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The International Climate Legal Regime and the Role of the AFOLU Sector

by

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Abstract

It has been years now that the scientific community is warning about the gravity of climate change consequences and about the need to effectively respond to it. However, the climate crisis just seems to get worse over time. Facing this crisis is terribly difficult for at least two reasons. Firstly, climate change is a phenomenon which is both transnational and global in its nature, hence all relevant international actors will need to cooperate with each other in order to address it. Secondly, there is a number of sectors contributing to the global emission of greenhouse gasses (GHG) worldwide, so that all sectors will have to do their part in order to mitigate their climate impact. There is a sector in particular, the sector of agriculture, forestry and other land use (AFOLU) that, despite being one of the major sources of pollution worldwide, has usually been disregarded when it came to take climate change mitigation action. Therefore, this research has decided to focus on the international regulation of the AFOLU sector, in order to understand whether and how it is addressed with the aim of reducing GHG emissions.

Key-words

Climate Change, Climate Change mitigation, AFOLU sector, International Climate Treaties, International Climate Legal Regime.

1.

1.1. Introduction

Human activities are shaping the global environment in such a manner that some scientists, starting from the Noble Laureate Paul Crutzen, have theorized the beginning of a new geological era, the Anthropocene, characterized by the fact that 'humans and our societies have become a global geophysical force' (Crutzen et al. 2007, p.614). Human action on Earth is causing ocean, land, and atmospheric contamination, that are turning, *inter alia*, into ocean acidification, waste production, forests destruction, biodiversity loss, and climate change.

Therefore, climate change can be framed as one of the dramatic consequences of humanly induced environmental pollution and degradation, whose consequences risk to have a great impact on human security and life on Earth. Otherwise, to phrase it in the European Council words, climate change represents 'an existential threat to humanity and biodiversity across all countries and regions [which] requires an urgent collective response' (Council of the European Union 2020, p.2).

In this context, the Agriculture, Forestry, and Other Land Use (AFOLU) sector deserves particular attention, being not only particularly vulnerable to climate change, but also a main driver of land degradation and atmospheric pollution (IPCC 2019).

Given the great responsibility of the AFOLU sector in contributing to climate change, and also given the urgency of providing an effective response to the climate crisis, it is fundamental to understand whether and how the International Climate Legal Regime is regulating the AFOLU sector with the aim of mitigating GHG emission. In order to make a satisfactory contribution to the academic literature, but also notwithstanding that a single article cannot provide a full analysis of the International Climate Legal Regime, this research will be structured as follows: after introducing an explanation of how the AFOLU sector affects climate change, the research will focus on the analysis of the three Universal Climate Treaties which constituted the basis of the International Climate Legal Regime that emerged since the early '90s (*i.e.* the UNFCCC, the Kyoto Protocol, and the Paris Agreement). Hence, the article will not provide a full analysis of the International Climate Legal Regime, nor it will carry out a general study of the three international climate treaties,

but it will mainly examine those elements that are necessary to understand whether and how such treaties address the regulation of AFOLU sector with the aim of mitigating GHG emission.

1.2. Drivers of climate change: historical trends, regions, and sectors

Climate change has been defined by the Intergovernmental Panel on Climate Change (IPCC) as "a change in the state of the climate that can be identified (e.g. using statistical tests) by changes in the mean and/or the variability of its properties, and that persists for an extended period, typically decades or longer" (UNFCCC 2011). It has already been a long time since climatologists have virtually no doubt about the fact the climate crisis we are experiencing is entirely caused by human activities (Maibach, 2014). Such climate change is caused by the emission of Greenhouse Gasses (GHGs), among which the most detrimental are carbon dioxide (CO2), methane (CH4) and nitrous oxide (N2O). While CO2 is the most prominent GHG in terms of human emissions (Rafferty 2021), methane is the second most produced GHG, it remains in the atmosphere for a much shorter period of time than CO2 (10 years), and it has a much more powerful greenhouse power, indeed, over a 20-year period, it is from 84 to 86 times more powerful as a greenhouse gas than carbon dioxide (International Gas Union 2017). Finally, N2O is the third GHG in terms of human emissions, and its climate-altering power is about 300 times stronger than that of CO2 (Barton et al. 2014).

Looking at the last 120 years, the concentration of GHGs in the atmosphere increased from 295 ppm (parts per million) CO2 equivalent in the 1900, up to 400.82 ppm CO2 equivalent in the 2000, and 456.81 ppm CO2 equivalent in 2018 (European Environment Agency 2020). In order to break down the different GHGs contributions, it is important to observe that CO2 emissions increased from 295 ppm in the 1900, up to 368.92 ppm in the 2000, and 413.61 ppm in 2020; while CH4 emissions have raised from 890 ppb (parts per billion) in the 1900, up to 1774 ppb in the 2000, and 1890 in 2020; lastly, N2O emissions grew from 280 ppb in the 1900, up to 316.14 in the 2000, and 333.4 ppb in 2020 (Global Monitoring Laboratory 2021). Therefore, it is evident that, while CO2 concentrations in the atmosphere increased by 40.21% from 1900 to 2020, CH4 concentrations increased by 112.36%, and N20 concentration by 19,16%. It is this huge increase in GHGs

concentration in the atmosphere to explain a global mean temperature that is 1.2 ± 0.1 °C above the 1850–1900 in 2020 (World Meteorological Organization 2020).

However, the emission of GHGs is not equally distributed all around the world. If we adopt a state-oriented perspective, China has been the major global emitter in 2018 (responsible for 26.1% of total GHG emissions), followed by United States (12.67%), EU-27 (7.52%), India (7.08%), and Russia (5.36%) (World Resource Institute 2020). However, also to adopt a per-capita standpoint can be relevant. In this case, it is US to have the highest per capita consumption of GHGs (17.97 tonnes of CO2 equivalent per capita in 2017), followed by Russia (17.28 t), South Korea (13.83 t), Iran (10.10 t), and Japan (9.74 t) (World Resource Institute 2020). Ultimately, it is also important to look at GHG emission by sector, and it is here that the role of the AFOLU sector in contributing to anthropogenic GHGs emerges.

The IPCC stated that, by 2010, the sector of electricity and heat production was the first sector in terms of GHG emission (25% of total emission), followed by the Agriculture, Forestry and Other Land Use (AFOLU) sector (24%), Industry (21%), and Transport (14%) (IPCC 2014). Having said this, the most recent IPCC data on the AFOLU sector, extrapolated from the Sixth Assessment Report (AR6) published in July 2021, assert that "Agriculture, Forestry and Other Land Use (AFOLU) activities accounted for around 13% of CO2, 44% of methane, and 82% of nitrous oxide emissions from human activities during 2007–2016, representing 23% (12.0±3.0 GtCO2 equivalent yr-1) of the total net anthropogenic emissions of GHGs" (IPCC, 2021, p.245). It emerges then, that the AFOLU sector is the second sector in terms of total GHG emission worldwide, and the first sector in terms of CH4 and N2O emissions. Indeed, as the AR6 underscores, the AFOLU sector "is a significant net source of GHG emission, with more than half of emissions attributed to non-CO2 GHGs from agriculture"; this makes agriculture "the 2nd largest contributor to warming on short time scales" (IPCC, 2021, p.1488).

What is even more astonishing, is the percentage of GHGs emission exclusively caused by the livestock sector. As the AR6 states, "in the agriculture and waste sectors, livestock production has the largest emission source (109 Tg yr-1 12 in 2008–2017) dominated by enteric fermentation by about 90%" (IPCC, 2021, p.1188). Indeed, while the entire amount of AFOLU emissions account for 24% of global GHG emissions, the livestock sector alone is responsible for "14.5% of all human-induced emissions" (Food and Agriculture

Organization 2013, p.14). It was the UN Food and Agriculture Organization, indeed, to draft in 2013 a report entitled "Tackling Climate Change through Livestock", in which it was explained that the livestock sector is responsible for the emission of 7.1 gigatons of CO2 equivalent per annum, mainly emitted in the form of methane (44%), nitrous oxide (29%), and CO2 (27%) , and primarily released in the process of feed production and enteric fermentation from ruminants (Food and Agriculture Organization 2013).

Evidently, the role played by the AFOLU sector in terms of GHG emissions is anything but marginal, and its regulation is now more urgent than ever. However, as the US historian, political scientist, and diplomat George Kennan stated, "the entire ecology of the planet is not arranged into national compartments; and whoever interferes seriously with it anywhere is doing something that is almost invariably of serious concerns to the international community at large" (1970, pp. 191-192). Evidently, when it comes to the protection of World's climate, the analysis of how climate is regulated on the global scale is necessary.

2.

2.1. The UNFCCC of 1992

The United Nation Framework Convention on Climate Change (UNFCCC), together with the Convention on Biological Diversity (CBD), and the United Nation Convention to Combat Desertification (UNCCD), is one of the three agreements which emerged from the United Nations Conference on Environment and Development (UNCED), hold in Rio de Janeiro in 1992. The UNFCCC entered into force in 1994 and, of the three conventions emerging from the UNCED, it was the one requiring the widest possible international response because, as pointed out by M.V.K. Sivakumar et al., "in the field of climate […], due to the very nature of the atmosphere, all physical causes and effects tend to be global in nature" (2000, p.17).

2.2. The Convention's objective

The Convention has been ratified by 197 states, and its objective, fixed at Article 2, is the "stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. Such a level should be achieved within a time-frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner". Therefore, it is the case to observe that, although the process that then came out of the UNFCCC has put "strong grounds for having adaptation as a policy goal", the original aim of the Convention is to "focus on reducing the source of climate change, rather than on adapting to the changes" (Schipper 2006, p.82). However, the mitigation objective of the Convention does not seem to be particularly ambitious (despite being reinforced by the reference to a "natural" adaptation), and no precise threshold has been fixed in terms of GHG reductions to be achieved, neither at the global or at the state level.

In addition to this, it should be noted that a reference to food production is present at Art.2. Nonetheless, food production is framed as one of those activities to be shielded from the "dangerous anthropogenic interference with the climate system", instead of being considered as one of those activities that needs to be regulated in order to mitigate the global emission of GHG.

2.3. The Principles of the UNFCCC

Next, the principles of the Convention are present both in the Preamble, that makes reference to the "sovereign right [of states] to exploit their own resources", and in Article 3, which refers to the principles of "equity" and "common but differentiated responsibility"(Art. 3.1), "precaution-prevention"(Art. 3.2) "sustainable development"(Art. 3.4), and "cooperation"(Art. 3.5). Although Article 3 makes no direct reference to agriculture, it may be reconducted to the broader AFOLU sector. Indeed, article 3.3 states that in order to "prevent or minimize the causes of climate change and mitigate its adverse effects", parties should adopt policies that take into account "sinks and reservoirs of greenhouse gases". Of course, the most common and important natural sinks and reservoirs of GHG are forests, which "remove carbon dioxide from the atmosphere";

afterwards, "the sequestered carbon dioxide is stored in live woody tissues and slowly decomposing organic matter in litter and soil" (Luyssaert et al., 2008, p.1). Moreover, as it has been already outlined, agriculture is the main driver of deforestation, and activities as tree felling and tillage, aimed at obtaining new fields to be destined to agriculture, are major drivers of GHG emission and climate change (Silva-Olaya et al., 2012). Therefore, Article 3.3 may be directly reconducted to the sector of forestry, and indirectly linked to the sector of agriculture, meaning that it automatically entails the need to consider the AFOLU sector in the process of designing climate change mitigation policies.

Furthermore, the principle of common but differentiated responsibility introduced at Art. 3.1 is one of the distinguishing features characterizing the functioning of both the UNFCCC and the Kyoto Protocol, and the relevance of such principle is also reflected in the discrimination among Annex I Parties (OECD countries plus economies in transition), Annex II Parties (OECD countries), and non-Annex Parties, introduced at Article 4. Indeed, the text of the UNFCCC acknowledges the "differentiated responsibilities and respective capabilities" (UNFCCC, Preamble) of different member States, and for this reason not all member States are asked to respond to the same commitments. The *raison d'être* of this principle stands behind "both historical responsibility of states and differing capacities of states to address climate change" (McManus 2009, p.2) . However, such distinction has been built statically, and it does not allow states to shift automatically from one category to another. Consequently, if an Annex II State Party does experience a severe and long-lasting economic crisis it must continue to be bound to the stricter commitments of Annex II Parties, while a non-Annex Party that experiences a terrific economic growth over the years (e.g., the Popular Republic of China) can continue to comply with much less stringent commitments.

2.4. The Parties' commitments

As long as the commitments of all Parties (Annex and non-Annex countries) to the UNFCCC are concerned, Art. 4.1 requires all states, *inter alia*, to cooperate in the "transfer, of technologies, practices and processes that control, reduce or prevent anthropogenic emissions of greenhouse gases […] in all relevant sectors, including the energy, transport, industry, agriculture, forestry and waste management sectors" (4.1.c), to promote the "sustainable management […] of sinks and reservoirs of all greenhouse gases not

controlled by the Montreal Protocol, including biomass, forests and oceans as well as other terrestrial, coastal and marine ecosystems" (4.1.d), and to "cooperate in preparing for adaptation to the impacts of climate change; develop and elaborate appropriate and integrated plans for coastal zone management, water resources and agriculture" (4.1.e). Having said this, it is worth to observe that, even though in the entire UNFCCC text the word 'agriculture' appears just twice and there are only four references to forestry, the three just cited subparagraphs make both two references to agriculture (*i.e.* the 100% of the references to agriculture present in the whole Convention) and two references to forestry. As a matter of facts, at Article 4.1 both agriculture and forestry (to wit: activities related to the AFOLU sector) are explicitly identified as "relevant sectors" for the mitigation of GHG emissions, the relevance of forests as natural sinks of GHG is officially recognized, and then the focus is drifted towards the importance for agriculture to adapt to climate change. On the one hand, it should be noted that the commitments related to the AFOLU sector which are listed in Art.4.1 are directed to all parties to the Convention, and not just to more developed countries: it is recognized then, that the AFOLU sector has a major role to play in the fight against climate change, and it cannot be a matter of interest for Annex-Parties only. Moreover, by including agriculture and forestry in the list of the relevant sectors, the UNFCCC could put the basis for a subsequent focus of the international community on the AFOLU sector. On the other hand, the significance of the references to the AFOLU sector that appear in Art.4.1 should not be overestimated neither. In fact, in line with the approach followed by the entire UNFCCC text, Art.4.1 does not refer to any reduction target, neither in terms of quantity of GHG emitted, nor in terms of timeframe within which it will be necessary to intervene. The paragraph does not even make reference to any best practice that should be considered in the regulation of the AFOLU sector and, in conformity with the further commitments which are mentioned in the Convention, it does not introduce any binding obligation to the parties. The lack of any binding obligation in Art.4, as well as in the whole UNFCCC text, represents a main shortcoming of the Convention, and it was mainly due to the will of the US to avoid the creation of a treaty encompassing some binding reduction commitments (Kuyper et al. 2018).

About the commitments of Annex-I Parties, which are listed in Art.4.2, the only elements that can be worth mentioning, given the aim of this research, are present in Art.4.2.a and Art.4.2.b. Indeed, while Art.4.2.a states that: "each of these Parties shall adopt

national policies […] by limiting its anthropogenic emissions of greenhouse gases and protecting and enhancing its greenhouse gas sinks and reservoirs", Art.4.2.b posits that "each of these Parties shall communicate […]periodically […] information on its policies and measures referred to in subparagraph (a) above, as well as on its resulting projected anthropogenic emissions by sources and removals by sinks of greenhouse gases". Therefore, Art.4.2 can be reconducted to the AFOLU sector, and in particular to forestry, through its references to GHG sinks. However, such connection to the AFOLU sector is merely indirect, and all the shortcomings that were already present in Art.4.1 (i.e. no identification of precise objectives to be achieved, no reference to best-practices, no binding obligation) do also apply to Art.4.2.

When it comes to the commitments of Annex-II Parties listed in Art.4.3, it emerges that the expenditure of further financial resources is required to developed states, with the aim to "meet the agreed full costs incurred by developing country Parties in complying with their obligations under Article 12, paragraph 1 [*i.e.* in the process of communication of information to the Conference of the Parties]" (Art.4.3). Even though not any direct or indirect reference to the AFOLU sector is present in Art.4.3, this paragraph is directly linked to Art.4.1 as it states that: "Parties included in Annex II […] shall also provide such financial resources, including for the transfer of technology, needed by the developing country Parties to meet the agreed full incremental costs of implementing measures that are covered by paragraph 1 of this Article". Evidently, always in line with the principle of common but differentiated responsibilities, this paragraph requires developed states to assist less developed countries in achieving their commitments. Furthermore, among the commitments of Annex II Parties, there is the duty to support less developed (non-Annex) State Parties to comply with the duties listed in Art.4.1, which is directed, *inter alia*, at mitigating the emission of GHG coming from the agricultural sector, and which is aimed at a sustainable management of forests. If, on the one hand, it might be argued that the provision present at Art.4.3 may underline the urgence of achieving the objectives fixed at Art.4.1, on the other hand, it should be observed that the language of Art.4.3 tends at reducing the already modest responsibilities of developing states, by framing them as not completely accountable for the output of their climate policies. This point is even clearer when it comes to the "implementation conditionality" that emerges at Art.4.7 which says that: "The extent to which developing country Parties will effectively implement their

commitments under the Convention will depend on the effective implementation by developed country Parties of their commitments". In addition to this, another factual problem emerges from Art.4.3, and it has to do with the exacerbation of the questionable distinction that has been made between Annex and non-Annex Parties to the Convention. As a matter of facts, it is important to underscore that, as it is framed, Art.4.3 requires states as Greece and Turkey (Annex II Parties) to support through financial resources and transfer of technologies states as China, India, South Korea, and Brazil (non-Annex Parties).

2.5. A Mother Convention

Furthermore, two more articles that it is important to analyse are Article 7 and Article 17 of the UNFCCC. These two articles do not make any mention to the AFOLU sector; however, they present those characteristics that really define the UNFCCC as a Framework Convention. In fact, they establish "the Conference of the Parties [COP], as the supreme body of this Convention"(Art.7.2), and also state that "the Conference of the Parties may, at any ordinary session, adopt protocols to the Convention" (Art.17.1). Indeed, as it has been showed by now, the UNFCCC has plenty of shortcomings when it comes to the protection of global climate, and even more when it comes to the mitigation of GHG produced by the AFOLU sector. Nevertheless, the characteristic of the UNFCCC that allows it to contribute more to the fight against climate change stands in the fact of being a "Mother Convention" (Van Asselt 2007, p.17), that could stimulate an increasing and continuous dialogue among the members of the international communities within the framework of periodically hold Conferences of the Parties, some of which have also produced new protocols to the Convention. The two protocols that were produced within the UNFCCC framework are the Kyoto Protocol of 1997 and the Paris Agreement of 2015. Such pieces of legislation introduced new rules for approaching the climate crisis and for the regulation of the AFOLU sector, and they will be analysed in the following paragraphs of this research.

2.6. The creation of the SBSTA

Finally, before moving to the Kyoto Protocol, there is a last element of the UNFCCC that deserves particular attention given the aim of this research. As a matter of facts, given

its role of Mother Convention, the UNFCCC establishes a number of bodies that support its operations, to wit: the Secretariat (Art.8), the Subsidiary Body for Scientific and Technological Advice (Art.9), the Subsidiary Body for Implementation (Art.10), and the Financial Mechanism (Art.11) (Harmsen 2018). Also in this case, despite not being directly related to the AFOLU sector, article 9 in particular presents one of the most important and characterizing features of the UNFCCC, as it establishes the "Subsidiary Body for Scientific and Technological Advice" (SBSTA) to provide the COP with "information and advice on scientific and technological matters relating to the Convention"(Art.9.1). The introduction of the SBSTA as a permanent body for the Convention is significant at least for two reasons. First of all, it makes evident that the discussions within the Conferences of the Parties cannot be merely political or economic in their nature, but they have to rely on consolidated and regularly updated scientific knowledge. Nonetheless, it should be noted that the SBSTA also presents some important limitations in this sense: its powers are particularly limited, being it just an advisory body with no decisional power; moreover its reports cannot entirely get rid of any political influence, given that the SBSTA "shall comprise government representatives competent in the relevant field of expertise" (Art.9.1). Second of all, the SBSTA has played an important role as a permanent body that has complied to its duty to "report regularly to the Conference of the Parties on all aspects of its work" (Art.9.1). Indeed, the SBSTA produced a number of reports from 1995 onwards and, interestingly, the work of the SBSTA started to focus on the role of agriculture, especially after the Decision taken at the COP 17 (hold in Durban in 2011), which requested "the Subsidiary Body for Scientific and Technological Advice to consider issues related to agriculture" (decision 2/CP.17, 2012), and after the Decision of COP 23 (hold in Bonn in 2017), which established the "Koronivia Joint Work on Agriculture".

2.7. Conclusion

In conclusion, the UNFCCC is the first Universal Climate Treaty, it reached universal ratification and it is a mother convention, i.e. a convention from which new international climate treaties as the Kyoto Protocol and the Paris Agreement could emerge. The UNFCCC put the accent on the necessity to regulate sinks and reservoirs of GHG and, after explicitly identifying agriculture and forestry as relevant sectors for the mitigation of GHG emissions, it requires all State Parties to the Convention to take into account the

relevance of the AFOLU sector. The Convention also established the formation of periodic Conferences of the Parties, as well as the creation of a Subsidiary Body for Scientific and Technological Advice. However, the UNFCCC also presents some main weaknesses: no binding target or obligation is introduced for any party to the Convention, the principle of Common but Differentiated Responsibility remains central, and the distinction between Annex I, Annex II, and non-Annex Parties is statically constructed. These elements are also evident when it comes to the lack of any specific target or quantified emission reduction to be applied to the sector of sinks and reservoirs of GHG. Besides, despite the introduction of the SBSTA represents an interesting characteristic of the Convention, the Body still lacks any effective power. Lastly, it should be noted that the objective of the Framework Convention itself is anything but far-reaching, and it presents food production as a sector that we need to protect from climate change, instead of framing it as a main contributor to the climate crisis.

3.

3.1. The Kyoto Protocol of 1997

The Kyoto Protocol was the first Protocol to the UNFCCC. It emerged from the COP-3, which was held in Kyoto in 1997. If, on the one hand, the Protocol maintains some features that resemble the approach adopted by the UNFCCC, on the other hand, it also presents some distinguishing innovative points. Indeed, as well as the UNFCCC, the Protocol makes great distinctions between Annex and non-Annex Parties to the Convention in terms of commitments, it uses a top-down approach, and it is the product of a negotiation of political (instead of scientific) nature. However, differently from the Convention, the Kyoto Protocol establishes some binding targets, it heavily relies on economic instruments (e.g. emissions trading, and clean development mechanism), and it gives greater attention to the sector of "Land-Use, Land-Use Change and Forestry" (LULUCF).

The Protocol entered into force in February 2005, i.e. ninety days after the date in which not less than 55 Parties to the Convention and all Annex B Parties had deposited their instruments of ratification, in accordance to Article 25. At present day there are 192 parties to the Kyoto Protocol; however, the Protocol presents important absentees among

Annex B Parties, to wit: the United States of America (which signed but never ratified the treaty), and Canada (which withdrew from the Protocol in 2011, before the beginning of the first Commitment Period). The absence of such major Annex B GHG emitters (the US was the main emitter of GHG until 2004 (World Resource Institute, 2020)), together with the lack of binding targets for non-Annex Parties to the Convention, are elements that is important to consider in order to understand the reasons for the failure of the Protocol of 1997.

3.2. A pragmatic approach

As a protocol to the Framework Convention, the Kyoto Protocol adopts a more pragmatic approach than the UNFCCC and it does not introduce any new specific global objective or principle. As a matter of facts, in its preamble the Protocol refers to the "pursuit of the ultimate objective of the Convention as stated in its Article 2" [i.e. the stabilization of GHG concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system], as well as to the necessity of "being guided by Article 3 of the Convention" [i.e. by the principles of the UNFCCC] (Preamble of the Kyoto Protocol, 1997). Nevertheless, it is Article 3 of the Protocol to fix the objectives for Annex I Parties to the Convention, and it is Article 2 to identify the measures that need to be adopted in order to reach such objectives.

Art.2.1.a. presents a list of "policies and measures" that "each Party included in Annex I, in achieving its quantified emission limitation and reduction commitments under Article 3 [and] in order to promote sustainable development" shall implement or further elaborate. This subparagraph is important given the aim of this research as it makes reference to the "protection and enhancement of sinks and reservoirs of greenhouse gases not controlled by the Montreal Protocol" (Art.2.1.a.ii), and to the "promotion of sustainable forms of agriculture in light of climate change considerations" (Art.2.1.a.iii). Evidently, these two measures are a clear expression of the necessity to act on the AFOLU sector in order to mitigate GHG emissions. Nevertheless, as it will emerge by the analysis of subsequent parts of the Protocol, it is the case to point out that, while the sector of "sinks and reservoirs of greenhouse gases" will be a main object of regulation for the Protocol (notwithstanding all its limitations also due to the complexity of the issue), the sector of agriculture, despite being mentioned by Art.2.1.a.iii, is not regulated by any specific

reduction target, and this has led many states not to include agriculture in their emissions trading schemes (Alabrese 2021).

3.3. The Parties' commitments and the role of LULUCF

It is the long and complex Article 3 of the Kyoto Protocol to specify the commitments of Annex I Parties. However, before moving to this article, it is necessary to have a look at Annexes A and B to the Kyoto Protocol, as they are frequently referred to in Art.3. Annex A makes a list of the greenhouse gasses, as well as of the categories of sectors and sources that have to be considered in order to comply with the Protocol's objectives. The first three climate-altering gasses that are mentioned in Annex A are carbon dioxide, methane, and nitrous oxide, being them the GHG which are main responsible of climate change (Rafferty 2021; International Gas Union 2017). Furthermore, and more importantly, agriculture is one of the five emitting sectors that are listed in Annex A, which makes reference to particular agriculture-related sources of GHG as enteric fermentation, manure management, rice cultivation, agricultural soils, prescribed burning of savannas, and field burning of agricultural residues. Annex B to the Protocol, then, provides a list of the thirty-six Annex I Parties to the Convention, and it presents the emission limitation or reduction commitment undertaken by each of these countries.

The first paragraph of Article 3 requires Annex I Parties to the Convention to reduce the emissions of GHG listed in Annex A in order to comply with the emission limitations listed in Annex B. The emissions shall be reduced of at least 5 per cent below the 1990 levels in the first commitment period, i.e. from 2008 to 2012. It is in this "5 per cent" threshold imposed on all Annex I Parties that it is possible to identify the basis of the top-down approach adopted by the Protocol of 1997. It is in the context of the first commitment period, moreover, that the members of the European Community decided to comply with a more ambitious 8 per cent target, and the "EU has emerged as the main actor among industrialised countries to push the process forward under the UN Convention" (Fischer & Geden 2015, p.2). Furthermore, it is important to observe that such particular targets were not identified under the suggestion of the scientific community, nor in compliance with the recommendations of the IPCC, but just as a result of political processes of negotiation. A similar political negotiation led to an 18 per cent reduction commitment "in the eight-year period from 2013 to 2020; nevertheless, the

composition of Parties in the second commitment period is different from the first" (United Nations 2021, p.1).

Art.3 of the Kyoto Protocol is particularly important also because of the main emphasis it puts on the sector of Land-Use, Land-Use Change, and Forestry (LULUCF). Despite not being explicitly mentioned with the label "LULUCF", the LULUCF sector plays a central role in the framework of the Kyoto Protocol, it has been object of numerous disputes among scientists and policymakers (Savaresi et al 2020), and it is particularly important for the object of this research. As a matter of fact, it must be acknowledged that "the AFOLU category includes LULUCF and Agriculture. Indeed, in the context of mitigation, 'Agriculture' – in accordance with IPCC terminology – includes emissions from enteric fermentation, manure management, rice cultivation, prescribed burning of savannas and grassland, and from soils (i.e. agricultural emissions), [while] emissions related to forest and other land use are covered under LULUCF" (FAO 2017, p.17). The LULUCF sector is qualitatively different from the other sector which are regulated by the Kyoto Protocol, as it is the only sector to be capable of GHG removals (Schlamadinger et al, 2007). Moreover, peculiar characteristics of the sector that should be taken in mind when it comes to regulate it are: saturation (i.e. the limit for the carbon storage potential of the available land), non-permanence (the carbon sequestration of GHG in the biosphere is reversible), and the influence of natural effects and control by humans (human capacity to manage the stock of GHG in the biosphere is strongly constrained by natural phenomena that are not under human control) (Schlamadinger et al, 2007).

Having said this, it is important to acknowledge that the rules and guidelines provided by the Protocol to regulate the LULUCF sector are multiple and complex (Alabrese, 2021), and for this reason it is the case to carry out an analysis of the relevant articles.

Art.3.3 introduces the duty, for the Annex I Parties to the Convention, to account for the emissions and removals of GHG due to "human-induced land-use change and forestry activities, limited to afforestation, reforestation and deforestation since 1990". The definition of "afforestation, reforestation and deforestation" are provided by the Marrakech Accords of 2001, which clarifies that the afforestation is a "human-induced conversion of land that has not been forested for a period of at least 50 years to forested land", the reforestation is "the direct human-induced conversion of non-forested land to

forested land", while deforestation is "is the direct human-induced conversion of forested land to non-forested land" (Marrakech Accords 2001, Annex A). These three activities are mandatorily reported by the Annex I Parties, and they will be registered as credits or debits for the first commitment period depending on the fact that they contribute to the storage or emission of GHG.

Article 3.4 does not specify other binding LULUCF elements that Annex I Parties decide to consider for the accounting of GHG emissions and removals. However it states that "the Conference of the Parties […] shall, at its first session or as soon as practicable thereafter, decide upon modalities, rules and guidelines as to how, and which, additional human-induced activities related to changes in greenhouse gas emissions by sources and removals by sinks in the agricultural soils and the land-use change and forestry categories shall be added to, or subtracted from, the assigned amounts for Parties included in Annex I". It was in the context of the Marrakech Accords that such "additional human-induced activities" were identified and disciplined. The accords distinguish between "cropland management, grazing land management and revegetation" on the one hand, whose anthropogenic GHG emissions by sources and removals by sinks "shall be equal to anthropogenic greenhouse gas emissions by sources and removals by sinks in the commitment period, less five times the anthropogenic greenhouse gas emissions by sources and removals by sinks resulting from these eligible activities in the base year of that Party" (article C.9), and "forest management" on the other. In the latter case, Annex I Parties "may account for anthropogenic greenhouse gas emissions by sources and removals by sinks in areas under forest management under Article 3.4, up to a level that is equal to the net source of emissions under the provisions of Article 3.3" (article C.10).

The accounting system used for Cropland Management, Grazing land Management, and Revegetation has been usually labelled as a "net-net accounting system" as it compares the emissions and removals during the commitment period to the removals on the base year; conversely, the system used for forest management has been described as a "gross-net accounting system": it accounts for any new emission or removals, and it requires states to take forest management related emissions and removals in consideration to comply with their reduction commitment (Schlamadinger et al. 2007, pp.296-297). The main pitfall of Art.3.4 is that it does not introduce any binding target during the first commitment period for Annex I Parties related to cropland management, grazing land management,

revegetation, and forest management. As a matter of fact, the decision to consider these elements in the first commitment period is based on a voluntary basis, while it will be binding just "in the second and subsequent commitment periods" (Kyoto Protocol Art.3.4). Unfortunately, the Doha Amendment to the Kyoto Protocol (of 2012), which was adopted for a second Commitment period, never entered into force, as it did not reach the minimum number of ratifications; moreover, among the Parties that committed to emission reductions for the second commitment period there are important Annex I absentees as US and Canada (which did not even commit to emission reduction for the first period), but also Russia, Japan, and New Zeeland (which had binding targets for the first commitment period, but did not commit to any reduction for the second). In addition, many scholars and scientists have criticized the reliance over two different kinds of accounting system for the regulation of different subsectors of the LULUCF sector: such differentiation has been considered as arbitral and based on unclear definition of the subsectors (Schlamadinger et al. 2007).

Then, another controversial paragraph of Article 3 of the Kyoto Protocol is Paragraph 7. According to this paragraph, Annex I Parties to the Convention "for whom land-use change and forestry constituted a net source of greenhouse gas emissions in 1990 shall include in their 1990 emissions base year […] the aggregate anthropogenic carbon dioxide equivalent emissions by sources minus removals by sinks in 1990 from land-use change for the purposes of calculating their assigned amount". There are two direct consequences of Art.3.7: firstly, it establishes two different accounting regimes between states for whom land-use change and forestry constituted a source of GHG emissions in 1990, and states for whom land-use change and forestry represented carbon removals; secondly, it allows the first category of states to include the emissions coming from land-use change in the calculation of the 1990 baseline (United Nations 2000), so to enlarge the baseline and to reduce the emission limitation for the commitment periods.

Furthermore, it is important to look at Article 10 of the Protocol. Indeed, while the above discussed articles focus on the emission limitations of Annex I Parties, Art.10 shifts the focus of attention on "all Parties", and it requires them, among the other things, to "formulate, implement, publish and regularly update national and, where appropriate, regional programmes containing measures to mitigate climate change and measures to facilitate adequate adaptation to climate change"(Art.10.b). Interestingly for the purpose of

this research, Article 10 specifies that "such programmes would, *inter alia*, concern […] agriculture, forestry and waste management" (Art.10.b.i). This article surely goes in the right direction as long as it requires both Annex and non-Annex Parties to make the emission of GHG coming from the AFOLU sector more transparent and predictable. However, it should be reminded that such provision remains a non-binding one for non-Annex I Parties, and it reaffirms the centrality of the principle of "common bud differentiated responsibilities".

3.4. The Clean Development Mechanism and the Emission Trading System

Finally, it is the case to make a quick reference to both article 12 and 17 of the Protocol. Article 12 introduces the so-called Clean Development Mechanism (CDM), whose aim is to "assist Parties not included in Annex I in achieving sustainable development […], and to assist Parties included in Annex I in achieving compliance with their quantified emission limitation and reduction commitments under Article 3". The CDM was initially supposed to be accompanied by a "clean development fund", proposed by Brazil but not included in the text of the Protocol (United Nation 2000), and it tried to promote sustainable development among non-Annex Parties, led by the intervention of Annex I Parties. Then, Article 17 introduces the Emissions Trading System (ETS). A mechanism of cap-and-trade that gave parties the possibility to "participate in emissions trading for the purposes of fulfilling their commitments under Article 3". The creation of a global ETS did never materialize, and the only structured emission trading regional market emerged in the EU. In addition, the creation of an ETS in the EU made more evident the problems at the basis of the creation of a cap-and-trade system, *i.e.* the difficulty to quantify and allocate carbon quotas, as well as to cover all the GHG emitters (the EU ETS just covers the 40% of its GHG emissions) (EU Commission 2021).

3.5. Conclusion

In conclusion, the Kyoto Protocol has been capable of identifying the GHG as well as the economic sectors that are responsible for the main changes in global climate. In particular, it has officially identified the sector of agriculture as a main GHG emitter (also making reference to the role of enteric fermentation and manure management), and it tried for the first time also to discipline the LULUCF sector. Moreover, the Kyoto Protocol has

been a place of experiment for the use of new instruments (CDM and ETS) to tackle climate change and it has been the first international climate treaty to introduce binding targets for State Parties. However, as it has been noted, the static distinction between Annex and non-Annex Parties to the Convention has been a main shortcoming, also given the dramatic economic growth of many non-Annex State Parties. This point makes clear that the Kyoto Protocol gave more importance to the historic responsibility of states (in terms of emissions) than on the necessity to effectively tackle the climate crisis. Furthermore, major Annex Parties did not even commit to any emission reduction as the US did not ratify the Protocol, and Canada withdrew from it in 2011 (before the first commitment period had finished). It should also be noted that some ratifying Annex Parties did not commit to any emission reduction, indeed Australia promised not to increase its GHG of more than 8% in its first commitment period, and Iceland committed to a maximum increase of 10% with reference to the 1990 base year. Finally, further shortcomings of the Kyoto Protocol shall be found in the incapacity to build a working ETS at the global level (maybe due to the fact that a system based on cap-and trade is unfit to regulate the global emissions of GHG) as well as in the impossibility to identify a common, clear and homogeneous regulation of the LULUCF sector, in a context in which, the delineation and respect of clearer schemes of regulation have been postponed to subsequent sessions of the conference of the parties, and to subsequent commitment periods. Furthermore, State Parties should acknowledge that to excessively rely on the removals from the LULUCF sector can be dangerous and counterproductive as humans do not have full control over plants carbon storage (Fung et al., 2005); therefore, to increase the LULUCF storage of carbon should not allow states to feel free to emit more.

4.

4.1. The Paris Agreement of 2015

The Paris Agreement was the second international treaty to be produced within the UNFCCC framework, and it was adopted at COP 21, which was held in Paris in 2015. As it has been pointed out by scholars as Prof. Savaresi, already the legal form of the treaty is quite ambiguous as some State Parties considered it as a Protocol to the Convention of 1992, while others (as the US) wanted the form of the Treaty to be left undetermined

(Savaresi 2016). For sure the Agreement makes a number of references to the Convention of 1992 but, interestingly, it does not ever mention the Protocol of 1997. What remains out of question is also that the Paris Agreement is a legally binding International Treaty on Climate Change (UNFCCC 2021) whose objectives are coherent with those of the Framework Convention of 1992. However, differently from the Kyoto Protocol, the Paris Agreement fixes a new global objective of result (at Art.2), it adopts a bottom-up approach with the introduction of Nationally Determined Contributions (at Art.3), and it gets rid of the strict distinction between Annex and non-Annex Parties to the Convention. Moreover, the Paris Agreement is the first International Environmental Treaty to make reference also to human right obligations (Savaresi 2016) and to dedicate space to the issue of loss and damage (Art.8). It is also important, given the aim of this research, to underscore that the Paris Agreement presents very few references to any activity related to the AFOLU sector. As a matter of facts, the Agreement never refers to agriculture, and it merely refers once to "food production" (Art.2) but it does so with the function of underlying the need to defend it from climate change, completely overlooking the impact of food production on atmospheric contamination. Furthermore, the role attributed to carbon sinks and to the value of forests is much more limited in the Agreement of 2015 than in the Protocol of 1997.

It is also important to observe that, while it almost took eight years for the Kyoto Protocol to enter into force, the Paris Agreement become effective already in November 2016 (i.e. less than one year after its adoption), to wit: thirty days after the date in which at least 55 State Parties to the convention accounting for at least the 55% of global GHG emissions had deposited the ratification to the treaty (in accordance with Art.21 of the Agreement). Up until now, the Agreement has been signed by 195 states, and it has reached 191 ratifications. The almost universal ratification of the Agreement risked to be seriously undermined when the US, under the Trump administration, withdrew from the treaty on the 4th of November 2019. However, it was under the Biden administration that the US could come back on their original position and deposit their ratification as soon as on the 20th of January 2021 (United Nations 2021).

4.2. The Agreement's objective

As it has been said, the Paris Agreement fixes a new clear global objective of result that is: "to strengthen the global response to the threat of climate change" and to "[hold] the increase in the global average temperature to well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels" (Art.2.1.a). Therefore, the objective of the Agreement is clearer and stricter than the one identified at Art.2 of the UNFCCC which just mentioned the necessity to avoid "dangerous anthropogenic interference with the climate system". However, even though a precise global objective of result has been identified by the Agreement, it still does not fix any binding obligation to individual State Parties, as the Kyoto Protocol does with Annex Parties to the Convention. The Paris Agreement requires instead all State Parties to play a role in order to reach the 1.5° objective through their nationally determined contributions (Art.3).

4.3. The role of Nationally Determined Contributions

The Nationally Determined Contributions (NDCs) were firstly conceptualized at COP 19 which was held in Warsaw in 2013. Looking at the Treaty of 2015, it emerges that NDCs are initially identified at Art.3 and they represent the backbone of the bottom-up approach envisaged by the Paris Agreement. Undoubtedly, it is important to observe that, although the principle of "common but differentiated responsibilities" is mentioned in the Agreement, no discrimination between Annex and non-Annex Parties to the Convention is present in terms obligations to State Parties when it comes to NDCs. As a matter of facts, Art.3 asserts that "all Parties are to undertake and communicate" their NDCs. This is an important step forward from the Kyoto Protocol, as the Agreement acknowledges that it is important to include developing states, since they have become more prominent GHG emitters. Moreover, the elimination of the strict divide between Annex and non-Annex Parties is also relevant for the purpose of this research, as the demand for bigger efforts from developing countries could allow the AFOLU sector to acquire a more prominent role (indeed, the AFOLU sector activities represent the main source of emission in developing countries) (IPCC 2014). Nevertheless, two issues in particular deserve to be discussed about NDCs, to wit: firstly, whether they involve any binding obligations for

State Parties or not and, secondly, which role the AFOLU sector assumes in the context of the NDCs.

As long as the bindingness of NDCs obligations is concerned, it is important to observe that most of the Paris Agreement's rules related to the adoption of NDCs are binding in their nature. As a matter of facts, Article 4.2 clearly states that "each Party shall prepare, communicate and maintain successive nationally determined contributions" and that "Parties shall pursue domestic mitigation measures". The stringent verb "shall" also emerges from Article 4.8 ("in communicating their NDCs, all Parties shall provide the information necessary for clarity, transparency and understanding"), Article 4.9 ("Each Party shall communicate a nationally determined contribution every five years"), and Article 4.13 ("Parties shall account for their nationally determined contributions"). Furthermore, these provisions clearly assign binding duties to "all Parties", even though it must be acknowledged that the main burdens remain on developed states as indicated by the use of the verb "should" in Art.4.4 ("Developing country Parties should continue enhancing their mitigation efforts"), as well as by the obligations imposed on developed states to assist developing countries in preparing and achieving their nationally determined contributions (i.e. Article 4.5 states that "Support shall be provided to developing country Parties for the implementation of this Article").

A major problem of NDCs is that, notwithstanding their draft and periodic submission is substantially binding for all parties, and although they aim at achieving the objective fixed at Art.2, no kind of emission reduction or threshold related to NDCs is fixed by the Paris Agreement. The Agreement maintains a more flexible approach than the Kyoto Protocol, and it balances the global obligation of result (limit the temperature increase to 1.5°C above pre-industrial levels), with binding obligation of conduct (the NDCs), and no individual obligation of result. All this risks to undermine the achievement of the global objective fixed at Article 2 of the Agreement, also considering that State Parties end up with the submission of a number of NDCs that are drafted by following different rules, and that are then particularly difficult to compare with each other (Jernnäs et al. 2019), especially when the regulation of the LULUCF sector is concerned (Krug 2018).

4.4. NDCs and the AFOLU sector

Moving to the relationship between the NDCs and the AFOLU sector, it must be primarily underlined that no direct mention to the AFOLU sector is present in the Paris Agreement. In fact, as it has already been said, the Agreement never refers to agriculture, it frames food production as a sector to be shielded from climate change instead of framing it as a sector to be regulated in order to cut GHG emissions, and it hardly makes reference to the role of forests and carbon sinks. Indeed, the role of forests, which is exclusively mentioned in Article 5, is not connected to nationally determined contributions. Article 5 does not involve any obligation for states, as parties, both at the international and at the European level, had difficulties in establishing rules and methodologies for reporting emissions and removals from LULUCF activities (Savaresi and Perugini 2020). Therefore, the Article just posits that "Parties should take action to conserve and enhance, as appropriate, sinks and reservoirs of greenhouse gases […] including forests" (Art.5.1), and that "Parties are encouraged to take action to […] reducing emissions from deforestation and forest degradation, [by taking into account] the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries" (Art.5.2).

The only obligation of the Paris Agreement concerning the AFOLU sector can be identified at Article 13.7.a, stating that "each Party shall regularly provide […] a national inventory report of anthropogenic emissions by sources and removals by sinks of greenhouse gases". Such "inventory report", that shall be prepared by "using good practice methodologies accepted by the Intergovernmental Panel on Climate Change" (Art.13.7.a), plays an important role in the context of reviewing the "adequacy and effectiveness" (Art.7.14.c) of the NDCs that have been undertaken and communicated. Then, unsurprisingly, this binding element emerges from Article 13, which is the Article that establishes the so called "enhanced transparency framework". This is a clear case of how the Treaty tries to compensate the lack of any individual binding obligation of result, through the introduction of unedited transparency and compliance rules. This peculiar *modus operandi* is also supported by Art.14, which introduces further measures to periodically assess the progress carried out by State Parties, and by Art.15 which introduces a "mechanism of compliance".

Interestingly, the Treaty does not say anything about the accounting techniques and methodologies that State Parties have to adopt in order to measure the amount of GHG emissions related to their sinks, and it leaves the identification of these (and other) technical issues to the Rulebook of the Paris Agreement (Cogswell et al. 2019). On the one hand, this kind of fluid approach, which should have incentivized and allowed the involvement of the largest possible number of states, is presenting some main shortcomings as it took three years to have a first (uncomplete) draft of the Rulebook at COP 24 in Katowice (Marcu et al. 2019) and, up to date, although almost five years have passed from the entrance into force of the Agreement, the Paris Agreement Rulebook has not been completed yet. On the other hand, it must be recognized that up until March 2021, 191 Parties have submitted their first NDCs, and 8 Parties have submitted their second NDCs (NDC Registry 2021), and this shows that, despite the problems concerning both the conclusion of the Rulebook and the identification of clear accounting standards have not been settled yet (e.g. the issue of double counting (Schneider et al 2019)), the Paris Agreement succeeded in its aim of involving both developed and developing countries.

Nevertheless, it is not just the quantity of the NDCs presented by the Parties to the Agreement to be relevant, but also their quality and, given the aim of this research, the amount of NDCs that made reference to the AFOLU sector. Therefore, it is also necessary to point out that, as underscored by Jernnäs et al., up to the 30th of July 2018, 173 Parties had presented their nationally determined contributions and, out of these Parties, only 78 (i.e. the 45% of the total) referred to "change of practices of natural resource management in order to cope with climate changes, e.g. through switch to climate smart agriculture, [and] ending deforestation" (Jernnäs et al. 2019, p.1243). Consequently, it is quite evident that notwithstanding the involvement of a great number of parties, the NDCs system, which is flexible by definition, has not been effective in assigning the right emphasis on the role of the AFOLU sector, and this led the majority of State Parties not to consider the role of "Agriculture, Forestry and Other Land Use" in their Nationally Determined Contributions.

The Paris Agreement has not increased the role of the SBSTA in the UNFCCC framework, but it presents some significant innovations as the emphasis on the connection between climate change mitigation and human rights protection in the Preamble, the

establishment of a new framework for the adaptation to climate change (which unfortunately does not make any reference to the sector of agriculture) at Art.7, and the inedited reference to the issue of "loss and damage" at Art.8. However, as long as the regulation of the AFOLU sector aimed at mitigating climate change is concerned, there is no further innovation introduced by the Agreement that is worth to be mentioned.

4.5. Conclusion

In conclusion, as long as the object of this research is concerned, the Paris Agreement does not introduce any significant improvement to the framework established by the Kyoto Protocol. Quite on the contrary, although a binding global obligation of result has been established, no binding individual obligation of result has been identified, but merely some binding obligations of conduct. Such obligations of conduct, moreover, do not make any reference to the sector of agriculture, and they just impose the regular draft of "inventory reports" that shall account for the "anthropogenic emissions by sources and removals by sinks" of GHG (Art.13.7.a). To be even more precise, it should be observed that not only the regulation of activities related to the AFOLU sector, but also the regulation of those activities related to other polluting sectors which were mentioned by the Kyoto Protocol (e.g. energy, industrial processes, waste, etc.), is absolutely absent in the Paris Agreement text. Given the absence of the Agreement on the clarification of which human activities are polluting and in need of being regulated and, given the absence of any reference to the Protocol of 1997, it can be said that the Agreement of 2015 remains silent not only on the individual obligations of result, but also on the legal identification of sectors that can be considered as polluting and in need of regulation. Therefore, the Agreement seems to identify a challenging collective obligation of result, without establishing a proper framework for its achievement. The explanation for the flexible and sometimes excessively malleable framework emerging from the Paris Agreement can be maybe found in two distinguished causes. First of all, the Parties in 2015 were quite conscious of the limits of the previous Kyoto Protocol (i.e. insufficient commitment of states in the first and, even more, in the second commitment period; too strict distinction between Annex and non-Annex Parties to the Convention; difficulty in the identification of common rules for the regulation of the LULUCF sector). Probably, in the Parties' view, such limits could be overcome by the adoption of a bottom-up approach that could leave

each state with more margin of manoeuvre, and by enhancing it through the identification of a number of transparency and compliance rules. Secondly, it should not be overlooked that after the great failure of COP 15, which was held in Copenhagen in 2009, and which was not able to produce a new protocol to the Convention, Parties had an even bigger pressure upon them, and could not afford the failure of another negotiation process. Therefore, the adoption of a new treaty in the framework of the UNFCCC which involves both the participation of developed and developing countries, but remains vague on the binding obligation of results, and completely silent on the identification of the sectors that need to be regulated, must have seemed like the least bad solution to both overcome the limits of the Kyoto Protocol, and to avoid a failure as the one of Copenhagen.

5.

5.1. The International Climate Legal Regime

The three international treaties analysed above, are the only International Treaties on Climate Change to have reached an (almost) universal scope of application. Each treaty had a peculiar objective and, although these treaties have reached some important results, they all present some structural limits that can be reconducted to the fact of being the product of diplomatic and political process which have seen the interaction of sovereign independent states.

The main objectives of the UNFCCC were to establish a mother convention for the protection of global climate, and to reach the largest possible number of State Parties. It can be said that such objectives have been achieved by the Convention of 1992, that was also able to stress the importance of the AFOLU sector in terms of GHG mitigation. However, the Convention reached this aim at the expenses of fixing no ambitious global target, by creating a strong divide between Annex and non-Annex Parties, and by remaining silent on any binding obligations of result.

Next, the Kyoto Protocol's main objective was to establish clear targets and binding obligations of result for State Parties, and also to clarify the economic sectors whose regulation is more urgent and the type of GHG that must be considered more responsible for the contamination of the atmosphere. Also in this case it is possible to affirm that the Treaty's objectives have been reached, and it is also important to underscore that the

Protocol has vehemently reaffirmed the relevance of the AFOLU sector for the mitigation of climate change. Nevertheless, the Kyoto Protocol has encountered some main problems in terms of ratification, as well as difficulties in providing clear regulation of the LULUCF sector. Besides this, it maintained the static distinction between developed and developing countries that already characterized the Convention of 1992.

Finally, the Paris Agreement tried to go beyond the rigid distinction between Annex and non-Annex Parties, without repeating the unsuccessful experience of Copenhagen. The Agreement of 2015 was actually able to meet this target, and it did so by also establishing a new binding global obligation of result, that could ultimately go beyond the unambitious objective fixed by the UNFCCC. Unfortunately, the achievement of such diplomatic result, required State Parties to sacrifice, during the draft of the Paris Agreement's text, the identification of any binding individual target of result. Besides this, the Agreement remained silent on the role that the AFOLU sector can play in order to reach the 1.5°C objective.

Therefore, although some elements related to "Agriculture Forestry and Other Land Use" can be identified in the treaties which constitute the basis of the International Climate Legal Regime, the current system of regulation of the AFOLU sector emerging from the establishment of the three Universal Climate Treaties is still far from being satisfactory. Two main issues need to be solved in order to establish a proper system of global governance allowing the AFOLU sector to be properly regulated in order to mitigate GHG emissions and, consequently, in order to mitigate climate change.

First of all, it is necessary to make the negotiation process which led to the establishment of new climate treaties, as well as the discussions held by the Conferences of the Parties, more based on scientific facts and less on political interests. As it has been previously pointed out, the UNFCCC had already established a Subsidiary Body for Scientific and Technological Advice (SBSTA). Nonetheless, the UNFCCC merely envisaged the SBSTA as an advisory body, and its power were not enlarged over time. To increase and expand the role of scientific committees in the evaluation of the effectiveness of climate policies and international climate treaties will be fundamental in order to establish a proper system of climate governance which also considers and regulates the activities of the AFOLU sector.

Last but not least, the climate crisis, as well as its relation with the AFOLU sector, will never be effectively treated and addressed until the dogma of an international system composed of sovereign independent states will not be overcome. As a matter of facts, provided that it is a long time now that the World is getting always more complex and interdependent (Keohane & Nye 1987) it is necessary to build systems of a global governance that also envisage the devolution of some sovereign powers to supernational structures and organizations. This change of heart and political habits becomes particularly urgent, especially when some peculiar phenomena, which are transnational in nature by definition, (as the protection of the goal climate and the efficient production of an amount of food that is sufficient food to feed the whole humanity) are concerned. As a matter of facts, not only the emergence of transnational phenomena touches upon a number of aspects of global politics and human security, (e.g. transnational terrorism and transnational migration could undermine both food security and energy security), but a number of scholars have warned that global warming in particular cannot be prevented by any state acting alone (Lowe 2007) and, as the Scholar Kannan Ambalam stated, "no crisis in world history has so clearly demonstrated […] the increasing interdependence of governments and other stakeholders as the contemporary global environmental crisis" (2014, p.145). Therefore, the environmental and climate crisis result being the quintessence of a World system characterized by transnational phenomena and interdependent actors. To find efficient ways to manage the limited resources we can use to feed humanity, by also drastically cutting environmental contamination and GHG emission before it is too late, is a challenge that goes well beyond the capabilities of the stereotyped "sovereign independent states", and it will require a completely new approach and conceptualization on the role of states in World Politics, as well as a major role of International and Transnational Law.

Evidently, further research need to be conducted over these issues.

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