



## DECARBONISING THE GLOBAL SHIPPING INDUSTRY: EXAMINING THE ROLE OF NATIONAL AND INTERNATIONAL LAW

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### Abstract

*About 80% of transnational trade depends on shipping, thereby making shipping the backbone of global trade and global economy. Consequently, the demand in shipping services has been on the increase. Greenhouse gas (GHG) emissions have thus been at an upward rise due to rising global trade. In fact, shipping conveniently takes an important place as a principal contributor to the GHG emissions in the world, accounting for 3 percent of the total CO<sub>2</sub> emissions. There is, therefore, a growing pressure to reduce GHG emissions (decarbonisation) from all sectors including the shipping industry. The paper is therefore a critical examination of the extant national and international legal regimes on the decarbonisation of the world's shipping industry. While conceding to the fact that effort to decarbonize the shipping industry is confronted by a multitude of challenges, the paper submits that the prospects for decarbonizing the shipping industry are promising provided the necessary legislative review and revision are done.*

**Keywords:** *Public International Law, International Environmental Law, Shipping Law, Decarbonisation, Energy Transition, Nigeria*

### 1.0 Introduction

The risks associated with climate change is increasingly recognised as a global environmental concern. Climate change means a change of climate, which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable times.<sup>1</sup> It is a broad range of global phenomena created predominantly by burning fossil fuels, which add heat-trapping greenhouse gases (GHGs) to Earth's atmosphere. These phenomena include the increased temperature trends described by global warming, but also encompass changes such as sea-level rise; ice mass loss in Greenland, Antarctica, the Arctic and mountain glaciers worldwide; shifts in flower/plant blooming; and extreme weather events.<sup>2</sup>

The global consensus is that overcoming the challenges of climate change would require a move away from crude oil as a primary source of energy in order to reduce or eradicate the release GHGs, such as

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<sup>1</sup> United Nations Framework Convention on Climate Change, Article 1.

<sup>2</sup> National Aeronautics and Space Administration definition of Climate change  
<<https://climate.nasa.gov/resources/global-warming/>> accessed 25 June, 2023.



carbon dioxide (CO<sub>2</sub>), methane and nitrous oxide into the atmosphere. This is what is called 'decarbonisation', which literally means the reduction of carbon footprint on Earth's surface. It precisely means the conversion to an economic system that sustainably reduces and compensates the emissions of GHGs. The long-term goal is to create a CO<sub>2</sub>-free global economy.<sup>3</sup> Decarbonisation encompasses all measures through which a business sector, or an entity-a government, an organisation reduces its carbon footprint, primarily its GHG emissions in order to reduce its impact on the climate.<sup>4</sup>

In the shipping industry, GHG emissions have thus been at an upward rise due to rising global trade. In fact, shipping conveniently takes an important place as a principal contributor to the GHG emissions in the world, accounting for three percent of the total CO<sub>2</sub> emissions.<sup>5</sup> There is, therefore, a growing pressure to reduce GHG emissions (decarbonisation) from all the shipping industry. The paper is therefore a critique of the extant international legal regime on the decarbonisation of the world's shipping industry. What follows, in other words, is an examination of the laws applicable to decarbonizing the shipping industry both national, regional, and international. While conceding to the fact that effort to decarbonize the shipping industry is confronted by a multitude of challenges, the paper submits in the concluding section that the prospects for decarbonizing the shipping industry are promising provided the necessary legislative review and revision are done.

## **2.0 The Nigerian National Legal Framework on Decarbonisation**

### **2.1 The Constitution of the Federal Republic of Nigeria 1999 (as amended)**

The Constitution of the Federal Republic of Nigeria (CFRN) 1999 is the mother law to other laws and authorities in Nigeria, so we cannot completely discuss the National Legal Frameworks for decarbonizing the shipping industry without first mentioning the Supreme law of the land. The Nigerian Constitution recognises the importance of the environment and provides that the state shall protect and improve the environment and safeguard the water, air, land, forest and wildlife of Nigeria.<sup>6</sup> However, this provision is in Chapter 2 of the Constitution, which deals with Fundamental Objectives and Directive Principles of State Policy. This part of the Constitution is non-justiciable and the government cannot be held liable for its breach. Nevertheless, it at least creates a moral duty on the government of Nigeria to observe these basic responsibilities. It is worthwhile to mention that previous Constitutions of Nigeria did not make provision for the protection of the environment until the coming into existence of the 1999 Constitution. While the 1999 Constitution made provision for the environment, it did not deal with environmental protection as such.<sup>7</sup> Although environment was given constitutional status, its provision only portray Nigeria as a country that is environmentally unconscious of environmental problems. The non-justiciability of chapter two of the constitution brings a new dimension to state responsibility by obliging the state to protect and improve the environment for the good of the society as a whole. It laid down the basic foundation for environmental legislation and the governments'

<sup>3</sup> Decarbonisation: Meaning <<https://www.volkswagenag.com/en/news/stories/2019/03/decarbonization-what-is-it.html#>> accessed 25 June, 2023.

<sup>4</sup> Meaning of Decarbonisation <<https://www.engie.com/en/news/decarbonation-definition>> accessed 25 June, 2023.

<sup>5</sup> R Zhuo and H Wang, 'Decarbonising Shipping and the Role of LNG: International Law and Policy Trends' in Professor Eduardo Pereira and Damilola Olawuyi (eds), *Paggrave Handbook of Natural Gas and Global Energy Transition* (Springer Nature Switzerland AG, 2022) 367-381.

<sup>6</sup> CFRN, s 20.

<sup>7</sup> C. T. Emejuru 'Human Rights and Environment: Whither Nigeria?' (2014) (30) *Journal of Law, Policy and Globalization*, 19-27.



responsibility in Nigeria.<sup>8</sup> Section 17(1)(d) of the Constitution seems to further support Section 20. It provides that in furtherance of the social order exploitation of human or natural resources in any form whatsoever for reasons, other than the good of community, shall be prevented.<sup>9</sup>

Section 17(1) (d) clearly shows that where an activity is being carried on and the environmental consequences outweigh its benefits, the government is obligated to stop such activity.<sup>10</sup> It is, thus, within the duties and powers of the state to impose restrictions on the use of those resources and factors, which adversely affect life and its development. The Directive Principles obligate the state to improve the quality of human life by controlling activities on the environment.<sup>11</sup> Section 24(e) of the Constitution makes it clear that the responsibility for abatement of pollution and protection of environment is not a duty of the state alone; it is an obligation of every citizen so that an individual may not overlook his duties to the community in exercise of his fundamental rights or commit wanton destruction of natural environment.

It is unfortunate to note, however, that section 6 (6) (c) CFRN destroys or impairs the legal validity of sections 20, and 24(d) and (e) respectively. According to section 6(6)(c) of CFRN, the judicial powers vested in accordance with the provisions of the Constitution shall not, except as otherwise provided by this constitution, extend to any issue or question as to whether any Act or omission by any authority or person or as to whether any law or any judicial decision is in conformity with the Fundamental Objectives and Directive Principles of State Policy set out in Chapter II of this Constitution. This thus renders the legal utility of fundamental Objectives and Directive Principles of State Policy unenforceable. It makes it absolutely difficult to enforce any directive on decarbonisation and the general the compliance of the fundamental obligations of the government as enshrined in the relevant sections of the of the Constitution. The legislature is therefore called upon to initiate amendment to the relevant sections of the Constitution, which are unfavourable to the ideals of decarbonisation and sustainable development, such as section 6(6)(c) of CFRN 1999 (as amended).<sup>12</sup>

## 2.2 The Nigerian Climate Change Act (CCA) 2021

The CCA 2021 provides a framework for climate actions at the national level. Most of the initiatives envisioned in the CCA 2021 are built on prior climate change policies, (i.e., the Revised National Climate Change Policy; National climate change programmes; the 2050 Long-Term Low Emission Vision and the First Nationally Determined Contribution). The CCA 2021 *inter alia* provides for an ambitious framework for mainstreaming climate actions in line with national development priorities and sets a net-zero target for 2050-2070.<sup>13</sup> The Act codifies national climate actions by mandating the Ministry of Environment to set, among others, a carbon budget, keeping average increase in global temperature within 2°C and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels. Furthermore, it approves of formulation of a National Climate Change Action Plan in

<sup>8</sup> CFRN, s 13.

<sup>9</sup> *Ibid*, s 17(1)(d).

<sup>10</sup> S. D. Sengar, *Environmental Law* (Prentice Hall 2007), 7.

<sup>11</sup> *M.C. Mehta v. Union of India* (2002) 4 SCC 356.

<sup>12</sup> A.C Osondu, *Our Common Environment: Understanding the Environment, Law and Policy*. (University of Lagos Press 2012) 184-185.

<sup>13</sup> CCA, s 1(f)



every five-year cycle to ensure that the national emission profile is consistent with the carbon budget goals and prescribes measures for identifying actions for climate adaptation and mitigation.<sup>14</sup>

### **2.3 National Environmental Standards Regulations and Enforcement Agency Establishment Act (NESREA) 2007.**

Given its efforts to address and safeguard all aspects of the environment, the NESREA Act is seen as the major Federal Government legislation in Nigeria, and has been described as ‘a new dawn in environmental compliance and enforcement’.<sup>15</sup> The Agency created to enforce the provisions of the Act is authorised to enforce compliance with laws, guidelines, policies and standards of environmental matters.<sup>16</sup> Such standards would include the federal water quality standards and air quality standards. In carrying out its functions, it is to coordinate and liaise with stakeholders within and outside Nigeria on matters of environmental standards, regulations and enforcement.<sup>17</sup> A notable provision of the NESREA Act is section 7(c), which mandates the its Agency to enforce compliance with the provisions of international agreements, protocols, conventions and treaties on the environment and such other agreement as may from time to time come into force.<sup>18</sup> Nigeria has ratified several international agreements on the environment in matters such as climate change, biodiversity, oil and gas, hazardous waste marine and wildlife pollution.

In a bid to provide effective enforcement of environmental standards, regulations, laws, rules, policies and guidelines, the newly established NESREA,<sup>19</sup> empowers the Minister of Environment to make regulations for the general purposes of carrying out or giving full effect to the functions of the Agency under the NESREA Act.<sup>20</sup> This has led to twenty-four Regulations, two of which are highly relevant to this dissertation. They are include the National Environmental (Ozone Layer Protection) Regulations, 2009 and National Environmental (Air quality control) Regulation, 2014

The principal thrust of these regulations was to provide for improved control of the nation’s air quality to such a degree that would upgrade the protection of biotic and abiotic, human, health and other resources affected by air quality deteriorations in addition to other things in line with the decarbonisation agenda.

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<sup>14</sup> M. T. Ladan ‘A Review of Nigeria's 2021 Climate Change Act: Potential for Increased Climate Act: Potential for increased Climate Litigation’ (2022) <<https://www.iucn.org/news/commission-environmental-economic-and-social-policy/202203/a-review-nigerias-2021-climate-change-act-potential-increased-climate-litigation>> accessed 22 August, 2023.

<sup>15</sup> NESREA Act, s 1(2). See also S. Mustapha ‘An Appraisal of the Regulatory Role of National Environmental Standards Regulations and Enforcement Agency (NESREA) in Nigeria’ (2022) (10) (3) *International Journal of Diplomatic, Legal and International Studies*, 9-23.

<sup>16</sup> NESREA Act, section 7(a).

<sup>17</sup> *Ibid*, s 7(b).

<sup>18</sup> *Ibid*, s 7(c)

<sup>19</sup> M.T. Ladan, *Law, Cases and Policies on Energy, Mineral Resources, Climate Change, Environment, Water, Maritime and Human Rights in Nigeria* (Ahmadu Bello University Press, 2009), 357-378.

<sup>20</sup> NESREA Act, s 34.

### 3.0 Regional and International Legal Framework on Decarbonisation

#### 3.1 The African Charter on Human and Peoples' Rights 1948

The African Charter on Human and Peoples' Rights has been ratified in Nigeria through the African Charter of Human and People's Right (Ratification and Enforcement) Act,<sup>21</sup> in compliance with the provisions of section 12 (1) CFRN and is now part of the Nigerian laws. The environmental aspect of the Charter is contained in the provisions of Articles 16 and 24 of the Charter, which provides respectively that "every individual shall have the right to enjoy the best attainable state of physical and mental health."<sup>22</sup>; and "all people shall have right to a general satisfactory environment favourable to their development."<sup>23</sup> Among the impact of the Charter is the fact that it is the first African international instrument to proclaim the rights to a satisfactory environment as a human right to which every person is entitled. It is also a bold effort toward sustainable development in the African continent and a definite response to the damage occasioned by the exportation of toxic wastes from Europe to Africa. The Charter has been used in the Nigerian Courts to protect human rights of the Nigerian people.<sup>24</sup> The Charter has also been used in ECOWAS court to protect the rights of the people to a clean environment. A case in point is *SERAP v. Federal Republic of Nigeria*<sup>25</sup>

#### 3.2 United Nations Convention on the Law of the Sea (UNCLOS) 1982

UNCLOS which is considered as the 'constitution of the oceans' sets a general framework for regulating among other things, the pollution that may arise from ships using alternative fuels and energy. A general duty established by the UNCLOS is that states have the obligation to protect and preserve the marine environment.<sup>26</sup> States are required to adopt all necessary measures to prevent, reduce and control pollution of the marine environment from any source.<sup>27</sup> UNCLOS also defines the jurisdictional rights and obligations in regulating marine pollution resulting from ships and other various sources, both legislative and enforcement, of flag, coastal and port states.<sup>28</sup>

Responsibility and liability for fulfilling international obligations regarding marine pollution and for ensuring the availability of legal recourse and prompt and adequate compensation for causing marine environmental damage are imposed on states.<sup>29</sup> According to Article 212 of the UNCLOS, States shall take the measures necessary to prevent, reduce and control atmospheric pollution. These measures shall include the adoption of laws and regulations applicable to the airspace under the sovereignty of States parties and to vessels flying their flag or vessels or aircraft of their registry.<sup>30</sup> Certain regional sea treaties also provide that States should take all appropriate measures to prevent, abate, and control atmospheric pollution.<sup>31</sup> States need to establish global and regional rules to prevent atmospheric pollution.<sup>32</sup> Moreover, as required by Article 222, enforce these laws and regulations, besides taking

<sup>21</sup> CAP A9, LFN 2010; *Gani Fawehimi v. General Sani Abacha & Ors* [1996] NWLR (Pt 475)

<sup>22</sup> African Charter of Human and People's Right (Ratification and Enforcement) Act, Article 16

<sup>23</sup> *Ibid*, Article 24

<sup>24</sup> *Gani Fawehimi v. General Sani Abacha & Ors* (supra)

<sup>25</sup> List No. ECW/CCJ/APP/08/09, Judgment No. ECW/CCJ/JUD/18/12.

<sup>26</sup> *Ibid*, Article 192.

<sup>27</sup> *Ibid*, Article 194.

<sup>28</sup> *Ibid*, Articles 207-234.

<sup>29</sup> *Ibid*, Article 235.

<sup>30</sup> UNCLOS, Article 212 (1).

<sup>31</sup> *Ibid*, Article 212(2).

<sup>32</sup> *Ibid*, Article 212(3).



measures to implement international rules and standards established by international organizations or diplomatic conference to prevent, reduce and control pollution of the marine environment and the atmosphere. These rules and standards must conform with international rules and standards concerning the safety of air navigation. Article 217 provides enforcement jurisdiction of flag States. Flag States are required to ensure compliance by their vessels with applicable international rules and standards and with their laws concerning regulation of vessels source pollution. Flag States are also obliged to provide for the effective enforcement of such laws and regulations, irrespective of where a violation occurs.<sup>33</sup>

Article 217 (2) places an obligation upon flag States to take appropriate measures in order to ensure that their vessels are prohibited from sailing, until they can proceed to sea in compliance with the requirements of the international rules and standards. In relation to this, Article 217(3) imposes on flag States a duty to ensure that their vessels carry on board certificates required by and issued pursuant to international rules and standards; and that their vessels are periodically inspected in order to verify such certificates. If a vessel commits a violation of rules and standards, the flag State is under the obligation to provide for immediate investigation and where appropriate institute proceeding in respect of this alleged violation, irrespective of where the violation occurred or where the pollution caused by such violation has occurred or has been spotted.<sup>34</sup>

At the written request of any State, flag States are obliged to investigate any violation alleged to have been committed by their vessels. If satisfied sufficient evidence is available to enable proceedings to be brought in respect of the alleged violation, flag States shall without delay institute such proceedings in accordance with their laws.<sup>35</sup> Flag States are also required to promptly inform the requesting State and the competent international organization of the action taken and its outcome. Such information shall be available to all States.<sup>36</sup>

### **3.3 United Nations Framework Convention on Climate Change (UNFCCC) 1992**

UNFCCC was adopted with the ultimate aim of preventing dangerous human interference with the climate system.<sup>37</sup> The objective of this convention is contained in Article 2 of the UNFCCC. It provides as follows:

The ultimate objective of this Convention and any related legal instruments that the Conference of the Parties may adopt is to achieve, in accordance with the relevant provisions of the Convention, stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. Such a level should be achieved within a time-frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner.

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<sup>33</sup> *Ibid*, Article 217(1).

<sup>34</sup> *Ibid*, Article 217(4).

<sup>35</sup> UNCLOS, Article 217(6).

<sup>36</sup> *Ibid*, Article 217(7).

<sup>37</sup> UNFCCC, Article 2.



UNFCCC sets out the basic legal framework and principles for international climate change cooperation with the aim of stabilizing atmospheric concentrations of GHGs to avoid dangerous anthropogenic interference with the climate system. In their actions to achieve the objective of the Convention and to implement its provisions, the UNFCCC stipulate some principles to guide State Parties. The first principle of the UNFCCC is that parties should protect the climate system for the benefit of present and future generations of humankind, on the basis of equity and in accordance with their common but differentiated responsibilities and respective capabilities.<sup>38</sup> Accordingly, the developed country Parties should take the lead in combating climate change and the adverse effects thereof.<sup>39</sup>

In order to protect the interest of developing countries, the UNFCCC provides that the specific needs and special circumstances of developing country Parties, especially those that are particularly vulnerable to the adverse effects of climate change, and of those Parties, especially developing country Parties, that would have to bear a disproportionate or abnormal burden under the Convention, should be given full consideration.<sup>40</sup> The UNFCCC further provides that the Parties should take precautionary measures to anticipate, prevent or minimize the causes of climate change and mitigate its adverse effects.<sup>41</sup> Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing such measures, taking into account that policies and measures to deal with climate change should be cost-effective so as to ensure global benefits at the lowest possible cost.<sup>42</sup> To achieve this, such policies and measures should take into account different socio-economic contexts, be comprehensive, cover all relevant sources, sinks and reservoirs of greenhouse gases and adaptation, and comprise all economic sectors.<sup>43</sup>

Efforts to address climate change may be carried out cooperatively by interested Parties.<sup>44</sup> More so, Article 3 is to the effect that the Parties have a right to, and should, promote sustainable development. Policies and measures to protect the climate system against human-induced change should be appropriate for the specific conditions of each Party and should be integrated with national development programmes, taking into account that economic development is essential for adopting measures to address climate change.<sup>45</sup> Parties to the Convention are also enjoined to cooperate to promote a supportive and open international economic system that would lead to sustainable economic growth and development in all Parties, particularly developing country Parties, thus enabling them better to address the problems of climate change.<sup>46</sup> Measures taken to combat climate change, including unilateral ones, should not constitute a means of arbitrary or unjustifiable discrimination or a disguised restriction on international trade.<sup>47</sup>

Pursuant to Article 4, all Parties, taking into account their common but differentiated responsibilities and their specific national and regional development priorities, objectives and circumstances, shall (a)

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<sup>38</sup> UNFCCC, Article 3(1).

<sup>39</sup> *Ibid.*

<sup>40</sup> *Ibid.*, Article 3(2).

<sup>41</sup> *Ibid.*

<sup>42</sup> *Ibid.*

<sup>43</sup> *Ibid.*

<sup>44</sup> *Ibid.*, Article 3(3).

<sup>45</sup> *Ibid.*

<sup>46</sup> *Ibid.*

<sup>47</sup> UNFCCC, Article 3(5).



Develop, periodically update, publish and make available to the Conference of the Parties, in accordance with Article 12, national inventories of anthropogenic emissions by sources and removals by sinks of all greenhouse gases not controlled by the Montreal Protocol, using comparable methodologies to be agreed upon by the Conference of the Parties;<sup>48</sup> (b) Formulate, implement, publish and regularly update national and, where appropriate, regional programmes containing measures to mitigate climate change by addressing anthropogenic emissions by sources and removals by sinks of all greenhouse gases not controlled by the Montreal Protocol, and measures to facilitate adequate adaptation to climate change;<sup>49</sup> (c) Promote and cooperate in the development, application and diffusion, including transfer, of technologies, practices and processes that control, reduce or prevent anthropogenic emissions of greenhouse gases not controlled by the Montreal Protocol in all relevant sectors, including the energy, transport, industry, agriculture, forestry and waste management sectors;<sup>50</sup> (d) Promote sustainable management, and promote and cooperate in the conservation and enhancement, as appropriate, of sinks and reservoirs of all 11 greenhouse gases not controlled by the Montreal Protocol, including biomass, forests and oceans as well as other terrestrial, coastal and marine ecosystems;<sup>51</sup> (e) Cooperate in preparing for adaptation to the impacts of climate change; develop and elaborate appropriate and integrated plans for coastal zone management, water resources and agriculture, and for the protection and rehabilitation of areas, particularly in Africa, affected by drought and desertification, as well as floods;<sup>52</sup> (f) Take climate change considerations into account, to the extent feasible, in their relevant social, economic and environmental policies and actions, and employ appropriate methods, for example impact assessments, formulated and determined nationally, with a view to minimizing adverse effects on the economy, on public health and on the quality of the environment, of projects or measures undertaken by them to mitigate or adapt to climate change;<sup>53</sup> (g) Promote and cooperate in scientific, technological, technical, socio-economic and other research, systematic observation and development of data archives related to the climate system and intended to further the understanding and to reduce or eliminate the remaining uncertainties regarding the causes, effects, magnitude and timing of climate change and the economic and social consequences of various response strategies;<sup>54</sup> (h) Promote and cooperate in the full, open and prompt exchange of relevant scientific, technological, technical, socio-economic and legal information related to the climate system and climate change, and to the economic and social consequences of various response strategies;<sup>55</sup> (i) Promote and cooperate in education, training and public awareness related to climate change and encourage the widest participation in this process, including that of non-governmental organizations; and<sup>56</sup> (j) Communicate to the Conference of the Parties information related to implementation, in accordance with Article 12.<sup>57</sup>

In line with Article 4 (2) the developed country Parties and other Parties included in Annex I commit themselves, to among other things, specifically as provided for in the following adopt national policies

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<sup>48</sup> *Ibid*, Article 4 (1)(a).

<sup>49</sup> *Ibid*, Article 4 (1)(b).

<sup>50</sup> *Ibid*, Article 4 (1)(c).

<sup>51</sup> UNFCCC, Article 4(1)(d).

<sup>52</sup> *Ibid*, Article 4 (1)(e).

<sup>53</sup> *Ibid*, Article 4 (1)(f).

<sup>54</sup> *Ibid*, Article 4 (1)(g).

<sup>55</sup> *Ibid*, Article 4 (1)(h).

<sup>56</sup> *Ibid*, Article 4 (1)(i).

<sup>57</sup> *Ibid*, Article 4 (1)(j).



and take corresponding measures on the mitigation of climate change, by limiting its anthropogenic emissions of greenhouse gases and protecting and enhancing its greenhouse gas sinks and reservoirs.

### 3.4 The Paris Agreement 2015

The Paris Agreement 2015 is another landmark international accord that was adopted by nearly every nation to address climate change and its negative impacts. The agreement aims to substantially reduce global greenhouse gas emissions in an effort to limit the global temperature increase in this century to 2 degrees Celsius above preindustrial levels, while pursuing the means to limit the increase to 1.5 degrees. It entered into force on 4 November 2016. Today, 194 Parties (193 States plus the European Union) have joined the Paris Agreement. The Agreement includes commitments from all countries to reduce their emissions and work together to adapt to the impacts of climate change, and calls on countries to strengthen their commitments over time. The Agreement provides a pathway for developed nations to assist developing nations in their climate mitigation and adaptation efforts while creating a framework for the transparent monitoring and reporting of countries' climate goals.

Article 2 of the Agreement sets a long-term temperature goal of keeping the increase in the global average well below 2°C with the aspiration of limiting the increase to 1.5°C. It provides as follows

1. This Agreement, in enhancing the implementation of the Convention, including its objective, aims to strengthen the global response to the threat of climate change, in the context of sustainable development and efforts to eradicate poverty, including by:<sup>58</sup>

(a) Holding the increase in the global average temperature to well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels, recognizing that this would significantly reduce the risks and impacts of climate change;<sup>59</sup>

(b) Increasing the ability to adapt to the adverse impacts of climate change and foster climate resilience and low greenhouse gas emissions development, in a manner that does not threaten food production; and<sup>60</sup>

(c) Making finance flows consistent with a pathway towards low greenhouse gas emissions and climate-resilient development.<sup>61</sup>

The high ambition of this goal implies that equally ambitious GHG emission reduction and mitigation efforts must be undertaken by all country Parties to stabilize and reduce global emissions. Additionally, Article 4 of the Agreement calls all country Parties to increase mitigation efforts to achieve global peaking of emissions “as soon as possible” and then rapidly reduce emission. It is to the effect that in order to achieve the long-term temperature goal set out in Article 2, Parties aim to reach global peaking

<sup>58</sup> Paris Agreement, Article 2(1).

<sup>59</sup> *Ibid*, Article 2 (1)(a).

<sup>60</sup> *Ibid*, Article 2 (1)(b).

<sup>61</sup> *Ibid*, Article 2 (1)(c).



of greenhouse gas emissions as soon as possible, recognizing that peaking will take longer for developing country Parties, and to undertake rapid reductions thereafter in accordance with best available science, so as to achieve a balance between anthropogenic emissions by sources and removals by sinks of greenhouse gases in the second half of this century, on the basis of equity, and in the context of sustainable development and efforts to eradicate poverty.<sup>62</sup> Parties to the Agreement are also expected to take action to conserve and enhance, as appropriate, sinks and reservoirs of greenhouse gases as referred to in Article 4, paragraph 1 (d), of the Convention, including forests.<sup>63</sup> In accordance with the principle of common but differentiated responsibility under the UNFCCC Article 9 of the Paris Agreement provides that developed country Parties shall provide financial resources to assist developing country Parties with respect to both mitigation and adaptation in continuation of their existing obligations under the Convention.<sup>64</sup>

### 3.4 The Kyoto Protocol to UNFCCC 1997

The Kyoto Protocol to UNFCCC was adopted in 1997 and came into force in 2005. It aims to reduce greenhouse gases emissions by setting individual targets with parties to the Protocol. This is one of the most cogent actions by the world leaders in fighting global warming which is now changing the earth's climate. The objective of the Protocol is well captured in Article 2 of the Kyoto Protocol. Article 2 provides that each Party included in Annex I, in achieving its quantified emission limitation and reduction commitments under Article 3, in order to promote sustainable development, shall: (a) Implement and/or further elaborate policies and measures in accordance with its national circumstances, such as: (i) Enhancement of energy efficiency in relevant sectors of the national economy; (ii) Protection and enhancement of sinks and reservoirs of greenhouse gases not controlled by the Montreal Protocol, taking into account its commitments under relevant international environmental agreements; promotion of sustainable forest management practices, afforestation and reforestation; (iii) Promotion of sustainable forms of agriculture in light of climate change considerations; (iv) Research on, and promotion, development and increased use of, new and renewable forms of energy, of carbon dioxide sequestration technologies and of advanced and innovative environmentally sound technologies; (v) Progressive reduction or phasing out of market imperfections, fiscal incentives, tax and duty exemptions and subsidies in all greenhouse gas emitting sectors that run counter to the objective of the Convention and application of market instruments; (vi) Encouragement of appropriate reforms in relevant sectors aimed at promoting policies and measures which limit or reduce emissions of greenhouse gases not controlled by the Montreal Protocol; (vii) Measures to limit and/or reduce emissions of greenhouse gases not controlled by the Montreal Protocol in the transport sector; (viii) Limitation and/or reduction of methane emissions through recovery and use in waste management, as well as in the production, transport and distribution of energy;<sup>65</sup>

State parties are also expected to cooperate with other such Parties to enhance the individual and combined effectiveness of their policies and measures adopted under this Article, pursuant to Article 4, paragraph 2 (e) (i), of the Convention. To this end, these Parties shall take steps to share their experience and exchange information on such policies and measures, including developing ways of improving their

<sup>62</sup> Paris Agreement, Article 4.

<sup>63</sup> *Ibid*, Article 5(1).

<sup>64</sup> *Ibid*, Article 9.

<sup>65</sup> Kyoto Protocol, Article 2 (1) (a)(i)-(viii).



comparability, transparency and effectiveness. The Conference of the Parties serving as the meeting of the Parties to this Protocol shall, at its first session or as soon as practicable thereafter, consider ways to facilitate such cooperation, taking into account all relevant information.<sup>66</sup> Furthermore, in a bid to reduce greenhouse gas emissions, the Kyoto Protocol provides in Article 2 (2) that the Parties included in Annex I shall pursue limitation or reduction of emissions of greenhouse gases not controlled by the Montreal Protocol from aviation and marine bunker fuels, working through the International Civil Aviation Organization and the International Maritime Organization, respectively.<sup>67</sup>

It should be noted that the policies and measures that state parties strive to implement, should be done in such a way as to minimize adverse effect both on climate change, international trade, etc. to this effect, Article 2 (3) provides that the Parties included in Annex I shall strive to implement policies and measures under this Article in such a way as to minimize adverse effects, including the adverse effects of climate change, effects on international trade, and social, environmental and economic impacts on other Parties, especially developing country Parties and in particular those identified in Article 4, paragraphs 8 and 9, of the Convention, taking into account Article 3 of the Convention.<sup>68</sup> The Conference of the Parties serving as the meeting of the Parties to this Protocol may take further action, as appropriate, to promote the implementation of the provisions of this paragraph. The Conference of the Parties serving as the meeting of the Parties to this Protocol, if it decides that it would be beneficial to coordinate any of the policies and measures in paragraph 1 (a) above, taking into account different national circumstances and potential effects, shall consider ways and means to elaborate the coordination of such policies and measures.<sup>69</sup>

### **3.5 Montreal Protocol on Substances that Deplete the Ozone Layer 1989**

The original Montreal Protocol on Substances that Deplete the Ozone Layer which was agreed on 16 September 1987 and entered into force on the 1st day of January 1989 was designed to reduce the degree of production as well as the consumption of ozone depleting substances in order to reduce their concentration in the atmosphere, and thereby protect the earth's delicate ozone layer. The Montreal Protocol contains a unique adjustment provision that enables the parties to it to respond quickly to new scientific information and agree to accelerate the reductions required on chemicals already covered by the Protocol. The state parties to the Montreal Protocol have amended the Protocol to enable, inter alia, the control of new chemicals and the creation of a financial mechanism to enable developing countries to comply.

The Montreal Protocol consists, in the main, of three types of provisions, to wit, controls on the production and consumption of ozone-depleting chemicals, arrangements for the administration and enforcement of control requirements, and measures to promote regular, periodic assessments of the Protocol's control provisions. At the heart of the Montreal Protocol are its requirements regarding control of compounds, which destroy the earth's ozone shield. As an interim measure, the Protocol requires a freeze, at 1986 levels, on annual consumption of five fluorocarbon compounds (CFC-11, 12,

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<sup>66</sup> *Ibid*, Article 2 (1) (b).

<sup>67</sup> *Ibid*, Article 2 (2).

<sup>68</sup> Kyoto Protocol, Article 2(3).

<sup>69</sup> *Ibid*, Article 2 (4).



113, 114, and 115), beginning in the seventh month after the Protocol enters into force.<sup>70</sup> It also calls for a similar freeze on consumption of halons-1221, 1301, and 2402, beginning three years from that date.<sup>71</sup> As an added measure, the treaty requires scheduled, long term reductions in the annual consumption of chlorofluorocarbons-to the extent of twenty percent by 1994 and fifty percent by 1999." In order to maintain a sufficient supply of CFC and halon based products for developing countries-and to respond to supply shortages and/or achieve economic efficiency in some of the more industrialized nations-the Protocol provides certain specific exceptions to the general limitations it imposes on CFC and halon consumption. For example, it provides that any party to the treaty that produced less than twenty-five kilotons of ozone-depleting substances in 1986 may, "for purposes of industrial rationalization," transfer to, or receive from, any other party, production of those substances in excess of the Protocol's general production levels, so long as the "total combined calculated levels of production of the parties concerned" does not exceed the production limits that would otherwise apply to those parties under the Protocol.<sup>72</sup>

Significantly, the treaty contains a provision, which would allow the Soviet Union to include in its 1986 base year level the expanded production foreseen in its five-year plan.<sup>73</sup> The Protocol also allows the European Economic Community (EEC) to jointly fulfil its consumption requirements so long as all twelve EEC members sign and ratify the Protocol.<sup>74</sup> Further, the agreement contains a number of provisions regarding the implementation of control requirements. It mandates a procedure for calculating "production," "consumption" and "imports and exports,"<sup>75</sup> prohibits the importation of ozone-depleting substances from states not parties to the treaty,<sup>76</sup> and bans the export of these substances to non-party states beginning on January 1, 1993.<sup>77</sup> The Protocol requires participating nations to "discourage" the export of technology for producing and utilizing controlled substances to non-participating states<sup>78</sup> and mandates that treaty participants "refrain from providing new subsidies, aid, credits, guarantees or insurance programmes" for the export of such technology to non-signatory nations.<sup>79</sup> Another requirement is annual reports by each party disclosing their production, imports and exports of ozone-depleting compounds,<sup>80</sup> as well as international cooperation in promoting research, development, and information exchanges regarding control techniques.<sup>81</sup> Finally, the Montreal Protocol allows periodic reassessment of the appropriateness of its control requirements. It provides that, beginning in 1990, and at least every four years thereafter, "the parties shall assess the control measures provided for in Article 2 on the basis of available scientific, environmental, technical and economic information."<sup>82</sup> It also requires the parties to hold meetings at regular intervals<sup>83</sup> to review

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<sup>70</sup> Montreal Protocol, Article 2 (1).

<sup>71</sup> *Ibid*, Article 2 (2).

<sup>72</sup> *Ibid*, Article 2 (5). See also Article 5.

<sup>73</sup> *Ibid*, Article 2 (6).

<sup>74</sup> Montreal Protocol, Article 2(8).

<sup>75</sup> *Ibid*, Article 3.

<sup>76</sup> Montreal Protocol, Article 4(1).

<sup>77</sup> *Ibid*, Article 4(2).

<sup>78</sup> *Ibid*, Article 4(5).

<sup>79</sup> *Ibid*, Article 4(6).

<sup>80</sup> *Ibid*, Article 7(2).

<sup>81</sup> *Ibid*, Article 9.

<sup>82</sup> *Ibid*, Article 6.

<sup>83</sup> *Ibid*, Article 11(1).



implementation of the Protocol, assess the control measures and consider and adopt any amendments which they deem appropriate.<sup>84</sup> The Protocol mandates that "extraordinary meetings of the parties shall be held at such times as may be deemed necessary by a meeting of the parties, or at the written request of any party, provided that, within six months of such a request being communicated to them by the secretariat, it is supported by at least one third of the parties."<sup>85</sup>

### 3.6 Vienna Convention on Protection of the Ozone Layer 1985

The Vienna Convention for the Protection of the Ozone Layer was adopted by the Conference on the Protection of the Ozone Layer and open for signature between 22 March 1985 and 21 September 1985 in Vienna, and also at New York, the United Nations Headquarters between 22 September 1985 and 21 March 1986. Nigeria became a signatory to the convention on 31<sup>st</sup> October 1988. The Vienna Convention for the Protection of the Ozone Layer is often called a framework convention, because it served as a framework for efforts to protect the globe's ozone layer. The main objectives of the Convention were for parties to promote cooperation by means of systematic observations, research as well as information exchange relating to the effects of anthropogenic activities on the ozone layer and to combat through adoption of legislative or administrative measures, all activities likely to have adverse effects on the ozone layer. Article 2 of the Vienna Convention provides that The Parties shall take appropriate measures in accordance with the provisions of this Convention and of those protocols in force to which they are party to protect human health and the environment against adverse effects resulting or likely to result from human activities which modify or are likely to modify the ozone layer.<sup>86</sup> To this end, the Parties shall, in accordance with the means at their disposal and their capabilities: (a) Co-operate by means of systematic observations, research and information exchange in order to better understand and assess the effects of human activities on the ozone layer and the effects on human health and the environment from modification of the ozone layer;<sup>87</sup> (b) Adopt appropriate legislative or administrative measures and co-operate in harmonizing appropriate policies to control, limit, reduce or prevent human activities under their jurisdiction or control should it be found that these activities have or are likely to have adverse effects resulting from modification or likely modification of the ozone layer;<sup>88</sup> (c) Co-operate in the formulation of agreed measures, procedures and standards for the implementation of this Convention, with a view to the adoption of protocols and annexes;<sup>89</sup> (d) Co-operate with competent international bodies to implement effectively this Convention and protocols to which they are party.<sup>90</sup> The provisions of this Convention shall in no way affect the right of Parties to adopt, in accordance with international law, domestic measures additional to those referred to in paragraphs 1 and 2 above, nor shall they affect additional domestic measures already taken by a Party, provided that these measures are not incompatible with their obligations under this Convention.<sup>91</sup> The application of this article shall be based on relevant scientific and technical considerations.<sup>92</sup> By

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<sup>84</sup> *Ibid*, Article 11(4).

<sup>85</sup> Montreal Protocol, Article 11(1).

<sup>86</sup> Vienna Convention, Article 2(1).

<sup>87</sup> *Ibid*, Article 2 (2) (a).

<sup>88</sup> *Ibid*, Article 2(2)(b).

<sup>89</sup> Vienna Convention, Article 2(2)(c).

<sup>90</sup> *Ibid*, Article 2(2)(d).

<sup>91</sup> *Ibid*, Article 2(3).

<sup>92</sup> *Ibid*, Article 2(4).



adopting the convention, Parties undertake to promote or establish, as appropriate, directly or through competent international bodies and taking fully into account national legislation and relevant ongoing activities at both the national and international levels, joint or complementary programmes for systematic observation of the state of the ozone layer and other relevant parameters, as elaborated in annex I.<sup>93</sup>

### **3.7 International Convention for the Prevention of Pollution from Ships, (MARPOL) 1973**

The MARPOL Convention is the main international convention covering prevention of pollution of the marine environment by ships from operational or accidental causes. It is a combination of two treaties adopted in 1973 and 1978 respectively and updated by amendments through the years. The International Convention for the Prevention of Pollution from Ships was adopted on 2 November 1973 at IMO and covered pollution by oil, chemicals and harmful substances in packaged form, sewage and garbage. The Protocol of 1978 relating to the 1973 International Convention for the Prevention of Pollution from Ships (1978 MARPOL Protocol) was adopted at a Conference on Tanker Safety and Pollution Prevention in February 1978 held in response to a spate of tanker accidents in 1976-1977. The Convention includes regulations aimed at preventing and minimizing pollution from ships both accidental pollution and that from routine operations and currently includes six technical Annexes. Special Areas with strict controls on operational discharges are included in most Annexes. the Annex that is relevant to this dissertation is Annex VI.

Annex VI is the most recent Annex to MARPOL and addresses air pollution stemming from fuel combustion from ships. It entered into force on 19 May 2005 and was last revised on 26 September 2011. Most of the Annex deals with surveys, certifications and technical details relating to the quality of the fuel burned, and gas system requirements. Specific attention is devoted to shipboard incineration and port gas system cleaning facilities.<sup>94</sup> Regulation 12 (2) prohibits the deliberate emission of ozone-depleting substances, unless one of the general exceptions occurs, namely the necessity to save the ship or life on-board or at sea, or accidental emissions due to damaged equipment.<sup>95</sup> Annex VI sets limits on sulphur oxide and nitrogen oxide emissions from ship exhausts. Moreover, a Port State may detain a ship if 'there are clear grounds for believing that the master or crew are not familiar with essential shipboard procedures relating to the prevention of air pollution from ships'.<sup>96</sup>

Obviously, MARPOL governs the technical aspects of ship-source pollution prevention and control since Annex VI of MARPOL consists of regulations to eliminate air pollution by sulphur oxide and nitrogen oxide, emissions. However, in 2011, the IMO amended MARPOL and added a new chapter 4 titled 'Regulations on the Energy Efficiency for Ships'. The essence of the new chapter is to reduce GHG emissions from ships as the response to the global warming crisis.<sup>97</sup> Chapter 4 covers mandatory technical and operational energy efficiency measures, namely the Energy Efficiency Design Index (EEDI) and the Ship Energy Efficiency Management Plan (SEEMP). EEDI aims at using technical means to improve ships' energy efficiency, thereby reducing the CO<sub>2</sub> impact per capacity mile while

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<sup>93</sup> *Ibid*, Article 3(2).

<sup>94</sup> MARPOL 73/78, Annex VI, Regulations 16 and 17.

<sup>95</sup> *Ibid*, Annex VI, Regulations 3.

<sup>96</sup> *Ibid*, Annex VI, Regulations 10.

<sup>97</sup> Zhuo and Wang (n 5).



SEEMP is to induce changes at operational level that would cut down energy consumption among the world fleet.<sup>98</sup> EEDI and SEEMP entered into force on January 1, 2013, representing a breakthrough in the lengthy deadlock of the negotiations between IMO member states on the shipping emissions issue.<sup>99</sup>

#### 4.0 Conclusion

This paper has reviewed a multitude of laws with potential to reduce emissions from global shipping. These laws have the common characteristics of the need for the utilization of technologies, energy efficiency, lifecycle environmental performance and economic viability in order to achieve the goal of net-zero in the shipping industry. In other words, the existing national and international legal regimes can be said have significantly influenced the regulation over pollution, the transportation of hazardous and noxious substances, and marine environmental protection.

However, when it comes to the use of alternative marine fuels options, the current legal regimes are not adequate. Insufficient legal framework for the regulation of alternative fuel options such as methanol, Ammonia, Hydrogen, Liquefied Natural Gas, Biofuel, Solar Power for ships will make it difficult to formulate an effective regulatory regime to address the emerging challenges in the era of carbon neutrality in the shipping industry. Hence, the need for a sustained legislative tinkering as solution that might be feasible to deal with threats posed by GHG emissions in the maritime sector.

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<sup>98</sup> *Ibid.*

<sup>99</sup> *Ibid.*