



## Climate change and international trade: Tracing the legal framework, interface and challenges

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### Abstract

The two important issues - climate change and world trade cannot be overemphasized. As much as international trade is very important to countries survival, there is still the needs for global protection of the environmental. There is a very strong link between climate change and world trade. For instance, the effects of climate change on world trade have led to the developments of new laws, policies, regulations and standards to address the challenges pose by the phenomenon. The biggest cause of climate change, on the other hand is trade. However, through green trade agreements, the trading of emissions and other trade efforts, international trade is assisting in reducing the effects of climate change. Therefore, it is important to pay further attention to how climate change has impacted trade, how international trade contributes to climate change, and how a balance might be reached between reducing climate change and enhancing global trade. This article explores the legal framework, interface and challenges between climate change and international trade law.

**Keywords:** Climate change, greenhouse gases, emissions, international trade

### Introduction

One of the contemporary issues in international law is how countries of the world will address global Climate Change vis-a-vis World Trade. Since industrial revolution, human activities have been relying heavily on burning of fossil fuels and other greenhouse gases for their needed goods and services, which have increased the atmospheric concentrations of Greenhouse Gases (GHGs) and adversely affecting both the natural ecosystem and humankind.

However, due to the convincing evidence that world is facing the threat of Climate Change and the clear link between human activities and Climate Change, for instance: production of goods and services are in stages: collection of raw materials, production and distribution, all which involve activities that contribute to Climate Change, the international community has taken up the responsibilities, making efforts to stabilizing greenhouse gases concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system and also using international trade as one of the major instruments for adaptation and mitigation of climate change. Green technologies and emissions are traded among the world countries, policies are adopted and formulated to regulating anthropogenic emissions, and targets are set for future reduction of emission and to minimize the likely effects of Climate change. The world leaders in complementing the past efforts, adopted the Paris Agreement in November, 2015, which in many quarters is seen as a land mark achievement for the world in mitigating the effects of Climate Change and also enhancing international trade.

In other words, climate change and international trade seems to have a necessary symbiotic relationship in which activities involved in one may contribute to changes in the other. It is therefore, in view of this, among others, that this article examines climate change and international trade and explore their legal framework, interface and challenges.

To achieve the aforementioned aim, analysis in the article are divided into parts. The first part is the introductory part. The second part examines climate change by putting it into perspective as well as the effect of climate change generally. The third part addressed both the international legal framework on climate change and the legal framework on international trade. Thereafter, part fourth and fifth parts examines the interface or meeting point and the challenges between climate change and international trade respectively. The conclusion then follows.

### Climate change in perspective

Climate is the pattern of variation in temperature, humidity, atmospheric pressure, wind, precipitation, atmospheric particle counts and other meteorological variables in a given region over a long period of time. In other words, Climate is the long-term weather patterns that describe a region <sup>[1]</sup>. Change on the other hand means “to cause to be different” or “to give a complete different form or appearance to <sup>[2]</sup>.” Thus, Climate Change is 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 time periods. It also refers to a change in the state of the climate that can be identified (e.g. using statistical tests) by changes in the mean and/or the variability of its properties, and that persists for an extended period <sup>[3]</sup>.

Climate Change occurs when the climate of a specific area or planet is altered between two different periods of time. This usually occurs when something changes the total amount of the sun’s energy absorbed by the earth’s atmosphere and surface. It also happens when something changes the amount of heat energy from the earth’s surface and atmosphere that escapes to space over an extended period of time. The climate system is driven by sun’s energy and regulated by natural processes and cycles in the Earth system. These include the carbon cycle, greenhouse effect,

orbital cycles, ocean currents that distribute warmer and colder water around the globe, and Atmosphere Ocean interactions that moderate temperature <sup>[4]</sup>.

The Earth's greenhouse effect is a natural phenomenon, whereby a delicate balance of certain gases called Greenhouse gases for their heat-trapping abilities, helps keep the temperature of the Earth at a level that supports life, that is, the presence of greenhouse gases in the atmosphere is a natural component of the climate system and helps to maintain the Earth as a habitable planet <sup>[5]</sup>. GHGs are relatively transparent to incoming solar radiation, allowing the sun's energy to pass through the atmosphere to the surface of the Earth. The energy is then absorbed by the earth surface used in processes like photosynthesis, or emitted back to space as infrared radiation <sup>[6]</sup>. Some of the emitted radiation passes through the atmosphere and travels back to space, but some is absorbed by GHG molecules and then re-emitted in all directions <sup>[7]</sup>. Changing the atmospheric abundance or properties of these gases and particles can lead to a warming or cooling of the climate system.

From the above, it is clear that both natural and human-made activities contribute to Climate Change. Natural contributors include: changes in the Earth's orbit, the sun intensity, the circulation of the ocean and the atmosphere, and volcanic activities. Human activities, which is also known as "anthropogenic" include: burning of fossil fuels (such as coal, oil and natural gases), cutting down of trees (deforestation) and developing land (land-use changes). The burning of fossil fuels emits GHGs into the atmosphere, while deforestation and land use changes remove trees and other kinds of vegetation that store CO<sub>2</sub> <sup>[8]</sup>.

It's obvious that since the industrial revolution in the eighteenth century, the concentration of GHGs especially the CO<sub>2</sub> in the atmosphere has risen and humans are directly responsible through production and distribution of goods and services locally and internationally. The enhanced greenhouse effect, as it is known scientifically, is caused by elevated concentrations of several gases in the Earth's atmosphere, which has risen over the past two hundred and fifty years when compared to pre-industrial revolution <sup>[9]</sup>.

### 1. Effects of climate change

Due to convincing evidence about Climate change, its aftermaths have not been pleasant, as it has been impairing and undermining the social, economic and human rights of people all over the world <sup>[10]</sup>. Climate Change has aggravated water scarcity, food production are adversely affected, increased frequency and intensity of storms, floods, hurricanes, droughts, fires, increase poverty and malnutrition, series of health consequences <sup>[11]</sup> and Climate refugees are being created. The world's poor are especially vulnerable to the climate-driven risks posed by rising sea level, coastal erosion and more frequent storms <sup>[12]</sup>. Around 14 per cent of the population and 21 per cent of urban dwellers in developing countries live in low elevation coastal zones that are exposed to these risks <sup>[13]</sup>. The livelihoods of billions – from poor farmers to urban slum dwellers – are threatened by a wide range of climate-induced risks that affect food security, water availability, natural disasters, ecosystem stability and human health <sup>[14]</sup>. According to the United Nations' Authoritative Intergovernmental Panel on Climate Change (IPCC) <sup>[15]</sup>,

Climate Change will become apparent in the following ways:

- a. By around 2100, global temperatures will have risen by between 1.1 and 6.4° C. The exact increase depends on future emissions of greenhouse gases and other pollutants and on the combined action of physical and chemical processes in the atmosphere.
- b. Some Parts of the World will receive more precipitation, with others becoming drier.
- c. In the course of the present century, sea level will rise by between 1 and 59 centimeters. This is because warmer water occupies more space than cold water and because of the retreat of glaciers and polar ice sheets. Our understanding of the melting of the Greenland and Antarctic ice sheets is still incomplete. This, together with the fact that there may be large regional variations in sea level rise, means that in some parts of the world the consequences may be even more dramatic than predicted by IPCC.
- d. The Gulf Stream, which transports relatively warm water from the Caribbean to Europe is expected to decline in strength, causing temperatures in northwest Europe to rise less markedly than elsewhere. Standard climate models, however, make no allowance for an abrupt change in the Gulf Stream.

With the manner the world is handling climate change, greenhouse gas (GHG) emissions will increase by 45 per cent to 41 gigatonnes (Gt) by 2030, with three-quarters of the rise generated by China, India and the Middle East <sup>[16]</sup>. Without a change in the carbon dependency of the global economy, the IEA warns that the atmospheric concentration of GHG could double by the end of this century, and lead to an eventual global average temperature increase of up to 6°C <sup>[17]</sup>. Such a scenario is likely to cause a sea level rise between 0.26 and 0.59 meters, and severely disrupt freshwater availability, ecosystems, food production, coastal populations and human health <sup>[18]</sup>. According to the Stern Review, with 5-6°C warming, the world economy could sustain losses equivalent to 5-10 per cent of global gross domestic product (GDP), with poor countries suffering costs in excess of 10 per cent of GDP <sup>[19]</sup>. Across all cities worldwide, about 40 million people are exposed to a 1 in 100 year extreme coastal flooding event, and by the 2070s the population exposed could rise to 150 million <sup>[20]</sup>.

These paint a quasi-apocalyptic as they indicate that the impact of Climate Change will soon become irreversible <sup>[21]</sup>. With regard to Africa and other developing worlds for example, millions of people will be exposed to increased water stress due to Climate Change <sup>[22]</sup>.

### International trade in perspective

States allowing cross-border trade and doing business with other states usually strive for economic advantages and prosperity of all participating countries. Foreign trade is carried on whenever goods are not available in one country, whenever there are special preferences for foreign goods, or whenever countries have different cost advantages. Increasing international trade is crucial to the continuance of globalization.

International Trade is usually referred to as the exchange of goods and services across international borders or territories <sup>[23]</sup>. International trade system depends on industrialization, advanced transportation, globalization, multinational

corporations and outsourcing. Without trade, nations would be limited to goods and services produced within their own borders.

## **International legal frameworks on climate change and international trade**

### **1. International legal frameworks on climate change**

The momentum to deal with Climate Change lies with rising level of scientific concern about Climate Change [24]. An early study of anthropogenically induced Climate Change was traced to Mauna Loa group of Climate Measurements, which revealed increasing concentrations of CO<sub>2</sub> in the earth's atmosphere [25]. It was predicted as early as 1896 that CO<sub>2</sub> released to the atmosphere would cause radioactive effects and leads to a warming of the Earth's surface, a prediction that was put forward by the Swedish chemist, Svante Arrhenius [26].

Also, in 1972, the declaration of the United Nations Conference on the Human Environment includes the common conviction that the discharge of substances at such concentrations that exceed the capacity of the environment to render them harmless must be halted to ensure that serious or irreversible damage is not inflicted upon ecosystem [27]. In 1978, the concept of human induced Climate Change and potential for human to cause adverse environmental impact was considered in the International principles addressing weather modification and in 1979, parties to the World Climate Conference expressed concern that the continued expansion of man's activities on earth may cause significant extended regional and even global changes of climate. Accordingly, the world Climate conference called for the prevention of potential man made changes in climate that might be adverse to the wellbeing of humanity [28].

However, from the early 1980s, concerns on Climate Change were more progressively institutionalized in transnational organizations, conventions, conferences, protocols and recently agreement; such as Intergovernmental Panel on Climate Change (IPCC), United Nations Framework Convention on Climate Change (UNFCCC), Kyoto Protocol, Rio Conference on Environmental and Development, Paris Agreement among others.

#### **1.1. International panel on climate change (IPCC)**

The International Panel on Climate Change (IPCC) was created by the World Metrological Organization and United Nations Environmental Program (UNEP) to provide independent scientific advice regarding human induced Climate Change through peer review and assessment of existing scientific information [29]. IPCC has produced several Climate Change assessments since 1990, these are: the 1990 report, which covered science and impacts of Climate Change. The second assessment report in 1995 incorporated the economic and social dimension of Climate Change. The third report in 2001 states the synthesis of previous IPCC reports and addressed a broad range of policy-relevant questions. The 2007 report comprised of another synthesis report and reports by each of the IPCC's three Working Groups (WG), which addresses the scientific basis of Climate Change, the impact of Climate Change, including vulnerability and adaptation to Climate Change, and the mitigation of Climate Change. The latest 2023 report is titled: Intergovernmental Panel on Climate Change

(IPCC) 2023, 'AR6 Synthesis Report Climate Change 2023, summaries the state of knowledge of climate change, its widespread impacts and risks. According to the IPCC 2023 report, there is a more than 50% chance that global temperature will rise by 1.5 degree Celsius (2.7 degree Fahrenheit) or more between 2021 and 2040, and under a high-emissions pathway, the world may specifically reach this threshold even sooner, between 2018 and 2037 [30].

#### **1.2. United nations framework convention on climate change (UNFCCC)**

On the 9<sup>th</sup> of May, 1992, 156 Countries at the Rio Conference signed the United Nations Framework Convention on Climate Change. The Framework is an agreement setting forth general obligations on states to mitigate Climate Change and adapt to its consequences. Though, not being an instrument with explicit commitment for countries to reduce GHG emissions, UNFCCC established the overarching principles and institutional arrangements for a regime to address Climate Change [31].

#### **1.3. The kyoto protocol**

The origin of the Kyoto Protocol can be traced to the report of United Nations Framework on Climate Change Conference's Conference of the Parties (UNFCCC COP-1) first meeting in Berlin (1995). The Parties to the Framework Convention determined that a more forceful international response to the threat of Climate Change was needed, leading to a commitment to develop a protocol with binding emission limits [32]. Kyoto Protocol was adopted by the Parties at United Nations Framework on Climate Change Conference's Conference of the Parties (UNFCCC COP-3) at Kyoto in 1997 and finally came into force on the 16<sup>th</sup> February, 2005, following intense international debate as to the economic costs and benefit of the agreement. Unlike the UNFCCC, the Kyoto Protocol establishes legally binding GHG emissions during the first commitment period (2008-2012) [33]. It also contains a range of innovative policy tools, which are aimed at assisting parties to meet flexibly their emission reduction obligations at the least economic cost. Known as flexibility mechanisms, these elective measures include: emission trading, the Clean Development Mechanism (CDM) and Joint Implementation (JI) [34].

#### **1.4. United nations conferences on climate change**

The United Nations Climate Change Conferences are yearly conferences held in the framework of the United Nations Framework Convention on Climate Change (UNFCCC). They serve as the formal meeting of UNFCCC Parties i.e. Conferences of the Parties (COP) to assess progress in dealing with Climate Change, and beginning in the mid-90s, to negotiate the Kyoto Protocol to establish legally binding obligations for developed countries to reduce their greenhouse gas emission [35]. Also, from 2005, the conferences have also served as avenue for Meeting of Parties (MOP) of the Kyoto Protocol. The twenty-first session of the Conference of the Parties (COP) and the eleventh session of the Conference of the Parties serving as the meeting of the Parties to the Kyoto took place from 30 November to 11 December 2015, in Paris, France, which led to the adoption of the Paris Agreement. The twenty-seventh session of the Conference of the Parties (COP 27) was held at the *Sharm el Sheikh*, Egypt in November 2022 where countries came together to take action towards achieving the

world's collective climate goals as agreed under the Paris Agreement and Convention <sup>[36]</sup>.

## 2. International legal frameworks on international trade

The true development of international trade law began since middle Ages, when international mercantile customs appeared and developed in Europe in the late seventeenth century. Merchants would travel with their goods to fairs and markets across Europe and use their mercantile customs. From the beginning *Lex mercatoria* (merchant law) was an international law of commerce, since it existed independently of emperors' law. It was based on the general customs and practices of merchants, who were common throughout Europe, and was applied almost uniformly by the merchant courts in different countries. Over time, emperors allowed merchants from different countries and regions to use the mercantile customs for dispute settlement <sup>[37]</sup>.

From the nineteenth century, states started to conclude treaties relating to international trade and business transactions and at the meeting of the United Nations Economic and Social Council (ECOSCO) in February, 1946, a resolution was passed to prepare a convention to establish grounds rules for trade among nations. As a result of this resolution, the Havana Conference was held between November 1947 and March 1948. Hence, the Charter for the ITO (The Havana Charter) was drafted. This was the first attempt by an international body to set out fair and uniform guidelines for international trade at both private and international levels. However, the ITO did not see the light of the day as many countries could not agree with the terms of the Charter <sup>[38]</sup>.

Fortunately, at earlier meetings of the Havana Conference held in Geneva from April to October 1947, multilateral tariff negotiations were being conducted and with unusual foresight, the General Agreement on Tariffs and Trade (GATT) had been drafted concurrently with the ITO Charter. The GATT incorporated the agreed tariff reductions along with a code of conduct aimed at preserving the trade benefits flowing from tariff reductions. This code aimed to restrict certain government practices that would operate to circumvent the tariff commitments. With the collapse of ITO, the GATT agreement became the centerpiece for the ordering of the international trade relationships of its signatories <sup>[39]</sup>.

Activities surrounding Bretton Wood Agreement was also noted around 1945. The agreement was signed by 44 Allied Nations, which gathered at the Mount Washington Hotel, in Bretton Woods, New Hampshire, United States, for the United Nations Monetary and Financial Conference. The International Monetary Fund (IMF) and the International Bank for Reconstruction and Development (IBRD) came into formal existence following international ratification of the Bretton Wood's Agreements. The Bretton Wood Agreement was formed to establish rules for commercial and financial relations among the world's major industrial states in the mid-20<sup>th</sup> century and also to rebuild the international economic system as World War II was still raging <sup>[40]</sup>.

However, world trade began to expand dramatically in the 1960s, national governments began to realize the need for a global set of standards and rules to harmonize and modernize the worldwide assortment of national and regional regulations, which until then, largely governed

international trade. They turned to the United Nations, which in 1966 recognized the need for it to play a more active role in removing legal obstacles to the flow of international trade and established the United Nations Commission on International Trade Law (UNCITRAL).

UNCITRAL has since become the core legal body of the United Nations system in the field of international trade law. Much of the complex network of international legal rules and agreements that affects today's commercial arrangements has been reached through long and detailed consultations and negotiations organized by UNCITRAL. Its aim is to remove or reduce legal obstacles to the flow of international trade and progressively modernize and harmonize trade laws in Corporation with World Trade Organization (WTO).

The WTO came into being in 1995, it was developed through a series of trade negotiations, or rounds, held under GATT. The first rounds dealt mainly with tariff reductions but later negotiations included other areas such as anti-dumping and non-tariff measures. The last round, which is the 1986-94 Uruguay Round led to the establishment of WTO. The WTO deals with the global rules of trade between nations. Its main function is to ensure that trade flows as smoothly, predictably and freely as possible. It is responsible for monitoring national trading policies, handling trade disputes, and enforcing the GATT agreements, which are designed to reduce tariffs and other barriers to international trade and to eliminate discriminatory treatment in international commerce <sup>[41]</sup>.

### The meeting point/ interface

Despite attempts being made by international community to save the world through Climate change control, efforts are also being made to further enhance international trade. In other words, there is no way one can avoid overlap between Climate change and International trade; economically, environmentally and politically. GHG emissions generated from human activities have resulted in climate change; likewise, all attempts in controlling climate change are affecting various policies of international trade. Thus, a collision between trade and climate change would be disastrous for humanity <sup>[42]</sup>.

The International trade and Climate Change debate started in Europe in 2006 when stakeholders argued for establishment of a 'Kyoto tariff' at the EU border. Since then, most of the steps taking on Climate Change and International Trade have been focusing on managing the link between International Trade and Climate Change <sup>[43]</sup>. GHG emissions arise virtually in all economy activities - collection of raw materials, production of goods and services and distribution of same. Each stage requires greater energy use and therefore leading to higher levels of GHG emissions <sup>[44]</sup>. Thus, this trend is projected to continue unless there are significant changes to current international trade laws, policies and actions.

However, all these sectors of the global economy are now being gradually affected as countries are taking steps to ensure that activities within their jurisdiction or control comply with various international conventions, protocols conferences, treaties, agreements on GHGs safe levels. Varieties of climate measures are structured and introduced to decarbonize the global economy; Countries and Industries are changing their ways of production and more energy efficient. Consumers are also adjusting to more energy

efficient technologies –computers, refrigerators, light bulbs etc. Transport modes are changing; cars are now becoming less dependent on fuel to curb GHG emissions. Renewable energies and zero emission technologies are being boosted to satisfy energy demand <sup>[45]</sup>. All these are already changing the course of international trade; that is comparative advantages of countries are already altered and thereby altering the pattern of international trade.

For instance, liberation of “environmental goods and services” and “green technologies” are playing key roles in climate mitigation and adaptation with international trade. Liberalization of energy resources are bringing more energy security, more efficiency and the necessary stimulus for the development of the renewable energy market, such as financing technology transfer and cooperation between developing and industrialized countries. Achieving this will depend on the ability of developing countries to manufacture, use and maintain low carbon technologies, and this can be facilitated through trade and technology transfer <sup>[46]</sup>.

Also, policies and measures at national level are essential, creating incentives for consumers and enterprise to demand and adopt climate-friendly products and technologies which will go a long way in promoting climate change and international trade relationships. Open trade are increasing the availability, and lower the cost of climate-friendly goods and services. This will help in meeting the demands in countries whose domestic industries do not produce these climate friendly goods and services in sufficient quantities or at affordable prices.

In addition, International trade can serve as a channel for spreading technologies that mitigate climate change. For instance, the sharing of technological knowledge can be made possible by international trade by which developing countries can benefit from developed countries’ innovations in climate change technology. Beyond offering opportunities for mitigation, trade can also play a valuable role in helping humankind adapt to a warmer future. Climate change threatens to alter geographical patterns of production, with food and agricultural products likely to be the most affected. Trade can provide a means to bridge differences in demand and supply, so that countries where climate change creates scarcity are able to meet their needs by importing from countries where these goods and services continue to be available <sup>[47]</sup>.

Furthermore, wide use of low carbon technologies is key to sustainable development, and there is broad consensus that trade will play a major role in disseminating low carbon technologies widely. It is expected that advanced know-how and environmental technologies will become more readily available through liberalized trade. It is also presumed that liberalized trade is a particularly potent drive for technological innovation <sup>[48]</sup>.

### Challenges

Despite the above connections, there are still huddles that need to be scaled. For instance, the WTO’s rules and institutions addressing intellectual property rights is likely to be one of the factors affecting smooth relation between Climate Change and world trade. The WTO’s intellectual property (TRIPS) agreement, including patents over the products and processes required to help mitigate and adapt to climate change can be said to be stretching the parallel line. Strong IPR protection may limit or affect the

development and transfer of green technologies by raising prices or in some cases limiting access to techniques required for technology development.

Another challenge is the world’s inability to unite countries to reduce greenhouse gases emissions. Situations whereby some countries negotiate the agreements to reduce their CO<sub>2</sub> emissions and others fail to participate in the agreement are issues of concern. Some countries even agreed to partial reduction of their emissions despite the convincing evidence of the threat of Climate Change <sup>[49]</sup>.

Also, poor awareness especially among developing countries is another challenge and should be taken seriously. Most industries operating in developing nations are not properly sensitized of the danger before the world. These industries keep emitting GHGs on daily basis with little or no knowledge of the consequences of their actions. Therefore, proper awareness needs to be made for industries to join the efforts in reducing GHGs.

The issue of compliance with international best practice on GHGs emissions also worth discussing, even multinational companies operating in both developed and developing countries are not helping situations. For instance, Volkswagen was once penalized by USA Government for various emission offences. Thus, companies need to adopt international best practice on GHGs emissions without being compelled.

Furthermore, enforceability of the various recommendations on keeping the global temperature rise below 2 degrees Celsius and to drive efforts to limit the temperature increase even further to 1.5 degrees Celsius above pre-industrial levels among nations is another major challenge. Most countries are yet to put necessary mechanism in place in ensuring strict compliance with various recommendations in reducing GHGs emissions <sup>[50]</sup>.

### Conclusion

Climate change is a global challenge requiring swift international collaborative action. As discovered, GHG emissions generated from human activities especially through trade have resulted in climate change. This trend is projected to continue unless there are significant changes to current international laws, policies and actions on international trade. Both the developed and developing countries will have to build a low carbon economy, which will require efforts at various levels. Trade and climate change can enhance each other despite various challenges, which if adequate mechanisms and implementations are put in place by the international community, climate change will be a great boost in international trade.

### References

1. Climate Change information resources, New York Metropolitan Region, ‘What causes global Climate Change?’ available at <http://ccir.cliesin.columbia.edu/nyc> (accessed on 8 June 2020).
2. [http://www.thefreedictionary.com/\\_/dict.aspx?rd=1&word=change](http://www.thefreedictionary.com/_/dict.aspx?rd=1&word=change), (accessed on 8 June 2020).
3. Hegerl GC, Zwiers FW, Braconnot P, Gillett NP, Luo Y, Marengo JA, *et al.* Scott, ‘Understanding and Attributing Climate Change: The Physical Science Basis Contribution of Working Group 1 to the Fourth Assessment Report of the Intergovernmental

- Panel on Climate Change' Cambridge University Press, 2007, 667.
4. Climate Change Information resources, New York Metropolitan Region, 'What causes global Climate Change? Op. cit at n 1.
  5. National Association of Clean Air Agencies, 'Primer on Climate Change Science', 2011, 2.
    - a. Climate Change Information resources, New York Metropolitan Region, 'What causes global Climate Change? Op. cit at n 1.
  6. EPA website on global warming, available at: <http://epa.gov/climatechange/basicinfo.html>, (accessed on 8 June 2020); and Pew Center on Global Climate Changes facts sheets on global warming, available at: <http://www.peclimate.org/science-impacts/factsheet> (accessed on 8 June 2020).
  7. Climate Change Information resources, New York Metropolitan Region, 'What causes global Climate Change? p. 2 Op. cit at n 1.
  8. EPA, 'Frequent Asked Questions about Global Warming and Climate Change: Back to Basics,' available at: [http://www.epa.gov/climatechange/downloads/Climate\\_Basics.pdf](http://www.epa.gov/climatechange/downloads/Climate_Basics.pdf) (accessed on 5 January 2021).
  9. The forth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC), see generally, Vikram Odedra, 'Future Flood of Refuges: A comment on Climate Change, Conflict and Forced Migration', Norwegian Refugee Council Annual Report, 2008, p 2; Rens Kortman, Edgar Peijnenborgh, Judith Harrewijn and Lindske Van Hulst, 'Climate Change: Causes, Consequences and Solutions', Background Document by UNESCO, 2007, 11.
  10. Christoph S. and Ruth B., 'International Climate Change Litigation and Negotiation Process', Working Paper, Foundation for International Environmental Law and Development, October, 2010, 5.
  11. Robert Meltz, 'Climate Change and Existing Law: A Survey of Legal Issues Past, Present and Future', Congressional Research Service, 2012, 12.
  12. Edward B. Barbier, "Rethinking the Economic Recovery: A Global Green New Deal", Report prepared for the Economics and Trade Branch, Division of Technology, Industry and Economics, United Nations Environment Program, 2009.
  13. Mc Granahan G, Balk DD, Anderson B. 'The rising tide: assessing the risks of climate change and human settlements in low elevation coastal zones' *Environment and Urbanization*, 2007; 19(1):17-37.
  14. Organization for Economic Cooperation and Development (OECD) 2008, "Costs of Inaction on Key Environmental Challenges" OECD, Paris; United Nations Development program (UNDP) 2008, "*Human Development Report 2007/2008, Fighting Climate Change: Human Solidarity in a Divided World*" UNDP, New York; Sukhdev, Pavan 2008, "*The Economics of Ecosystems & Biodiversity: An Interim Report*" European Communities, Brussels.
  15. Intergovernmental Panel on Climate Change (IPCC), 'Climate Change 2001: 'Synthesis Report to the Third Assessment Report of the Intergovernmental Panel on Climate Change' (Cambridge University Press), 2001, 8.
  16. International Energy Agency. 'World Energy Outlook 2008', Organization for Economic Co- operation and Development and the International Energy Agency, Paris, 2008.
  17. International Energy Agency 2008: 'World Energy Outlook 2008' Op cit n 22.
  18. Intergovernmental Panel on Climate Change (IPCC) 2007: 'Climate Change 2007: Synthesis Report. Contribution of Working Groups I, II and III to the Fourth Assessment', Report of the Intergovernmental Panel on Climate Change [Core Writing Team, Pachauri, R.K and Reisinger, A. (eds.)], IPCC, Geneva.
  19. Stern Nicholas. 'The Economics of Climate Change: The Stern Review', (Cambridge University Press, Cambridge, UK), 2007.
  20. Nicholls RJ, Hanson S, Herweijer C, Patmore N, Hallegatte S, Jan Corfee Morlot, *et al.* 'Ranking of the World's Cities Most Exposed to Coastal Flooding Today and in the Future: Executive Summary'. OECD Environment Working Paper No. 1. OECD, Paris. The top ten cities in terms of exposed population are Mumbai, Guangzhou, Shanghai, Miami, Ho Chi Minh City, Kolkata, Greater New York, Osaka-Kobe, Alexandria and New Orleans, 2007.
  21. Intergovernmental Panel on Climate Change (IPCC) 2023, 'AR6 Synthesis Report Climate Change 2023: Headline Statement and summary for policy makers'. Available at <http://www.ipcc.ch> accessed on (16 June 2023). See also Global Climate Change: Is it too late to prevent Climate Change? Available at: <http://www.climate.nasa.gov> (accessed on 25 April 2023).
  22. Christoph S, Ruth B. 'International Climate Change Litigation and Negotiation Process', Working Paper, Foundation for International Environmental Law and Development. See also Is it too late to prevent Climate Change? Available at, 2010, 8. <http://www.climate.nasa.gov> (accessed on 25 January 2022).
  23. Alexander D. 'Main Features of World Trade Law' (English Edition, International Technical Cooperation, Berlin, Germany, 2012). See also Reem Heikal, 'International (Global) Trade: Definition, Benefits, Criticism' available at <http://www.investopedia.com> (accessed on 28 March 2023).
  24. Lee Godden. 'Death, Desire, Modernity and Redemption: Climate Change and Public International Environmental Law', *Melbourne Journal of International Law*, 2009; 10:15.
  25. Diana L. 'Conventions of Climate Change: Constructions of Danger and the Dispossession of the Atmosphere' *Journal of Historical Geography*, 2009; 35:282.
  26. Arrhenius. 'On the influence of Carbonic Acid in the Air upon Temperature of the Ground', *Philosophers Magazine*, Vol. 5 (1896) p 251; Daniel B, 'The History of the Global Climate Change Regime' (URS Luterbacher and Detlef F. Sprinz (eds), the MIT Press, Cambridge, United Kingdom, 2001, 2.
  27. Nicola Durrant, 'The Role of Law in Responding to Climate Change: Emerging Regulatory, Liability and Market Approaches' (Thesis submitted in fulfillment of the requirement for the degree of Doctor of Philosophy, Faculty of Law/Institute for

- Sustainable Resources, Queensland University of Technology, Brisbane, 2008, 58.
28. Intergovernmental Panel on Climate Change (IPCC): 16 years of Scientific Assessment in Support of the Climate Convention. Available at, 2004. <http://www.ipcc.ch/pdf/10th-anniversary/annivassarybrochure.pdf>
  29. John Dernbach, Seema Kakade. 'Climate Change Law: An introduction'. *Energy Law Journal*, 2008:29(1):3.
  30. Intergovernmental Panel on Climate Change (IPCC) 2023, 'AR6 Synthesis Report Climate Change 2023'. Available at <http://www.ipcc.ch> (accessed on 16 June 2023).
  31. Lee Godden. 'Death, Desire, Modernity and Redemption: Climate Change and Public International Environmental Law', p 16. Op. cit. n 45; Nicola Duraant, 'The Role of Law in Responding to Climate Change: Emerging Regulatory, Liability and Market Approaches', p 73. Op. cit. n 27.
  32. The Berlin meeting coincided with the Publication of the Intergovernmental Panel on Climate Change's Second Assessment Report, which outlined a stronger basis for concern about the risks of human-induced Climate Change. See generally, *Climate Change 1995: The Science of Climate Change: Contribution of Working Group 1 to the Second Assessment of the Intergovernmental Panel on Climate Change* (J.T. Houghton *et al.* (eds.), Cambridge University Press, 1995); Kyle W.D., 'An Overview of the International Regime addressing Climate Change, Sustainable Development Law & Policy', *Climate Law Reporter Journal Article* 5, 2007, 7.
  33. Vincent Cusack. 'Perceived Costs versus Benefits of meeting the Kyoto Target for Greenhouse Gas Emission Reduction: The Australian Perspectives', *Environmental and Planning Law Journal*, Vol. 16, 1999, p 53 at 54-55.; Timo Koivurova, 'International Legal Avenues to Address the Plight of Victims of Climate Change: Problems and Prospects'. (Academy of Finland, Project No. 8110564, 2007).
  34. Xueman Wang and Glenn Wiser, 'The Implementation and Compliance Regimes under the Climate Change Convention and its Kyoto Protocol', *Review of European Community and International Environmental Law*, 11(2) pp 181-198 at p 186.
  35. United Nations Climate Change: About the Secretariat. Available at: <http://www.unfccc.int> (accessed on 15 September 2023). See also Climate Change Resources: India at COP15. Available at: <http://www.climate-leaders.org/climate-change-resources/india-at-cop15/unfccc--cop> (accessed 16 December 2020).
  36. The next UN Climate Change Conference (COP 28) will take place from 30 November until 12 December 2023 in United Arab Emirates. See UN Climate Change Conference – United Arab Emirates Nov/Dec 2023. Available at <http://www.unfccc.int> accessed on 15 September 2023.
  37. Nguyen TT, *et al.* 'International Trade and Business Law', (The People's Public Security Publishing House, Hanoi, Vietnam, 2012, 45.
  38. Peter G, Gabriel M. 'International Trade and Business Law: Law, Policy and Ethics' (Cavendish Publishing, Australia, 1998, 443.
  39. Peter G, Gabriel M. 'International Trade and Business Law: Law, Policy and Ethics'. Op. cit. n 38, 2004, 444.
  40. La Kadri L, Afolabi A. 'Rule of International Finance Corporation (IFC) in international Trade', Seminar Paper Presented at the LL.M Class, Faculty of Law, University of Ilorin, Nigeria, 2012, 1.
  41. Wto.org available at [https://www.wto.org/english/thewto\\_e/whatis\\_e/inbrief\\_e/inbr01\\_e.htm](https://www.wto.org/english/thewto_e/whatis_e/inbrief_e/inbr01_e.htm); Brief history of WTO. Available at <https://www.dandc.eu/en/article/brief-history-wto> (accessed on 12 December 2019).
  42. Ad Hoc working Group on Trade and Climate, 'From Collision to vision: Climate Change and World Trade', A Discussion Paper, World Economic Forum, November, 2010, 7.
  43. Meena R, Charly P. 'Climate Change and International Trade: The need for a Paradigm Shift' *New Thinking on Trade Policy and Development Trade and Climate Change*, Anna Colombo, Secretary General Socialist Group in the European Parliament, 2008, 8. Available at: <http://www.sociaistgroup.eu>
  44. Ludivine Tamiotti *et al.* 'Trade and Climate Change: A Report by the United Nations Environment Programme and the World Trade Organization'. Report number: 78-92-870-3522-6 Available at, 2009, 10. [http://www.wto.org/english/res\\_e/booksp\\_e/trade\\_climate\\_change\\_e.pdf](http://www.wto.org/english/res_e/booksp_e/trade_climate_change_e.pdf) (accessed 20 December 2020.)
  45. Nathalie Bernasconi, Johannes N. 'Is World Trade Law a Barrier to Saving Climate?' available at [www.climate-tradereport.foee-ciel\\_sep009.pdf](http://www.climate-tradereport.foee-ciel_sep009.pdf). p 5. (accessed 20 December 2020).
  46. Meena R, Charly P. 'Climate Change and International Trade: The need for a paradigm shift', p 9-10. op cit. at 43.
  47. Meena R, Charly P. 'Climate Change and International Trade: The need for a paradigm shift', p. xiii. Op. cit at n 43; Ludivine Tamiotti *et al.*, 'Trade and Climate Change'. Op cit. at 44.
  48. See generally: Nils M. O. and Christiane G., 'Trade and Climate Change Triggers or Barriers for Climate Friendly Technology Transfer and Development?' *Dialogue on Globalization, Occasional Papers Berlin*, (No 41/February 2009).
  49. Matthew Stilwell. 'Improving Institutional Coherence: Managing interplay between Trade and Climate Change'. *Global Economic Governance (GEG) Working Paper No. 2009/49*. University of Oxford. *Global Economic Governance Programme (GEG)*, Oxford, p 23. Available at: [www.globaleconomicgovernance.org/papers.php](http://www.globaleconomicgovernance.org/papers.php). See also Scott Barrett, 'Climate Change Policy and International Trade' *The Centre for Social and Economic Research on the Global Environment (CSERGE, 2008) Working Paper GEC 94-12*.
  50. Intergovernmental Panel on Climate Change (IPCC) 2023, 'AR6 Synthesis Report Climate Change 2023: Headline Statement and summary for policy makers'. Available at <http://www.ipcc.ch> (accessed on 16 June 2023). See also *Global Climate Change: Is it too late to prevent Climate Change?* Available at: <http://www.climate.nasa.gov> (accessed on 25 April 2023).