.⁷⁷

The adopted amendment allows for export of CO₂ streams for disposal provided that an agreement or arrangement has been entered into by the countries concerned. Such an agreement or arrangement is to include “confirmation and allocation of permitting responsibilities between the exporting and receiving countries, consistent with the provisions of [the] Protocol and other applicable international law”.⁷⁸ In the case of export to non-Parties to the Protocol, the agreement or arrangement must contain provisions at a minimum equivalent to those of the 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 the Protocol to protect and preserve the marine environment.^{79,80}

It is emphasised in the Resolution that Contracting Parties should ensure that the long-distance export of CO₂ streams between UN regions is reduced to the minimum consistent with the protection and preservation of the marine environment from all sources of pollution, taking into account the special

74 Australia, Belgium, Canada, Denmark, France, Germany, Italy, Japan, the Netherlands, New Zealand, Norway, Republic of Korea, Spain, Sweden and the United Kingdom.

75 LC 31/15 (n 73), para. 5.17. The abstaining Parties were: Kenya, the Marshall Islands, Mexico, Saudi Arabia, South Africa and Vanuatu. The text of Resolution LP.3(4) is found in Annex 5.

76 *Ibid.*, at para. 5.18.

77 *Ibid.*

78 Article 6(2) as amended.

79 *Ibid.*

80 In addition to the actual amendment, Resolution LP.3(4) notes that not all countries have suitable sub-seabed geological formations for the sequestration of CO₂ streams and reiterates that the London Protocol should not constitute a barrier to the transboundary movement of CO₂ streams to other countries for disposal as a measure to mitigate climate change and ocean acidification. Resolution LP.3(4), paras 5 and 8.

position of developing countries.⁸¹ The Resolution also reaffirms the previous conclusion by the Legal and Technical Working Group that the transboundary movement of CO₂ after injection (i.e., migration) is not export for dumping and therefore not prohibited by Article 6.⁸²

In 2013 the Meeting of the Parties also adopted the Guidance on the implementation of article 6.2 on the export of carbon dioxide streams for disposal in sub-seabed geological formations for the purpose of sequestration, subject to the entry into force of the amendment to Article 6.⁸³

The Continued Tribulations of CO₂ Export

The legal obstacles to transboundary movement of CO₂ for sub-seabed storage were not resolved by the mere adoption of the amendment resolution. Whereas amendments to annexes—such as the one that added CO₂ sequestration in sub-seabed geological formations to Annex 1 of the Protocol—become binding on all Parties that do not issue a declaration stating their non-acceptance of the amendment,⁸⁴ any amendment to the Protocol as such requires acceptance by two-thirds of the Contracting Parties for it to enter into force, and then it only binds those Parties that have accepted it.⁸⁵ However, five years after the adoption of the amendment, only Norway and Great Britain had submitted such an acceptance with respect to the amendment to Article 6.⁸⁶ According to the IEA, a significant number of the Parties to the Protocol take a limited interest in CCS; furthermore, among those that do engage with CCS policy issues, not all are interested in offshore CO₂ storage or CO₂ export for such storage. It is thus likely that many Parties give a low priority to ratification

81 *Ibid.*, at para. 10.

82 *Ibid.*, at para. 12.

83 *Report of the Thirty-fifth Consultative Meeting of the Contracting Parties to the London Convention and the Eighth Meeting of Contracting Parties to the London Protocol*, 21 October 2013, LC 35/15, para. 5-7; available at <https://docs.imo.org/Search.aspx?keywords=LC%2035%2F15>; accessed 24 April 2015.

84 London Protocol (n 31), Art. 22 (4).

85 *Ibid.*, at Art. 21(3).

86 S McCoy, *Carbon Capture and Storage: Legal and Regulatory Review* (4th ed. IEA, Paris, 2014) 76; Amendment to Article 6 of the London Protocol 1996, acceptance by the United Kingdom of Great Britain and Northern Ireland, LC-LP.2/Circ.2/Rev.1, 1 February 2012, available at <https://docs.imo.org/Search.aspx?keywords=LC-LP.2%2FCirc.2%2FRev.1>; accessed 22 April 2015.

of the Article 6 amendment.⁸⁷ The odds of the amendment entering into force within the foreseeable future thus seem quite long.

The bleak prospect of the amendment coming into force has given rise to a discussion on whether there are measures other than the acceptance and formal entry into force of the amendment that may enable Parties to export CO₂ for sub-seabed geological storage without breaching their obligations under the Protocol.

Exporting CO₂ without an Amendment

The position initially held by a few Parties that export would not be contrary to Article 6 of the Protocol must now be deemed completely refuted, not least since the Parties reaffirmed that the export of CO₂ waste streams is prohibited until the amendment enters into force.⁸⁸ But this does not preclude that there may be measures other than formal acceptance of the amendment by a sufficient number of Parties that could enable captured CO₂ to be exported for sub-seabed geological storage. The IEA, which sees CCS as a critical component in a portfolio of low-carbon energy technologies,⁸⁹ published a 'working paper' in 2011 that explores such different options.⁹⁰ The paper sets out six options, namely:

1. The adoption by the Parties of an interpretative resolution;
2. An agreement to apply the amendment provisionally;
3. The conclusion of a subsequent agreement;
4. Modification of the operation of relevant aspects of the Protocol as between two or more contracting parties;
5. Suspension of the operation of relevant aspects of the London Protocol as between two or more Contracting Parties; and
6. Conducting CCS through non-contracting Parties.

87 IEA, *Carbon Capture and Storage and the London Protocol: Options for Enabling Transboundary CO₂ Transfer* (IEA, Paris, 2011) 12.

88 Report of the Thirty-Third Consultative Meeting and the Sixth Meeting of Contracting Parties, 8 November 2011, LC 33/15, para. 5.15; available at <https://docs.imo.org/Search.aspx?keywords=LC%2033%2F15>; accessed 22 April 2015.

89 IEA (n 2), at p. 5.

90 IEA (n 87).

The reasoning provided for the different options is at times rather meagre. However, some of the options warrant more serious consideration than others.

Exporting to or with Non-parties

The sixth option of the IEA working paper, i.e., exporting CO₂ to or with non-contracting Parties to the 1996 Protocol, is dealt with very briefly, and for good reason. Despite the apparent position of one or a few Parties, nothing in the wording of Article 6 (“... shall not allow the export of wastes or other matter to other countries...”) suggests that the prohibition would not apply to export to non-Parties. Such an interpretation has also been clearly rejected by many Parties.⁹¹ Even these strong legal objections aside, the utility of such an option would be limited, because many of the Parties that may have an interest in engaging in export as part of regional CCS solutions are largely surrounded by other Parties and would thus gain little from this ‘option’.⁹² Exporting captured CO₂ further afield is probably out of the question in most cases for both practical (e.g., cost) and political reasons.⁹³

Adoption of an Interpretative Resolution

The working paper’s first option, adoption by the Parties of an interpretative resolution, is also of limited practical interest. It draws on the fact that, according to Article 31 (3) of the Vienna Convention on the Law of Treaties (VCLT),⁹⁴ when interpreting a treaty provision “any subsequent practice in the application of the treaty which establishes the agreement of the parties regarding its interpretation” is to be taken into account, together with the context. That the wording of Article 6 does not appear to be very ambiguous is not necessarily a problem, as subsequent practice has been found to affect the interpretation

91 LC 30/16 (n 67), para. 5.14.

92 Such is, e.g., the situation around the North Sea (where Denmark, Germany, Great Britain, the Netherlands and Norway are all Parties) and to a slightly lesser extent in the Baltic Sea area (where Denmark, Estonia, Germany and Sweden all are Parties; Finland lacks geological conditions suitable for CO₂ storage).

93 As noted above, the Parties have emphasised that Contracting Parties should ensure that the long-distance export of CO₂ streams between UN regions is reduced to the minimum consistent with the protection and preservation of the marine environment from all sources of pollution, taking into account the special position of developing countries. Resolution LP.3(4), para. 10. See also on the opinions of the Parties LC 31/15 (n 73), para. 5.11.

94 Vienna Convention on the Law of Treaties, 23 May 1969, Vienna, in force 27 January 1980 (1969) 8 *ILM* 679.

of other, also apparently rather clear, treaty provisions.⁹⁵ Subsequent practice has also been found to be able to affect the interpretation of more technical, as well as more value-oriented, provisions.⁹⁶ However, even assuming that such an agreement would be able to establish an interpretation of Article 6 that allows export of CO₂ for sub-seabed storage, the fact still remains that several Parties have rejected an interpretative declaration as an adequate basis for regulating CO₂ sequestration in sub-seabed geological formations.⁹⁷ Furthermore, as the IEA's working paper also points out, the fact that the Parties have initiated a formal amendment procedure indicates that they consider Article 6 to prohibit export for sub-seabed storage.⁹⁸ There can hence be little doubt that the Parties consider a prohibition to be in force. If an attempt would nonetheless be made to have an interpretative resolution adopted, consensus among the Parties would be required.⁹⁹ Considering that China voted against the adoption of the amendment in the first place—although expressing its support for facilitating export for sub-seabed storage in principle—and that other Parties abstained,¹⁰⁰ this consensus may be very hard to attain.

In sum it must be concluded that having resort to an interpretative resolution is not a viable option, at least not unless the Parties unanimously act in such a way as to make it clear that they all agree with a new interpretation of Article 6.

A Subsequent Agreement

The IEA paper's third option, the conclusion of a subsequent agreement, is perhaps the most promising one. It has the advantage of not requiring unanimity among the Parties. In fact it even acknowledges that different Parties may wish different rules to apply in relation to export, at least for the moment.

According to the relevant rules on the application of successive treaties relating to the same subject matter, a new agreement between some of the

95 International Law Commission (ILC), First report on subsequent agreements and subsequent practice in relation to treaty interpretation, by Georg Nolte, Special Rapporteur, 19 March 2013, A/CN.4/660, para. 49; available at <http://daccess-dds-ny.un.org/doc/UNDOC/GEN/N13/264/75/PDF/N1326475.pdf?OpenElement>; accessed 22 April 2015.

96 *Ibid.*, at para. 52.

97 LC/CM-CO₂ 1/5 (n 46), para. 3.6.

98 IEA (n 87), at p. 16.

99 ILC, Second report on subsequent agreements and practice in relation to the interpretation of treaties, by Georg Nolte, Special Rapporteur, 26 March 2014, A/CN.4/671, available at <http://daccess-dds-ny.un.org/doc/UNDOC/GEN/N14/278/52/PDF/N1427852.pdf?OpenElement>; accessed 24 April 2015, para. 102.

100 See (n 75).

Parties to the London Protocol could change the legal obligations between them, e.g., by allowing export of CO₂ for sub-seabed storage as between those Parties. In relation to the Parties to the London Protocol that were not Parties to such a subsequent agreement, the Protocol would still apply as before.¹⁰¹ The major issue here, which is not seriously addressed in the IEA paper, is the nature of the obligation owed towards those States that remain Parties only to the Protocol. The IEA paper finds it “difficult to see how a subsequent agreement enabling export of CO₂ 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 CO₂ streams are transported through their territory . . .”¹⁰²

This conclusion presupposes that the Protocol only aims to protect, and thus only establishes obligations relating to, the right of individual Parties not to have substances intended for dumping exported to them. Little supports such a view. In effect the Protocol is what is commonly referred to as an ‘interdependent’ treaty, i.e., one in which the rights and obligations of the treaty cannot be reduced to reciprocal rights and obligations between any two Parties.¹⁰³ The movement of the water of the sea and its inhabitants makes pollution of the sea, e.g., by dumping, a potential concern for more than just the State in whose maritime zone the dumping occurs. As regards the EEZ, that argument is further strengthened by the rights enjoyed in that zone by other States than the coastal State. It can hence not be assumed that the obligations set out in the Protocol are only intended to protect the interests of the State in whose waters any particular act of dumping would occur.

Admittedly, prohibiting export for dumping is different than prohibiting or regulating dumping as such. It could be that the intention with this particular export-related obligation is only to protect the State to which the export may be destined. However, little suggests that to be the case. The overall intention of the Parties, as stated in the preamble to the Protocol, is to protect the marine environment and to promote the sustainable use and conservation of marine resources.¹⁰⁴ Rights or interests of particular States are not mentioned. Furthermore, no other intention underlying the export ban in Article 6 is mentioned either. Article 6 is a general export ban, without any distinction being

101 VCLT (n 94), Art. 30 (4).

102 IEA (n 87), at p. 18.

103 On the concept of ‘interdependent’ treaties see J Pauwelyn, ‘The Role of Public International Law in the WTO: How Far Can We Go?’ (2001) 95 *AJIL* 535–578, at p. 549.

104 London Protocol (n 31), first preambular paragraph.

made between, e.g., Parties and non-Parties, or between developed and developing States, as might be expected if, for example, the interests of particularly vulnerable States were to be protected by the ban.

The discussion on export within the dumping regime was much influenced by the developments under the Basel Convention.¹⁰⁵ However, the idea of banning export emerged even before the adoption of that Convention as a potential means of preventing circumvention of the prohibition on dumping by exporting waste to non-Parties.¹⁰⁶ When such a prohibition was eventually given legally binding force, as Article 6 in the Protocol, it took the form of a general export ban, without any distinction between different categories of States. Against this background it is hard to sustain an argument that the export ban, as opposed to the ban on dumping as such, would be an obligation that is owed only in respect to each State to which export might take place.

However, it should be recalled that the amendment to Article 6 only allows export to other Parties to the Protocol or, in the case of non-Parties, requires that export occur only in accordance with an agreement or arrangement containing provisions at a minimum equivalent to those contained in the Protocol. As long as the substantive requirements of the Protocol are upheld—irrespective of whether export occurs to a Party or a non-party—the actual risk of the export of CO₂ for dumping resulting in environmental harm that would not otherwise have occurred is limited. In fact, export may very well enable captured CO₂ to be managed more safely and efficiently if the export is prompted by better storage sites and/or higher technical capacity in the State of import compared to that of export. An argument can therefore still be made that the rights of the non-Parties to a new agreement would not suffer in any material sense as a consequence of export for dumping taking place under responsible and well-regulated conditions.

It is conceivable that poor States in particular could be induced to accept dumping, to the detriment of the marine environment, by economic compensation or other benefits (or potentially through some form of coercion). It is also conceivable that an agreement allowing export could, in some cases, particularly with respect to States with weak institutions, be obtained through the provision of inducements to influential individuals. This could result in harm to the marine environment that would not have occurred had the export not taken place. However, these arguments are most pertinent in relation to potential export from developed to developing countries. As long as an agreement

105 See, e.g., A Nollkaemper, 'Transboundary Movement of Hazardous Waste for the Purpose of Dumping at Sea' (1991) 22 *Marine Pollution Bulletin* 377–380.

106 *Ibid.*, at p. 380.

only involves States with (presumed) high levels of technological and regulatory capacity, there should be little basis for these types of objections.

It is vital that any new agreement on modifications between a subset of Parties to the Protocol preempts the risk of eroding the general level of environmental protection for which the Protocol should be a guarantor.

Other Options

Of the other options presented in the IEA paper, most run up against the same problem as a subsequent agreement. A treaty or a part of a treaty is applied provisionally pending its entry into force if, as far as is relevant here, the negotiating States have in some manner so agreed.¹⁰⁷ No formal obstacle to the Parties agreeing on provisional application seems to exist. It should also be clear that not all Parties must agree to such a provisional application for it to become effective with regard to the Parties that do.¹⁰⁸ But because of the legal relationship between those States that do apply the (in this case) modification and those Parties to the Protocol that do not, the ‘integral’ nature of the Protocol may still put the legality of export into question. In this regard the same reasoning as above applies *mutatis mutandis*.

More or less the same goes for the option of modifying the operation of relevant aspects of the Protocol (i.e., Article 6) as between two or more Parties. This draws on the provisions in Article 41 of the VCLT. It enables two or more parties to a multilateral treaty that does not prohibit such action to conclude an agreement to modify the treaty as between them. That requires, as far as is relevant here, that the modification does not affect the enjoyment by the other parties of their rights under the treaty. Any modification must also 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.¹⁰⁹ Both the “enjoyment by the other parties of their rights” and “the effective execution of the object and purpose of the treaty” raise the question of the nature of the obligation not to export and its relation to the overall purpose of the Protocol.

¹⁰⁷ VCLT (n 94), Art. 25 (1) (b).

¹⁰⁸ In a recent ILC report on the provisional application of treaties, the Special Rapporteur, Juan Manuel Gómez-Robledo, concludes, *inter alia*, that an expression of intention to apply a treaty may be unilateral, as well as made by two or more contracting parties. ILC, First report on the provisional application of treaties, 3 June 2013, A/CN.4/664, para. 22; available at <http://daccess-dds-ny.un.org/doc/UNDOC/GEN/N13/352/47/PDF/N1335247.pdf?OpenElement>; accessed 24 April 2015.

¹⁰⁹ VCLT (n 94), Art. 41(1).

The fifth option, suspension of the operation of relevant aspects of the London Protocol as between two or more contracting Parties, runs up against much the same problems as the previous two options. In addition it would, as noted in the IEA paper, signal that the Parties are prepared to set aside the multilaterally agreed obligations in order to pursue their own agenda (although that ultimate objective, if not the actual measure, would find support in action by all the Parties).¹¹⁰ That would probably make it one of the least palatable options.

Conclusion

To summarise, enabling export of captured CO₂ is not a problem if consensus can be achieved for, e.g., an interpretative resolution making it clear that construing Article 6 of the Protocol as not prohibiting export of captured CO₂ for geological storage, at least not when storage is to occur in another Party to the Protocol, is consistent with the will of the Parties. However, in light of the developments at the Meetings of the Parties so far, this seems rather unlikely to happen. Measures which do not require consensus could also be resorted to. They would not make the legality of export a foregone conclusion, but would at least enable a good argument to be made that the interests of the Parties who did not join such an action, e.g., the adoption of a subsequent agreement or the provisional application of the amendment to Article 6, had not been injured in any substantive way. This would require a high level of certainty that export would not in fact result in CO₂ storage operations that do not meet at least the demands of the London Protocol.

110 IEA (n 87), at p. 20.