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## Greenhouse gas emissions from offshore oil and gas activities — Relevance of the Paris Agreement, Law of the Sea, and Regional Seas Programmes

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## ABSTRACT

Parties to the *Paris Agreement* have a binding obligation to collectively limit global temperature rises to an agreed upon target. Commitments include providing national greenhouse gas (GHG) inventory reports to the *United Nations Framework Convention on Climate Change* ('UNFCCC') secretariat, reporting their contributions towards the collective target. GHG emissions from upstream oil and gas (O&G) facilities, including those in offshore areas under coastal State jurisdiction (where current activity is occurring in over 50 countries), are to be included within the scope of these reports. Parties to the *United Nations Convention on the Law of the Sea* ('UNCLOS') are obligated to adopt and enforce laws and regulations to prevent, reduce, and control pollution arising from seabed exploration and exploitation activities under their jurisdiction. These are to be no less effective than international rules and standards as established through competent international organisations. The International Maritime Organization (IMO) and United Nations Environment Programme (UNEP), via the Regional Seas Programmes (RSP), are two such organisations that develop international rules and standards covering certain aspects of offshore O&G activities. IMO treaties, rules, and standards cover GHG emissions arising from vessel-related offshore O&G activities, but emissions from O&G industry-specific activities, such as the venting and flaring of reservoir hydrocarbons, are excluded. The only other source of international law, implementing *UNCLOS'* requirement, providing international rules and standards for coastal States to benchmark their laws against for the prevention of marine pollution in the form of GHG emissions from offshore O&G activities are the regional instruments of the RSP. However, as this article will show, current RSP coverage is minimal and insufficient, particularly in light of Parties' *Paris Agreement* and *UNCLOS* obligations. Examples are provided showing inconsistencies in the reporting of offshore O&G GHG emissions across national inventory reports, as well as examples of applicable requirements prescribed under various RSP instruments, or lack thereof, highlighting the deficiency of a relevant international pollution prevention rule and/or standard across all marine regions.

### 1. Introduction

With the signing of the *Paris Agreement* and its adoption at the Conference of the Parties' twenty-first session,<sup>1</sup> entering into force on 4 November 2016 with near-universal ratification,<sup>2</sup> Parties now have a binding obligation to limit global temperature rises to 'well below 2 °C'<sup>3</sup>

above pre-industrial levels, and must pursue efforts to limit rises to 'no more than 1.5 °C'.<sup>4</sup> Commitments under the *Paris Agreement* include providing national GHG inventories to the *UNFCCC's* secretariat (Climate Change secretariat), and reporting how Parties will contribute to achieving the target, which is communicated within Nationally Determined Contributions (NDC).<sup>5</sup> Parties are required to 'pursue

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<sup>1</sup> UNFCCC, *Adoption of the Paris Agreement*, Dec 1/CP.21, COP, 21st sess, UN Doc FCCC/CP/2015/10/Add.1 annex (29 January 2016), ('*Paris Agreement*').

<sup>2</sup> *Ibid*; UN Treaty Collection, *Status of Treaties: Chapter XXVII: Environment: 7. d Paris Agreement: Paris, 12 December* < [https://treaties.un.org/Pages/ViewDetails.aspx?src=TREATY&mtdsg\\_no=XXVII-7-d&chapter=27&clang=\\_en](https://treaties.un.org/Pages/ViewDetails.aspx?src=TREATY&mtdsg_no=XXVII-7-d&chapter=27&clang=_en) > .

<sup>3</sup> *Paris Agreement* art 2(1)(a).

<sup>4</sup> *Ibid*.

<sup>5</sup> *Ibid* art 3, art 4(2); *United Nations Framework Convention on Climate Change*, signed 9 May 1992, 1771 UNTS 107 (entered into force 21 March 1994), arts 4, 12 ('*UNFCCC*'); UNFCCC, *Nationally Determined Contributions (NDCs): The Paris Agreement and NDCs* < <https://unfccc.int/process-and-meetings/the-paris-agreement/nationally-determined-contributions-ndcs#eq-2> > .

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domestic mitigation measures<sup>6</sup> and adopt national policies to achieve their NDC objectives.<sup>7</sup> Per reporting guidelines adopted by the Climate Change secretariat, GHG emissions from all upstream O&G facilities, including those in offshore areas under the national jurisdiction of the Party, are to be included within the scope of national reports.<sup>8</sup>

Per *UNCLOS*, facilities undertaking offshore O&G activities within territorial waters, Economic Exclusive Zones (EEZ), and on the extended continental shelf (if claimed) fall under the jurisdiction of the relevant coastal State.<sup>9</sup> Coastal States have obligations under *UNCLOS* to protect and preserve the marine environment,<sup>10</sup> and adopt and enforce laws and regulations covering offshore O&G activities within these marine areas:<sup>11</sup>

to prevent, reduce and control pollution of the marine environment **arising from or in connection with seabed activities** subject to their jurisdiction and from artificial islands, installations and structures under their jurisdiction.<sup>12</sup>

These laws and regulations 'shall be no less effective than international rules, standards and recommended practices and procedures'<sup>13</sup> to be established through 'competent international organisations [IO]'.<sup>14</sup>

Under *UNCLOS* article 1, 'pollution of the marine environment' is defined as:

the introduction by man, **directly or indirectly, of substances or energy** into the marine environment **which results or is likely to result in** such deleterious effects as harm to living resources and marine life [and] hazards to human health.<sup>15</sup>

Sufficient scientific evidence exists that proves anthropogenic GHG emissions increases ocean temperatures and results in ocean acidification and eutrophication, which causes harm to the marine environment and its biodiversity.<sup>16</sup> Thus, based on *UNCLOS*' broad

definition,<sup>17</sup> GHG emissions from offshore O&G activities could be considered a source of marine pollution.<sup>18</sup> Therefore, to assist States in meeting their obligations under *UNCLOS* regarding the prevention, reduction and control of this source of marine pollution, commensurate international rules and standards of a competent IO should be in place.<sup>19</sup>

*UNCLOS* does not mandate any specific organisation related to prevention, reduction, and control of pollution from seabed activities.<sup>20</sup> However, two competent IOs with remit incorporating pollution prevention measures for offshore O&G activities that occur within marine areas under national jurisdiction include the IMO and UNEP.<sup>21</sup>

IMO's *MARPOL Annex VI* intends to govern GHG emissions from international shipping activities,<sup>22</sup> thereby providing a mechanism under international law to regulate and monitor the climate change impacts of the shipping industry's global activities. *MARPOL Annex VI* applies to

(footnote continued)

International Shipping a Type of Marine Pollution?' (2016) 113(1–2) *Marine Pollution Bulletin* 187, 189–90; Alan Boyle, 'Law of the Sea Perspectives on Climate Change' (2012) 27(4) *International Journal of Marine and Coastal Law* 157, 158–9 ('Perspectives').

<sup>17</sup> *UNCLOS* (n 10) art 1(4).

<sup>18</sup> Orellana (n 16) 258–63; Shi (n 16) 189–90; Boyle, 'Perspectives' (n 16) 158–9; UNGA, Compilations of UNEP Governing Council Decisions Pertaining to the Protection of the Marine Environment, Information Documents of the 9th Global Meeting of the Regional Seas Conventions and Action Plans, UN Doc UNEP(DEPI)/RS.9/Inf.5 (3 October 2007), 1st sess, iii(e)(iv) ('UNEP Governing Council Decisions'). See also commentary on drafting *UNCLOS*, Nordquist, Nandan and Rosenne (n 14) 31–45, 53–66, 137–46.

<sup>19</sup> *UNCLOS* (n 10) art 208(5); Ulrich Beyerlin and Thilo Marauhn, *International Environmental Law* (Hart, 1st ed, 2011) 120. For a historical overview of the efforts of UNEP, and Iberoamerican Institute of Maritime Law and Comité Maritime International attempting to develop a global convention to regulate offshore O&G activities, with the intent of meeting this current legal gap, see UNEP, *Report of the UNEP Working Group of Experts in Environmental Law*, 8th sess, UN Doc UNEP/WG.54/4 (13 February 1981); Jorge Radovich, *Position Document by the Iberoamerican Institute of Maritime Law (IIDM) Concerning the Need for IMO to Promote an International Convention to Regulate Offshore Extraction Activities, Submitted by IIDM* (No IMO Legal Committee, 102nd sess, Agenda item 11, LEG 102/11 (9 February 2015)) < <https://www.transportstyrelsen.se/contentassets/cd85085ecde04673a5d17ab377ecf480/102-11.pdf> > .

<sup>20</sup> Raphaël Billé et al., Regional Oceans Governance. Making Regional Seas Programmes, Regional Fishery Bodies and Large Marine Ecosystem Mechanisms Work Better Together (Working Paper No 196, UNEP, 2016) 86–8; JD Kingham and DM McRae, 'Competent International Organisations and the Law of the Sea' (1979) 3(2) *Marine Policy* 106, 108–9, 111–3, 115–7, 127–8; IMO Secretariat, Implications of the United Nations Convention on the Law of the Sea for the International Maritime Organization: Study by the International Maritime Organization (IMO) (Working Paper No LEG/MISC.8, 30 January 2014) 117–34 ('IMO Implications'); UNGA (n 18) 22/2 iii(a) para 6; Gabriele Goettsche-Wanli, Briefing on Developments in Ocean Affairs and the Law of the Sea 20 Years After the Conclusion of the United Nations Convention on the Law of the Sea, Marine Environment from the Conclusion of the United Nations Convention on the Law of the Sea to the World Summit on Sustainable Development Part II of the Presentation Entitled "Legal Instruments That Support the Implementation of the United Nations Convention on the Law of the Sea" The United Nations Convention on the Law of the Sea as a Framework or Umbrella Convention (DOALOS/UNITAR, 26 September 2002) 1–2, 5 < [https://www.un.org/Depts/los/convention\\_agreements/convention\\_20years/Presentation\\_GoettscheWanli.pdf](https://www.un.org/Depts/los/convention_agreements/convention_20years/Presentation_GoettscheWanli.pdf) > .

<sup>21</sup> Ibid. Note, UNEP (now referred to as UN Environment) is the lead UN programme concerned with the environment, with rules and standards applicable to offshore O&G activities incorporated within instruments of the Regional Seas Programmes.

<sup>22</sup> *International Convention for the Prevention of Pollution from Ships*, signed 2 November 1973, 1340 UNTS 62 (entered into force 2 October 1983), as modified by 1978 Protocol (signed 1 June 1978) and the 1997 Protocol (signed 26 September 1997), and as regularly amended, annex vi ('*MARPOL*').

<sup>6</sup> *Paris Agreement* (n 3) art 4(2).

<sup>7</sup> Ibid.

<sup>8</sup> UNFCCC, *Use of the 2006 IPCC Guidelines for National Greenhouse Gas Inventories and Revision of the UNFCCC Reporting Guidelines for Annex I Parties to the Convention* < <https://unfccc.int/process/transparency-and-reporting/reporting-and-review-under-the-convention/greenhouse-gas-inventories-annex-i-parties/reporting-requirements/use-of-the-2006-ipcc-guidelines-for-national-greenhouse-gas-inventories-and-revision-of-the-unfccc> > ('*IPCC Guidelines*').

<sup>9</sup> *United Nations Convention on the Law of the Sea*, signed 10 December 1982, 1833 UNTS 3 (entered into force 16 November 1994), arts 2, 56, 60, 76, 80 ('*UNCLOS*').

<sup>10</sup> *UNCLOS* arts 192–6.

<sup>11</sup> Ibid arts 2, 56, 60, 76, 80, 208, 214. Note, *UNCLOS* articles 212 and 222 prescribe requirements for the prevention of marine pollution from airborne sources (land-based sources, ships, and aircrafts), thus excluding the main sources of GHG emissions from offshore O&G activities. Thus, these articles are not expanded upon in any detail within this paper. See further, Myron H Nordquist, Satya Nandan and Shabtai Rosenne (eds), *United Nations Convention on the Law of the Sea Commentary 1982 Online* (Brill, 2013) 208–13; Alan Boyle, 'Law of the Sea Perspectives on Climate Change' (2012) 27(4) *International Journal of Marine and Coastal Law* 831, 158 ('Perspectives').

<sup>12</sup> Ibid art 208(1) (emphasis added).

<sup>13</sup> Ibid art 208(3).

<sup>14</sup> Ibid art 208(5). *UNCLOS* does not define who the 'competent international organisations' are as applicable to Article 208, however IMO and UNEP are typically regarded as the relevant organisations. See also, UN DOALOS, A. 'Competent or Relevant International Organisations' under the United Nations Convention on the Law of the Sea (Law of the Sea Bulletin No 31, 1996) 79 ('*DOALOS*'); Myron H Nordquist, Satya Nandan and Shabtai Rosenne (eds), *United Nations Convention on the Law of the Sea Commentary 1982 Online* (Brill, 2013) 14–16.

<sup>15</sup> *UNCLOS* (n 10) art 1(4) (emphasis added).

<sup>16</sup> Marcos A Orellana, 'Climate Change and the International Law of the Sea: Mapping the Legal Issues' in Randall S Abate (ed), *Climate Change Impacts on Ocean and Coastal Law: US and International Perspectives* (Oxford University Press, 2014) 253, 258–63; Yubing Shi, 'Are Greenhouse Gas Emissions from

vessels as well as offshore fixed and floating platforms and drilling rigs.<sup>23</sup> However, GHG emissions from offshore O&G exploration and exploitation activities are not comprehensively governed, as only vessel-related activities of offshore platforms and rigs are covered.<sup>24</sup> GHG emissions arising from O&G industry-specific activities, such as the venting and flaring of reservoir hydrocarbons, are therefore excluded. Additionally, IMO's recent adoption of its Initial Strategy to reduce GHG emissions from ships by at least 50% by 2050 presumably (if its existing unified interpretations apply) also excludes floating facilities engaged in O&G activities.<sup>25</sup> Hence, even though IMO is a competent IO for international rules and standards for some offshore O&G activities, it is not the sector's most significant GHG emissions' sources.<sup>26</sup>

UNEP holds a global coordination and promotion role regarding the development of international rules and standards for the protection of shared marine and coastal environments from non-living resources' activities (such as the exploration for and extraction of O&G from the seabed), as well as the sustainable development of such resources.<sup>27</sup> This role is executed via the Regional Seas Programmes (RSP), which provides a mechanism for States to cooperate at a regional level to formulate and elaborate the international rules and standards prescribed by UNCLOS, considering the needs and capabilities of the region, taking the form of conventions, protocols, actions plans, and various other guidance materials.<sup>28</sup> For coastal States, the instruments of the RSP provide the only other source of international law regulating (and in the case of non-binding agreements, guiding) the prevention of marine pollution in the form of GHG emissions from offshore O&G activities.<sup>29</sup> However, as this article will show, this coverage is minimal and insufficient, particularly in light of Parties' *Paris Agreement* obligations.<sup>30</sup> In addition, GHG emissions standards, monitoring, and reporting is not consistent across coastal States for offshore O&G activities due to deficient international rules and standards —<sup>31</sup> thus, States are

in breach of their obligations under UNCLOS article 208, and, accordingly, are defective in addressing the directives of the RSP.<sup>32</sup>

This article provides an overview of the world's regions where there are offshore O&G exploration and exploitation activities and discusses the associated sources of GHG emissions. The obligations of coastal States regarding the regulation and monitoring of GHG emissions from industry activities under their jurisdiction, as required per *Paris Agreement* and UNCLOS, are outlined. The article then undertakes an assessment of the RSP, highlighting applicable shortcomings and concluding that existing RSP instruments provide inadequate rules and standards under international law to provide the basis for coastal States to regulate GHG emissions from the offshore O&G industry.

## 2. Offshore oil & gas overview

### 2.1. Regions and countries

O&G exploration and exploitation activities, or 'upstream' activities, occur off the coasts of over 50 countries in all regions of the world, with the exception of Antarctica.<sup>33</sup> The regional areas are typically grouped

(footnote continued)

General for Maritime Affairs and Fisheries, *International Ocean Governance: An Agenda for the Future of Our Oceans* (JOIN No, 2016/049, European Commission, 2016) 3; Catherine Redgwell, 'Mind the Gap in the GAIRS: The Role of Other Instruments in LOSC Regime Implementation in the Offshore Energy Sector' (2014) 29(4) *International Journal of Marine and Coastal Law* 600, 610; Lyons (n 24) 197, 204; Elizabeth Maruma Mrema, 'Regional Seas Programme: The Role Played by UNEP in Its Development and Governance' in David Joseph Attard et al. (eds), *IMLI Manual on International Maritime Law: Volume III: Marine Environmental Law and Maritime Security Law* (Oxford University Press, 2016) 345, 379; Nelson Atanga Ayamdo, 'Protecting the Gulf of Guinea in an Oil Boom: Regulating Offshore Petroleum Pollution in a Divided World' (2016) 9(3) *Journal of World Energy Law & Business* 219, 225–29 ('Protecting the Gulf of Guinea in an Oil Boom'); Violeta Radovich, *International Legal Regime of Offshore Structures-Environmental Concerns* (2012); UNEP, *Implementation of the Regional Seas Strategic Directions (2017–2020)*, 18th Global Meeting of the Regional Seas, Conventions and Action Plans, UN Doc UNEP/WBRS.18/5 (16 September 2016), 16; Nengye Liu, 'Protection of the Marine Environment from Offshore Oil and Gas Activities' in Rosemary Rayfuse (ed), *Research Handbook on International Marine Environmental Law* (Edward Elgar Publishing, 2015) 190, 205; Nilufer Oral, 'Forty Years of the UNEP Regional Seas Programme: From Past to Future' in Rosemary Rayfuse (ed), *Research Handbook on International Marine Environmental Law* (Edward Elgar Publishing, 2015) 339, 358; Beyerlin and Marauhn (n 19) 140–2; Alan E Boyle, 'Saving the World-Implementation and Enforcement of International Environmental Law through International Institutions' (1991) 3(2) *Journal of Environmental Law and Litigation* 229, 578 ('Saving the World'); Julien Rochette et al., *Seeing beyond the Horizon for Deepwater Oil and Gas: Strengthening the International Regulation of Offshore Exploration and Exploitation* (Study No 01/14, L'Institut du Développement Durable et des Relations Internationales (IDDRI), February 2014) 9 ('2014 IDDRI'); Karen N Scott, 'Climate Change and the Oceans: Navigating Legal Orders' in Myron H Nordquist, John Norton Moore and Ronán Long (eds), *Legal Order in the World's Oceans: UN Convention on the Law of the Sea* (BRILL, 2017) 124, 148 ('CC&O'); A Roach and USN JAGC, 'International Standards for Offshore Drilling' in Myron H Nordquist et al. (eds), *Regulation of Continental Shelf Development: Rethinking International Standards* (Brill, 2013) 105, 114–16, 121; Karen N Scott, 'Integrated Oceans Management: A New Frontier In Marine Environmental Protection' in Donald R Rothwell et al. (eds), *Oxford Handbook of the Law of the Sea* (Oxford University Press, 2015) 463, 488 ('IOM').

<sup>32</sup> Mrema (n 31) 352.

<sup>33</sup> IEA, *Offshore Energy Outlook* (World Energy Outlook Series No 2018, International Energy Agency (IEA), 4 May 2018) 34–7; Offshore Magazine 78(5), 'Global E&P' (1 April 2018) < <https://www.offshore-mag.com/articles/print/volume-78/issue-5/departments/global-e-p/global-e-p.html> > ; Offshore Magazine 78(4), 'Global E&P' (1 May 2018) < <https://www.offshore-mag.com/articles/print/volume-78/issue-4/departments/global-e-p/global-e-p.html> > ; European Commission, Joint Research Centre EU Offshore Authorities Group, 'Offshore Oil and Gas Production' < <https://euoag.jrc.ec.europa.eu/>

<sup>23</sup> MARPOL annex vi reg 19.

<sup>24</sup> Ibid annex vi reg 19(2); Youna Lyons, 'Regulation of Offshore Hydrocarbon Exploration and Exploitation under International Law' in Robin Warner and Stuart Kaye (eds), *Routledge Handbook of Maritime Regulation and Enforcement* (Routledge, 2015) 229, 194.

<sup>25</sup> IMO Secretariat, 'Initial IMO Strategy on Reduction of GHG Emissions from Ships' (MEPC Resolution MEPC.304(72), 13 April 2018) ('Initial Strategy'); IMO Secretariat, 'Unified Interpretations to MARPOL Annex VI' (MEPC Document MEPC.1/Circ795/Rev.2, 1 December 2014) ('Unified Interpretations').

<sup>26</sup> IMO Implications 77, 122; Pierre-Marie Duprey and Jorge E Vinales, *International Environmental Law* (2015) 100.

<sup>27</sup> UNEP, Governing Council Decision 1(I), UN General Assembly Official Records (GAOR), Vol 28, 1973, Supp. 25 (A/9025) (22 June 1973) 42; UNEP, Report of the Governing Council on the Work on Its Second Session, 1–22 March 1974, Decision 8(II) (1974); UNEP, Regional Seas Implementation and Monitoring of the Sustainable Development Goals (SDGs), 18th Global Meeting for the Regional Seas Conventions and Action Plans, UN Doc UNEP/WBRS.18/2 (11 August 2016) 3–5; Billé et al. (n 20) 3, 23–8. See also above n 21.

<sup>28</sup> UNCLOS (n 10) art 197; UNEP, 'Governing Council Decision 1(I), UN General Assembly Official Records (GAOR), Vol 28, 1973, Supp. 25 (A/9025) (22 June 1973)' (n 27) 42; UNEP, 'Report of the Governing Council on the Work on Its Second Session, 1–22 March 1974, Decision 8(II) (1974)' (n 27); Billé et al. (n 20) 3, 23–8. Note, the formation of the RSP preceded UNCLOS, the term 'Regional Seas Programmes (RSP)' used within this paper refers to the co-ordination programme of UNEP over both UNEP-administered and non-UNEP-administered regional seas programmes. See further, UNEP, 'Regional Seas Implementation and Monitoring of the Sustainable Development Goals (SDGs), 18th Global Meeting for the Regional Seas Conventions and Action Plans, UN Doc UNEP/WBRS.18/2 (11 August 2016)' (n 27) 3–5.

<sup>29</sup> Ibid.

<sup>30</sup> *Paris Agreement* (n 3) art 2.

<sup>31</sup> Ricardo Pereira, 'Pollution from Seabed Activities' in David Joseph Attard et al. (eds), *IMLI Manual on International Maritime Law: Volume III: Marine Environmental Law and Maritime Security Law* (Oxford University Press, 2016) 95, 99; Philippe Sands and Jacqueline Peel, *Principles of International Environmental Law* (Cambridge University Press, 2012) 387; Directorate-

as Arctic Circle, Asia Pacific, Baltic Sea, Black Sea, Caspian Sea, East Africa, Wider Caribbean, Mediterranean Sea, Middle East Gulf Areas, North East Atlantic, North East Pacific, Red Sea and Gulf of Aden, South Atlantic, South East Pacific, and West, Central and South Africa.

The top ten offshore O&G producing nations in 2017 are, in order of decreasing production,<sup>34</sup> Saudi Arabia, Norway, Qatar, Iran, Brazil, United States of America (USA), Mexico, United Arab Emirates (UAE), United Kingdom (UK), and Angola.<sup>35</sup> There are many large fields planned for development in coming years that will provide substantial contributions to the world's offshore O&G production. These include offshore Australia, China, Egypt, Guyana, India, Indonesia, Israel, Kazakhstan, Malaysia, Mozambique, Nigeria, Russian Federation, Suriname, and Tanzania.<sup>36</sup>

Unproven O&G reservoirs within areas beyond national jurisdiction ('the Area')<sup>37</sup> will not be addressed within this article as it is unknown if exploration activities will proceed.<sup>38</sup> Offshore decommissioning activities and midstream O&G activities, such as the transportation and long-term storage of extracted materials via vessel or subsea pipeline and carbon, capture, and storage within the seabed, are also outside the scope of this article as emissions from these activities are considered other sources of pollution as classified within *UNCLOS* and, therefore, differing associated implementing international instruments apply.<sup>39</sup> Thus, this article only addresses activities associated with the exploration and extraction of offshore O&G resources from the seabed within marine areas under the jurisdiction of coastal States.

## 2.2. Offshore O&G facilities

The types of activities undertaken offshore for the purposes of exploring and exploiting O&G from the seabed include the following: seismic surveys and exploratory drilling to discover exploitable reservoirs; developmental drilling and construction of subsea infrastructure and topside facilities as required to exploit the O&G; and extraction, processing, and short-term storage of the O&G, prior to transport to the buyer. These activities are carried out from survey

(footnote continued)

node/63 > .

<sup>34</sup> Rankings are based on the collective daily production volume of each country's offshore oil and gas fields, in million barrels of oil/oil-equivalent per day.

<sup>35</sup> Offshore Magazine 77(1), 'Top 10 Offshore Producing Countries in 2017' (13 January 2017) < <https://www.offshore-mag.com/articles/print/volume-77/issue-1/departments/data/top-10-offshore-producing-countries-in-2017.html> > .

<sup>36</sup> IEA (n 33) 37, 43; Offshore Magazine 78(5) (n 33); Offshore Magazine 78(4) (n 33); European Commission, Joint Research Centre EU Offshore Authorities Group (n 33); Rochette et al. (n 31) 5–7; Offshore Magazine 78(3), 'Project Activity Ramping up across Asia/Pacific' (1 March 2018) < <https://www.offshore-mag.com/articles/print/volume-78/issue-3/asia-pacific/project-activity-ramping-up-across-asia-pacific.html> > .

<sup>37</sup> *UNCLOS* (n 10) art 1(1)(1).

<sup>38</sup> Note, per *UNCLOS* Part XI and its related implementing agreement, exploration or exploitation of oil and gas within the Area would be regulated by the International Seabed Authority (ISA). ISA do not currently have any regulations in place relevant to oil and gas resources, nor are any being developed at this time. See further 'Deep Seabed Mineral Resources', *International Seabed Authority* (2019) < <https://www.isa.org.jm/mineral-resources/55> > .

<sup>39</sup> Note, for example, GHG emissions from: transportation of oil and gas via vessel is regulated under *UNCLOS* 211 and 217–21 and associated international shipping regulations; transportation of extracted materials via subsea pipeline is regulated under *UNCLOS* article 79; and long-term storage via carbon, capture, and storage within the seabed is regulated under *UNCLOS* 210 and 216 and associated international dumping regulations. Therefore, emissions from these activities would be reported within their respective category within national GHG inventory reports, separately from emissions associated with offshore O&G exploration and extraction activities.

vessels, drilling rigs, construction vessels, and production, processing, storage, and offloading facilities, subject to the specifics of the O&G field and other economic and operational factors.<sup>40</sup> Offshore platforms can be mobile or fixed, and are either propelled or non-propelled, dependent upon the activity conducted and its design.<sup>41</sup> Fixed platforms are installed on the seabed. Floating platforms are either anchored to the seabed or use dynamic positioning to remain on location.<sup>42</sup>

The first offshore O&G facility was installed in the Gulf of Mexico in 1947. Since then, over 16,600 facilities have been installed in offshore waters globally.<sup>43</sup> As of early 2018, there were over 1300 offshore operational drilling rigs, with over a quarter within the North Sea and Gulf of Mexico.<sup>44</sup>

## 2.3. Associated GHG emissions

Offshore upstream O&G operations involve numerous activities that generate GHG emissions.<sup>45</sup> The combustion of fuels as required to generate electricity and operate equipment, both stationary and mobile sources, and the flaring of excess hydrocarbons produces emissions that include carbon dioxide (CO<sub>2</sub>), carbon monoxide (CO), methane (CH<sub>4</sub>), oxides of nitrogen (NO<sub>x</sub>), nitrous oxide (N<sub>2</sub>O), and sulphur (SO<sub>x</sub>). Vented or process emissions from physical or chemical processing activities and venting of tanks during loading produces emissions including CO<sub>2</sub>, CO, CH<sub>4</sub>, NO<sub>x</sub>, N<sub>2</sub>O, SO<sub>x</sub>, and volatile organic compounds (VOCs). Fugitive emissions from equipment leaks, such as seals, gaskets, and valves, and from incinerating wastes result in emissions of VOCs, CH<sub>4</sub>, and CO<sub>2</sub>, and incidental releases of refrigeration and fire-fighting system gases generate halon and chlorofluorocarbons.<sup>46</sup>

GHG emissions from combustion, and venting and flaring are the most significant of those emitted from offshore upstream O&G activities due to their volume and global impacts resulting in anthropogenic climate change, as well as specific impacts on the marine environment such as ocean acidification and eutrophication, and increased ocean temperatures.<sup>47</sup> There are large uncertainties calculating these emissions because the fuels used in combustion are predominantly self-generated from the O&G reservoir, therefore their compositions vary from commodity petroleum products.<sup>48</sup> Fugitive emissions, particularly CH<sub>4</sub>, from gas pipelines and processing equipment, also represent a significant source, but more so for onshore operations where pipelines are typically longer and older, leading to higher potential for leaks.<sup>49</sup>

O&G production from offshore fields accounts for more than a quarter of world supply. Of the O&G reservoirs discovered over the last

<sup>40</sup> Radovich (n 31) 1; Lyons (n 24) 198; Vaughan Lowe, 'Ships' in Nerina Boschiero et al. (eds), *International Courts and the Development of International Law: Essays in Honour of Tullio Treves* (Springer Science and Business Media, 2013) 291, 293.

<sup>41</sup> Radovich (n 31) 1; Lyons (n 24) 198; Lowe (n 40) 293.

<sup>42</sup> Radovich (n 31) 1; Lyons (n 24) 198; Lowe (n 40) 293.

<sup>43</sup> Infield Systems, 'Platforms Data: Offshore Oil and Gas Facilities Database' (2018) < <https://www.infield.com/oil-gas-database/fixed-floating-platform-facilities> > .

<sup>44</sup> Statista, 'Number of Offshore Rigs Worldwide as of January 2018 by Region' (2018) < <https://www.statista.com/statistics/279100/number-of-offshore-rigs-worldwide-by-region/> > .

<sup>45</sup> Iliana Christodoulou-Varotsi, *Marine Pollution Control: Legal and Managerial Frameworks* (Taylor & Francis, 2018) 67.

<sup>46</sup> Ibid; IPIECA/OGP/API, *Guidelines for Reporting Greenhouse Gas Emissions* (OGP Report No 446, 2011) 5–4 < [https://www.api.org/~media/Files/EHS/climate-change/GHG\\_industry-guidelines-IPIECA.pdf](https://www.api.org/~media/Files/EHS/climate-change/GHG_industry-guidelines-IPIECA.pdf) > ('IPIECA/OGP/API Guidelines').

<sup>47</sup> *World Ocean Assessment* cpt 5; Christodoulou-Varotsi (n 45) 67; Tim Stephens, 'Ocean Acidification' in Rosemary Rayfuse (ed), *Research Handbook on International Marine Environmental Law* (Edward Elgar Publishing, 2015) 431, 431.

<sup>48</sup> IPIECA/OGP/API (n 46) 6–2, 6–5.

<sup>49</sup> Ibid 5–4.

ten years, approximately half have been offshore. These factors feed the projection that offshore O&G production is likely to increase its portion of global supply at least in the near future, and natural gas even more so, in line with rises in global energy demand.<sup>50</sup>

This overview demonstrates the substantial contribution of upstream O&G activities to the sector's total GHG emissions and highlights the need for these to be adequately regulated.

#### 2.4. Applicable regulations

The different types of offshore O&G facilities and associated activities result in varying requirements under international law.<sup>51</sup> Coastal States have primary legislative jurisdiction over facilities within their territorial waters, and those within their EEZ and on the extended continental shelf (if claimed) installed for the purposes of exploration or exploitation of the non-living resources of the seabed.<sup>52</sup>

In cases where a non-State-owned company is undertaking offshore O&G activities, coastal States grant a licence or enter into an agreement or contract for the exploration and exploitation within a specific area under their jurisdiction. These activities are often undertaken per the provisions of an enacted Exploration and Production Sharing Contract (EPSC), which states the company's obligations, supplementing those within the coastal State's national legislation.<sup>53</sup> Consequently, if neither the EPSC (or other form of agreement) nor national regulations sets the limits and standards for GHG emissions from the offshore O&G activities, including associated reporting requirements, then there are minimal obligations on companies undertaking these activities to comply with stringent pollution prevention measures due to the lack of a base international standard.<sup>54</sup>

Under the *Paris Agreement*, in addition to setting adequate environmental standards, coastal States are obligated to report on GHG emissions from activities under their jurisdiction, including offshore activities under their jurisdiction.<sup>55</sup> Moreover, coastal States must regulate, enforce, and monitor the risks or effects of pollution to the marine environment, including from or through the atmosphere, arising from activities engaged in exploration or exploitation of the seabed according to their *UNCLOS* responsibilities.<sup>56</sup> These provisions are discussed within the following sections.

### 3. Paris Agreement's applicability to offshore O&G activities

#### 3.1. Binding target

Parties to the *Paris Agreement* have agreed to a binding obligation of meeting a target to limit global temperature rise to 'well below 2 °C' above pre-industrial levels, and pursue efforts to limit rise to 1.5 °C.<sup>57</sup>

<sup>50</sup> IEA (n 33) 15, 21–22.

<sup>51</sup> See above n 39.

<sup>52</sup> *UNCLOS* (n 10) arts 2, 56(1), 60.

<sup>53</sup> Johnnie W Hoffman, 'The Service Contract As A Vehicle For International Petroleum Exploration and Production' [1994] (Apr) *International mining and oil & gas law, development, and investment* 14, 14–2.

<sup>54</sup> Seline Trevisanut, 'Role of Private Actors in Offshore Energy: Shifting Models of Participation' (2014) 29(4) *International Journal of Marine and Coastal Law* 645, 663–4; Zhiguo Gao, 'International Petroleum Exploration and Exploitation Agreements: A Comprehensive Environmental Appraisal' (1994) 12(2) *Journal of Energy & Natural Resources Law* 240, 249–56.

<sup>55</sup> *Paris Agreement* (n 3) art 13(7); UNFCCC, *Reporting Requirements* < <https://unfccc.int/process/transparency-and-reporting/reporting-and-review-under-the-convention/greenhouse-gas-inventories-annex-i-parties/reporting-requirements> > ('*Reporting Requirements*'); UNFCCC arts 4, 7, 13; IPCC Guidelines ch 8.2.1.

<sup>56</sup> *UNCLOS* (n 10) arts 194, 204, 208, 212, 214, 222.

<sup>57</sup> *Paris Agreement* (n 3) art 2.

#### 3.2. Commitments

Parties to the *Paris Agreement* have a commitment to prepare, communicate, and maintain successive and progressive NDCs regarding how they will achieve the binding target.<sup>58</sup> Parties are also obligated, per requirements of the UNFCCC and reiterated within *Paris Agreement*,<sup>59</sup> to:

[f]ormulate, implement, publish and regularly update national and, where appropriate, regional programmes containing measures to mitigate climate change by addressing anthropogenic emissions by sources and removal by sinks of all greenhouse gases[.]<sup>60</sup>

and adopt appropriate national policies to achieve the objectives as documented within their NDC.<sup>61</sup>

The objectives stated within a Party's NDC are not legally binding.<sup>62</sup> Compliance measures may arise upon creation of the committee referred to under article 15 of the *Paris Agreement*.<sup>63</sup> However in the meantime, to support compliance, transparent and detailed national GHG inventories are required to be reported to the Climate Change secretariat and are subject to technical expert review.<sup>64</sup>

##### 3.2.1. National GHG inventory reports

Parties of the UNFCCC are required to prepare and submit national GHG inventories.<sup>65</sup> The required content and frequency of these reports have evolved over the past two decades with the adoption of the *Kyoto Protocol* and *Paris Agreement*, and multiple decisions by their Conference of Parties regarding enhanced transparency and reporting measures.<sup>66</sup> In accordance with the principles of common but differentiated responsibilities and respective capabilities, the reporting requirements differ for developed (Annex I) and non-developed (non-Annex I) Parties.<sup>67</sup>

Annex I Parties are required to include GHG inventories within their annual National Inventory Reports (NIR).<sup>68</sup> Non-Annex I Parties are required to submit GHG inventories every other year as part of their National Communications (NC) and Biennial Update Reports (BUR).<sup>69</sup>

<sup>58</sup> *Ibid*; UNFCCC (n 55) arts 4, 12.

<sup>59</sup> UNFCCC (n 55) art 4; *Paris Agreement* (n 3) art 4.

<sup>60</sup> UNFCCC (n 55) art 4(1)(b).

<sup>61</sup> *Ibid* art 4; *Paris Agreement* (n 3) art 4.

<sup>62</sup> *Paris Agreement* (n 3) art 4(2).

<sup>63</sup> *Ibid* art 15.

<sup>64</sup> *Ibid* art 13(7).

<sup>65</sup> UNFCCC (n 55) arts 4, 12; UNFCCC, *What Is Transparency and Reporting?* < <https://unfccc.int/process-and-meetings/transparency-and-reporting/the-big-picture/what-is-transparency-and-reporting> > ('*Transparency and Reporting*'); UNFCCC, *Reporting Requirements* (n 55).

<sup>66</sup> UNFCCC (n 55) arts 4, 12; *Kyoto Protocol* art 5, 7; *Paris Agreement* (n 3) art 13; UNFCCC, *COP, CMP, and CMA Decisions* < <https://unfccc.int/decisions> > .

<sup>67</sup> UNFCCC (n 55) arts 3(1), 4(1); UNFCCC, *Transparency and Reporting* (n 65); UNFCCC, *Reporting Requirements* (n 55).

<sup>68</sup> UNFCCC, *Guidelines for the Preparation of National Communications from Parties Not Included in Annex 1 to the Convention*, Dec 17/CP.8, COP, 8th sess, UN Doc FCCC/CP/2002/7/Add.2 (28 March 2003), ('Dec17/CP.8'); UNFCCC, *Revision of the UNFCCC Reporting Guidelines on Annual Inventories for Parties Included in Annex 1 to the Convention*, Dec 24/CP.19, COP, 19th sess, UN Doc FCCC/CP/2013/10/Add.3 (31 January 2014), ('Dec24/CP.19'); UNFCCC, *Reporting Requirements* (n 55).

<sup>69</sup> UNFCCC, *Outcome of the Work of the Ad Hoc Working Group on Long-Term Cooperative Action under the Convention: UNFCCC Biennial Update Reporting Guidelines for Parties Not Included in Annex 1 to the Convention*, Dec 2/CP.17, COP, 17th sess, UN Doc FCCC/CP/2011/9/Add.1 annex iii ('Dec2/CP.17'); UNFCCC, Dec17/CP.8; UNFCCC, *Biennial Update Reports*, (accessed 9 July 2018) < <https://unfccc.int/node/16628> > ; UNFCCC, *National Reports from Non-Annex I Parties*, (accessed 9 July 2018) < <https://unfccc.int/process/transparency-and-reporting/reporting-and-review-under-the-convention/national-communications-non-annex-i-parties/national-reports-non-annex-i-parties> > .

The content and layout of an Annex I Party NIR must be consistent with good practice methodologies of the Intergovernmental Panel on Climate Change (IPCC), including the *IPCC Guidelines*.<sup>70</sup> The national inventories compiled by non-Annex I Parties 'should' be consistent with the *IPCC Guidelines*.<sup>71</sup> The *IPCC Guidelines* state that GHG emissions from offshore upstream O&G facilities under the jurisdiction of a coastal State are to be included within the scope of national GHG inventories.<sup>72</sup>

Per the *IPCC Guidelines'* common reporting format tables,<sup>73</sup> emissions from upstream O&G operations, both onshore and offshore, are to be captured and reported under various codes, broken down by activity.<sup>74</sup> These activities include: emissions from fuels combusted by the fuel extraction industry; emissions from transportation combustion and evaporation of fuel for transport activity, such as water-borne navigation, and via pipeline; fugitives emissions from oil and natural gas systems associated with the exploration, production, processing, and storage activities, and venting and flaring from these systems; emissions from products used as substitutes for ozone depleting substances, including refrigeration and foam blowing agents; and emissions from waste incineration, and wastewater treatment and discharge.<sup>75</sup> Categorized by activity, the emissions of the following gases are to be reported: CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, HFCs, SF<sub>6</sub>, NO<sub>x</sub>, CO, non-methane VOCs, and SO<sub>2</sub>.<sup>76</sup>

Of the top ten offshore O&G producing countries,<sup>77</sup> four have not ratified the *Paris Agreement* — Angola, Iran, UAE, and USA.<sup>78</sup> Of the remaining countries, Norway and UK have provided NIRs to the Climate Change secretariat annually as required.<sup>79</sup> Whilst USA has withdrawn its acceptance, it has also provided annual NIRs, as required until the end of the withdrawal notice period in 2020. Of the non-developed countries within this group: Brazil submitted a BUR in 2017; Saudi Arabia submitted a BUR in 2018; Mexico's most recent BUR was submitted in 2015; Qatar most recent report, a NC, was submitted in 2011.<sup>80</sup>

It is extremely difficult to determine total offshore O&G-associated GHG emissions from within each Party's reports as they are spread across multiple categories. As mentioned previously, the main emissions sources from offshore O&G activities are flaring and venting and therefore an attempt has been made to review this data sub-set from the most recent reports as submitted by Norway, UK, Saudi Arabia, and Brazil.<sup>81</sup>

### 3.2.2. Norway

Per information provided within Norway's 2018 NIR,<sup>82</sup> the Norwegian Petroleum Directorate (NPD) and Norwegian Environment Agency (NEA) are the responsible agencies for regulating and collecting emissions data from O&G operations. Flaring and venting emissions were submitted from all offshore O&G facilities, and offshore and onshore gas terminals and refineries, reported in the general categories per the *IPCC Guidelines*.<sup>83</sup> No breakdown was provided between emissions from offshore and onshore sources.

The data captured within Norway's NIR was predominantly gathered from annual reports submitted by the O&G facilities to the European Union's Emissions Trading System (EU ETS), with venting emissions and total production figures gathered from annual report data submitted to the NEA.<sup>84</sup> The EU ETS data is subject to third party verification as part of the scheme's requirements.<sup>85</sup> The figures are also quality-controlled by comparing with figures reported annually to NEA and NPD.<sup>86</sup>

National measures implemented with the aim of reducing emissions from offshore O&G activities were discussed within the NIR.<sup>87</sup> These include introduction of a tax on gas flared offshore since 1991, leading to a marked reduction in emissions from this source.<sup>88</sup> The report showed CO<sub>2</sub> emissions from flaring were 30 per cent lower in 2016 than 1990, even though O&G production has increased over this period.<sup>89</sup> It was also reported that venting rates from offshore O&G activities were low due to strict security regulations.<sup>90</sup>

### 3.2.3. United Kingdom

Per information provided within UK's 2018 NIR,<sup>91</sup> the UK Department for Business, Energy and Industrial Strategy (BEIS) Offshore Environmental Inspectorate is the responsible government agency for regulating the offshore O&G industry with regards to managing and reporting sector emissions, and providing data to inform the NIR.<sup>92</sup>

Fugitive emissions data from flaring and venting during O&G production activities was reported within the NIR consistent with *IPCC Guidelines*, under activities<sup>93</sup>: Upstream Oil Production – venting; Upstream Gas Production – venting; Upstream Oil Production – flaring; and Upstream Gas Production – flaring.<sup>94</sup> For the most current reported dataset, 2016, emissions data was gathered from the UK's Environmental and Emissions Reporting System (EEMS).<sup>95</sup> It was stated that operators of offshore facilities submit annual source-specific emission estimates to this database.<sup>96</sup> The CO<sub>2</sub> emissions from flaring, as gathered from the EEMS, were verified against reports submitted by the

<sup>70</sup> IPCC Guidelines (n 55).

<sup>71</sup> UNFCCC, *Dec2/CP.17* annex iii; UNFCCC, *Dec17/CP.8*; UNFCCC, *Biennial Update Reports*, (accessed 9 July 2018) < <https://unfccc.int/node/16628> >; UNFCCC, *National Reports from Non-Annex I Parties*, (accessed 9 July 2018) < <https://unfccc.int/process/transparency-and-reporting/reporting-and-review-under-the-convention/national-communications-non-annex-i-parties/national-reports-non-annex-i-parties> > .

<sup>72</sup> IPCC Guidelines (n 55) s 8.2.1.

<sup>73</sup> Ibid s 8.3; UNFCCC, *Dec24/CP.19* annex ii.

<sup>74</sup> IPCC Guidelines s 8.3; UNFCCC, *Dec24/CP.19* annex ii.

<sup>75</sup> IPCC Guidelines s 8.3; UNFCCC, *Dec24/CP.19* annex ii.

<sup>76</sup> IPCC Guidelines (n 55) s 8.3.

<sup>77</sup> Offshore Magazine 77(1) (n 35).

<sup>78</sup> UN Treaty Collection (n 2).

<sup>79</sup> UNFCCC, *National Inventory Submissions* < <https://unfccc.int/process/transparency-and-reporting/reporting-and-review-under-the-convention/greenhouse-gas-inventories-annex-i-parties/national-inventory-submissions-2018> > .

<sup>80</sup> UNFCCC, *Biennial Update Report Submissions from Non-Annex I Parties* < <https://unfccc.int/process/transparency-and-reporting/reporting-and-review-under-the-convention/biennial-update-reports-0>>; UNFCCC, *National Communication Submissions from Non-Annex I Parties* < <https://unfccc.int/node/17005/> > .

<sup>81</sup> Statistics Norway, *Greenhouse Gas Emissions 1990–2016* (National Inventory Report No M–985, Statistics Norway, and Norwegian Institute of Bioeconomy Research, Norwegian Environment Agency, 13 April 2018) ('*Norway NIR*'); P Brown et al., *UK Greenhouse Gas Inventory, 1990 to 2016: Annual Report for Submission under the Framework Convention on Climate Change*

(*footnote continued*)

(Annual Report, Business, Energy & Industrial Strategy, Science Research Programme of the Department, 12 April 2018); DNA, *First Biennial Update Report of the Kingdom of Saudi Arabia* (Designated National Authority (DNA), Kingdom of Saudi Arabia, March 2018) ('*Saudi Arabia BUR*'); Ministry of Science, Technology, Innovations and Communication, *Second Biennial Update Report of Brazil to the United Nations Framework Convention on Climate Change* (Ministry of Science, Technology, Innovations and Communications, Ministry of Foreign Affairs (Brazil), 2017) ('*Brazil BUR*').

<sup>82</sup> Statistics Norway (n 81) 79.

<sup>83</sup> Ibid 140; IPCC Guidelines (n 55) s 8.3.

<sup>84</sup> Statistics Norway (n 81) 150.

<sup>85</sup> Ibid 16.

<sup>86</sup> Ibid 88.

<sup>87</sup> Ibid 9.

<sup>88</sup> Ibid 138.

<sup>89</sup> Ibid.

<sup>90</sup> Ibid.

<sup>91</sup> Brown et al. (n 81).

<sup>92</sup> Ibid 37.

<sup>93</sup> IPCC Guidelines (n 55) s 8.3; Brown et al. (n 81) 110.

<sup>94</sup> Brown et al. (n 81) 187.

<sup>95</sup> Ibid 188.

<sup>96</sup> Ibid 189.

facility operators under the EU ETS.<sup>97</sup> It was stated that EU ETS data does not include emissions from fugitives or venting.<sup>98</sup> The UK Inventory Agency combined data from the EEMS and EU ETS to derive total estimates for the O&G sector.<sup>99</sup> The data reported from the EEMS system was reconciled with UK Energy Statistics data.<sup>100</sup> For any facility data where the UK Inventory Agency's quality checks identified a gap, outlier or inconsistent reporting between different systems, these were resolved in consultation with the BEIS Offshore Environmental Inspectorate.<sup>101</sup>

Worth noting regarding UK's 2018 NIR is that emissions data from offshore and onshore facilities were combined for venting and flaring. It was not clarified if all offshore O&G facilities are required to provide reports to the EEMS, or if the data provided was a collection of those facilities over a certain emissions threshold limit. Regulatory mechanisms, as required to report GHG emissions were discussed, as well as details on climate initiatives, however no specific information regarding national measures aimed at reducing GHG emissions from the O&G industry was provided.<sup>102</sup>

### 3.2.4. Saudi Arabia

Saudi Arabia's 2018 BUR follows the *IPCC Guidelines* in reporting its national inventory of GHG emissions.<sup>103</sup> Fugitive emissions from fuels in the offshore and onshore O&G industry, including venting and flaring, were considered.<sup>104</sup>

According to the BUR, the National Committee for Clean Development Mechanism (DNA) is the government agency responsible for the design, preparation and implementation of a domestic GHG emissions measurement, reporting and verification system.<sup>105</sup> The DNA maintains a database hosting the GHG inventory data from each sector. Emission factors for the inventory were obtained from facility-level plants, country-specific and relevant regional and international studies, including those authored by IPCC.<sup>106</sup> Quality assurance was ensured via third party review and audit of the inventory data.<sup>107</sup>

The BUR reported multiple national measures that have been implemented with the aim of reducing GHG emissions from the O&G sector.<sup>108</sup> One such measure was 'zero-discharge' technology that was introduced at onshore and offshore O&G well sites in order to eliminate gas flaring and liquid hydrocarbon discharges.<sup>109</sup> It was reported that flaring was minimised due to this measure from all upstream facilities in 2012.<sup>110</sup> Other initiatives included the measuring of methane emissions from O&G operating facilities to better control and reduce emissions, a lead detection and repair program for O&G operation activities, and recovery systems at O&G facilities to limit gas flaring.<sup>111</sup>

### 3.2.5. Brazil

Brazil's 2017 BUR generally follows the GHG emission categories per the *IPCC Guidelines* in reporting its national inventory.<sup>112</sup> However, there is no further breakdown therefore it is impossible to gather

information of emissions attributed to the O&G industry. There is no mention of flaring or venting as a source of emissions.

### 3.3. Expert reviews

To facilitate implementation and promote compliance of *Paris Agreement* obligations, NIRs are subject to independent review by technical experts. The purpose of these reviews is one of an 'enhanced transparency framework'.<sup>113</sup> The independent reviews are designed to identify any areas of improvement regarding the Party's commitments, and provide assistance to those who may be falling behind.<sup>114</sup>

Norway's 2018 NIR addressed comments from the Expert Review Team's (ERT) review of Norway's previous NIR.<sup>115</sup> One such comment from the ERT was regarding why Norway was not separating their fugitive and vented emissions. The response provided by Norway was that this is how the data was being reported from the facilities, and that the accuracy of the total reported emissions would not improve if this split were made.<sup>116</sup>

UK's 2018 NIR also addressed comments from the previous year's ERT review.<sup>117</sup> One such example was a comment by the ERT recommending the UK implement a qualitative uncertainty analysis of the inventory.<sup>118</sup> UK's 2018 NIR stated that this had been implemented, and explained its mechanism.<sup>119</sup>

### 3.4. No common standards for national measures

The *Paris Agreement* does not establish caps on GHG emissions. Instead, it creates a binding obligation to a specific target limiting global emissions.<sup>120</sup> The requirement on each Party is to determine how they will achieve this target by implementing 'national measures',<sup>121</sup> and state this within their NDCs, providing transparent tracking of their progress via the national GHG inventory reporting mechanisms.<sup>122</sup> It can be seen from the reports reviewed in the previous sections that there are variances in how GHG emissions from the offshore O&G sector are regulated under different national systems whilst remaining in conformance with *Paris Agreement* requirements.

GHG emissions reduction best practices occurring within the offshore O&G sector of some countries, such as Norway and Saudi Arabia, per information provided within their national GHG inventory reports, which are not necessarily being adopted by other countries. The *Paris Agreement* does not require the implementation of global best practice standards within respective national legislations, but *UNCLOS* does,<sup>123</sup> as described below.

## 4. UNCLOS' applicability to offshore O&G activities

### 4.1. Jurisdiction of offshore O&G activities under UNCLOS

*UNCLOS* provides the framework for the management and protection of the world's oceans and its resources. It distributes jurisdiction of marine areas and primary responsibility for their protection, setting out States' duties to protect marine environments.<sup>124</sup>

Territorial waters — those adjacent to coastlines out to 12 nautical

<sup>97</sup> Ibid.

<sup>98</sup> Ibid.

<sup>99</sup> Ibid 191.

<sup>100</sup> Ibid 192.

<sup>101</sup> Ibid.

<sup>102</sup> Ibid 483–4.

<sup>103</sup> DNA (n 81) 45; IPCC Guidelines (n 55).

<sup>104</sup> DNA (n 81) 28.

<sup>105</sup> Ibid 111.

<sup>106</sup> Ibid.

<sup>107</sup> Ibid 118.

<sup>108</sup> Ibid 51.

<sup>109</sup> Ibid.

<sup>110</sup> Ibid.

<sup>111</sup> Ibid 58.

<sup>112</sup> Ministry of Science, Technology, Innovations and Communication (n 81) 10–1; IPCC Guidelines (n 55).

<sup>113</sup> *Paris Agreement* (n 3) art 13.

<sup>114</sup> Ibid.

<sup>115</sup> Statistics Norway (n 81) 140.

<sup>116</sup> Ibid.

<sup>117</sup> Brown et al. (n 81) 55.

<sup>118</sup> Ibid.

<sup>119</sup> Ibid.

<sup>120</sup> *Paris Agreement* (n 3) art 2(1)(a).

<sup>121</sup> Ibid art 4(2).

<sup>122</sup> Ibid arts 3, 4(2).

<sup>123</sup> *Paris Agreement* (n 3); *UNCLOS* (n 10).

<sup>124</sup> Beyerlin and Maruhn (n 19) 118.

miles — are subject to coastal State sovereignty.<sup>125</sup> Coastal States have sovereign rights to explore, exploit, conserve and manage natural resources within their EEZ — those areas between territorial waters and 200 nautical miles from the coastline — and extended continental shelf (if claimed), where jurisdiction is limited to these specific activities, which includes installations and structures.<sup>126</sup> These rights correspond with a duty to protect and preserve the marine environment, with the coastal State required to adopt legislation ‘and take other measures as may be necessary’<sup>127</sup> to prevent, reduce and control pollution of the marine environment.<sup>128</sup>

#### 4.2. GHG emissions – source of marine pollution

UNCLOS defines pollution as the direct or indirect introduction of substance or energy into the marine environment which results in, or is likely to result in, harm to living resources, marine life or human health.<sup>129</sup> By many accounts,<sup>130</sup> as previously discussed,<sup>131</sup> GHG emissions satisfy the UNCLOS definition of pollution, and are to be governed under the coastal State’s legislation in implementing protection measures and controls.<sup>132</sup>

#### 4.3. International rules and standards

In controlling pollution from seabed activities, the regulations that coastal States are required to adopt under UNCLOS are to be no less effective than international rules and standards.<sup>133</sup> Regarding pollution from or through the atmosphere, coastal State regulations are to take into account international rules and standards.<sup>134</sup> These international rules and standards are to be as established through competent IOs.<sup>135</sup> In addition, States are to endeavour to harmonise these rules and standards at the appropriate regional level.<sup>136</sup>

UNCLOS provides a system of norms with minimal substantive environmental rules, and it is the State’s duty to cooperate regionally or globally to develop international rules and then enforce these within

<sup>125</sup> UNCLOS (n 10) 3; Beyerlin and Marauhn (n 19) 118–20; John E Noyes, ‘Territorial Sea and Contiguous Zone’ in Donald R Rothwell et al. (eds), *Oxford Handbook of the Law of the Sea* (Oxford University Press, 2015) 91; Erik J Molenaar, ‘Port and Coastal States’ in Donald R Rothwell et al. (eds), *Oxford Handbook of the Law of the Sea* (Oxford University Press, 2015) 280; Maria Gavouneli, ‘State Jurisdiction in Relation to the Protection and Preservation of the Marine Environment’ in David Joseph Attard et al. (eds), *IMLI Manual on International Maritime Law: Volume III: Marine Environmental Law and Maritime Security Law* (Oxford University Press, 2016) 5, 13–24.

<sup>126</sup> UNCLOS (n 10) art 55, 76; Beyerlin and Marauhn (n 19) 118–20; Noyes (n 125); Gemma Andreone, ‘Economic Exclusive Zone’ in Donald R Rothwell et al. (eds), *Oxford Handbook of the Law of the Sea* (Oxford University Press, 2015) 159; Gavouneli (n 125) 5, 13–24.

<sup>127</sup> UNCLOS (n 10) arts 208, 212; Beyerlin and Marauhn (n 19) 118–20.

<sup>128</sup> UNCLOS (n 10) arts 2(1), 21(1), 55–57, 60, 208, 212; Duprey and Vinales (n 26) 95–7; Gavouneli (n 125) 13–24.

<sup>129</sup> UNCLOS (n 10) arts 1(1), 1(4) (emphasis added).

<sup>130</sup> Shi (n 16) 189–90; Orellana (n 16) 258–63; Boyle, ‘Perspectives’ (n 16) 832; Christodoulou-Varotsi (n 45) 67, 74; Robin Churchill, ‘LOSC Regime for Protection of the Marine Environment—Fit for the Twenty-First Century’ in Rosemary Rayfuse (ed), *Research Handbook on International Marine Environmental Law* (Edward Elgar Publishing, 2015) 3, 29; Scott, ‘CC&O’ (n 31) 131; Meinhard Doelle, ‘Climate Change and the Use of the Dispute Settlement Regime of the Law of the Sea Convention’ (2006) 37(3–4) *Ocean Development & International Law* 319, 323.

<sup>131</sup> See above n 16–19.

<sup>132</sup> Shi (n 16) 189–90; Orellana (n 16) 258–63; Boyle, ‘Perspectives’ (n 16) 832; Christodoulou-Varotsi (n 45) 67, 74; Churchill (n 130) 29; Scott, ‘CC&O’ (n 31) 131; Doelle (n 130) 323.

<sup>133</sup> UNCLOS (n 10) arts 208(1), 208(3).

<sup>134</sup> Ibid art 212(1); Beyerlin and Marauhn (n 19) 119.

<sup>135</sup> UNCLOS (n 10) arts 208(5), 212(3); Beyerlin and Marauhn (n 19) 119.

<sup>136</sup> UNCLOS (n 10) arts 194(1), 208(4), 212(3).

their legislative frameworks.<sup>137</sup>

#### 4.4. Competent IOs for offshore O&G activities

Competent IOs who have developed global rules and standards (partially) covering GHG emissions from offshore O&G activities include IMO and UNEP, via the RSP.<sup>138</sup> IMO’s pertinent requirements, namely, those arising from *MARPOL Annex VI* and its Initial Strategy,<sup>139</sup> are extremely limited in their applicability, with emissions from O&G-specific activities outside their scope.<sup>140</sup> UNEP’s role regarding the development of international standards, addressed by regional RSP regulations,<sup>141</sup> although having more relevance to offshore O&G-specific activities than those of IMO, is still not accomplishing the IO role as required per UNCLOS.<sup>142</sup> These global rules and standards are further described below.

#### 4.5. MARPOL Annex VI’s limited applicability

Entering into force in 2005, *MARPOL Annex VI* was developed by IMO to address the gap in international regulations regarding the prevention of air pollution from ships in accordance with UNCLOS article 212.<sup>143</sup> *MARPOL Annex VI* does apply to offshore O&G facilities, however, only covering vessel-based operational emissions resulting from seabed activities.<sup>144</sup> As clarified within its unified interpretations,<sup>145</sup> this excludes any emissions generated specifically from exploration and exploitation related activities.<sup>146</sup> In further developments, IMO adopted its Initial Strategy to reduce GHG emissions from global shipping in April 2018,<sup>147</sup> which outlines its target for reducing emissions by 2050 of at least 50% as compared to 2008 levels.<sup>148</sup> Assuming IMO’s current unified interpretations apply,<sup>149</sup> facilities engaged in O&G activities will be excluded from the strategy’s new energy efficiency and fuel oil consumption reporting requirements.<sup>150</sup> Therefore, given the bulk of GHG emissions from offshore O&G activities, including the venting and flaring of reservoir hydrocarbons, are excluded from IMO’s governing instruments, it can be concluded that the IMO is an inadequate source of relevant global rules and standards for these activities.<sup>151</sup>

<sup>137</sup> Ibid arts 194(1), 197, 208, 212, 214, 222; Beyerlin and Marauhn (n 19) 119–20.

<sup>138</sup> UN DOALOS (n 14) 86, 88. See also above n 21 and 28.

<sup>139</sup> *MARPOL* (n 23) annex vi; Initial Strategy.

<sup>140</sup> *MARPOL* (n 23) annex vi reg 3.

<sup>141</sup> Billé et al. (n 20) s3.2.

<sup>142</sup> UNCLOS (n 10) art 208(5); Oral (n 31) 361; Rochette et al. (n 31) 20; Jon M Van Dyke, ‘Whither the UNEP Regional Seas Programmes?’ in Harry N Scheiber and Jin-Hyun Paik (eds), *Regions, Institutions, and Law of the Sea: Studies in Ocean Governance* (Martinus Nijhoff Publishers, 2013) 89, 89. Note, multiple competent IOs can share the role per requirements of UNCLOS art 208(5), but to-date, only UNEP has partially fulfilled this role regarding GHG emissions pollution sources resulting from seabed activities.

<sup>143</sup> *MARPOL* (n 23) annex vi; IMO Implications (n 26); Christodoulou-Varotsi (n 45) 80.

<sup>144</sup> *MARPOL* (n 23) art 2(4), annex vi regs 5(1), 19(1); Lyons (n 24) 194; Christodoulou-Varotsi (n 45) 80–1.

<sup>145</sup> IMO Secretariat, ‘Unified Interpretations’ (n 25) annex 4.6.

<sup>146</sup> *MARPOL* (n 23) annex vi reg 19(2)–(3); Lyons (n 24) 194; Christodoulou-Varotsi (n 45) 80–1. An example of GHG emissions from O&G industry-specific activities, not related to vessel operations, include emissions from venting and flaring of reservoir hydrocarbons.

<sup>147</sup> Initial Strategy (n 139).

<sup>148</sup> Ibid annex 3.1.3.

<sup>149</sup> IMO Secretariat, ‘Unified Interpretations’ (n 25) annex 4.6.

<sup>150</sup> Initial Strategy (n 139); Unified Interpretations annex 4.6.

<sup>151</sup> IMO Implications (n 26) 77, 122; Duprey and Vinales (n 26) 100.



#### 4.6. Regional seas programmes' applicability

##### 4.6.1. Development, mandate, and structure

UNEP established the RSP in 1974 following its Governing Council's decision at its second session to address environmental degradation of the world's shared marine and coastal areas and provide a regional platform for the management of their natural resources through the cooperation of neighbouring countries.<sup>152</sup> The RSP's mandate has evolved over the years, however subsequent Governing Council and United Nations Environment Assembly meetings have continued to repeatedly endorse the UNEP in its focus to coordinate and support the development of agreements and action plans at a regional level, implementing international rules and standards, to address the degradation of the oceans and seas.<sup>153</sup>

Covering nearly 150 countries, including almost all of the populated coastlines of the world, 18 RSPs are currently in place; 13 of which are administered by UNEP and five independently.<sup>154</sup>

Each RSP is established under framework documents, via the development of an action plan and/or convention between the Parties; noting that the regions where only an action plan is in place are non-binding frameworks in nature.<sup>155</sup> The conventions can be supplemented by issue-specific protocols, guidelines, and other supporting documents.<sup>156</sup> These documents define the regional priorities, together with topics such as environmental assessment, environmental management, pollution prevention duties, technical and procedural requirements, and financial and institutional arrangements.<sup>157</sup> *UNCLOS* provides a strong basis for the negotiating of and focus for content of the legally-binding RSP conventions and protocols; though they can be adopted irrespective of *UNCLOS*.<sup>158</sup> The 40 provisions regarding marine environment protection and preservation measures specified under *UNCLOS* Part XII (articles 192–237) are generally found within the RSP conventions and protocols, at least at a framework level.<sup>159</sup>

The institutional structure is different for each RSP but typically includes: inputs for science-based decisions; legal and technical assistance; and regional cooperation via meetings, workshops, and conferences.<sup>160</sup> RSP promotes the regional and international coordination as required under *UNCLOS* in formulating international rules and standards for pollution prevention and protection of marine environments.<sup>161</sup>

##### 4.6.2. Regional and sector coverage

A summary of RSPs from selected regions — Black Sea, Caspian Sea, Wider Caribbean, North-east Atlantic, Mediterranean Sea, Middle East Gulf Baltic Sea, and West, Central, and South Africa — are presented below. An overview is provided for each showing how the regulation of

<sup>152</sup> UNEP, *United Nations Environment Programme, Report of the Governing Council on the Work of Its Second Session, 11–22 March 1974, Governing Council Decision 8(II) I 'Priority Subject Areas of the Programme, 4. Oceans'(1974)*; Mrema (n 31) 346–7; Mark Zacharias, *Marine Policy: An Introduction to Governance and International Law of the Oceans* (Routledge, 2014) 164.

<sup>153</sup> Ibid; UNEA, *UN Environment Assembly Res 2/10 'Oceans and Seas' (27 May 2016) UN Doc 'Official Records of the General Assembly, Seventy-First Session, Supplement No. 25' (A/71/25) (n 80), Annex, Resolution 2/10*.

<sup>154</sup> Billé et al. (n 20) 23–25; Sands and Peel (n 31) 352.

<sup>155</sup> Billé et al. (n 20) 23–7; Sands and Peel (n 31) 352–60. Note, no framework conventions in place in the East Asian Seas, North-West Pacific, South Asian Seas, and the Arctic regions, though there is a binding agreement on cooperation on marine oil pollution preparedness and response in the Arctic (but not relevant to GHG emissions).

<sup>156</sup> Billé et al. (n 20) 23–7; Sands and Peel (n 31) 352–60.

<sup>157</sup> Billé et al. (n 20) 23–7; Sands and Peel (n 31) 352–60.

<sup>158</sup> Mrema (n 31) 346–51; *UN DOALOS* (n 14) 25–7; Duprey and Vinales (n 26) 107.

<sup>159</sup> *UNCLOS* (n 10) arts 192–237; Mrema (n 31) 351.

<sup>160</sup> *UN DOALOS* (n 14) 27.

<sup>161</sup> Mrema (n 31) 347–51.

GHG emissions as a source of marine pollution arising from offshore O&G activities is addressed, or not, under the RSP, including discussions on inconsistencies.

**4.6.2.1. Black Sea.** All countries bordering the Black Sea signed and ratified the *Bucharest Convention*, entering into force in 1994.<sup>162</sup> Articles XI and XII of the *Bucharest Convention* require the Parties to adopt national legislation and take measures to prevent, reduce and control pollution of the marine environment of the Black Sea 'caused by or connected with activities on its continental shelf, including the exploration and exploitation of the natural resources of the continental shelf'<sup>163</sup> and 'from or through the atmosphere'.<sup>164</sup> No specifics are included regarding what these measures entail, nor what standard they should meet. A number of protocols have been developed under the *Bucharest Convention*, subsequently, however none with specific requirements that govern offshore O&G operations or emissions from activities undertaken within the Black Sea.<sup>165</sup>

The *Black Sea Strategic Action Plan (SAP)* was developed and adopted by all Parties in 1996 to implement the requirements of the *Bucharest Convention*. It was amended in 2009 and adopted by all Parties.<sup>166</sup> The current action plan is based on an ecosystem approach to management of the marine environment and aims to resolve transboundary environmental problems and current regulatory gaps as identified within the *Black Sea State of Environment Report (2008)*.<sup>167</sup> One of the gaps mentioned within the *Black Sea SAP* was to determine impact on the Black Sea as a result of increasing offshore O & G activities.<sup>168</sup> Management targets included: develop regional procedures for Environmental Impact Assessment (EIA); improve network of atmospheric deposition monitoring around the Black Sea coast; introduce standards of Best Available Techniques (BAT) and Best Environmental Practices (BEP) for the most polluting industries and activities; and harmonise environmental quality standards throughout the Black Sea region.<sup>169</sup> To date, no updated state of the environment report has been released to enable progress against these targets to be assessed.

All countries bordering the Black Sea have offshore O&G operations, with activities commencing in the 1960s.<sup>170</sup> Given this, it is surprising there are no specific measures regarding the prevention of pollution currently implemented under the RSP.

**4.6.2.2. Caspian Sea.** Under auspice of the Caspian Environment Program, the bordering countries of the Caspian Sea developed and adopted the *Caspian Sea Strategic Action Programme* in 2003.<sup>171</sup> This led to the development of the *Tehran Convention*,<sup>172</sup> adopted in 2003 and

<sup>162</sup> *Convention on the Protection of the Black Sea Against Pollution*, signed April 1992, 32 ILM 1110 (entered into force 15 January 1994), ('*Bucharest Convention*'); *Black Sea Commission*, 'Table of Main Legal Documents' < <http://www.blacksea-commission.org/your-page.html> > .

<sup>163</sup> *Bucharest Convention* art xi(1).

<sup>164</sup> Ibid art xii.

<sup>165</sup> *Black Sea Commission* (n 162).

<sup>166</sup> *Black Sea Commission*, 'Strategic Action Plan for the Rehabilitation and Protection of the Black Sea 1996' (31 October 1996); *Black Sea Commission*, 'Strategic Action Plan for the Rehabilitation and Protection of the Black Sea 2009' (7 April 2009) ('*Black Sea SAP*').

<sup>167</sup> Temel Oguz, *State of Environment Report for the Black Sea: 2001–2006/7* (Black Sea Commission Publication No, 2008–3, Commission on the Protection of the Black Sea Against Pollution, 2008) ('*Black Sea SOE*').

<sup>168</sup> *Black Sea SAP* s2.3.

<sup>169</sup> Ibid s3.3.

<sup>170</sup> Oguz (n 167).

<sup>171</sup> CEP, Tehran Steering Committee, *Strategic Action Programme (SAP) for the Caspian Sea* (5 November 2003).

<sup>172</sup> *Framework Convention for the Protection of the Marine Environment of the Caspian Sea*, signed 11 November 2003, 44 ILM 1 (entered into force 12 August 2006), ('*Tehran Convention*').

entered into force in 2006, which has been ratified by all Parties.<sup>173</sup>

The *Tehran Convention's* objective is the prevention of pollution of the Caspian Sea's marine environment from all sources and to promote sustainable development.<sup>174</sup> Article 8 of the *Tehran Convention* specifically identifies pollution from seabed activities, obligating all Parties to take appropriate measures to prevent, control and reduce resulting pollution of the Caspian Sea.<sup>175</sup> Article 17 obligates Parties to apply EIA procedures for any planned activity likely to cause significant adverse effects on the marine environment.<sup>176</sup>

The *Caspian Sea EIA Guidelines*, as approved by the Parties in 2003, provides further guidance regarding implementing the *Tehran Convention's* EIA requirements.<sup>177</sup> The *Caspian Sea EIA Guidelines* are aligned with the requirements of the *Espoo Convention* and provide an operational tool for the Parties to implement EIAs in a transboundary context within the Caspian Sea region.<sup>178</sup> Offshore hydrocarbon production is listed within the *Caspian Sea EIA Guidelines* as an 'Appendix 1' activity under the *Espoo Convention*, and therefore one for which an EIA is required prior to a decision to authorise or undertake such proposed activity.<sup>179</sup> The *Caspian Sea EIA Guidelines* refer to the *Espoo Convention* definition of 'impact' as meaning 'any effect caused by a proposed activity on the environment including human health and safety, flora, fauna, soil, air, water, climate ...'.<sup>180</sup> Further, the *Caspian Sea EIA Guidelines* state that the information to be addressed within the EIA includes: amounts and types of emissions into the atmosphere; a consideration of cumulative impacts and alternatives; and details of the activity's possible significant transboundary environmental impact; and mitigation measures addressing all stated impacts.<sup>181</sup>

In 2011, the *Caspian Sea State of the Environment* report was developed,<sup>182</sup> which reports on the state of the Caspian Sea and identifies impacts on the marine environment, including those from GHG emissions from offshore O&G activities.<sup>183</sup> The report addresses the obligations on all Parties per their respective ratifications of the *Paris Agreement*, and how their reporting obligations under the *Paris Agreement* apply to the Caspian Sea RSP.<sup>184</sup>

**4.6.2.3. Wider Caribbean.** After establishment of the Caribbean Environment Programme by UNEP in 1981, the countries of the region adopted a *Caribbean Action Plan* that led to the development and adoption of the *Cartagena Convention*, which entered into force in 1986.<sup>185</sup> The intent of the *Cartagena Convention* is to promote the protection and development of the regional marine environment. Due to their

<sup>173</sup> Tehran Convention Secretariat, 'Status of Ratification' < <http://www.tehranconvention.org/spip.php?article2> > .

<sup>174</sup> *Tehran Convention* art 2.

<sup>175</sup> *Ibid* art 8.

<sup>176</sup> *Ibid* art 17.

<sup>177</sup> UNEP CEP, *Guidelines: Environmental Impact Assessment in a Transboundary Context in the Caspian Sea Region: Step by Step Procedures (2003)* ('*Caspian Sea EIA Guidelines*').

<sup>178</sup> Caspian Sea EIA Guidelines 8–9; *Convention on Environmental Impact Assessment in a Transboundary Context*, signed 25 February 1991, 1989 UNTS 309 (entered into force 10 September 1997), as amended, ('*Espoo Convention*').

<sup>179</sup> Caspian Sea EIA Guidelines (n 178) 30, 38.

<sup>180</sup> *Ibid* 30.

<sup>181</sup> *Ibid* 13.

<sup>182</sup> UNEP & GRID-Arendal, *State of the Environment Report of the Caspian Sea*, Interim Secretariat of the Framework Convention for the Protection of the Marine Environment of the Caspian Sea and the Project Coordination Management Unit of the "CaspEco" project, 2010, ('*Caspian Sea SOE*').

<sup>183</sup> Caspian Sea SOE 65.

<sup>184</sup> *Ibid* 32.

<sup>185</sup> UNEP CEP, *Action Plan for the Caribbean Environment Programme*, UNEP Regional Seas Reports and Studies No. 26 Na.86–6474, UNEP (1983), ('*Caribbean Action Plan*'); *Convention for the Protection and Development of the Marine Environment in the Wider Caribbean Region*, signed 24 March 1983, 22 ILM 227 (entered into force 11 October 1986), ('*Cartagena Convention*').

ecological and oceanographic interconnectivity, the Gulf of Mexico and the Caribbean Sea areas, including the northern South American countries around to French Guiana, were combined under the scope of the *Cartagena Convention*.<sup>186</sup> Of the 28 countries within this region, three — Haiti, Honduras, and Suriname — have not ratified the *Cartagena Convention*,<sup>187</sup> the latter being the only one of these with offshore O&G activities.<sup>188</sup>

Per the *Cartagena Convention*, the Parties must take all appropriate measures to reduce and control pollution to the marine environment from seabed activities and discharges into the atmosphere under their jurisdiction.<sup>189</sup> Parties are also required to undertake EIAs for major development projects within the marine environment.<sup>190</sup> The *Cartagena Convention* provides no guidance regarding what activities would be considered 'major developments',<sup>191</sup> nor the scope to be addressed within an EIA for such activities.<sup>192</sup>

Three supporting protocols have been developed under the *Cartagena Convention*.<sup>193</sup> None are specific to O&G activities, however the *Specially Protected Areas and Wildlife (SPAW) Protocol* touches on pollution prevention measures by recommending prohibition or regulation of such activities if they occur within a specially protected area, including requirement for an EIA which is to address direct, indirect, and cumulative impacts, thus impacts from GHG emissions would potentially be addressed through this requirement.<sup>194</sup>

No state of the marine environment report has yet been created documenting the sources and impacts of marine pollution across the whole regional area as governed under the *Cartagena Convention*, though one has been in development for a number of years.<sup>195</sup>

**4.6.2.4. North-east atlantic.** The marine areas covered under the North-east Atlantic RSP include the North Sea and Atlantic areas off the northern-western European Union (EU) and Scandinavian coasts, and Iceland.<sup>196</sup> Significant upstream O&G activities occur within the marine areas of over half of these countries. Together with the EU, Finland, Luxembourg, and Switzerland, all are parties and have ratified the *OSPAR Convention*, which entered into force in 1998.<sup>197</sup>

The *OSPAR Convention* aims to prevent and eliminate pollution and ensure sustainable development of the North-east Atlantic region, under the auspices of the OSPAR Commission.<sup>198</sup> Included within the

<sup>186</sup> UNEP CEP, 'Learn about the Cartagena Convention and Its Protocols' (Page, March 2017) < <http://www.cep.unep.org/cartagena-convention> > .

<sup>187</sup> *Ibid*.

<sup>188</sup> *Ibid*.

<sup>189</sup> *Cartagena Convention* arts 4, 8, 9.

<sup>190</sup> *Ibid* art 12.

<sup>191</sup> *Ibid*.

<sup>192</sup> *Cartagena Convention* (n 189).

<sup>193</sup> *Ibid*; *Protocol Concerning Co-Operation in Combating Oil Spills in the Wider Caribbean Region*, signed 24 March 1983 (entered into force 11 October 1986), ('*OSC Protocol*'); *Protocol Concerning Specially Protected Areas and Wildlife (SPAW) in the Wider Caribbean Region*, signed 18 January 1990 (entered into force 18 June 2000), ('*SPAW Protocol*'); *Protocol Concerning Pollution from Land-Based Sources and Activities*, signed 6 October 1999 (entered into force 13 August 2010), ('*LBS Protocol*').

<sup>194</sup> *SPAW Protocol* arts 5(2)(g), 13.

<sup>195</sup> UNEP CEP, 'Experts Met in Jamaica to Discuss State of Marine Environment Report' (22 August 2016) < <http://cep.unep.org/save-the-date-15-17-august-2016> > .

<sup>196</sup> *OSPAR Convention for the Protection of the Marine Environment of the North-East Atlantic*, signed 22 September 1992, 32 ILM 1069 (entered into force 25 March 1998), ('*OSPAR Convention*').

<sup>197</sup> Ecolex, 'Convention for the Protection of the Marine Environment of the North-East Atlantic' (22 September 1992) < <https://www.ecolex.org/details/convention-for-the-protection-of-the-marine-environment-of-the-north-east-atlantic-tre-001152/participants/?q=OSPAR+Convention+for+the+Protection+of+the+Marine+Environment+of+the+North-East+Atlantic%22> > .

<sup>198</sup> *OSPAR Convention*.

OSPAR Convention are a series of Annexes, dealing with specific sources of pollution or marine conservation, with one specific to pollution from offshore O&G sources, *Annex III Prevention and elimination of pollution from offshore sources* ('OSPAR Annex III').<sup>199</sup> Article 4 of *OSPAR Annex III* requires that discharges and emissions from offshore sources are subject to authorisation or regulation that take into account all relevant decisions, recommendations and agreements under the *OSPAR Convention*.<sup>200</sup> Article 2 states that the Parties shall require the use of BAT and BEP, including 'clean technology', with these defined within Appendix I of the *OSPAR Convention*.<sup>201</sup>

A *North-East Atlantic Environment Strategy* was adopted by the Parties in 2010.<sup>202</sup> It requires the implementation of programmes and measures, including those specific to the offshore O&G industry, which are to be guided by general principles including the precautionary and polluters pay principles, application of BAT and BEP, and adhering to an ecosystem approach to sustainable development.<sup>203</sup> The *North-East Atlantic Environment Strategy* includes strategies specific to the offshore O&G industry, requiring monitoring and assessment of the status of the marine environment to be undertaken and used within follow up implementation plans.<sup>204</sup> It also includes an eutrophication strategy, stating measures to be implemented with the aim of minimising human-induced eutrophication of the marine environment due to discharges and emissions.<sup>205</sup>

Annual state of the marine environment reports are compiled by the OSPAR Commission, reporting on assessments of human pressures on the marine environment, biological diversity of the regional marine area, and the status of the programmes and measures undertaken per the *North-East Atlantic Environment Strategy*.<sup>206</sup> The *Intermediate Assessment 2017* report provided the status of the marine area's biological diversity, eutrophication and ocean acidification, and assessment of impacts from hazardous and radioactive substances, offshore O&G industry, and a range of other human pressures.<sup>207</sup>

In addition to *OSPAR Annex III*, three other regions have binding offshore O&G sector-specific protocols or annexes under their respective conventions to their RSP framework — Mediterranean Sea, Middle East Gulf, and Baltic Sea — with one under development for the West, Central, and South Africa region.<sup>208</sup>

**4.6.2.5. Mediterranean Sea.** The *Offshore Protocol to the Barcelona Convention*,<sup>209</sup> as implemented under the Mediterranean Seas RSP, has been ratified by only seven of the 15 relevant Parties; these include all countries bordering the Mediterranean Sea, in addition to the EU.<sup>210</sup> However, as the EU is one of these ratifications, and is

<sup>199</sup> Ibid annex iii, as amended on 24 July 1998, updated 9 May 2002, 7 February 2005 and 18 May 2006, adopted in 2007 ('OSPAR Annex III').

<sup>200</sup> *OSPAR Annex III* art 4(1).

<sup>201</sup> Ibid art 2(1).

<sup>202</sup> OSPAR Commission, 'North-East Atlantic Environment Strategy: Strategy of the OSPAR Commission for the Protection of the Marine Environment of the North-East Atlantic 2010–2020' (Agreement, 2010–03, 2010) ('NEA Environment Strategy').

<sup>203</sup> North-East Atlantic Environment Strategy 5, 19.

<sup>204</sup> Ibid 19.

<sup>205</sup> Ibid 12.

<sup>206</sup> Ibid 6.

<sup>207</sup> OSPAR Commission, 'OSPAR Intermediate Assessment 2017' < <https://oap.ospar.org/en/ospar-assessments/intermediate-assessment-2017/> > ('OSPAR IA') ('OSPAR SOE, 2017').

<sup>208</sup> Rochette et al. (n 31) 11; Oral (n 31) 361; Van Dyke (n 142) 89.

<sup>209</sup> *Convention for the Protection of the Mediterranean Sea against Pollution*, signed 16 February 1976, (entered into force 12 February 1978), as amended, ('Barcelona Convention'); *Protocol for the Protection of the Mediterranean Sea against Pollution Resulting from Exploration and Exploitation of the Continental Shelf and the Seabed and Its Subsoil*, signed 14 October 1994 (entered into force 24 March 2011), ('Offshore Protocol').

<sup>210</sup> Ecolex, 'Protocol for the Protection of the Mediterranean Sea against

therefore bound to implement the requirements of the *Offshore Protocol* within the EU,<sup>211</sup> this only leaves Israel, Monaco, and Slovenia with no binding requirements specific to offshore O&G activities under the *Barcelona Convention*.<sup>212</sup>

The *Offshore Protocol* requires an EIA be undertaken as part of the planning and approval process,<sup>213</sup> with the decision at the discretion of the Party's Competent Authority 'in the light of the nature, scope, duration and technical methods employed in the activities and of the characteristics of the area',<sup>214</sup> therefore is not necessarily required for all offshore O&G activities. The content to be addressed within an EIA, if required, is also outlined within the *Offshore Protocol*, but does not explicitly refer to emissions.<sup>215</sup> However it does require assessment of 'direct or indirect short and long-term effects of the proposed activities on the environment, including fauna, flora and the ecological balance'<sup>216</sup> so GHG emissions from offshore O&G activities may be deemed to be applicable.<sup>217</sup>

**4.6.2.6. Middle East Gulf.** The *E&E Protocol to the Kuwait Convention*, implemented under the Middle East Gulf area's RSP, also named 'ROPME sea area'<sup>218</sup> has been unanimously ratified by all of the Parties; the area's bordering countries.<sup>219</sup> The *E&E Protocol* states that the Competent Authority is to require an EIA for any activity which could cause 'significant risk of pollution'<sup>220</sup> to the marine and coastal environment; its determination and scope to be per the *MEEIA Guidelines*.<sup>221</sup>

The *MEEIA Guidelines* define 'significant' as any 'adverse effect of such severity that the competent State Authority would consider it

(footnote continued)

Pollution Resulting from Exploration and Exploitation of the Continental Shelf and the Seabed and Its Subsoil' (14 October 1994) < [https://www.ecolex.org/details/protocol-for-the-protection-of-the-mediterranean-sea-against-pollution-resulting-from-exploration-and-exploitation-of-the-continental-shelf-and-the-seabed-and-its-subsoil-tre-001206/participants/?q=Protocol+for+the+protection+of+the+Mediterranean+Sea+against+pollution+resulting+from+exploration+and+exploitation+of+the+continental+shelf+and+the+seabed+and+its+subsoil+&xdate\\_min=&xdate\\_max=>](https://www.ecolex.org/details/protocol-for-the-protection-of-the-mediterranean-sea-against-pollution-resulting-from-exploration-and-exploitation-of-the-continental-shelf-and-the-seabed-and-its-subsoil-tre-001206/participants/?q=Protocol+for+the+protection+of+the+Mediterranean+Sea+against+pollution+resulting+from+exploration+and+exploitation+of+the+continental+shelf+and+the+seabed+and+its+subsoil+&xdate_min=&xdate_max=>) .

<sup>211</sup> Ramses A Wessel, 'EU as a Party to International Agreements: Shared Competences, Mixed Responsibilities' in Marc Maresceau and Alan Dashwood (eds), *Law and Practice of EU External Relations: Salient Features of a Changing Landscape* (Cambridge University Press, 2008) 152, 184.

<sup>212</sup> Ecolex (n 210).

<sup>213</sup> *Offshore Protocol* art 1(a).

<sup>214</sup> Ibid art 5(a).

<sup>215</sup> Ibid annex iv.

<sup>216</sup> Ibid annex iv(1)(e).

<sup>217</sup> Ibid.

<sup>218</sup> UNEP, *ROPME Sea Area*, (accessed 9 July 2018) < <https://www.unenvironment.org/explore-topics/oceans-seas/what-we-do/working-regional-seas/regional-seas-programmes/ropme-sea-area> > .

<sup>219</sup> *Kuwait Regional Convention for Co-Operation on the Protection of the Marine Environment from Pollution*, signed 24 April 1978, 17 ILM 511 (entered into force 30 June 1979), ('Kuwait Convention'); *Protocol Concerning Marine Pollution Resulting from Exploration and Exploitation of the Continental Shelf*, signed 29 March 1989 (entered into force 17 February 1990), ('E&E Protocol'); Ecolex, 'Protocol Concerning Marine Pollution Resulting from Exploration and Exploitation of the Continental Shelf' (19 March 1989) < <https://www.ecolex.org/details/protocol-concerning-marine-pollution-resulting-from-exploration-and-exploitation-of-the-continental-shelf-tre-001128/participants/?q=kuwait+regional+convention> > .

<sup>220</sup> *E&E Protocol* art iv(1)(a).

<sup>221</sup> Ibid art iv(1)(b); ROMPE Council, *Guidelines to the Protocol Concerning Marine Pollution Resulting from Exploration and Exploitation of the Continental Shelf: Guidelines for the Conduct of Environmental Impact Surveys and the Production of Environmental Impact Statements: Seventh Meeting of ROMPE Council* (21 February 1990) < [http://memac-rsa.org/assets/fileManager/1\\_GUIDELINES\\_Impact\\_Assessment\\_1.pdf](http://memac-rsa.org/assets/fileManager/1_GUIDELINES_Impact_Assessment_1.pdf) > ('MEEIA Guidelines') ('MEEIA Guidelines').

reasonable for the person threatened to take action to prevent it'.<sup>222</sup> The *MEEIA Guidelines* list activities for which an EIA 'will normally be required'<sup>223</sup> at the discretion of the Competent Authority's designee.<sup>224</sup> The list includes most activities involved in offshore drilling, construction, and production operations.<sup>225</sup> It also specifies the types of impacts that should be considered in determining significance, which includes effects of emissions to the atmosphere.<sup>226</sup> If an EIA is required, the content to be addressed, per the *MEEIA Guidelines*, includes an assessment of 'the foreseeable direct and indirect short-term and long-term effects that the operations might have on ... fauna and flora, ... [h]abitats, ... [and] ecological balance of the area.'<sup>227</sup> In addition, the *MEEIA Guidelines* require the EIA to describe the extent of any transboundary impacts from discharges to the water or atmosphere.<sup>228</sup> Given this, GHG emissions from offshore O&G activities should be deemed applicable to both the determination for an EIA and its scope under the *E&E Protocol*.

**4.6.2.7. Baltic Sea.** The Baltic Sea RSP has an O&G-specific annex under its *Helsinki Convention*, as ratified by all countries bordering the Baltic Sea.<sup>229</sup> It requires an EIA prior to authorisation of any O&G activity, though emissions are not specifically addressed.<sup>230</sup> However, *Helsinki Convention* requires its Parties to promote the use of BAT and BEP to prevent and eliminate pollution from offshore activities, addressing energy efficiency and emissions as part of this scope.<sup>231</sup>

**4.6.2.8. West, Central and South Africa.** An offshore O&G protocol under the *Abidjan Convention* is currently under development for the West, Central and South Africa RSP.<sup>232</sup> This protocol is similar in scope to the *Offshore Protocol* under the Mediterranean Sea RSP,<sup>233</sup> but strengthening obligations in respect to GHG emissions. Improvements include that all upstream offshore O&G activities will require an EIA as part of the authorisation process.<sup>234</sup> Also, clarification is provided that emissions are to be included within evaluation impacts.<sup>235</sup>

<sup>222</sup> MEEIA Guidelines 2.

<sup>223</sup> Ibid part b(1.3)(2).

<sup>224</sup> Ibid part b(2), annex i.

<sup>225</sup> Ibid.

<sup>226</sup> Ibid.

<sup>227</sup> Ibid part b(4.3)(b).

<sup>228</sup> Ibid part c(2.4)(h).

<sup>229</sup> *Convention on the Protection of the Marine Environment of the Baltic Sea Area*, signed 22 March 1974, 13 ILM 546 (entered into force 3 May 1980), as amended, ('*Helsinki Convention*'); Ecolex, 'Convention on the Protection of the Marine Environment of the Baltic Sea Area' (9 April 1992) < [https://www.ecolex.org/details/convention-on-the-protection-of-the-marine-environment-of-the-baltic-sea-area-tre-001153/participants/?q=Convention+on+the+Protection+of+the+Marine+Environment+of+the+Baltic+Sea+Area&xdate\\_min=&xdate\\_max=>](https://www.ecolex.org/details/convention-on-the-protection-of-the-marine-environment-of-the-baltic-sea-area-tre-001153/participants/?q=Convention+on+the+Protection+of+the+Marine+Environment+of+the+Baltic+Sea+Area&xdate_min=&xdate_max=>) .

<sup>230</sup> *Helsinki Convention* art 7, annex vi reg 3.

<sup>231</sup> Ibid art 3, annex vi reg 2, annex ii.

<sup>232</sup> *Convention for the Co-Operation in the Protection and Development of the Marine and Coastal Environment of the West and Central African Region*, signed 23 March 1981, 20 ILM 3 (entered into force 5 August 1984), ('*Abidjan Convention*'); UNEP WACAF, *Draft Additional Protocol to the Abidjan Convention on Environmental Norms and Standards for Offshore Oil and Gas Activities (Twelfth Meeting of the Contracting Parties to the Convention on Cooperation for the Protection, Management and Development of the Marine Environment and Coastal Areas of the Atlantic Coast of the West, Central and Southern African Region (Ecosystems Division)*, UN Doc ABC-WACAF/COP.12/10 (27 March 2017), ('*Draft O&G Protocol*').

<sup>233</sup> *Offshore Protocol* (n 213).

<sup>234</sup> *Draft O&G Protocol* annex iv(c)(1).

<sup>235</sup> Ibid annex v.

## 5. Offshore O&G GHG emissions — RSP regulatory gap

As can be seen from the review above, there is a regulatory gap under the RSP with regards to GHG emissions from the offshore O&G industry as required under both *Paris Agreement* and *UNCLOS*. The gaps are summarised below, and some measures that may address these proposed.

### 5.1. Inconsistencies and gaps

The regulation of GHG emissions from offshore O&G activities is far from consistent across the RSP, which is not surprising as the RSPs have framework structures that vary according to regional constraints and characteristics, but also in their standards of regulation of this source of marine pollution.<sup>236</sup> In some regions, specific regulation is notably lacking, such as within the Black Sea RSP,<sup>237</sup> or is weak, as in the Wider Caribbean RSP.<sup>238</sup> Even within the regions that do adequately address pollution from offshore O&G activities, there are still large inconsistencies regarding how GHG emission impacts on the marine environment from these activities are assessed. In addition, there is no consistent standard required to be met within all regions regarding the prevention of pollution from GHG emissions from offshore O&G activities.

*UNCLOS* requires that States implement measures according to international standards in order to control and prevent pollution of the marine environment from seabed activities and from the atmosphere.<sup>239</sup> This requirement accounts for regional differences, such as varying environments or industry sector influences.<sup>240</sup> There is sufficient consistency regarding the pollution sources from these activities, such as the emissions of GHGs and how this pollution affects the marine environment, to be able to set base standards at an international level that apply to all regions to govern this source of marine pollution resulting from offshore O&G activities.<sup>241</sup>

At the 2016 global meeting of RSPs, UNEP identified the inconsistency of offshore O&G standards across the RSP and included an action within their *Strategic Directions 2017–2020* to develop international guidance regarding offshore O&G activities.<sup>242</sup> Whether this guidance will contain adequate provisions regarding the prevention and control of GHG emissions from offshore O&G remains to be seen.

There is also a gap in both the binding nature of some of the RSP agreements and promotion of compliance. For example, the RSP of the Arctic Sea, East Asian Sea, North-west Pacific, and South Asian Sea have no convention covering their respective regional sea area.<sup>243</sup> These regions rely on adopted action plans or protection strategies to provide their regulatory framework.<sup>244</sup> However, even for the RSPs with

<sup>236</sup> Oral (n 31) 361; Rochette et al. (n 31) 20; Van Dyke (n 142) 89.

<sup>237</sup> Billé et al. (n 20) 125. No specifics are provided within the Black Sea framework regarding pollution prevention measures to be implemented, nor standards to be met, including no standard for EIA nor requirements for BAT/BEP.

<sup>238</sup> Ibid 139. There is no guidance within the Wider Caribbean framework regarding what activities would be considered 'major development projects' (triggering the requirement for an EIA), nor any standard for the scope to be addressed within an EIA for such activities (assessment of impacts from emissions may not be included within EIA, unless the activity is within a specially protected area).

<sup>239</sup> *UNCLOS* (n 10) arts 8, 12, 14, 22.

<sup>240</sup> Van Dyke (n 142) 90.

<sup>241</sup> Radovich (n 31) s iv; Liu (n 31) 203; Pereira (n 31) 138; Boyle, 'Perspectives' (n 16) 566; Beyerlin and Marauhn (n 19) 141; Scott, 'CC&O' (n 31) 148–50; Roach and JAGC (n 31) 121; Scott, 'IOM' (n 31) 488.

<sup>242</sup> UNEP (n 31) T3.2 'A global guideline for extraction of oil in marine and coastal environment is developed'.

<sup>243</sup> Van Dyke (n 142) 90; Oral (n 31) 346–9; Billé et al. (n 20) 123, 127, 131, 135.

<sup>244</sup> Van Dyke (n 142) 90; Oral (n 31) 346–9; Billé et al. (n 20) 123, 127, 131,

conventions in place, compliance mechanisms are notably lacking. The Mediterranean Sea RSP is the only RSP with an adopted formal compliance mechanism and compliance committee established, whilst the North-east Atlantic RSP has a provision for assessing compliance under *OSPAR Convention*.<sup>245</sup>

There are the inconsistencies between the various RSPs, as described above. There are also a number of countries with current offshore O&G activities who have not adopted their respective RSP convention, such as Suriname, (*Cartagena Convention*).<sup>246</sup> Israel has ratified the *Barcelona Convention*, however not its O&G-specific *Offshore Protocol*.<sup>247</sup>

There is also a significant gap in coverage with a number of countries with offshore O&G activities falling outside existing RSP areas including large O&G fields offshore Brazil and Australia's north-west coast, and others such as Argentina and Falkland Islands.<sup>248</sup>

## 5.2. Addressing the regulatory gap

### 5.2.1. Sector-specific international convention?

Many have suggested a new international legal instrument is required to address the current gaps in international rules and standards regarding the offshore O&G industry's activities,<sup>249</sup> which seems warranted considering a shortfall in the regulation of GHG emissions under RSPs (and more generally, the lack of international environmental rules and standards regarding offshore O&G activities) in meeting the requirements for such under *UNCLOS*.<sup>250</sup>

A sector-specific international convention would complement the existing treaties, somewhat regulating the industry's activities, and coordinating the currently fragmented approach.<sup>251</sup> Such an instrument would provide a common base for the standard to be met globally for offshore O&G activities, and filling the gaps.<sup>252</sup>

However, the international legal community appears to be moving

(footnote continued)

135.

<sup>245</sup> Oral (n 31) 362; UNEP MAP, *Procedures and Mechanisms on Compliance under the Barcelona Convention and Its Protocol*, Dec IG 17/2, 15th mtg, UN Doc UNEP(DEPI)/MED IG.17/10 (8 January 2008) annex v; *OSPAR Convention* (n 198) art 23.

<sup>246</sup> *UNEP CEP* (n 186).

<sup>247</sup> *Ecolex* (n 210).

<sup>248</sup> Billé et al. (n 20) 122–38.

<sup>249</sup> Pereira (n 31) 99; Sands and Peel (n 31) 387; Directorate-General for Maritime Affairs and Fisheries (n 31) 3; Redgwell (n 31) 610; Lyons (n 24) 197, 204; Mrema (n 31) 379; Ayamdoo (n 31) 225–9; Radovich (n 31); UNEP (n 31) 16; Liu (n 31) 205; Oral (n 31) 358; Beyerlin and Marauhn (n 19) 140–2; Boyle, 'Saving the World' (n 31) 578; J Rochette, *Towards an International Regulation of Offshore Oil Exploitation: Report of the Experts Workshop Held at the Paris Oceanographic Institute on 30 March 2012* (Working Paper No 15/12, L'Institut du Développement Durable et des Relations Internationales (IDDRI), July 2012) 9 ('2012 IDDRF'); Scott, 'CC&O' (n 31) 148; Roach and JAGC (n 31) 114–6, 121; Scott, 'IOM' (n 31) 488. See also above n 19.

<sup>250</sup> *Ibid*; Billé et al. (n 20) 122–38; *UNCLOS* (n 10) art 208(3).

<sup>251</sup> Issues arising from regime interaction is not addressed within this paper as institutional challenges of coordination and collaboration due to overlapping mandates is outside the scope of this piece, however for further on this topic see Margaret A Young, *Regime Interaction in International Law: Facing Fragmentation* (Cambridge University Press, 2012).

<sup>252</sup> Christodoulou-Varotsi (n 45) 93; Churchill (n 130); Alexander Yankov, 'Law of the Sea Convention and Agenda 21: Marine Environmental Implications' in Alan E Boyle and David Freestone (eds), *International Law and Sustainable Development: Past Achievements and Future Challenges* (Oxford University Press, USA, 2001) 27, 244; Alan Boyle, 'Further Development of the Law of the Sea Convention: Mechanisms for Change' (2005) 54(3) *International & Comparative Law Quarterly* 563, 566 ('Further Development'). Note, the lack of an international institution with specific mandate to regulate this industry has hindered previous efforts to develop such a global treaty, for further information see UNEP (n 19); Radovich (n 19).

away from sector-specific framework regulations regarding ocean governance towards that of an ecosystem approach<sup>253</sup>; this is certainly the case with newer adoptions of RSP instruments that are based on ecosystem-wide management.<sup>254</sup> If this is determined as the preferred mode for international regulation of industry activities within marine areas, then the use of EIAs, together with applying BAT and BEP, may meet this gap in place of a sector-specific model.

### 5.2.2. Implementation of global EIA Standard?

Another option that could potentially address the gap in international regulatory standards regarding GHG emissions from offshore O&G activities is to incorporate existing international EIA standards within RSPs for the authorising authority's approval process for such activities.<sup>255</sup> As can be seen from the above review of RSP requirements for the various regions, EIAs are not consistently required for offshore O&G activities, but even where they are, the scoping standards for such EIAs do not always clarify that impacts from GHG emissions should be addressed.<sup>256</sup>

An EIA is a process that, if used effectively, can adequately assess the impact of an activity, determine applicable mitigation measures to reduce risks to as low as reasonably practicable, and set appropriate monitoring and management plans that include ongoing reporting requirements.<sup>257</sup> EIAs can successfully be applied in assessing the impacts from GHG emissions of individual activities.<sup>258</sup> Together with applying BAT and BEP to ensure the 'cleanest' technology is being proposed, an informed decision can be made regarding what is considered sustainable to develop whilst still achieving the *Paris Agreement* target.<sup>259</sup> Implementing the requirements for an EIA within each RSP would also meet the requirements under *UNCLOS* to assess 'as far as practicable ... the potential effects of such activities on the marine environment'.<sup>260</sup>

As mentioned above, the *Caspian Sea EIA Guidelines* under the *Tehran Convention* default to the *Espoo Convention* as the international standard when determining need for, and scope of, an EIA for offshore O&G activities with potential transboundary impacts.<sup>261</sup> However, the *Espoo Convention* is not ratified by all countries who undertake offshore O&G operations.<sup>262</sup> So in order for this 'solution' to address one of the

<sup>253</sup> See Liu (n 31) 203; Van Dyke (n 142) 91; Beyerlin and Marauhn (n 19) 141; Scott, 'IOM' (n 31) 465; Sands and Peel (n 31) 352; Kjell Grip, 'International Marine Environmental Governance: A Review' (2017) 46(4) *Ambio* 413, 420; Scott, 'CC&O' (n 31) 137; UNEP, *Regional Seas Strategic Directions 2017–2020*, UN Doc UNEP/WBRS.17/8 (18 January 2016) strategy 3 ('Regional Seas Strategic Directions, 2017–2020').

<sup>254</sup> Van Dyke (n 142) 91, 108; Mrema (n 31) 357; Billé et al. (n 20) 2, 26–7; Boyle, 'Further Development' (n 252) 576; Yankov (n 252) 286.

<sup>255</sup> Jacqueline Peel, 'Environmental Impact Assessments and Climate Change' in Michael Faure (ed), *Elgar Encyclopedia of Environmental Law* (Edward Elgar Publishing Limited, 2016) 348, 351–53; Beyerlin and Marauhn (n 19) 230–4; Robin Warner, 'Preserving a Balanced Ocean: Regulating Climate Change Mitigation Activities in Marine Areas beyond National Jurisdiction' (2007) 14 *Australian International Law Journal* 99, 16–7; Gao (n 54) 252–3; European Commission, *Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment* (2013); ARUP, *Environmental Impact Assessment Guide to: Assessing Greenhouse Gas Emissions and Evaluating Their Significance* (IEMA, 2017).

<sup>256</sup> See above n 177–181, 190–194, 213–217, 222–228, 230–231, 234.

<sup>257</sup> Peel (n 255) 351–53; Beyerlin and Marauhn (n 19) 230–4; Warner (n 255) 16–7; European Commission (n 255); ARUP (n 255).

<sup>258</sup> Peel (n 255) 351–3; Redgwell (n 31) 619.

<sup>259</sup> Redgwell (n 31) 619.

<sup>260</sup> *UNCLOS* (n 10) art 206.

<sup>261</sup> *Caspian Sea EIA Guidelines* (n 178); *Espoo Convention*.

<sup>262</sup> UN Treaty Collection, *Status of Treaties: Chapter XXVII: Environment: 4. a Amendment to the Convention on Environmental Impact Assessment in a Transboundary Context Sofia, 27 February 2001* <[https://treaties.un.org/Pages/ViewDetails.aspx?src=TREATY&mtidg\\_no=XXVII-4-a&chapter=27&clang=\\_en](https://treaties.un.org/Pages/ViewDetails.aspx?src=TREATY&mtidg_no=XXVII-4-a&chapter=27&clang=_en)> .

'international rules, standards and recommended practices and procedures'<sup>263</sup> required per *UNCLOS* to prevent marine environment pollution from seabed activities,<sup>264</sup> it needs to be implemented. This can be achieved either by encouraging all Parties within each RSP to ratify the *Espoo Convention* or via incorporation of the convention's requirements within each of the RSP frameworks,<sup>265</sup> of which an example is the Caspian Sea RSP.<sup>266</sup>

## 6. Conclusion

This article presents the argument that the RSP, as currently implemented, do not adequately regulate GHG emissions from O&G activities occurring globally within offshore areas under national jurisdictions as required under *UNCLOS* and the *Paris Agreement*. It also presents the reasons international regulations are required for these emissions and why the UNEP is the appropriate competent IO to address such requirements.

The *Paris Agreement* creates obligations on its Parties to meet a specific target regarding global temperature rises.<sup>267</sup> They must do so by minimising GHG emissions, implementing appropriate national measures, and providing successive and transparent reports regarding their progress.<sup>268</sup> An overview of selected national reports is provided, showing inconsistencies across countries in how emissions are being reported from the offshore O&G sector, and identifying that there is no international standard regarding emissions reduction measures being applied. Whilst not necessarily required under *Paris Agreement*, they are by *UNCLOS*,<sup>269</sup> and therefore should perhaps be incorporated within a Party's reports to the Climate Change secretariat.<sup>270</sup>

These requirements that arise under *UNCLOS* are due to its clauses requiring coastal States to harmonise their national legislation based on international rules and standards as established by competent IOs. This article establishes that IMO does not adopt this role for the regulation of GHG emissions from O&G activities, but UNEP does, although only partially, through its RSP efforts.

An overview of selected RSPs is provided, highlighting the current regulatory gap that exists across the various regions as applicable to GHG emissions from offshore O&G activities. It not only shows minimal consistency across the regions regarding such rules and standards, but also the omission of applicable measures in some regions. Given all marine regions except Antarctica have offshore O&G activities, this is an international regulatory gap.

The article concludes with suggestions to bridge this gap. One such solution is to develop a new sector-specific international legal instrument applicable to the offshore O&G industry. However, this option ignores the current trend for international rules and standards promoting ecosystem-wide management of marine areas.<sup>271</sup> An alternative solution proposed is to improve the RSP frameworks by incorporating mandatory requirements for an EIA to be undertaken for offshore upstream O&G activities as part of the competent authority's approvals process. Also, utilising BAT and BEP as tools to ensure the mitigation measures the EIA identifies to reduce GHG emissions would ensure internationally accepted best standards are adopted.<sup>272</sup>

<sup>263</sup> *UNCLOS* (n 10) art 208(3).

<sup>264</sup> *Ibid* arts 208(3), 208(5).

<sup>265</sup> *Espoo Convention* (n 261).

<sup>266</sup> *Tehran Convention* (n 174); Caspian Sea EIA Guidelines (n 178).

<sup>267</sup> *Paris Agreement* (n 3) art 2.

<sup>268</sup> *Ibid* arts 4(2), 7.

<sup>269</sup> *UNCLOS* (n 10) arts 2, 56, 60, 76, 80, 192-6, 208, 214.

<sup>270</sup> *Paris Agreement* (n 3) arts 4, 7, 13; *UNFCCC, Reporting Requirements* (n 55).

<sup>271</sup> Liu (n 31) 203; Van Dyke (n 142) 91, 108; Beyerlin and Marauhn (n 19) 141; Scott, 'CC&O' (n 31) 137; Sands and Peel (n 31) 352; Scott, 'IOM' (n 31) 465, 488; Grip (n 253) 420; Mrema (n 31) 357; Yankov (n 252) 286; Boyle, 'Further Development' (n 252) 576; *ibid*; Billé et al. (n 20) 2, 26-7; UNEP, 'Regional Seas Strategic Directions 2017-2020' (n 253) strategy 3.

<sup>272</sup> Peel (n 255) 351-3; Redgwell (n 31) 619.

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