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**The efforts to respond to climate change and implementation of the Sustainable Development Goals (SDGS) from the hardest-affected countries: Vietnam case analysis**

**Os esforços para responder às mudanças climáticas e a implementação dos Objetivos de Desenvolvimento Sustentável (ODS) dos países mais afetados: análise de caso do Vietnã**

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Arno Dal Ri Junior

# The efforts to respond to climate change and implementation of the Sustainable Development Goals (SDGs) from the hardest-affected countries: Vietnam case analysis\*

## Os esforços para responder às mudanças climáticas e a implementação dos Objetivos de Desenvolvimento Sustentável (ODS) dos países mais afetados: análise de caso do Vietnã

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### Abstract

Climate change is rapidly becoming one of the foremost crises of humanity, effects of which are particularly observable in developing countries. Economic underdevelopment or weak economies have somewhat limited the adaptation to rapid climate change of these countries, exposing them to continuous difficulties in different spheres of life. Despite accomplishing significant achievements in responding to climate change and safeguarding human rights, due to the impacts of globalization and other domestic problems, Vietnam still faces significant difficulties and challenges in striving to respond to climate change and comprehensively achieve the sustainable development goals. Considering the adverse impacts of climate change and adaptations to climate change in developing countries with a focus on Vietnam, by using scientific methodologies including research, data collation, analysis and evaluation, the authors provide insights into significant issues from a legal perspective, in particular: (i) assessing the impact of climate change on developing countries development and Vietnam; (ii) analysing international and Vietnamese legal frameworks in response to climate change; (iii) analysing challenges faced by developing countries and Vietnam in the process of implementing measures to respond to climate change and the implementation of the SDGs; and (iv) proposing solutions that Vietnam needs to focus on in the future.

**Keywords:** Climate change; Climate change's impacts; Vietnam; Sustainable development; Developing countries; Human rights; Paris agreement.

### Resumo

A mudança climática está rapidamente se tornando uma das principais crises da humanidade, cujos efeitos são particularmente observáveis nos países

em desenvolvimento. O subdesenvolvimento econômico ou as economias fracas limitaram um pouco a adaptação às rápidas mudanças climáticas desses países, expondo-os a dificuldades contínuas em diferentes esferas da vida. Apesar de alcançar conquistas significativas na resposta às mudanças climáticas e na salvaguarda dos direitos humanos, devido aos impactos da globalização e outros problemas internos, o Vietnã ainda enfrenta dificuldades e desafios significativos na tentativa de responder às mudanças climáticas e alcançar de forma abrangente os objetivos de desenvolvimento sustentável. À luz disso, os autores fornecerão insights sobre questões significativas do ponto de vista jurídico, em particular: (i) avaliação do impacto das mudanças climáticas no desenvolvimento dos países em desenvolvimento e no Vietnã; (ii) analisar os marcos legais internacionais e vietnamitas em resposta às mudanças climáticas; (iii) analisar os desafios enfrentados pelos países em desenvolvimento e pelo Vietnã no processo de implementação de medidas para responder às mudanças climáticas e a implementação dos ODS; e (iv) propor soluções nas quais o Vietnã precisa se concentrar no futuro.

**Palavras-chave:** Direito Internacional; Direito Ambiental

## 1 Introduction of climate change and its adverse impacts on Vietnam and study methodologies

Al Gore, in his address before the Senate Foreign Relations Committee, declared the following: “We have arrived at a moment of decision. Our home – Earth – is in grave danger. What is at risk of being destroyed is not the planet itself, of course, but the conditions that have made it hospitable for human beings.”<sup>1</sup>

Earth, the only planet in the solar system with life, the common home of all humankind, is facing a huge challenge, namely, the unusual and rapid change of the global climate system. The increase in temperature of the Earth’s surface, accompanied by rising sea levels, floods, droughts, crop failures and epidemics, are having profound effects on economic development and the economic and social prosperity of most countries

and regions in the world. With modern science not yet possessing solid evidence pointing to another potentially habitable planet, the adaptation to climate change and reduction of its negative impacts are considered the only viable means to ensure the preservation of life on Earth for future generations.

According to the United Nations Environment Programme (UNEP), “while the world had spent 30 years debating whether global warming was happening, the cost of climate change was growing ever higher, and a history of lost opportunity after lost opportunity was growing longer.”<sup>2</sup> Climate change is becoming one of the great crises of all humanity, particularly for developing countries. Economic weakness has somewhat limited the ability of these countries to adapt to rapid climate change, exposing them to continuing economic, security, and social difficulties.

As a developing country located in the Asia-Pacific region, Vietnam has come under increasing pressure to promote economic development while at the same time suffering from increasingly severe weather phenomena over the past several decades. Vietnam has observed numerous extreme weather events and natural hazards such as increases in temperature, typhoons and tropical depressions in the East Sea, severe droughts, precipitation, sea-level rise, and El Nino and La Nina effects.<sup>3</sup>

According to the recent annual reports of the Global Climate Risk Index, Vietnam is one of the world’s developing countries substantially exposed and vulnerable to the adverse impacts of climate change given its geographical location, economic development patterns and population size.<sup>4</sup> Within the two decades from 1999 to 2018, based on its average weighted ranking and analysed indicators, Vietnam was listed as one of

<sup>2</sup> UNITED NATIONS ENVIRONMENT PROGRAMME. *Press Conference on Launch of Report by United Nations Environment Programme, ‘Global Environment Outlook: environment for development’*. 2007. Available at: [https://www.un.org/press/en/2007/071025\\_UNEP.doc.htm](https://www.un.org/press/en/2007/071025_UNEP.doc.htm). Accessed on: 31 July 2021.

<sup>3</sup> MINISTRY OF NATURAL RESOURCES AND ENVIRONMENT. *Summary for policymakers: climate change and sea level rise, scenarios for Vietnam: summary for policymakers*. 2016. Available at: [http://www.imh.ac.vn/files/doc/KichbanBDKH/CCS\\_SPM\\_2016.pdf](http://www.imh.ac.vn/files/doc/KichbanBDKH/CCS_SPM_2016.pdf). Accessed on: 31 July 2021.

<sup>4</sup> MCELWEE, Pamela. *The social dimensions of adaptation of climate change in Vietnam*. the social dimensions of adaptation of climate change in Vietnam. Available at: <http://documents.worldbank.org/curated/en/955101468326176513/The-social-dimensions-of-adaptation-of-climate-change-in-Vietnam>. Accessed on: 31 July 2021.

<sup>1</sup> GORE, Al. We’ve arrived at a moment of decision. *Huffpost*, 2009. Available at: [https://www.huffpost.com/entry/were-arrived-at-a-moment\\_b\\_161627](https://www.huffpost.com/entry/were-arrived-at-a-moment_b_161627). Accessed on: 31 July 2021.

the ten most affected countries due to extreme weather events as follows:<sup>5</sup>

| CRI 1999-2018 (1998-2017) | CRI score | Death toll | Deaths per 100,000 inhabitants | Total losses in million US\$ PPP (Purchase power parity) | Losses per unit Gross domestic product (GPD) in % | Number of events (total 1999-2018) |
|---------------------------|-----------|------------|--------------------------------|--|---|------------------------------------|
| 6 (9)                     | 29.83     | 285.80     | 0.33                           | 2 018.77   | 0.47  | 226                                |

Overall, in the 2000-2019 period, the statistics show that Vietnam was ranked in 13th place globally with the climate risk index (CRI) score of 35.67. In terms of fatalities and economic loss, the country was ranked 15<sup>th</sup> in annual fatalities, 47<sup>th</sup> in fatalities per 100,000 inhabitants, 11<sup>th</sup> in losses and 47<sup>th</sup> in losses per unit GDP amongst all countries analysed in the study.<sup>6</sup>

High catastrophe risk levels were attributable to the country's exposure and vulnerability to natural hazards. According to the INFORM Report 2021, the statistics of climatic risks contribute to feature Vietnam in the position of 92<sup>nd</sup> out of 191 countries for overall inform risk level. Vietnam has high exposure to natural risk, with a level of 7.4 being recorded. The increasing severity of floods in central Vietnam represents the greatest risk to Vietnam, followed by other natural disasters such as tropical cyclones and tsunamis. Some rankings of indicators of climatic risks selected from the INFORM Risk Index 2021 for Vietnam are as follows:<sup>7</sup>

| Flood (0-10) | Tropical Cyclone (0-10) | Tsunami (0-10) | Epidemic (0-10) | Drought (0-10) | Earthquake (0-10) | Overall Natural Risk Level (0-10) |
|--------------|-------------------------|----------------|-----------------|----------------|-------------------|-----------------------------------|
| 10.0         | 7.9                     | 7.4            | 6.8             | 4.3            | 4.1               | 7.4                               |

<sup>5</sup> ECKSTEIN, David; KUNZEL, Vera; SCHAFER, Laura. Briefing paper: global climate risk index 2020: who suffers most from extreme weather events? Weather-related loss events in 2018 and 1999-2018. *Germanwatch e.V.*, 2021. Available at: [https://germanwatch.org/sites/default/files/20-2-01e%20Global%20Climate%20Risk%20Index%202020\\_14.pdf](https://germanwatch.org/sites/default/files/20-2-01e%20Global%20Climate%20Risk%20Index%202020_14.pdf) Accessed on: 31 July 2021.

<sup>6</sup> ECKSTEIN, David; KUNZEL, Vera; SCHAFER, Laura. Briefing paper: global climate risk index 2020: who suffers most from extreme weather events? Weather-related loss events in 2018 and 1999-2018. *Germanwatch e.V.*, 2021. Available at: [https://germanwatch.org/sites/default/files/20-2-01e%20Global%20Climate%20Risk%20Index%202020\\_14.pdf](https://germanwatch.org/sites/default/files/20-2-01e%20Global%20Climate%20Risk%20Index%202020_14.pdf) Accessed on: 31 July 2021.

<sup>7</sup> INTER-AGENCY STANDING COMMITTEE; THE EUROPEAN COMMISSION. *Inform Report 2021: shared evidence for managing crises and disasters*. Luxembourg: Publications Office of the European Union, 2021. Available at: <https://drmkc.jrc.ec.europa.eu/inform-index> Accessed on: 31 July 2021.

The negative impacts of climate change have become barriers for Vietnam in implementing socio-economic development policies and achieving the goals of sustainable development and human rights, including environmental rights.

In Vietnam, due to the impacts of climate change, the occurrence of large-scale extreme weather events is more frequent. In the Mekong Delta and the Central region, droughts will continue to recur in 2019-2020 on a larger scale and severity than the saline intrusion and droughts in 2016. The water volume of rivers and streams in the Central and Central Highlands regions continues to decline and are deficient from 35% to 70% compared to the average of many years in the same period. Some rivers decrease in volume by more than 80%. Category 4 and 5 hurricanes have been increasingly more frequent in the past 35 years and have gradually moved south over the past five decades.<sup>8</sup>

Recent climate change studies show that Vietnam's climate has shown clear signs of significant change. Specifically, over the past century, the average monthly temperature has increased by about 0.4°C nationwide, rising from 27.1°C in the 1901-1930 period to 27.5°C in the 1991-2015 period.<sup>9</sup> The 1958-2014 period witnessed a rise of the average nationwide temperature of around 0.62°C, meaning that each decade experienced an increase of 0.10°C.<sup>10</sup> The maximum monthly precipitation showed an upward trend from 270 mm (1901-1930) to 281 mm (1991-2015).<sup>11</sup> However, rainfall levels fluctuated, exhibiting a tendency to decrease in the North and increase in the South of the territory.<sup>12</sup> The average an-

<sup>8</sup> SOCIALIST REPUBLIC OF VIETNAM. *Biến đổi khí hậu đang trở thành thách thức an ninh*. [Climate change has become a matter of national security]. 2021. Available at: <http://baochinhphu.vn/Khoa-hoc-Cong-nghe/Bien-doi-khi-hau-dang-tro-thanh-thach-thuc-an-ninh/426559.vgp> Accessed on: 31 July 2021.

<sup>9</sup> OPEN DEVELOPMENT VIETNAM. *Average monthly temperature and rainfall for Vietnam from 1901-2015*. Available at: <https://data.vietnam.opendevlopmentmekong.net/en/dataset/nhi-t-d-va-lung-mua-trung-binh-hang-thang-t-i-vi-t-nam-t-1901-2015> Accessed on: 31 July 2021.

<sup>10</sup> MINISTRY OF NATURAL RESOURCES AND ENVIRONMENT. *Summary for policymakers: climate change and sea level rise, scenarios for Vietnam: summary for policymakers*. 2016. Available at: [http://www.imh.ac.vn/files/doc/KichbanBDKH/CCS\\_SPM\\_2016.pdf](http://www.imh.ac.vn/files/doc/KichbanBDKH/CCS_SPM_2016.pdf) Accessed on: 31 July 2021.

<sup>11</sup> OPEN DEVELOPMENT VIETNAM. *Average monthly temperature and rainfall for Vietnam from 1901-2015*. Available at: <https://data.vietnam.opendevlopmentmekong.net/en/dataset/nhi-t-d-va-lung-mua-trung-binh-hang-thang-t-i-vi-t-nam-t-1901-2015> Accessed on: 31 July 2021.

<sup>12</sup> MINISTRY OF NATURAL RESOURCES AND ENVIRON-

nual temperature has been on the rise in the years 2018 and 2019, especially in the North and North Central of Vietnam, going up from 0.5°C to 1°C, compared to the data recorded in the previous years.<sup>13</sup> Extreme climatic hazards also showed record-breaking high temperatures, rainfall and flooding levels frequently occurring.<sup>14</sup>

As a nation with a coastline of 3,260 km<sup>15</sup>, changes in sea level will cause detrimental repercussions for Vietnam. In its report in 2001, the Intergovernmental Panel on Climate Change (IPCC) pointed out that the rising sea-level contributed to extensive coastal inundation, loss and salinization of agricultural land, and depletion of crop yields. The IPCC also anticipated that the sea-level rise in Vietnam would be 100 cm without adaptation measures, leading to land loss of 40,000 km<sup>2</sup> accounting for 12.1% of the total area and adversely impacting 17.1 million people, equivalent to 23.1% of the total population.<sup>16</sup> The recent data showed that from 1993 to 2014, the sea level in the East Sea increased by 4.05±0.6mm/year, and the average sea level rose by 3.5±0.7 mm/year. The coast of Central Vietnam, particularly the South Central Coast, experienced a considerable increase with the sea level rise of 4 mm/year and 5.6 mm/year, respectively.<sup>17</sup> The Red River Delta and the Mekong River Delta, which are crucial areas for agricultural cultivation and livestock farming, are sub-

stantially vulnerable to inundation and salinity intrusion as a consequence of rising sea levels caused by climate change. If the sea level rises by 100 cm, 16.8% of the Red River Delta and 38.9% of the Mekong River Delta will be inundated, jeopardising staple crops and the lives of local people. It was estimated that a rise of sea levels by 100cm leading to serious risk of salinization and flooding, would cause half of the agricultural land to be lost, 7 million residents displaced, and over 14.2 million houses demolished.<sup>18</sup>

Climate change causes great losses of life and widespread damage to local people, property, and infrastructure, negatively impacting all aspects of the economy, society and environment. According to the General Statistics Office (GSO), in 2020, natural disasters occurred such as heavy rain, flash floods, floods, high tides and landslides, causing 379 deaths and missing, 1,060 injured, destroying 4.3 thousand houses, damaging 594.9 thousand houses, nearly 269 thousand hectares of rice and 134.9 thousand hectares of arable crops, and causing the deaths of 38.6 thousand cattle and 4.1 million poultry. The total value of the damage caused by natural disasters was estimated at 39.1 trillion VND, considerably contributed by damage caused by storms and floods, which amounted to 82.8% of the total loss (32.3 trillion VND).<sup>19</sup>

Climate change is also becoming the cause of climate security challenges, potential threats to national stability and development, and waves of environmental migration across the country. Environmental degradation is amongst the crucial factors along with economic and demographic reasons significantly triggering changes to Vietnamese population mobility patterns. It was recorded that in the 2008-2015 period, extreme weather events displaced over 2 million people along with the country, in which the number of displaced people in

MENT. *Summary for policymakers: climate change and sea level rise, scenarios for Vietnam: summary for policymakers*. 2016. Available at: [http://www.imh.ac.vn/files/doc/KichbanBDKH/CCS\\_SPM\\_2016.pdf](http://www.imh.ac.vn/files/doc/KichbanBDKH/CCS_SPM_2016.pdf) Accessed on: 31 July 2021.

<sup>13</sup> NATIONAL CENTRE FOR HYDRO. *Hydro – Meteorological Forecast Newsletter for the season*. 2018. Available at: <https://web.archive.org/web/20180902095144/http://www.nchmf.gov.vn/web/vi-VN/70/16/Default.aspx> Accessed on: 31 July 2021.

<sup>14</sup> OPEN DEVELOPMENT VIETNAM. *Climate change*. 2019. Available at: <https://vietnam.opendevelopmentmekong.net/topics/climate-change/#ref-2897204-11> Accessed on: 31 July 2021.

<sup>15</sup> SOCIALIST REPUBLIC OF VIETNAM. *Overview on Vietnam geography*. Available at: <http://chinhphu.vn/portal/page/portal/English/TheSocialistRepublicOfVietnam/AboutVietnam/AboutVietnamDetail?categoryId=10000103&articleId=10000505> Accessed on: 31 July 2021.

<sup>16</sup> INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE. *Climate Change 2001: impacts, adaptation, and vulnerability: contribution of working group II to the third assessment report of the Intergovernmental Panel on Climate Change*. 2001. Available at: [https://www.ipcc.ch/site/assets/uploads/2018/03/WGII\\_TAR\\_full\\_report-2.pdf](https://www.ipcc.ch/site/assets/uploads/2018/03/WGII_TAR_full_report-2.pdf). Accessed on: 31 July 2021.

<sup>17</sup> MINISTRY OF NATURAL RESOURCES AND ENVIRONMENT. *Summary for policymakers: climate change and sea level rise, scenarios for Vietnam: summary for policymakers*. 2016. Available at: [http://www.imh.ac.vn/files/doc/KichbanBDKH/CCS\\_SPM\\_2016.pdf](http://www.imh.ac.vn/files/doc/KichbanBDKH/CCS_SPM_2016.pdf) Accessed on: 31 July 2021.

<sup>18</sup> MINISTRY OF NATURAL RESOURCES AND ENVIRONMENT. *Summary for policymakers: climate change and sea level rise, scenarios for Vietnam: summary for policymakers*. 2016. Available at: [http://www.imh.ac.vn/files/doc/KichbanBDKH/CCS\\_SPM\\_2016.pdf](http://www.imh.ac.vn/files/doc/KichbanBDKH/CCS_SPM_2016.pdf) Accessed on: 31 July 2021; DANG, Nguyen Anh; LEONARDELLI, Irene; DIPIERRI, Ana Alicia. Assessing the evidence: migration, environment and climate change in Vietnam. *International Organization for Migration*, 2016. Available at: <https://publications.iom.int/books/assessing-evidence-migration-environment-and-climate-change-viet-nam> Accessed on: 31 July 2021.

<sup>19</sup> GENERAL STATISTICS OFFICE. *Statistical Yearbook of Vietnam 2020*: statistical publishing house. 2020. Available at: <https://www.gso.gov.vn/wp-content/uploads/2021/07/Sach-NGTK-2020Ban-quyen.pdf> Accessed on: 31 July 2021.



2013-2014 occupied more than half.<sup>20</sup> Hundreds of thousands of people were displaced annually in the aftermath of extreme rainfall events and flooding caused by tropical cyclones. The occurrence of Typhoon Nok Ten in 2011 caused the displacement of around 200,000 people. In 2013, several severe catastrophes adversely affected Vietnam, leaving many people displaced, particularly those living in central Vietnam. Between September and October 2013, about 215,000 people were displaced due to heavy precipitation and flooding due to tropical storms. In November of 2013, Typhoon Haiyan, a powerful tropical cyclone, contributed to the displacement of around 800,000 Vietnamese people.<sup>21</sup>

In addition, recent statistics show that from 2004 to 2009, the displacement of around 714,000 people occurred in the Mekong River Delta to the south-eastern region around Ho Chi Minh City.<sup>22</sup> Within the past 10 years, 1.7 million people have migrated out of the Mekong Delta, while only 700,000 people have moved in. This migration rate is twice as high as the national average.<sup>23</sup> The data on the number of migrants and displaced people outlines the connection between migration and environmental degradation.

Hence, the impacts of climate change on the country's socio-economic development are indubitable. Such impacts threaten the implementation of Vietnam's poverty reduction and sustainable development goals if plans to adapt to climate change with a long-term vision are not formulated.

Given the above, in this paper, the authors employ qualitative methods with collated data and literature to clarify the detrimental impacts of climate change on the hardest-affected countries with particular refer-

ence to the case of Vietnam in adaptations to climate change implementation of sustainable development goals. Qualitative methods support exploratory research which assists the authors in developing insights into the concerned matter. In addition, on the basis of the State's practices, the authors focus on using data collected and assessed from various sources including international and national legal instruments, national policies, reports of international and national organisations, experts' opinions in academic books and papers and others to obtain different perspectives and develop critical thinking on the concerned matter in the legal context. Throughout this paper, the authors have found that, despite a lot of efforts in taking measures, particularly establishing and complementing the legal framework and enforcement in response to climate change, the hardest-affected countries, especially Vietnam, are still facing numerous challenges in practice.

Therefore, in light of the foregoing methodologies and considerations, the authors' paper aims to analyse the international and Vietnamese legal framework in response to climate change, the challenges faced by Vietnam in the process of implementing measures to respond to climate change and propose solutions for Vietnam to respond more effectively to the impacts of climate change, towards achieving the goal of sustainable development in the coming period.

## 2 Efforts of the international community in establishing and developing a legal framework to respond to climate change

As the concentration of this paper is on the statutory framework on climate change, prior to proceeding with the analysis, it is necessary to elucidate the establishment and development of international legal instruments on climate change and the difference between developed countries and developing countries in such process.

There exists injustice between advanced countries and emerging countries in addressing the impacts of climate change. Developing countries are seriously affected by climate change's impacts which were not

<sup>20</sup> DANG, Nguyen Anh; LEONARDELLI, Irene; DIPIERRI, Ana Alicia. Assessing the evidence: migration, environment and climate change in Vietnam. *International Organization for Migration*, 2016. Available at: <https://publications.iom.int/books/assessing-evidence-migration-environment-and-climate-change-viet-nam> Accessed on: 31 July 2021.

<sup>21</sup> LAVELL, Chris; GINETTI, Justin. *The risk of disaster-induced displacement in south-east Asia and China*. 2014. Available at: 201410-south-east-asia-china-technical-report-en.pdf Accessed on: 31 July 2021.

<sup>22</sup> ENTZINGER, Han; SCHOLTEN, Peter. *Adapting to climate change through migration: a case study of the Vietnamese Mekong River Delta*. Geneva: International Organization for Migration (IOM), 2016. p. 8.

<sup>23</sup> CHAPMAN, Alex; PHAM, Van Dang Tri. Climate change is triggering a migrant crisis in Vietnam. *The Conversation*, 2018. Available at: <https://theconversation.com/climate-change-is-triggering-a-migrant-crisis-in-vietnam-88791> Accessed on: 31 July 2021.

attributable to them.<sup>24</sup> Developed nations' economic growth was primarily based on the exploitation of natural resources and the use of substances causing the generation of greenhouse gas emissions and ozone depletion. Hence, developing nations considered that they should enjoy the same right. Due to limited financial and technological capacity, it is difficult for developing countries to pursue their economic development objectives to satisfy citizens' basic needs while simultaneously complying with environmental protection obligations given the high economic cost of curbing carbon emissions. In other words, as the developing world is still faced with addressing poverty, overpopulation, and lack of sanitation, consequently, environmental protection is not an utmost priority. Therefore, emergent countries are likely to "sacrifice the environment to increase their economic growth and raise their standard of living".<sup>25</sup> The "polluter pays principle"<sup>26</sup> is another argument for developing countries that "because the industrialized nations caused the pollution problems, they should pay the developing countries to avoid making the same development decisions that would further contribute to the problem".<sup>27</sup> Such arguments remain compelling ones for developing countries in the climate change debate.<sup>28</sup>

The division between the developed North and the developing South hinders the global response to climate change.<sup>29</sup> The key solution is global cooperation and

response. Although the majority of developing countries are not large polluters and do not play the leading role in dealing with environmental problems, for reaching the collective targets of sustainability, their engagement in combating climate change is necessary and should never be disregarded.<sup>30</sup>

Throughout the contemporary development of international law, numerous international legal standards on combating climate change have been articulated, demonstrating the determination and efforts of the international community in combating the impacts of climate change. These norms are mainly recognized in core international treaties on climate change such as the Vienna Convention for the Protection of the Ozone Layer in 1985 (the Vienna Convention)<sup>31</sup>, the Montreal Protocol in 1987<sup>32</sup>, the United Nations Framework Convention on Climate Change in 1992 (UNFCCC)<sup>33</sup>, the Kyoto Protocol in 1997<sup>34</sup> and several other documents. These international instruments collectively create obligations on the developed countries considered the main contributors to the emergence of global climate change. These obligations mainly focus on (i) providing financial support to countries directly affected by climate change (mostly developing countries), and (ii) providing scientific and technological support to developing countries to combat climate change.

The first effort of the international community in dealing with climate change was reflected in Principle

<sup>24</sup> SFORNA, Giorgia. Climate change and developing countries: from background actors to protagonists of climate negotiations. *International Environmental Agreements: Politics, Law and Economics*, v. 19, p. 273-295, 2019. p. 273-274; GETU, Mulugeta. Accommodating the interests of developing countries in the climate change regime: lessons from the ozone layer regime. *Mizan Law Review*, v. 6, n. 1, p. 1-44, 2012. p. 12.

<sup>25</sup> GETU, Mulugeta. Accommodating the interests of developing countries in the climate change regime: lessons from the ozone layer regime. *Mizan Law Review*, v. 6, n. 1, p. 1-44, 2012. p. 12-15.

<sup>26</sup> GALLAGHER, Anne. The "New" Montreal Protocol and the Future of International Law for Protection of the Global Environment. *Houston Journal of International Law*, v. 14, n. 2, p. 270-364, 1992. p. 297.

<sup>27</sup> DUVAL, Lee Anne. The future of the Montreal Protocol: money and methyl bromide. *Virginia Environmental Law Journal*, v. 18, p. 609-636, 1999. p. 623.

<sup>28</sup> SFORNA, Giorgia. Climate change and developing countries: from background actors to protagonists of climate negotiations. *International Environmental Agreements: Politics, Law and Economics*, v. 19, p. 273-295, 2019. p. 273-274; GETU, Mulugeta. Accommodating the interests of developing countries in the climate change regime: lessons from the ozone layer regime. *Mizan Law Review*, v. 6, n. 1, p. 1-44, 2012. p. 12.

<sup>29</sup> GETU, Mulugeta. Accommodating the interests of developing

countries in the climate change regime: lessons from the ozone layer regime. *Mizan Law Review*, v. 6, n. 1, p. 1-44, 2012. p. 28.

<sup>30</sup> THOMS, Laura. A comparative analysis of international regimes on ozone and climate change with implications for regime design. *Columbia Journal of Transnational Law*, v. 41, n. 3, p. 795-860, 2003. p. 799.

<sup>31</sup> UNITED NATIONS. *Vienna Convention for the Protection of the Ozone Layer*. 1985. Available at: [https://treaties.un.org/doc/Treaties/1988/09/19880922%2003-14%20AM/Ch\\_XXVII\\_02p.pdf](https://treaties.un.org/doc/Treaties/1988/09/19880922%2003-14%20AM/Ch_XXVII_02p.pdf) Accessed on: 31 July 2021.

<sup>32</sup> UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE. *Montreal protocol on substances that deplete the ozone layer*. 1987. Entered into force on 01 January 1989. Available at: <https://treaties.un.org/doc/publication/unts/volume%201522/volume-1522-i-26369-english.pdf> Accessed on: 31 July 2021.

<sup>33</sup> UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE. *United Nations Framework Convention on Climate Change (UNFCCC)*. 1992. Available at: [https://unfccc.int/files/essential\\_background/background\\_publications\\_htmlpdf/application/pdf/conveng.pdf](https://unfccc.int/files/essential_background/background_publications_htmlpdf/application/pdf/conveng.pdf) Accessed on: 31 July 2021.

<sup>34</sup> UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE. *Kyoto Protocol to the United Nations Framework Convention on Climate Change*. 1997. Available at: <https://unfccc.int/resource/docs/convkp/kpeng.pdf> Accessed on: 31 July 2021.

21 of the Stockholm Declaration 1972 articulated by the United Nations International Law Commission (ILC). According to this, along with the right to exploit natural resources within their national jurisdiction, States bear the responsibility to ensure their exploitation activities do not cause damage to the environment of other States or areas.<sup>35</sup> In addition to setting out State responsibility in protecting the environment, this Principle mentions the conflict between environmental protection and State sovereignty. In addition to the fact that the Stockholm Declaration is a soft law instrument, this Principle is not effective in addressing climate change since it attempts to redress the balance between the sovereign right to exploit natural resources of States and their responsibilities to the environment, which is difficult to implement. To developing countries, sovereignty over natural resources equals the right to economic development, and it is necessary to prioritize their development goals over the commitment to theoretical liability to the environment.<sup>36</sup> Due to the infeasibility of Principle 21 under the Stockholm Declaration, in the following years, the international community recognized that the workable way was international cooperation and thereby tried to allocate and impose responsibilities on States throughout the articulation of multilateral environmental agreements.<sup>37</sup>

For ozone layer protection, the Vienna Convention was adopted in 1985. Even though this Convention failed to specify provisions and commitments on ozone depletion, it represented an initial step towards the advent of the latter protocol and its amendments. After years of research advanced by scientific knowledge about ozone depletion and negotiations, the Montreal Protocol was adopted in 1987, and subsequent amendments were developed. The Montreal Protocol scheme has improved the existing flaws of the former protocol by determining a large number of substances depleting the ozone to be put under control and, as a result, has

generated positive outcomes that show some signs that the ozone has been recovering.<sup>38</sup>

Faced with the challenge of the unusual and rapid change of the Earth's climate, since 1990, a series of international conferences have been organized to issue urgent calls for the birth of a global multilateral international treaty to respond to climate change. In June 1992, at the United Nations Conference on Environment and Development, the UNFCCC was born with the goal of "stabilizing greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system".<sup>39</sup> This Convention represents a significant milestone in the process of raising the international community's awareness of environmental protection and dealing with global warming. It has become one of the most universally ratified treaties on climate change, with 166 signatures since its inception and 197 members until now.<sup>40</sup> Considering differences between countries enshrines common responsibilities and specific responsibilities for the States parties. The Convention promotes developing nations' economic growth whilst guarding against the effects of climate change. In the spirit of the UNFCCC, developed nations should assume the foremost position in "combating climate change and the adverse effects thereof".<sup>41</sup> Thereby, it imposes the responsibilities on industrialized countries listed in Annex I to reduce greenhouse gases (GHG) emissions to their 1990 levels<sup>42</sup> and all developed countries to provide financial support, including technology transfer, to

<sup>38</sup> GETU, Mulugeta. Accommodating the interests of developing countries in the climate change regime: lessons from the ozone layer regime. *Mizan Law Review*, v. 6, n. 1, p. 1-44, 2012. p. 6-7.

<sup>39</sup> UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE. *Status of Ratification of the Convention*. Available at: <https://unfccc.int/process-and-meetings/the-convention/status-of-ratification/status-of-ratification-of-the-convention> Accessed on: 31 July 2021.

<sup>40</sup> UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE. *Status of Ratification of the Convention*. Available at: <https://unfccc.int/process-and-meetings/the-convention/status-of-ratification/status-of-ratification-of-the-convention> Accessed on: 31 July 2021.

<sup>41</sup> UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE. *Kyoto Protocol to the United Nations Framework Convention on Climate Change*. 1997. Available at: <https://unfccc.int/resource/docs/convkp/kpeng.pdf> Accessed on: 31 July 2021.

<sup>42</sup> UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE. *Kyoto Protocol to the United Nations Framework Convention on Climate Change*. 1997. Available at: <https://unfccc.int/resource/docs/convkp/kpeng.pdf> Accessed on: 31 July 2021

<sup>35</sup> UNITED NATIONS INTERNATIONAL LAW COMMISSION. *Report of the United Nations Conference on the Human Environment*. A/CONF.48/14/Rev.1. Stockholm, 5-16 June 1972. Principle 21.

<sup>36</sup> NANDA, Ved P. Climate change and developing countries: the international law perspective. *ILSA Journal of International and Comparative Law*, v. 16, n. 2, p. 539-556, 2010. p. 545-546.

<sup>37</sup> NANDA, Ved P. Climate change and developing countries: the international law perspective. *ILSA Journal of International and Comparative Law*, v. 16, n. 2, p. 539-556, 2010. p. 546.

vulnerable developing countries to comply with their obligations.<sup>43</sup>

Despite calling for a reduction in greenhouse gas emissions, the UNFCCC set forth abstract ideas without a specific schedule to achieve such goals and delay the formulation of the latter instrument.<sup>44</sup> The parties' commitments under the UNFCCC regime were not robust and binding enough for effective implementation. These then paved the way for the adoption of the Kyoto Protocol.<sup>45</sup>

The advent of the Kyoto Protocol in 1997, as a result of the Third Conference of the Parties to the UNFCCC, was an effort to address the shortcomings and enhance the implementation of the UNFCCC. This Protocol endeavours to balance and reconcile the rights and benefits between developed and developing countries to achieve the collective goals.<sup>46</sup> It also manages to allay the concerns of developing nations by creating more flexible mechanisms and initiatives suitable for them and facilitating their involvement.

The Clean Development Mechanism (CDM) is a market-based scheme to mitigate carbon emissions. This mechanism creates a mutually beneficial situation for both developed and emergent countries. Industrialized countries can conform to and fulfil their commitments to reduce carbon emissions by conducting low-emission projects in developing countries while promoting and directing developing countries towards sustainable development.<sup>47</sup> Although the efficacy of CDM is dubious regarding whether emission-reduction projects will bring benefits to developing countries<sup>48</sup> and there

exists unequal distribution when the least developed countries are excluded, this mechanism constitutes an important step towards partnerships with developing countries, through which technology transfer encompassing both knowledge and equipment transfer from the developed world can occur.<sup>49</sup> Under the auspices of the Kyoto Protocol, for providing financial assistance to emerging countries vulnerable to climate change's negative impacts, the Adaptation Fund (AF), sharing the proceeds from the CDM, was founded to capitalize on pollution abatement programmes and projects in developing countries.<sup>50</sup>

Within the purview of the UNFCCC, throughout sessions of the Conference of the Parties (COP), developing countries have been actively engaged in the implementation of other schemes designed to stimulate their significant contributions. As a part of the agreed outcome of COP7, the National Adaptation Programmes of Actions (NAPAs) and its financial fund were established to help the least developed countries stimulate the climate-resilient development path by adopting medium and long-term adaptation plans. Through formal submission of NAPAs, the least developed countries determine and prioritise which actions should be taken in response to climate change in accordance with their capacity and national development goals.<sup>51</sup> The establishment of the Technology Mechanism is an outcome of COP16 in 2010 to enhance technology development and transfer in favour of emergent countries.<sup>52</sup> The National Adaptation Plan (NAP), which was established under the Cancun Adaption Framework in 2011, is another instrument through which the participation of developing countries is leveraged to help promote the achievement of the common goals of climate change mitigation. NAP is a flexible and country-led process

<sup>43</sup> UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE. *Kyoto Protocol to the United Nations Framework Convention on Climate Change*. 1997. Available at: <https://unfccc.int/resource/docs/convkp/kpeng.pdf> Accessed on: 31 July 2021.

<sup>44</sup> NANDA, Ved P. Climate change and developing countries: the international law perspective. *ILSA Journal of International and Comparative Law*, v. 16, n. 2, p. 539-556, 2010. p. 547.

<sup>45</sup> GETU, Mulugeta. Accommodating the interests of developing countries in the climate change regime: lessons from the ozone layer regime. *Mizan Law Review*, v. 6, n. 1, p. 1-44, 2012. p. 9.

<sup>46</sup> NANDA, Ved P. Climate change and developing countries: the international law perspective. *ILSA Journal of International and Comparative Law*, v. 16, n. 2, p. 539-556, 2010. p. 547.

<sup>47</sup> UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE. *Kyoto Protocol to the United Nations Framework Convention on Climate Change*. 1997. Available at: <https://unfccc.int/resource/docs/convkp/kpeng.pdf> Accessed on: 31 July 2021.

<sup>48</sup> GETU, Mulugeta. Accommodating the interests of developing countries in the climate change regime: lessons from the ozone layer regime. *Mizan Law Review*, v. 6, n. 1, p. 1-44, 2012. p. 10-11.

<sup>49</sup> SFORNA, Giorgia. Climate change and developing countries: from background actors to protagonists of climate negotiations. *International Environmental Agreements: Politics, Law and Economics*, v. 19, p. 273-295, 2019. p. 275.

<sup>50</sup> UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE. *Adaptation Fund*. Available at: <https://unfccc.int/Adaptation-Fund> Accessed on: 31 July 2021.

<sup>51</sup> UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE. *National Adaptation Programme of Action*. Available at: <https://unfccc.int/topics/resilience/workstreams/national-adaptation-programmes-of-action/introduction> Accessed on: 31 July 2021.

<sup>52</sup> SFORNA, Giorgia. Climate change and developing countries: from background actors to protagonists of climate negotiations. *International Environmental Agreements: Politics, Law and Economics*, v. 19, p. 273-295, 2019. p. 275.

for developing countries to determine priority needs in respect of climate change adaptation. NAP is conducted at the national level and allows developing countries to formulate medium and long-term policies, strategies and programmes addressing climate change's adverse impacts that they have suffered.<sup>53</sup> As a result of COP18 in 2012, the Nationally Appropriate Mitigation Actions (NAMAs) is the instrument involving the participation of developing countries to help them reduce emissions. Through NAMAs, considering their capacity and national development goals, developing countries can specify their needs and receive international support related to technology, financing and capacity-building to facilitate their mitigation efforts in emission mitigation.<sup>54</sup>

The Paris Agreement<sup>55</sup> is a historic landmark in the international community's efforts to respond to climate change. Adopted in 2015 after considerable negotiation, the Paris Agreement was considered a resounding success of multilateralism when adopted by 196 parties at COP21, marking the next stage in the evolution of the right to a healthy environment in a way that adopts a human rights-based approach. With the common goal of reducing the rise in Earth's temperature, the Paris Agreement is a multilateral response by all member states to climate change that aims to protect the environment for all.<sup>56</sup>

Building on the UNFCCC, the Paris Agreement brings together all countries for the first time with a common goal to make full efforts towards the ambition of combatting climate change and adapting to its impacts, with increased support for developing countries. According to Article 2 thereof, the central and long-term goal is to strengthen the global response to the threat of climate change by keeping the global tempe-

rature rise this century below 2°C above pre-industrial levels and pursue efforts to limit further temperature rise to 1.5°C.<sup>57</sup> The Paris Agreement is a crucial instrument complementing existing multilateral efforts in combating climate change, such as the UNFCCC and the Kyoto Protocol. It continues to stimulate climate change adaption and environment-friendly economic development.<sup>58</sup>

In the spirit of the principle of “common but differentiated responsibility”, which is the basis for the climate change regime, the Paris Agreement reflects this principle in a different way compared to the former instrument – the Kyoto Protocol. To achieve and stabilize the temperature of the Earth as mentioned, the parties, including developing countries, aim to reach the pre-industrial levels of GHG emissions as soon as possible, pledging to rapid reductions. Additional time is required for developing countries to achieve that goal.<sup>59</sup> The Agreement expects developing countries to gradually assume a more central role by contributing to the development of a low-carbon economy in a commensurate manner with their capabilities, national contexts and national development goals. Unlike the Kyoto Protocol, the Paris Agreement highlights that all attempts to achieve the common goal will be unsuccessful without the contribution of developing nations. Therefore, for the effective implementation of the regime under the Paris Agreement, the participation of emergent countries in carbon emission mitigation is no longer voluntary like it was under the Kyoto Protocol.<sup>60</sup> Even though developed nations still spearhead efforts to combat climate change,<sup>61</sup> the disparity related to the division

<sup>53</sup> UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE. *National Adaptation Plans (NAPs)*. Available at: <https://unfccc.int/topics/adaptation-and-resilience/workstreams/national-adaptation-plans> Accessed on: 31 July 2021.

<sup>54</sup> UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE. *Nationally Appropriate Mitigation Actions (NAMAs)*. Available at: <https://unfccc.int/topics/mitigation/workstreams/nationally-appropriate-mitigation-actions> Accessed on: 31 July 2021.

<sup>55</sup> UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE. *The Paris Agreement*. 2015. Available at: [https://unfccc.int/sites/default/files/english\\_paris\\_agreement.pdf](https://unfccc.int/sites/default/files/english_paris_agreement.pdf) Accessed on: 31 July 2021.

<sup>56</sup> UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE. *The Paris Agreement*. Available at: <https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement> Accessed on: 31 July 2021.

<sup>57</sup> UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE. *The Paris Agreement*. Available at: <https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement> Accessed on: 31 July 2021.

<sup>58</sup> BOYLE, Alan. Climate change, the Paris agreement and human rights. *International and Comparative Law Quarterly*, v. 67, n. 4, p. 759-777, 2018. p. 763-764.

<sup>59</sup> UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE. *The Paris Agreement*. Available at: <https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement> Accessed on: 31 July 2021.

<sup>60</sup> BOYLE, Alan. Climate change, the Paris agreement and human rights. *International and Comparative Law Quarterly*, v. 67, n. 4, p. 759-777, 2018. p. 764; THOMS, Laura. A comparative analysis of international regimes on ozone and climate change with implications for regime design. *Columbia Journal of Transnational Law*, v. 41, n. 3, p. 795-860, 2003. p. 799.

<sup>61</sup> UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE. *The Paris Agreement*. Available at: <https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement>

of responsibilities between developed and developing countries no longer exists.<sup>62</sup> It was recorded that China and India emitted the most carbon emissions in 2012. The arrival of the Paris Agreement is a prompt action of the international community in combating climate change if being successfully implemented. The largest contributors to GHG emissions have to adopt carbon emission management and control regimes. A significant milestone in the development of the UN climate change regime is evident in the Paris Agreement, which recognises that developed nations do not solely cause climate change and its effects.<sup>63</sup>

Following the “bottom-up” approach, the Paris Agreement aims to leverage cooperation and communications amongst the parties with the UNFCCC Secretariat through the Nationally Determined Contributions (NDCs) policy for the global solution to reduce GHG emissions.<sup>64</sup> Despite being an optional scheme, the NDCs is formed on the basis of the parties’ obligatory preparation, communication and maintenance.<sup>65</sup> The formal submission of NDCs is required on a five-year basis (e.g. by 2020, 2025, 20130), and NDCs can be revised by a party from time to time to record its intent to achieve the highest possible ambition.<sup>66</sup> By now, there have been 192 countries having completed the submission of the first NDCs and 11 countries having submitted the second NDCs.<sup>67</sup>

In addition, to facilitate carbon emission reduction, the Paris Agreement encourages the parties to maintain

and enhance carbon sinks and reservoirs, including forests.<sup>68</sup> In other words, under the Paris Agreement, the parties should take measures to reduce GHG emissions not only directly but also indirectly, such as protection of forest resources, prevention and minimisation of deforestation, forest degradation, land pollution and marine pollution, which are set forth in the existing instruments and initiatives within the purview of the UNFCCC.<sup>69</sup>

Another notable provision of the Paris Agreement is that it offers solutions to reduce and combat climate change and refers to solutions to improve capacity to adapt to climate change and damage. The participants all acknowledged that adaptation is a major challenge for the world, especially countries frequently negatively impacted by climate change.<sup>70</sup> The Paris Agreement strengthens and supports the implementation of the foregoing institution of the NAP within the scope of the Cancun Adaption Framework. Each party is encouraged to “submit and update periodically an adaptation communication, which may include its priorities, implementation and support needs, plans and actions”<sup>71</sup>, paving the way for integrating climate change into the national decision-making process and effective partnerships amongst countries.<sup>72</sup>

Regarding financial support, technology and capacity building, the Paris Agreement reaffirms developed countries’ obligations to support developing country efforts to develop climate change countermeasures on a voluntary basis as recorded in the previous UNFCCC voluntarily. The provision of expanded financing aims

agreement Accessed on: 31 July 2021.

<sup>62</sup> EDIBOGLU, Ezgi. The Paris agreement: effectiveness analysis of the new UN climate change regime. *University College Dublin Law Review*, v. 17, 2017. p. 177-178.

<sup>63</sup> BOYLE, Alan. Climate change, the Paris agreement and human rights. *International and Comparative Law Quarterly*, v. 67, n. 4, p. 759-777, 2018. p. 764.

<sup>64</sup> SEGGER, Marie-Claire Cordonier. Advancing the Paris agreement on climate change for sustainable development. *Cambridge Journal of International and Comparative Law*, v. 5, n. 2, p. 202-237, 2016. p. 209.

<sup>65</sup> UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE. *The Paris Agreement*. Available at: <https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement> Accessed on: 31 July 2021; EDIBOGLU, Ezgi. The Paris agreement: effectiveness analysis of the new UN climate change regime. *University College Dublin Law Review*, v. 17, 2017. p. 178-179.

<sup>66</sup> UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE. *The Paris Agreement*. Available at: <https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement> Accessed on: 31 July 2021.

<sup>67</sup> NDC Registry (interim). Available at: <https://www4.unfccc.int/sites/NDCStaging/Pages/All.aspx> Accessed on: 31 July 2021.

<sup>68</sup> UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE. *The Paris Agreement*. Available at: <https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement> Accessed on: 31 July 2021.

<sup>69</sup> SEGGER, Marie-Claire Cordonier. Advancing the Paris agreement on climate change for sustainable development. *Cambridge Journal of International and Comparative Law*, v. 5, n. 2, p. 202-237, 2016. p. 210-211.

<sup>70</sup> UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE. *The Paris Agreement*. Available at: <https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement> Accessed on: 31 July 2021.

<sup>71</sup> UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE. *The Paris Agreement*. Available at: <https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement> Accessed on: 31 July 2021.

<sup>72</sup> SEGGER, Marie-Claire Cordonier. Advancing the Paris agreement on climate change for sustainable development. *Cambridge Journal of International and Comparative Law*, v. 5, n. 2, p. 202-237, 2016. p. 211-212.

to strike a balance between adaptation and mitigation, taking into account country-directed strategies and developing country priorities and needs, in particular countries that are vulnerable to the adverse effects of climate change and have significant capacity constraints, such as least developed countries and small island developing countries, considering their adaptation needs for financing and other resources. In addition to financial support, international cooperation on technology development and climate-safe technology transfer in developing countries have also been reinforced. A technology framework established under the Paris Agreement to guide the Technology Mechanism and the capacity building activities will be enhanced through increased support for developing countries and appropriate institutional arrangements.<sup>73</sup>

The Paris Agreement sets out a transparency and compliance framework. The Paris Agreement relies on a robust accounting and transparency system to provide clarity on the actions and support of the parties based on the transparency framework, with the flexibility of different capabilities of the parties. Transparency arrangements under the Convention, including national communications, biennial reports and biennial update reports, international assessment and review, and international consultation and analysis, will form part of the experience to develop this transparency paradigm. In addition to reporting information on mitigation, adaptation and support, the information for tracking progress submitted by each party must undergo an international technical expert review. The transparency framework will also aim to clarify the support provided and received by stakeholders in the context of climate change actions.<sup>74</sup> On the other hand, to ensure effective implementation of the Agreement's provisions, a mechanism to facilitate implementation and promote compliance with the provisions of the Agreement is also established. The mechanism consists of a specialised and favourable committee and functions in a transparent, non-conflicting and non-punitive. The Committee will

pay particular attention to the parties' respective national capabilities and circumstances.<sup>75</sup>

To implement the Paris Agreement, COP22 in Marrakech, Morocco, in 2016, launched an action plan to combat devastating climate change, create consensus on the global response to climate change, and transform the political consensus of COP21 into tangible steps.<sup>76</sup> However, the process of implementing the Paris Agreement became more difficult when the US announced its decision to withdraw from the Paris Agreement in May 2017, under which the US would stop providing financial support to the Green Climate Fund, the largest international climate fund established within the framework of the UNFCCC.<sup>77</sup> Despite this US proclamation, COP23, held in Bonn, Germany in 2017, finally reached a consensus to uphold its commitment in Paris to tackling climate change. COP23 has also made progress in drafting a detailed set of regulations to implement the Paris Agreement on ending the use of fossil fuels in the 21st century.<sup>78</sup>

After 3 years of implementation with many difficulties, the United Nations and its member states have made unremitting efforts to solve the problem of climate change. COP24 in Katowice, Poland, from 3 to 14 December 2018, was one of the last two conferences before 2020 when the Paris Agreement came into force. Before COP24, the international community was still standing still in the fight against climate change. Further difficulties emerged when Brazil's new government announced it was withdrawing its proposal to host COP25 in 2019 and announced plans to withdraw from the Paris Agreement due to disagreements with other countries. Furthermore, divisions within the European Union and

<sup>73</sup> UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE. *The Paris Agreement*. Available at: <https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement> Accessed on: 31 July 2021.

<sup>74</sup> UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE. *The Paris Agreement*. Available at: <https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement> Accessed on: 31 July 2021.

<sup>75</sup> UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE. *The Paris Agreement*. Available at: <https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement> Accessed on: 31 July 2021.

<sup>76</sup> PEET, Karl *et al.* *Transport@COP22 Marrakech*: After 'COP of Action', transport prepared to act: final report. 2016. Available at: <https://www.yumpu.com/en/document/read/56594855/after-cop-of-action-transport-prepared-to-act> Accessed on: 31 July 2021.

<sup>77</sup> UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE. *UNFCCC Statement on the US Decision to Withdraw from Paris Agreement*. Available at: <https://unfccc.int/news/unfccc-statement-on-the-us-decision-to-withdraw-from-paris-agreement> Accessed on: 31 July 2021.

<sup>78</sup> VERKUIJL, Cleo *et al.* Policy brief: aligning fossil fuel production with the Paris agreement: insights for the UNFCCC Talanoa Dialogue. *Stockholm Environment Institute*, 2008. Available at: <https://cdn.sei.org/wp-content/uploads/2018/03/verkuijl-fossil-fuels-paris-pb.pdf> Accessed on: 31 July 2021.

the US-China trade war also influenced climate change policies around the world. Under Article 9 of the Paris Agreement, developed country Parties shall provide financial resources to assist developing country Parties in both mitigation and adaptation in order to continue to meet their current obligations under UNFCCC. At COP21, developed countries intended to continue their collective mobilization target until 2025. In particular, advanced economies have officially agreed to mobilize 100 billion USD per year by 2020, from a variety of sources, to address the urgent mitigation and adaptation needs of developing countries.<sup>79</sup> However, overcoming these hurdles, at COP24, the member states' representatives finally completed and approved the "rule book", the Katowice Climate Package, a set of guidelines for implementing the Paris Agreement, marks a milestone on the long road to tackle climate change problem.<sup>80</sup> At the Conference, countries agreed on how governments would measure, report and verify their emissions reduction efforts.

According to the UN Climate Press Release dated 26 February 2021, the Initial NDC Synthesis Report was published by UN Climate Change on NDCs, submitted by countries at the end of 2020. These plans came from 75 countries and territories in the United Nations, about 30% of global greenhouse gas emissions. However, while most countries are gradually increasing their target levels, the overall impact of these efforts is limited to put into effect their achievement to reduce their emissions by 1% by 2030 compared to 2010 levels. The Intergovernmental Panel on Climate Change warned that emissions reductions would need to be lowered by about 45% to meet the 1.5°C target.<sup>81</sup> UN Climate

Change Executive Secretary Patricia Espinosa recently appealed to G20 nations for their more proactive leading role to attain the common goal under the Paris Agreement, saying that "The G20 accounts for 80 per cent of all global emissions. There is no path to 1.5°C without the G20".<sup>82</sup>

### 3 Vietnamese legislation in response to climate change requirements: the efforts of a developing country to a global problem

The Vietnamese Government signed the UNFCCC on June 11, 1992, ratifying it on November 16, 1994, and signed the Kyoto Protocol on December 3, 1998, ratifying it on September 25, 2002.<sup>83</sup> As a party to the UNFCCC and Kyoto Protocol, Vietnam has developed and issued several legal documents to contribute to the realization of the UNFCCC's ultimate goal over the past years.

According to the provisions of these treaties, as one of the non-Annex I Parties to the UNFCCC, Vietnam is not yet obliged to commit to a quantitative reduction of greenhouse gas emissions under the provisions of the Kyoto Protocol. However, Vietnam, like other developing countries participating in the UNFCCC, has to perform some common obligations such as (i) developing national notification on climate change, (ii) preparing a national inventory of greenhouse gases from anthropogenic sources and the amount of greenhouse gases absorbed by sinks, (iii) assessing the impacts of climate change on socio-economic sectors and identify those vulnerable to climate change and sea-level rise, (iv) developing and implementing climate change adaptation measures, (v) developing and implementing programs and plans to reduce greenhouse gas emissions when fully supported in terms of capital and technology transfer from developed countries and international organizations, (vi) conducting research and monitoring

<sup>79</sup> ESPAGNE, Étienne. *CEPII Policy Brief: Climate Finance at COP21: Lessons Learnt*. No. 9, February 2016. Available at: [http://www.cepii.fr/PDF\\_PUB/pb/2016/pb2016-09.pdf](http://www.cepii.fr/PDF_PUB/pb/2016/pb2016-09.pdf). Accessed on: 31 July 2021. ESPAGNE, Étienne. *CEPII Policy Brief: climate finance at COP21: lessons learnt*. n. 9, February 2016. Available at: [http://www.cepii.fr/PDF\\_PUB/pb/2016/pb2016-09.pdf](http://www.cepii.fr/PDF_PUB/pb/2016/pb2016-09.pdf). Accessed on: 31 July 2021.

<sup>80</sup> UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE. *Katowice climate package*. making the Paris agreement work for all. Available at: <https://unfccc.int/process-and-meetings/the-paris-agreement/katowice-climate-package>. Accessed on: 31 July 2021.

<sup>81</sup> UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE. *UN Climate Press Release: Greater Climate Ambition Urged as Initial NDC Synthetic Report is Published*. 26 February 2021. Available at: <https://unfccc.int/news/greater-climate-ambition-urged-as-initial-ndc-synthesis-report-is-published>. Accessed on: 31 July 2021.

<sup>82</sup> UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE. *UN Climate Change News: Patricia Espinosa: "There is no path to 1.5oC without the G20"*. 23 July 2021. Available at: <https://unfccc.int/news/patricia-espinosa-there-is-no-path-to-15degc-without-the-g20>. Accessed on: 31 July 2021.

<sup>83</sup> UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE. *Ratification status: Viet Nam*. Available at: <https://unfccc.int/node/61236>. Available at: 31 July 2021.



activities on issues/factors related to climate and climate change, and (vii) updating and disseminating information to raise awareness of policymakers and the public on climate change and the CDM.<sup>84</sup>

After becoming a member of the above-mentioned international treaties, Vietnam has made strenuous efforts in internalizing the provisions of international law into the national legal system, contributing to guaranteeing the implementation of Vietnam's international commitments related to the legislative aspect. The Vietnamese Government ensures national policies and legislation are comprehensively formulated and developed in accordance with the international treaties. Upon the nation's participation in the UNFCCC, the Government organised the Vietnam Initial National Communication in 2003 with the Ministry of Natural Resources and Environment (MONRE), as the State agency mainly responsible for environmental issues. In the next two years, Directive 35/2005/CT-TTg was issued by the Prime Minister to initiate the implementation of the Kyoto Protocol.<sup>85</sup>

To implement the UNFCCC and the Kyoto Protocol more effectively, the Government, through Decision 79/2006/QĐ-TTg dated April 14, 2006, approved the "National Target Program on Efficient Use and Saving of Energy". This Program included information dissemination, encouragement and promotion of scientific and technological research and development of mandatory management measures to synchronously implement activities on economical and efficient use of energy society-wide. The goal was to save from 3% - 5% of the total energy consumption in the country in the period 2006 - 2010 and from 5% - 8% in the period 2011 - 2015.<sup>86</sup>

<sup>84</sup> MINH, Nguyen Duc. *Xây Dựng Chính Sách, Pháp Luật và Triển Khai các Hành Động Ứng Phó Biến Đổi Khí Hậu ở Việt Nam. Nghiên Cứu Lập Pháp*, v. 19, n. 347, 2017. Available at: <http://lapphap.vn/Pages/tintuc/tinchitiet.aspx?tintucid=208092> Accessed on: 31 July 2021.

<sup>85</sup> DANG, Nguyen Anh; LEONARDELLI, Irene; DIPIERRI, Ana Alicia. Assessing the evidence: migration, environment and climate change in Vietnam. *International Organization for Migration*, 2016. p. 51. Available at: <https://publications.iom.int/books/assessing-evidence-migration-environment-and-climate-change-viet-nam> Accessed on: 31 July 2021.

<sup>86</sup> GOVERNMENT OF VIETNAM. *National Target Program on Efficient Use and Saving Energy, approved by Decision 79/2006/QĐ-TTg*. Available at: <https://climate-laws.org/geographies/vietnam/policies/national-target-program-on-efficient-use-and-saving-energy-euse-approved-by-decision-79-2006-qd-ttg> Accessed on: 31 July 2021.

Subsequently, on April 16, 2007, Decision No. 47/2007/QĐ-TTg was issued to approve the Plan to organize the implementation of the Kyoto Protocol for the 2007-2010 period to mobilize all resources to implement the country's socio-economic development plan during this period in the direction of rapid, sustainable development, and environmental protection in line with the UNFCCC, the Kyoto Protocol and their initiatives. The Decision also encouraged technological improvement, receipt and application of modern technology, clean technology, and modern techniques, which contributes to the effective management, exploitation, and use of natural resources, and the mitigation of GHG emissions.<sup>87</sup>

Regarding the CDM, the Prime Minister issued Decision No. 130/2007/QĐ-TTg dated August 02, 2007 stipulating a number of financial mechanisms and policies for investment projects. Investment projects under the clean development mechanism, according to which, a CDM project means an investment project in production adopting new, advanced, and environmentally friendly technologies, with GHG emission reduction results approved by the CDM Executive Board (EB) to be registered and issued with GHG emission reduction certificates. As CDM projects represent primarily foreign investment projects, CDM projects in Vietnam are governed by the legal documents of Vietnam, including those regulating investment.<sup>88</sup>

Taking the following step in response to climate change, the Prime Minister enacted Decision No. 158/2008/QĐ-TTg dated December 02, 2008 approving the National Target Program to respond to climate change, stating the central object was to

assess climate change impacts on sectors and regions in specific periods and to develop feasible action plans to effectively respond to climate change in the short-term and long-term to ensure sustainable development of Vietnam, to take opportunities moving towards the development of a low-carbon

<sup>87</sup> SOCIALIST REPUBLIC OF VIETNAM. *Decision n. 47/QĐ-TTg of April 6, 2007, approving the Plan on Organization of the Implementation of the Kyoto Protocol under the United Nations Framework Convention on Climate change in the 2007-2010 Period*. Available at: <http://extwprlegs1.fao.org/docs/pdf/vic72962.pdf> Accessed on: 31 July 2021.

<sup>88</sup> SOCIALIST REPUBLIC OF VIETNAM. *Decision n. 130/2007/QĐ-TTg of August 02, 2007, on several financial mechanism and policies applied to investment projects on clean development mechanism*. Available at: <https://vanbanphapluat.co/130-2007-qd-ttg> Accessed on: 31 July 2021.

economy, and to join the international community's efforts in mitigating change and protecting the climatic system.

The climate change response was carried out on the principle of sustainable development, following a country-specific approach that ensured gender equality, poverty reduction, and comprehensive participation of relevant parties, especially stakeholders and in line with the principle of “common but differentiated responsibility” defined in the UNFCCC. The Vietnamese Government pledged to effectively implement the climate change mitigation program when sufficient capital support and technology transfer from developed countries and other international funding sources.<sup>89</sup>

Realising that climate change would have far-reaching effects on the future development of the country, under Decision 2139/QĐ-TTg dated December 05, 2011, the National Strategy on Climate Change was launched, which set out strategies for alleviating the adverse impacts of climate change, including (i) Vietnam's response to climate change must build upon sustainable development towards a low-carbon economy, (ii) adaptation efforts to climate change and a reduction of GHG emissions should be made, (iii) participatory engagement of all stakeholders (including the State, corporations, professional organizations, and communities) and international cooperation are necessary, (iv) combatting measures must be implemented in a systematic, integrated, interregional and interdisciplinary manner; and (v) the strategy must have a century-long vision to serve as a basis for developing and implementing strategies and programmes to address climate change.<sup>90</sup> Under this Strategy, several missions were enshrined to tackle climate change issues such as natural disasters, sea-level rise, and GHG emission reduction. The Government recognized the importance of

forests and oceans as natural carbon sinks in reducing carbon emissions, preserving biodiversity, and protecting the Earth's climate. Empowerment of climate-resilient communities, reinforcement of the State's leading role, and development of modern technology for green growth in response to climate change was essential.<sup>91</sup> In light of this Strategy, laws directed at protecting natural resources have been enacted, including the Law on Energy Efficiency in 2011, the Law on Water Resources in 2012, the Law on Environmental Protection in 2014 and the Forestry Law in 2017. These national legislative documents recognise and emphasise the crucial role of natural resources in adapting to climate change and future generations of the country. Hence, they impose responsibilities on all stakeholders for effective use and preservation.<sup>92</sup>

According to the Intended Nationally Determined Contribution (INDC) report that Vietnam submitted to UNFCCC on September 30, 2015, as of June 2015, Vietnam had 254 CDM projects endorsed and registered by the EB. Amongst 254 projects, projects on energy accounted for 87.6%, waste treatment accounted for 10.2%, afforestation and reforestation accounted for 0.4%, and other types accounted for 1.8%. The number of Certified Emission Reductions (CERs) issued by the EB is over 12 million, ranking eleventh in the world.<sup>93</sup> In particular, Dong Nai 4 Hydropower Project with a capacity of 340MW is the largest hydroelectric project in Vietnam currently built under the CDM mechanism and successfully registered with the EB on November 27, 2012 and archived in the list of projects on the UNFCCC CDM's website with the name “Project 8405: Dong Nai 4 Hydropower Project”. This Project helps

<sup>89</sup> SOCIALIST REPUBLIC OF VIETNAM. *Decision n. 158/2008/QĐ-TTg of December 02, 2008, approving the National target program on response to climate change*. Available at: <http://extwprlegs1.fao.org/docs/pdf/vie85707.pdf> Accessed on: 31 July 2021; DANG, Nguyen Anh; LEONARDELLI, Irene; DIPIERRI, Ana Alicia. Assessing the evidence: migration, environment and climate change in Vietnam. *International Organization for Migration*, 2016. p. 51-52. Available at: <https://publications.iom.int/books/assessing-evidence-migration-environment-and-climate-change-viet-nam> Accessed on: 31 July 2021.

<sup>90</sup> SOCIALIST REPUBLIC OF VIETNAM. *Decision n. 2139/QĐ-TTg on December 05, 2011, approving the national strategy on climate change*. Available at: <http://www.chinhphu.vn/portal/page/portal/English/strategies/strategiesdetails?categoryId=30&articleId=10051283> Accessed on: 31 July 2021.

<sup>91</sup> DANG, Nguyen Anh; LEONARDELLI, Irene; DIPIERRI, Ana Alicia. Assessing the evidence: migration, environment and climate change in Vietnam. *International Organization for Migration*, 2016. p. 52-53. Available at: <https://publications.iom.int/books/assessing-evidence-migration-environment-and-climate-change-viet-nam> Accessed on: 31 July 2021. p. 52-53.

<sup>92</sup> UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE. *NDC Registry (interim)*. Country page: the Socialist Republic of Vietnam: updated Nationally Determined Contribution of Vietnam (NDC). Available at: [https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Viet%20Nam%20First/Viet%20Nam\\_NDC\\_2020\\_Eng.pdf](https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Viet%20Nam%20First/Viet%20Nam_NDC_2020_Eng.pdf) Accessed on: 31 July 2021.

<sup>93</sup> UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE. *NDC Registry (interim)*. Country page: Vietnam: intended nationally determined contribution of Vietnam. Available at: <https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Viet%20Nam%20First/VIETNAM'S%20INDC.pdf> Accessed on: 31 July 2021.

to reduce 594,017 metric tonnes of carbon dioxide per year.<sup>94</sup>

Regarding the trading and transfer of GHG emission reduction certificates (CERs), Certified Emission Reduction (CERs) are carbon credits awarded by the EB for CDM projects. 1 CERs is defined as one tonne of CO<sup>2</sup> equivalent. The transfer, purchase and sale of greenhouse gas emission quotas between Vietnam and foreign countries are currently regulated by the Prime Minister. After receiving CERs, investors, who build and implement CDM projects, can offer them immediately to interested partners or choose an appropriate time during the valid period of CERs. The quantity and selling price of CERs are determined based on the signed contract of sale of CERs. In addition, Vietnamese law also stipulates that investors who build and implement CDM projects when selling CERS must pay a CERS selling fee. This fee is calculated as a percentage of CERS sales that investors who build and implement CDM projects receive.<sup>95</sup>

In respect of GHG emission reduction options, based on the results of the GHG inventory in 2000, State ministries and supporting agencies have coordinated to develop many GHG emission reduction plans for 3 main areas, namely energy, agriculture and land use land use change and forestry (LULUCF). In addition, on December 22, 2015, the Prime Minister issued Decision No. 2359/QD-TTg approving the national system of greenhouse gas inventory, which facilitates the national inventory of greenhouse gases to be conducted efficiently, in accordance with the standards set forth in the UNFCCC. As a member of the UNFCCC, Vietnam has an obligation to fully implement its commitments, including the obligation to develop and update the National Notification periodically and biennial update reports (BUR) submitted to the UNFCCC Secretariat. Accordingly, the first national notification was submitted by Vietnam to the UNFCCC Secretariat in 2000, the second time in 2010 and the third time in 2018 in which

the inventory process and methods, as well as the calculation of coefficients of all emissions, are in line with the UNFCCC and in commensurate with the national circumstances.

**Table 1** - GHG emissions in 2010 and emissions estimates for 2020 and 2030

*Unit: million tons of CO<sub>2</sub> equivalent*

| Sector       | 2010         | 2020         | 2030         |
|--------------|--------------|--------------|--------------|
| Energy       | 141,1        | 381,1        | 648,5        |
| Agriculture  | 88,3         | 100,8        | 109,3        |
| LULUCF       | -19,2        | -42,5        | -45,3        |
| Waste        | 15,4         | 26,6         | 48,0         |
| <b>Total</b> | <b>225,6</b> | <b>466,0</b> | <b>760,5</b> |
|              |              |              |              |

Fonte: SOCIALIST REPUBLIC OF VIETNAM<sup>96</sup>

The Vietnamese Government additionally set forth sanctions for violations. Vietnam’s climate change response measures are always associated with environmental protection measures. Regarding criminal sanctions, any environmental violation, depending on the severity thereof, may constitute one of the crimes specified in Chapter XIX of the Criminal Code 2015 (as amended in 2017). When committing environmental crimes, individuals can be punished with imprisonment for a maximum term of 15 years. At the same time, the Penal Code 2015 also stipulates those individuals and legal entities that commit illegal acts causing harm to the environment may also be subject to fines with the highest fines of VND 5 billion (around USD 217,000) for individuals and VND 20 billion (around USD 868,000) for legal entities, respectively. In addition, individuals may be prohibited from holding certain professional positions, practising certain professions, doing certain jobs for a period of time, or suspended from working with the legal entity temporarily or permanently.<sup>97</sup>

<sup>94</sup> UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE. *Project Search: Project 8405: Dong Nai 4 Hydropower Project*. Available at: <https://cdm.unfccc.int/Projects/DB/TUEV-RHEIN1353929993.69/view> Accessed on: 31 July 2021.

<sup>95</sup> MINISTRY OF NATURAL RESOURCES AND ENVIRONMENT. *Summary for policymakers: climate change and sea level rise, scenarios for Vietnam: summary for policymakers*. 2016. Available at: [http://www.imh.ac.vn/files/doc/KichbanBDKH/CCS\\_SPM\\_2016.pdf](http://www.imh.ac.vn/files/doc/KichbanBDKH/CCS_SPM_2016.pdf) Accessed on: 31 July 2021.

<sup>96</sup> SOCIALIST REPUBLIC OF VIETNAM; MINISTRY OF NATURAL RESOURCES AND ENVIRONMENT. The initial biennial updated report of Vietnam to the United Nations framework convention on climate change. *Vietnam Publishing House of Natural Resources, Environment and Cartography*, 2014. Available at: [https://data.vietnam.opendevlopmentmekong.net/vi/library\\_record/bao-cao-c-p-nh-t-hai-nam-m-t-l-n-l-n-th-nh-t-c-a-vi-t-nam-d-g-i-cho-unfccc](https://data.vietnam.opendevlopmentmekong.net/vi/library_record/bao-cao-c-p-nh-t-hai-nam-m-t-l-n-l-n-th-nh-t-c-a-vi-t-nam-d-g-i-cho-unfccc) Accessed on: 31 July 2021.

<sup>97</sup> SOCIALIST REPUBLIC OF VIETNAM. *Criminal Code n. 100/2015/QH13 dated November 27, 2015*. Available at: <https://www.wipo.int/edocs/lexdocs/laws/en/vn/vn086en.pdf>. Accessed on: 31 July 2021; As amended by Law No. 12/2017/QH14 dated June 20, 2017. Available at: <https://vanbanphapluat.co/law-12-2017-gh14-amendments-100-2015-gh13>. Accessed on: 31 July 2021.

In the civil context, Vietnam’s Civil Code 2015 also provides for liability to compensate for damage caused by environmental pollution. Article 602 provides that “A subject that pollutes the environment and thereby causes damage must compensate according to the provisions of law, even if the subject is not at fault”.<sup>98</sup> According to this provision, “subject” here can include both individuals and legal entities. When they pollute the environment and cause harm, they must compensate according to the law even if they are not at fault. As such, subjects must have enjoyed benefits from their production and businesses for not employing the carbon emission and waste management control regime, when their non-compliance causes damages to the environment, they shall be held liable for such damages. This, thereby, is completely consistent with fairness.

In the administration area, measures to handle administrative violations are prescribed in Decree No. 155/2016/ND-CP in 2016 on sanctioning violations in environmental protection. Accordingly, there are two forms of sanction for administrative violations in environmental protection, including warnings and fines. In particular, the maximum fine for an administrative violation in environmental protection is VND 1 billion (approximately USD 43,834) for individuals and VND 2 billion (about USD 86,768) for organizations, respectively. Besides the main sanctions, the Decree also stipulates additional sanctions, including the withdrawal of permits such as hazardous waste treatment permits, discharge permits, industrial emission permits, and others, and confiscation. In addition, individuals and organizations that commit administrative violations may also be required to take remedial measures to restore the environment.<sup>99</sup>

In terms of implementing the common goal under the Paris Agreement, on October 28, 2016, as a result of Decision No. 2053/QĐ-TTg, the action plan to implement the Paris Agreement on climate change was launched. The common goal was for Vietnam to identify

and implement appropriate activities and solutions by 2020 and 2030, thereby gradually and comprehensively implementing the provisions of the Paris Agreement on climate applicable to Vietnam. Vietnam also set five specific goals to be achieved when implementing the Paris Agreement Implementation Plan. Under which, there are three goals to fulfil its commitments in Vietnam’s Nationally Determined Contribution (INDC), including (i) implementation of GHG emission reduction commitments, (ii) implementation of adaptation commitments to climate change, and (iii) preparation and mobilisation of human, technological and financial resources. The remaining two specific goals that Vietnam needs to achieve are to (iv) establish and operate an open and transparent system (measuring, reporting and verification (MRV) systems) and (v) perfect institutions and policies to facilitate the implementation and focus on national efforts for climate change responses.<sup>100</sup>

## 4 Impact of climate change on the implementation of sustainable development goals in Vietnam

The term sustainable development first appeared in the “World Conservation Strategy” of the International Union for Conservation of Nature (IUCN) in 1980 with a narrow scope, emphasizing the sustainability of ecological development and conservation of biological resources. In 1987, in the Report “Our Common Future”, the United Nations World Commission on Environment and Development (WCED), the concept of “sustainable development” was explained as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs”.<sup>101</sup> Although, in 1992, the United Nations Environment and Development Summit held in

<sup>98</sup> SOCIALIST REPUBLIC OF VIETNAM. *Civil Code n. 91/2015/QH13 dated November 24, 2015*. Available at: <https://www.wipo.int/edocs/lexdocs/laws/en/vn/vn079en.pdf> Accessed on: 31 July 2021.

<sup>99</sup> SOCIALIST REPUBLIC OF VIETNAM. *Decree n. 155/2016/ND-CP dated November 18, 2016*. Available at: <https://www.resource-data.org/dataset/rgi--18-2016-penalties-for-administrative-violations-against-regulations-on-environmental-protection/resource/83ce4139-2f53-4ce0-86ce-a53c5eb8768a> Accessed on: 31 July 2021.

<sup>100</sup> SOCIALIST REPUBLIC OF VIETNAM. *Decision n. 2053/QĐ-TTg dated October 28, 2016, approving the Plan for Implementation of the Paris Agreement*. Available at: <https://www.ccacoalition.org/en/resources/decision-no-2053qd-ttg-vietnam%C2%B4s-action-plan-implement-paris-agreement#> Accessed on: 31 July 2021; VIETNAM ENERGY. *Vietnam Plan for Implementation of the Paris Agreement*. Available at: <http://nangluongvietnam.vn/news/en/mechanical-project/vietnam-plan-for-implementation-of-the-paris-agreement.html> Accessed on: 31 July 2021.

<sup>101</sup> UNITED NATIONS. *Report of the World Commission on Environment and Development*. UN Doc A/42/427. 1987. Available at: [https://www.un.org/ga/search/view\\_doc.asp?symbol=A/42/427&Lang=E](https://www.un.org/ga/search/view_doc.asp?symbol=A/42/427&Lang=E) Accessed on: 31 July 2021.

Rio de Janeiro set out the Global Agenda for the 21st Century referred to as the concept of “sustainable development”, the concept of sustainable development was not complemented until the World Summit on Sustainable Development in 2002. It was defined as a development process that combines closely, rationally and harmoniously the three core aspects of development, including economic development, social development, and environmental protection.<sup>102</sup>

A set of Sustainable Development Goals (SDGs) adopted by the United Nations in 2015 in the 2030 Agenda for Sustainable Development

have given the concept of sustainable development more concrete content and affirmed the need for international cooperation and partnerships amongst States. The SDGs, also known as the global goals, are universal goals designed to end poverty, protect the planet, promote gender equality, improve sanitation and hygiene, ensure fundamental rights for all citizens, and enjoy peace and prosperity by 2030 in each United Nations’ member state.<sup>103</sup>

In Vietnam, the view of sustainable development has been affirmed in the lines and policies of the Party such as Directive No. 36-CT/TW dated June 25, 1998 of the Politburo on strengthening environmental protection in the current period of industrialization and modernization of the country; Resolution No. 41-NQ/TW dated November 15, 2004 of the Politburo on environmental protection in the period of accelerating industrialization and modernization of the country and other legal documents. Article 3(4) of the Law on Environmental Protection 2014 states that sustainable development “is the development that meets the needs of the present without compromising the ability of future generations to meet those needs based on closely and harmoniously combining economic growth, ensuring social progress and environmental protection”.<sup>104</sup>

<sup>102</sup> UNITED NATIONS. *Report of the World Summit on Sustainable Development*. UN Doc A/CONF.199/20. 2002. Available at: <https://undocs.org/pdf?symbol=en/A/Conf.199/20> Accessed on: 31 July 2021; BOYLE, Alan. Climate change, the Paris agreement and human rights. *International and Comparative Law Quarterly*, v. 67, n. 4, p. 759-777, 2018. p. 761.

<sup>103</sup> BOYLE, Alan. Climate change, the Paris agreement and human rights. *International and Comparative Law Quarterly*, v. 67, n. 4, p. 759-777, 2018. p. 761.

<sup>104</sup> SOCIALIST REPUBLIC OF VIETNAM. *Law on Environmental Protection n. 55/2014/QH13 dated June 23, 2014*. Available at: <http://extwprlegs1.fao.org/docs/pdf/vie168513.pdf> Accessed on: 31 July 2021; VIETNAM ENVIRONMENT ADMINISTRATION MAGAZINE. *Phát triển bền vững và việc bảo vệ môi trường có mối quan hệ như thế nào?* [How Does Sustainable Development

a) *Impact of climate change on the implementation of SDG No. 13: Conservation and sustainable use of oceans, seas, and marine resources for sustainable development*

Vietnam has a coastline of more than 3,260 km, and according to marine scientists, in Vietnam’s vast seas, there are up to 500,000 km<sup>2</sup> containing a huge amount of oil and gas. In addition to oil and gas, the Vietnamese seabed contains numerous precious minerals, such as coal, iron, titanium, glass sand, and other construction materials, potentially supporting economic development. Additionally, Vietnam’s seafood resources are plentiful and a main source of income to the region, comprising various specialities of high economic value such as shrimp, crab, squid, sea cucumber, seaweed, and others. Regarding fish, marine biologists said that they had discovered more than 2,000 different species, in which over 100 species have high economic value with a total seafood reserve of about 3 - 4 million tons, the exploitation capacity is 1.5 - 1.8 million tons/year.<sup>105</sup> The precious natural conditions in Vietnam mean that the sea plays a vital role in the nation’s sustainable development.

In conjunction with this advantage, like other nations in the world, Vietnam faces several severe impacts of climate change, especially during the implementation of each of the SDGs related to the environment, in particular:

Climate change is constantly changing the ocean environment as well as adversely affecting marine creatures. This will greatly affect the marine ecosystem as well as Vietnam’s economic development, particularly the coastal wetlands such as the mangrove areas in Ca Mau, Ho Chi Minh City, Vung Tau and Nam Dinh. Climate change causes coastal biodiversity and aquatic resources to sharply decrease, as well as coastal ecosystems to degrade and reduce in area. Flora and fauna populations tend to move farther from shore due to changes in the coastal circulation structures, changes in river-sea

relate to Environmental Protection?]. Available at: <http://vem.tapchimoitruong.vn/pages/article.aspx?item=Ph%C3%A1t-tri%E1%BB%83n-b%E1%BB%81n-v%E1%BB%AFng-v%C3%A0-vi%E1%BB%87c-b%E1%BA%A3o-v%E1%BB%87m%C3%B4i-tr%E1%BB%9Dng-c%C3%B3-m%E1%BB%91i-quan-h%E1%BB%87-nh%C6%B0-th%E1%BA%BF-n%C3%A0o?-48300>. Accessed on: 31 July 2021.

<sup>105</sup> PHUONG OANH. *Vì sự phát triển bền vững biển đảo Việt Nam* [For the sustainable development of Vietnam’s ocean and islands]. 2017. Available at: <http://www.bienphong.com.vn/vi-su-phat-trien-ben-vung-bien-dao-viet-nam/> Accessed on: 31 July 2021.

interactions in coastal estuaries, and the loss of up to 60% of natural habitats. The El-Nino phenomenon has exhibited a tendency to increase both in frequency and intensity, causing sea temperature to rise, changes to the growing season, an increase in the outbreak of phytoplankton, and environmental changes unfavourable the growth of seagrass beds<sup>106</sup>.

Climate change also intensifies ocean acidification and tropical storms, leading to the destruction of coral reefs and seagrass beds. Consequently, marine ecosystems' distribution, biodiversity, and biological productivity will be reduced. When these ecological functions are impaired, coastal ecosystems become weakened and are less able to recover from the accelerating impacts of climate change.<sup>107</sup> In specific, sea water pollution causes negative effects on the habitat of fishes and other marine species and their growth and reproduction. On the other hand, climate change will also affect the operation of offshore projects, drilling rigs, gas pipelines and gas-fired power plants built along the coast, increasing operation, maintenance, and repair costs.

*b) Impact of climate change on the implementation of SDG 14: Timely and effective response to climate change and natural disasters*

Proactively responding to climate change, strengthening natural resource management, and protecting the environment are issues of special importance, having a great influence on determining the country's sustainable development. These are the grounds and premises for making guidelines and policies for socio-economic development, ensuring national defence, security and social security. These also are amongst the most crucial tasks of the political system and the responsibilities and obligations of all classes of society. Examining Vietnam's achievements in the process of preventing, adapting to and dealing with climate change, it is appar-

<sup>106</sup> VIETNAM COAST GUARD. *Hệ sinh thái biển Việt Nam trước tác động của biến đổi khí hậu* [Vietnam's Aquatic Ecosystem under the Impacts of Climate Change]. 13 August 2017. Available at: <https://canhsatbien.vn/portal/bien-dao-viet-nam/he-sinh-thai-bien-viet-nam-truoc-tac-dong-cua-bien-doi-khi-hau>. Accessed on: 31 July 2021.

<sup>107</sup> VIETNAM COAST GUARD. *Hệ sinh thái biển Việt Nam trước tác động của biến đổi khí hậu* [Vietnam's Aquatic Ecosystem under the Impacts of Climate Change]. 13 August 2017. Available at: <https://canhsatbien.vn/portal/bien-dao-viet-nam/he-sinh-thai-bien-viet-nam-truoc-tac-dong-cua-bien-doi-khi-hau>. Accessed on: 31 July 2021.

ent that Vietnam has responded rapidly and flexibly to the impacts that environmental change brings.

Although Vietnam has prepared in all aspects, the nation is still only beginning to overcome the consequences and anticipate, as well as using all measures to prevent natural disasters and address climate change challenges. Most response measures merely temporarily halt rather than completely solve climate change. Given the status quo of environmental issues in the country as analysed above, the Vietnamese Government and other State agencies have coordinated with the public to enact numerous natural disaster prevention and control measures to minimise potential damages. However, climate change undeniably poses problems that cannot be readily foreseen.

*c) Impact of climate change on the implementation of SDG 15: Protect and develop sustainable forests, conserve biodiversity, develop ecosystem services, combat desertification, prevent degradation and restore resources*

Vietnam is one of 16 countries with high biodiversity globally<sup>108</sup>, with many types of ecosystems, species, and genetic resources. Ecosystems in Vietnam include forest ecosystems (terrestrial ecosystems), mangrove ecosystems (wetland ecosystems), coral reef ecosystems, and seagrass beds. marine ecosystems). Regarding species biodiversity, Vietnam is home to nearly 16,500 species of vascular plants, large fungi and terrestrial mosses, of which the number of endemic plant species accounts for a large proportion (about 30%).<sup>109</sup> Ecosystems with rich biological resources have directly benefited humans and made significant economic contributions, especially in agricultural, forestry and fishery production. Ecosystems also play an important role in climate regulation and environmental protection.

To ensure the implementation of the SDGs in biodiversity conservation, Vietnam has set a target by 2030, to strengthen the implementation of sustainable mana-

<sup>108</sup> BUTLER, Rhett A. The top 10 most biodiverse countries: what are the world's most biodiverse countries? *Mongabay News*, 2016. Available at: <https://news.mongabay.com/2016/05/top-10-biodiverse-countries/>. Accessed on: 31 July 2021.

<sup>109</sup> MINISTRY OF RESOURCES AND ENVIRONMENT. *Chiến lược quốc gia về đa dạng sinh học đến năm 2020 tầm nhìn đến năm 2030* [National strategy on biodiversity to 2020 vision to 2030]. Available at: [https://absch.cbd.int/api/v2013/documents/B1386951-E447-D99A-E059-6D45AE9EF54B/attachments/Chiến%20lược%20QG%20về%20Đa%20dạng%20sinh%20h%E1%BB%8Dc\\_QĐ1250\\_Fulltext.pdf](https://absch.cbd.int/api/v2013/documents/B1386951-E447-D99A-E059-6D45AE9EF54B/attachments/Chiến%20lược%20QG%20về%20Đa%20dạng%20sinh%20h%E1%BB%8Dc_QĐ1250_Fulltext.pdf). Accessed on: 31 July 2021.

gement of all types of forests, prevent deforestation, restore degraded forests, and promote tree planting and forest regeneration, bringing forest cover to about 45% nationwide. According to data from the Forestry Production Development Department, the Ministry of Agriculture and Rural Development, as of June 2018, Vietnam had 6,765,936 hectares of production forests (including 3,905,504 hectares of natural forests 2,860,432 hectares of regenerated forests) out of a total of 14,415,381 hectares of forested land. The area of large timber forest is 201,220 ha, of which 28,658 ha is converted forest, 172,562 hectares are planted with intensive cultivation.<sup>110</sup>

However, in the context of climate change, fragmented ecosystems will certainly respond more slowly to these changes and will inevitably lose species at a very high rate. For Vietnam, if the sea level rises by 1m, 250,000 h of existing mangroves will be lost<sup>111</sup>. If the sea level rises by 1 m, 46 important biosphere reserves and 9 special-use forests of high biodiversity value will be severely affected. Tropical species in coastal ecosystems will decrease. An increase in carbon emissions will directly affect the growth and development of plants and animals in the mangrove ecosystem. Sea level rise along with monsoons, storms, high tides will continue to contribute to coastal erosion. Besides, climate change also increases the area of land being deserted and degraded in many localities across the country. The area of degraded land and land degradation will increase with the destruction of forests as well as the impact of factors that cause extreme events due to climate change, such as saline intrusion.

<sup>110</sup> NATIONAL COMMITTEE OF THE NETHERLANDS. *Một số ghi nhận và khuyến nghị Hội thảo Cải thiện tài chính và chính sách cho phát triển trồng rừng gỗ lớn ở Việt Nam*. [Recognitions and recommendations: the conference of financial improvement and policies for the development of forest planting in Vietnam]. 2018. Available at: [https://nature.org.vn/vn/wp-content/uploads/2018/06/011018\\_Ghi-nhan-va-khuyen-nghi\\_Rung-trong-go-lon-o-Viet-Nam\\_2018.pdf](https://nature.org.vn/vn/wp-content/uploads/2018/06/011018_Ghi-nhan-va-khuyen-nghi_Rung-trong-go-lon-o-Viet-Nam_2018.pdf) Accessed on: 31 July 2021.

<sup>111</sup> MINISTRY OF AGRICULTURE AND RURAL DEVELOPMENT. *Biến đổi khí hậu và những ảnh hưởng lên nghề cá tại các khu vực rừng ngập mặn ven biển* [Climate change and its effects on fisheries in coastal mangrove areas]. Available at: <https://www.mard.gov.vn/Pages/bien-doi-khi-hau-va-nhung-anh-huong-len-nghe-ca-tai-cac-khu-vuc-rung-ngap-man-ven-bien-4378.aspx> Accessed on: 31 July 2021.

## 5 Difficulties and challenges that Vietnam is facing in taking urgent actions to respond to climate change and realizing the SDGs

The birth of the Paris Agreement on climate change has significantly impacted the international community, including Vietnam. This agreement creates not only new opportunities for Vietnam in the fight against climate change but also poses significant challenges that Vietnam has to face and quickly solve.

First, perfecting the legal system for environmental protection on climate change will be more complicated because it requires reforming institutions and policies to be in line with international regulations. Currently, there is no united law on climate change, with laws and legal documents only touching on the issue of climate change and enforcement mechanisms are minimal. There exist several gaps in the legal framework, mechanisms and policies on coordination and activities in solving climate change issues. On the other hand, there is a lack of public understanding about climate change and awareness of the law in dealing with climate change, leading to difficulties in implementing and complying with the law.

Second, the Paris Agreement also challenges transforming from a conventional and low-cost development model based on natural resources to an environment-friendly and high-cost development model<sup>112</sup>. Meanwhile, Vietnam's financial, scientific and technical resources in environmental science are still limited and have not met urgent practical needs. In practice, many investors and production units aim for immediate profit without caring for environmental issues. They use and apply high-carbon and low-cost production models, which in return generate large amounts of toxic substances and GHG emissions. Therefore, changing the perception of these actors directing them to switch to a more expensive but environmentally friendly model and structure of renewable energy sources, is a big challenge for Vietnam.

<sup>112</sup> INDUSTRY AND ENVIRONMENT. *Thoả thuận Paris và cơ hội, thách thức đối với Việt Nam* [The Paris Agreement and opportunities and challenges for Vietnam]. 19 September 2018. Available at <https://congngiepmoitruong.vn/thoa-thuan-paris-va-co-hoi-thach-thuc-doi-voi-viet-nam-1124.html> Accessed on: 31 July 2021.

Third, climate change will also affect many professions and different spheres of life, economy and production, especially agriculture, fisheries, forestry and others, so it will place significant demands on resources and material resources for adapting to and overcoming the consequences of natural disasters, while still meeting the goals of sustainable economic development<sup>113</sup>. Climate change is becoming increasingly severe, manifesting as natural disasters such as storms, floods, droughts, and others occurring with increasing frequency and severity, negatively affecting people's lives hindering the country's socio-economic development. Therefore, the State faces a significant challenge pertaining to ensuring the goal of green growth by balancing economic development and environmental protection.

Fourth, investing in scientific and technological research developing renewable energy instead of raw materials and fossil energy is costly and requires a stable financial source to meet these investment requirements<sup>114</sup>. Although the Government has approved and implemented many research programs and applied technology to combat climate change, this requires huge investments that are not affordable to the State, and scientists still face a shortage of funds to develop their research projects. On the other hand, there are still many products and scientific works applied to the environment that only stop at the level of preliminary projects research, and the results thereof are unsuccessful. The product quality is low-level and low-profit, proving difficult to be put into practice and unable to compete with scientific products of other countries in the world in the field of combatting climate change.

Fifth, although the Paris Agreement has placed the responsibility on developed countries to provide financial support with a 100 billion USD/year by 2020 to developing countries to overcome the consequences of climate change<sup>115</sup>. However, major countries also

want to receive a clearer commitment from developing countries in increasing financial support to implement their plans to reduce greenhouse gas emissions adapt to climate change and transition to a clean energy usage model. Accompanying that, the contribution of major countries to the support fund is still stagnant and insufficient, which is also a big challenge for Vietnam as it cannot overly rely on financial aid commitments from the Governments of developed nations.

## 6 Some proposals to improve the legislation to respond to climate change and implement the SDGs in Vietnam in the coming time

### *a) Continue to improve national policies and laws on climate change prevention*

- Conduct a review of the entire system of legal documents regulating climate change control in order to make reasonable, timely and appropriate adjustments to specific conditions and circumstances;
- Review and adjust socio-economic development strategies, master plans and plans of ministries, branches and localities on a scientific basis and with due regard to economic efficiency and taking into account risks and uncertainties of climate change and sea-level rise, supplemented by the integration of climate change issues in regional and local socio-economic development master plans and plans.
- Study the formulation and promulgation of the Law on Climate Change Prevention and Control and the system of legal documents under the Law; Resolutions of the Politburo, the Central Committee of the Party and the National Assembly on climate change.
- Strengthen the participation of the entire

<sup>113</sup> COMMUNIST PARTY OF VIETNAM. *Thực hiện mục tiêu của Thỏa thuận Paris – Những thách thức không dễ vượt qua* [Implementing the Goals of the Paris Agreement – Challenges Not Easy to Overcome]. 19 December 2015. Available at <https://dangcongsan.vn/tieu-diem/thuc-hien-muc-tieu-cua-thoa-thuan-paris--nhung-thach-thuc-khong-de-vuot-qua-361760.html>, Accessed on: 31 July 2021.

<sup>114</sup> INDUSTRY AND ENVIRONMENT. *Thỏa thuận Paris và cơ hội, thách thức đối với Việt Nam* [The Paris Agreement and opportunities and challenges for Vietnam]. 19 September 2018. Available at <https://congnghepmoitrung.vn/thoa-thuan-paris-va-co-hoi-thach-thuc-doi-voi-viet-nam-1124.html> Accessed on: 31 July 2021.

<sup>115</sup> INDUSTRY AND ENVIRONMENT. *Thỏa thuận Paris và cơ*

*hội, thách thức đối với Việt Nam* [The Paris Agreement and opportunities and challenges for Vietnam]. 19 September 2018. Available at <https://congnghepmoitrung.vn/thoa-thuan-paris-va-co-hoi-thach-thuc-doi-voi-viet-nam-1124.html> Accessed on: 31 July 2021.



political system in organizing, directing and inter-sectoral coordination on climate change response, improve the effectiveness and efficiency of climate change management from central to local levels, and perfect functions, tasks, organizational structure and human resources to respond to climate change.

- Proactively form a strategy to adapt to the climate of the Earth with a vision of at least a century. The focus of this strategy should be on several vulnerable sectors such as marine resources, agriculture, the planning of residential and industrial zones in coastal areas, energy and transportation.
- Further promote the development and completion of policies and plans on national GHG inventories (in which it is recommended to consider making GHG inventories a periodic activity) and CDM projects in Vietnam.
- Establish mechanisms for the participation of communities and non-governmental organizations in implementing, monitoring and supervising climate change response activities.

*b) Addressing the relationship between the need for economic development and the task of combating climate change*

The Resolution of the 11<sup>th</sup> National Congress of the Communist Party of Vietnam (January 2011) identified one of the main tasks of the State in the 2011-2015 period as “environmental protection, proactively prevent natural disasters and effectively respond to climate change”. Responding to climate change is a difficult job, requiring a great deal of money and time. In the past, when climate change had yet to cause apparent impacts, the important task was to take advantage of both internal and external resources to invest in national construction and development and to meet people’s basic needs. However, with the current climate situation, implementing international commitments to combat climate change, countries have no choice but to share their budgets for a new arduous task: investing in combating climate change. Addressing the relationship between investment costs for national development and invest-

ment costs to combat climate change is a difficult problem, especially for developing countries and for those that are still receiving various sources of development aid from the international community such as Vietnam. According to several scientists, in 2010 - 2050, Vietnam must invest 850 million USD/year to adapt to climate change. From which, the annual cost for four main investment areas includes the agricultural sector (160 million USD), the anti-flood infrastructure (540 million USD), the aquaculture sector (130 million USD) and seaports (12 million USD). This is a significant number compared to Vietnam’s limited budget. This fact also explains why Vietnam’s anti-climate change activities have been slow and moderate in recent years. It is thought that in the coming time, competent state agencies should continue to develop more specific plans to combat climate change, balancing spending sources for both development needs and anti-climate change tasks so that Vietnam’s anti-climate change activities become more substantive and practical.

*c) Proactively respond to natural disasters and mitigate damage caused by climate change*

- Build and effectively operate a monitoring system for climate change and sea-level rise to meet the requirements of building inundation maps, disaster risk maps, and climate according to climate change and sea-level rise scenarios.
- Modernize the monitoring system and hydro-meteorological forecasting technology to ensure early warning and forecast extreme climate phenomena. By 2020, develop a hydrometeorological monitoring network with a station density equivalent to that of developed countries and automate over 90% of stations; strengthen remote measurement systems, ensure continuous monitoring of changes in weather, climate, and others.
- Build an information system and apply modern technologies to monitor climate change and sea-level rise, integrate with the region by 2020 and expand in the coming periods.
- Improve the quality of forests, afforestation, greening bare land and bare hills, ensuring

the effective exploitation of all types of forests to maintain and improve the ability to prevent natural disasters, combat desertification and land degradation...

- Ensure food security, water resource security and energy security in the context of climate change.

*d) Promote the training of highly qualified human resources on climate change*

Vietnam's climate change experts are mainly part-time, and many people's foreign language skills are limited. Moreover, the number of experts with in-depth knowledge of climate change issues is small and scattered in different agencies. Climate change is a big problem, having a direct impact on the survival of each country, so training and forming a high-quality staff on climate change represents an urgent need. This source of staff would not only contribute directly to the process of preparing and negotiating international treaties on climate change but would also be an important source of advice for the process of formulating and promulgating policies and national climate change legislation. Such experts' knowledge and highly specialized scientific research would propose appropriate measures to mitigate and respond to extreme impacts of climate change.

*e) Strengthening international cooperation in the field of climate change prevention and control*

- Strengthen cooperation with countries and international organizations in the process of implementing the UNFCCC, Kyoto Protocol and other relevant international treaties to actively, proactively and creatively build multilateral and bilateral agreements and agreements on climate change;
- Strengthen external information on climate change, focusing on cooperation activities in monitoring and sharing information on cross-border issues to ensure harmonization of interests between countries.

*f) Developing awareness-raising campaigns about the impacts of climate change and climate change prevention and control activities for all classes of people*

In Vietnam, the awareness of climate change of all social sectors is still limited, not meeting the management requirements of the state and society. Therefore, raising awareness about climate change is an urgent task that needs to be carried out immediately. To achieve high efficiency, information dissemination should be deployed in the following directions:

- Raising awareness and the responsibility of officials, civil servants, public employees and all sectors of society on climate change issues.
- Developing appropriate methods to access and use the information on climate change for all segments of society; diversifying forms of information dissemination of impacts, risks and opportunities from climate change, paying particular attention to populated communities and key areas.
- Incorporating basic knowledge on climate change into education and training programs.
- Increasing awareness, personal responsibility and responsibility to support the community in preventing and avoiding disaster risks and encouraging and replicating effective models in responding to climate change.

## 7 Conclusion

UN Secretary-General Antonio Guterres stated if before this mission was an urgent task, now it is a mission of paramount importance. This is a rare moment that we cannot afford to miss. When rebuilding society (post-COVID-19), we cannot return to the former normal. The NDCs need to reflect this reality and the big emitters, especially the G20 countries, need to be at the forefront.<sup>116</sup> Climate change is becoming a great danger, threatening the survival of humanity with no one other

<sup>116</sup> UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE. *UN Climate Press Release: Greater Climate Ambition Urged as Initial NDC Synthetic Report is Published*. 26 February 2021. Available at: <https://unfccc.int/news/greater-climate-ambition-urged-as-initial-ndc-synthesis-report-is-published> Accessed on: 31 July 2021.

than humans being the subject bearing the heaviest consequences from that change.

As one of the countries heavily affected by climate change and also a member of the international treaties on climate change as well as the Paris Agreement, Vietnam has always been active, making efforts to fulfil its member service obligations in implementing commitments to combat climate change according to the common roadmap. However, from the initial practice of implementing the Paris Agreement, Vietnam needs to make reasonable adjustments to the Paris Agreement Implementation Plan to suit national conditions and circumstances. In other words, Vietnam needs to soon update the contents related to the NDC so that it can most objectively assess its contributions to the fight against climate change, thereby contributing to the completion of Vietnam's Implementation Plan of the Paris Agreement. At the same time, Vietnam also needs to improve the legal system quickly as well as take measures to create the best conditions and improve the efficiency of the implementation of the Paris Agreement in the current period. To do that, Vietnam needs to mobilize all resources in the pursuit of the accomplishment of the goals already set forth.

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