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The Montreal Protocol: an international law achievement

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ABSTRACT

The current state of the environment is a major concern for most of the countries. However, despite all the efforts made in the multilateral arena, it seems that the practical results are minimal. Within this context, the Montreal Protocol remains as an international instrument that has been implemented successfully worldwide. This article explores the legal characteristics that made the Montreal Protocol such a remarkable legal agreement, proposing that it involves a series of well-designed binding commitments, a precautionary approach, makes differentiation for developing countries, is a flexible agreement, does not include soft law, and reflects a sense of compromise among the international community, all of which has led it to its unquestionable success. For those purposes, the articles use an international law perspective mainly from the Critical Legal Studies approach and from Law and Economics.

Keywords: Montreal Protocol – International Law – Rule of Law -Flexibility – Precautionary Principle – Common but Differentiated Responsibilities – Soft Law

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INTRODUCTION

It is a well-known fact that the condition of the environment is a major threat to the planet and a serious concern for most of the countries as well as for diverse international organizations. Such concern about the environment is not new; indeed, since the 1970s, certain countries and organizations have already settled on their agendas regarding this issue (Robertson, 2021). Additionally, several non-state actors (Vu et al., 2021) have been persistently trying to push for environmental action from governments, succeeding only a few times.

To address the multiple concerns regarding environmental problems (such as global warming, desertification, and ocean acidification, among many others), a significant number of international agreements have been concluded with the hope of reversing the damage created. Such agreements have created a whole international legal regime for environmental protection. According to Gonzales et al., "There are more than 1100 MEAs (Multilateral Environmental Agreements) in addition to 1100 bilateral and 250 "other" environmental agreements covering nearly every imaginable environmental problem from oceans to atmosphere and from the Antarctic to the Arctic" (2015). The quantity of obligations created might suggest that the problem is under control. However, the juridical framework through which to address these concerns has not created the necessary improvement the environmental conditions. For example, the Paris Agreement was created to avoid the increase in global temperatures and entered into force in 2016, however, temperatures are still raising. Clearly, the correspondence between this agreement and its enforcement is lacking.

Therefore, it is reasonable to consider that international environmental law is composed by a continuity of inefficient agreements. However, there is an agreement that has been a complete international success, diplomatically and practically, which is the Montreal Protocol on Substances that Deplete the Ozone Layer (Montreal Protocol). This agreement was adopted in 1987 with the main objective of regulating certain substances that might modify the ozone layer. It is an agreement in force, ratified by all United Nation members. Specifically, the Protocol regulates the usage of ozone-depleting

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substances (ODS). Since being implemented, the list of regulated substances has been constantly increasing. Overall, such measures have since been effective, as ODS has been reduced by 95%, in addition to other undesired substances. As a consequence of the efficient application of the Montreal Protocol, the ozone layer has been recovering in a steady manner and, in the near future, might be fully recovered. Also, the application of the Montreal Protocol has had other desirable effects on the environment like helping to reduce global warming.

Considering the success of the Montreal Protocol, this paper presents the following research question: Which are the main juridical elements that made the Montreal Protocol a successful international agreement? This essay proposes that the Montreal Protocol has a solid legal architecture because it contains a series of well-designed binding commitments, a precautionary approach, makes differentiation for developing countries, is a flexible agreement, does not include soft law, and reflects a sense of compromise among the international community, all of which has led it to remarkable success in protecting the ozone layer. This paper uses an international law perspective which includes some elements of Critical Legal Studies (to analyze the vocabularies used), Law and Economics (using terms like efficiency or cost/benefits), and exegetic analysis of the Protocol to describe the legal implications of some of its articles.

The first describes the law-making process of the Montreal Protocol. It also presents arguments to demonstrate its success, using studies produced by objective data collected by scientists. The second part presents the six juridical elements mentioned above analyzed from an international law perspective, arguing that they were essential for the legal architecture of the Protocol. The third part concludes.

1. THE LAW-MAKING OF THE MONTREAL PROTOCOL

Situated in the stratosphere, the ozone layer filters ultraviolet radiation, it contains around 90% of atmospheric ozone molecules; it works as a filter for the ultraviolet radiation of the sun (Godin-Beekmann et al., 2018). In the 1970s, researchers Molina and Rowland found that chlorofluorocarbons

(CFCs) and other ozone-depleting substances (ODSs) were becoming a significant threat to the stratospheric ozone (Wu et al., 2013). The observational pieces of evidence only appeared in the mid-80s when, enormous ozone losses over the Antarctic at the British Antarctic Survey station were discovered. The ozone is a very fragile system that depends on a series of chemical processes in the atmosphere and is a scarce substance considering that it exists just between 8 to 10 molecules per million of air molecules (Godin-Beekmann et al., 2018). It is known that its depletion has effects on human health, animal life, and ecosystems, the scale of which is yet unknown (Norman, 2008)

The international community took immediate action to start negotiating an agreement to regulate the usage of ODSs and CFCs. However, it was very difficult to explain to world leaders that "a perfume spray used in Paris could destroy a remote gas in the stratosphere and thereby cause skin cancer deaths and species extinctions half a world distant and several generations into the future" (Benedick, 2008 p. 14). The first agreement that was signed in this regard was the Vienna Convention for the Protection of the Ozone Layer that served an initial step before going into a more comprehensive and solid agreement in this regar (DeSombre, 2001).

After the signature of that agreement, a more comprehensive treaty started, being negotiated: the Montreal Protocol. It began, with a small body of negotiating parties, which represented both the richest countries that produced the biggest quantity of ODSs (such as the United States or United Kingdom), as well as those countries that, despite, producing few ODSs were disproportionally affected due to their smaller size and the financial cost of searching for alternative chemicals (Epstein, 2014). As the negotiations advanced, the negotiators started to self-organize into groups depending on their expertise and interests, which reduced the transaction costs of the designment of the protocol.

The Montreal Protocol was signed in 1987, with only 24 parties and, the humble ambition to reduce the production of CFC by 50% during 12 years. Nevertheless, the state-parties expanded their goals and increased the lists of ODSs through amendments. They also agreed to add more significant obligations in addition to strengthening a multilateral fund. The agreement

served to become the only environmental treaty that every UN member joined and later has ratified; in other words, the only treaty with universal membership (UNEP, 2022). In the words to Cardesa-Salzmann:

The Montreal Protocol's NCP is seen as an innovative endogenous enforcement mechanism that has proven to be quite successful in eliciting compliance among parties experiencing some sorts of difficulties in the implementation process. Within a general context of what some refer to as a process of 'commodification' of International law inspired by a 'managerial mindset', it has served as a model for similar enforcement mechanisms in a number of global MEAs. (2012, p. 105)

In enabling "compliance" among all the parties "despite de difficulties in the implementation process", the Montreal Protocol is considered to be "the most successful global environmental treaty in history." (Canan et al., 2015, p.113). Its general success can be measured from different angles and perspectives (Zeferos et al., 2009). According to Morgenstern et al., the Protocol has provided stability to the stratospheric ozone layer and to the surface climate (2008). Without the Montreal Protocol, the consequences in the atmosphere might have been disastrous according to scientific measurements (McKenzie et al., 2019). Moreover, there are reasons to believe that the Montreal Protocol even had a role in the current global warming, according to Goyal et al:

Using ensembles of coupled climate model simulations combined with suitable anthropogenic forcing, we have shown that a substantial amount of warming has been avoided by virtue of the Montreal Protocol of 1987. As of 2019, the protocol has likely already avoided regional warming of the order 0.5 °C–1.0 °C over some land areas, and over much of the Arctic.(1987, p.6)

To that end, it is considered that by 2050 the measures taken by the Protocol would have avoided a global warming of around 1.5-4 °C, depending of the altitude in the earth (Barnes et al., 2021). According to Young et al., "we estimate that there could have been 325–690 billion tons less carbon held in plants and soils by the end of this century (2080–2099) without the Montreal Protocol." (Young et al., 2021, p. 384). Because of the Montreal Protocol, the zones outside the polar regions have been affected in small measure

and, UV radiation has been relatively small (Newman & McKenzie, 2020). Moreover, according to Wu et al. "We find that during 2020–29, severe ozone loss and large CFC increases—had they occurred—would have been capable of seriously affecting the hydrological cycle and the atmospheric zonal mean circulation across the entire planet." (2013, p. 4064). It is calculated that a full recovery of the ozone layer will occur in 2067 approximately, depending on diverse factors (Zerefos et al., 2009, p. 199).

However, there are still many challenges for the Montreal Protocol. To measure the beneficial effects of the Montreal Protocol on the ozone layer still presents difficulties (Maeder et al., 2010), which makes the work of scientists more complicated. For instance, recent research has demonstrated how much the climate may affect the effort of scientists to measure the ozone layer in certain regions (Feng et al., 2021). ODSs still banked are still creating damage, so that has to be taken into account (Norman et al., 2008). By the same token, there are controversially some CFCs that are considered essential exceptions (meaning allowed to be used for essential necessity) that still are used and consequently cause some damages (Gareau, 2008). For example, feedstock exemptions that were authorized by the Montreal Protocol have shown to be more damaging to the environment than what was initially believed (Andersen et al. 2021).

To sum up, the international community has created an international agreement to protect the ozone layer. This agreement, Montreal Protocol, is considered a major success for achieving its objectives efficiently. In the next chapter, the legal components of the Protocol are analyzed from an international law perspective.

2. JURIDICAL ANALYSIS OF THE MAIN COMPONENTS

International law has two fundamental purposes: to enact international regulations for the subjects of law and to create a socialization framework between states and other members of the international community (Koskenniemi, 2022). In this regard, normally it produces rules but also standards, that are obligatory in nature. Of course, it is essential that international law is applied and implemented in good faith (Zeng, 2014).

In the last years, within the structure of international law, the field of international environmental law has emerged with the objective "to reach certain common legal grounds to achieve a similar international framework of law for the protection of the environment and fostering sustainable development." (Ezeizabarrena, 2020, p.158). In other words, a common interest is shaping this field of international law from a substantive and procedural approach (Cardesa-Salzmann, 2012). The interest of protecting the environment is a policy problem that orientates the policy-making of the states, in the words of Kelleher: "there is a reciprocal relationship between the policy-making process and the structuring of the policy problem; the policy-making process both influences and is influenced by the way in which a given policy problem is structured." (Kelleher, 2001, p. 79). To achieve correct international policy-making over environmental protection there is a growing tendency to consider the environment as a public global good (Bodansky, 2012). The logic behind this is explained in the following words by Barret:

Where a global externality is unidirectional, the country causing the externality will, in the absence of a negotiated settlement, ignore the damages its activities impose on other countries. This is the full non-co-operative outcome. The full co-operative outcome is found by internalizing the externality. In this case the country inflicting the externality chooses its actions so as to maximize the net benefits of all countries, including itself. Global net benefits will of course be higher in this case. The difference between the global net benefits for the co-operative and non-co-operative outcomes defines the potential gains to co-operation. (1990, p.70)

For those purposes, during the last decades, a great number of agreements have been signed regarding international environmental law. According to Gonzales et al. more than 2,000 agreements have been signed in that regard (2015). However, the number might be much higher now, considering that the above-mentioned research is from 2015. Moreover, that number does not include instruments like memoranda of understanding, interinstitutional agreements, decisions within regional authorities (like European Union decisions), United Nations General Assembly Resolutions, etc.

This astonishing number of instruments has created a whole legal regime of international environmental law, which is dense and complex,

and it presents its own logic and principles (Atapattu, 2006). It is not a unique phenomenon, international law has been fragmenting in the last years in diverse regimes (Simma, 2006). Furthermore, according to Simma & Pulkowski international law has even fragmented into self-contained regimes, which makes the jurisdictional and substantive analysis harder to perform for some areas of law (Simma, 2006).

Like in other areas of the law, for international environmental law the legal design of a treaty can have a close relationship with the outcome of its objectives and affect its efficiency (Thoms, 2003). There have been different attempts to approach juridically to diverse environmental problems (Held & Roger, 2018) and it can be concluded that the legal architecture of the agreement matters. That architecture responds to the objectives and necessities of the agreement, and it will variate according to them in diverse categories such as the intensity of the obligations, the precision of those, the dynamism of certain processes, timings, etc. To make an analogy, when a building is designed, each of its components may be more or less important according to its own necessities. It might be essential to incorporate an elevator in a 102-floor building but not so important in a 3-floor building. As much as the architectural design of a building matter, a legal architecture of a treaty can be determinant for its success.

In that regard, this paper argues that the legal architecture of the Montreal Protocol is well-designed according to the context it needed to face. For those purposes, six juridical elements incorporated in the Protocol will be discussed in the lines below, that this paper proposes have been essential for its successful outcome: the certainty and predictability of the obligations, the precautionary principle, the flexibility of the agreement, the common but differentiated responsibilities, the absence of soft law and the commitment of the international community. Each one of them will be analyzed separately, nevertheless, their success relies in their application in conjunction.

2.1. THE RULE OF LAW: CERTAINTY AND PREDICTABILITY

The rule of law is a fundamental legal concept related to the certainty and predictability of the law and it is an essential component of the Montreal

Protocol. It is a complex concept that might have many definitions and approaches. In general, it implies constraining the power of the government by ensuring legal certainty, so the subjects of law can predict what is permitted or prohibited (Ebbesson, 2010). In that regard, Raitio provides a definition that reflects the approach of this paper:

I will try to define the principle of legal certainty. It has at least two dimensions, namely predictability and acceptability. The demand of legitimacy relates to the principle of legal certainty and to the interpretation process, which requires the courts to justify their decisions in a tried and tested way. So, the requirement of acceptability in judicial decision-making can be linked with legal certainty when considering the grounds of the judgment. Those grounds should be predictable and acceptable. (2013, p.5)

But besides any doctrinal definition, two elements remain central for the rule of law which are predictability and acceptability. The acceptability is not in question in this part of the article and will be discussed below. The predictability which has a close relation with certainty has been reflected through different categories in the treaty: the obligatory wording, the command and control measures, targets, and timetables, certain lists of ODSs, among others.

About the obligatory wording, one good sample is Article 2 of the Montreal Protocol, regarding control measures; it uses the word "shall" in its different sections to denote its obligatory character. Although the usage of "shall" can be problematic to determine a prohibition, a goal or an order (Krapivkina, 2017), it is clear that in legal terms it is used to denote an obligation (Garzone, 2013). To make an example, Article 2 paragraph 3 tells:

Each Party shall ensure that for the period 1 July 1993 to 30 June 1994 and in each twelve-month period thereafter, its calculated level of consumption of the controlled substances in Group I of Annex A does not exceed, annually, eighty per cent of its calculated level of consumption in 1986

As suggested above, the word "shall" is implying an obligation in the statement. The object of that obligation (the controlled substances in Group I of Annex A) is explicitly described in the article, fixing a precise maximum

quantity for the consumption of the mentioned substances. Moreover, the article is providing an exact period of time to perform the obligation. So, there is no possibility to interpret that the obligation could be performed out of that period of time or that the substances in Group I of Annex A are exempt from this article. In simple words, there is no room for interpretation or legal manoeuvring from the state parties to avoid fulfilling obligations.

Besides incorporating objective obligations, the articles are written systematically. The whole article 2 provides direct commands of the measures that countries shall take what has been called the "command and control measures", which basically means a direct regulation. This is complemented by article 3 which calculates the control levels of production, import/export and consumption of ODSs. According to Plein, this unique approach "had the consequence of capping both the level of production and the quantity of the substances that actually remained in the country each year." (2007, p.75) It is an unusual technique in the agreements and it seems outdated nowadays but it was successful in the elimination of ODSs. (Gareau, 2015) The obligations of both articles need each other to become effective, otherwise, their practical application would be limited.

Furthermore, the Montreal Protocol set in article 2 clear targets and timetables. It provides restrictions concerning the dates when substances must be phased out, but it allows states the necessary flexibility to choose their own means for phasing out these restricted chemicals. (Plein, 2007) This became an essential piece of the agreement to provide enough time for adaptation but at the same time to give obligatory timings so the obligations are fulfilled in a limited period. The purpose of the flexibility was to reduce emissions but to incentivize technological transformation at the same time, in other words countries could choose the means to reduce the emissions and therefore they could also develop technology for that purpose.(Barrett, 2008, p. 249) For those purposes, countries started to develop alternatives to produce chemicals that can substitute the ODSs, which required improving their techniques and knowledge to create more environmentally friendly chemicals to fulfill the obligations of the Protocol.

Another factor that provided certainty and predictability to the agreement was to make concrete lists of the ODSs. The ODSs are listed in

annex A (CFCs, halons), B (fully halogenated CFCs, carbon tetrachloride, methyl chloroform), C (HCFCs), E (methyl bromide) and F (HFCs). Those lists have a fixed groups and substances of the substances subject to control. For example Annex A lists certain CFCSs and halons as controlled substances, establishes the following:

Annex A: Controlled substances
Montreal Protocol

Group	Substance	Ozone-Depleting Potential*
Group I		
$CFCl_3$	(CFC11)	1.0
CF_2Cl_2	(CFC12)	1.0
$C_2F_3Cl_3$	(CFC113)	0.8
$C_2F_4Cl_2$	(CFC114)	1.0
C_2F_5Cl	(CFC115)	0.6
Group II		
CF_2BrCl	(halon1211)	3.0
CF_3Br	(halon1301)	10.0
$C_2F_4Br_2$	(halon2402)	6.0

There is no doubt that a substance such as (CFC 11) is regulated by this annex for example. There is no space for interpretation and discussion. In other words, the idea of making a closed and determined list provides defined regulated substances with an objective criteria.

For the above-mentioned, the obligations contained in the Montreal Protocol can be seen as a series of well-designed commitments. The agreement has not left any room for unnecessary interpretation or legal manoeuvring from a party that might want to avoid compiling with the objectives of the treaty. The articles have been written with precision, so it is clear for the state parties what are their obligations in accordance to the treaty. For those reasons, the Montreal Protocol can be considered an agreement compatible with the essence of the rule of law.

2.2. THE NECESSITY OF CHANGE: FLEXIBILITY IN THE MONTREAL PROTOCOL

Normally, from a legal point of view, flexibility as a concept will be antagonistic with certainty, which is key for a successful law to avoid imprecisions. As Ebesson puts it "prima facie, dealing with complex and unexpected changes and ensuring flexibility does not seem to square well with the notion of the rule of law and the inflexibility implied by requirements of legal certainty." (2010, p. 415) However, when the Montreal Protocol was drafted there was not enough information regarding the relation between ODSs and ozone layer depletion. Moreover, when it first started to be negotiated, the Protocol was far from perfect: only 24 countries were involved in the negotiation and its objective was very humble with no clear direction going forward. Gonzales et al., consider that the Montreal Protocol was not sufficient to save the ozone layer, according to them: "When it was first signed, was the Montreal Protocol strong enough to save the earth's ozone layer? The answer, interestingly, is no, absolutely not." (2015, p.125)

It was clear from the beginning that the Protocol needed to be strengthened according to the new scientific findings. In part, because contrary to traditional agreements that regulate a static solution, the Protocol had to confront evolving science, which is a dynamic process, that resulted in the necessity of readjusting the obligations agreed in the treaty with every notable discovery. (Zerefos et al., 2009) To that end, a legal mechanism was introduced: a regular meeting of the parties to permanently assess the agreement. In this regard, article 11 embodies the obligation:

> Article 11. Meetings of the Parties
>
> 1. The Parties shall hold meetings at regular intervals. The secretariat shall convene the first meeting of the Parties not later than one year after the date of the entry into force of this Protocol and in conjunction with a meeting of the Conference of the Parties to the Convention, if a meeting of the latter is scheduled within that period.
>
> 2. Subsequent ordinary meetings of the Parties shall be held, unless the Parties otherwise decide, in conjunction with meetings of the Conference of the Parties to the Convention. Extraordinary meetings of the Parties shall be held at such other times as may be deemed

> necessary by a meeting of the Parties, or at the written request of any Party, provided that, within six months of such a request being communicated to to them by the secretariat, it is supported by at least one third of the Parties.
>
> 3. The Parties, at their first meeting, shall:
>
> (…)Decide on any addition to, insertion in or removal from any annex of substances and on related control measures in accordance with paragraph 10 of Article 2; (…)

Consider and adopt, as required, proposals for amendment of this Protocol or any annex and for any new annex

The main idea of the article is that, during such meetings, the parties are able to decide whether it is necessary to add or remove substances from the agreement. Also, the parties can, under the article, make a general assessment of the Protocol. Thus, it is unanimously agreed that the Protocol shall be modified in response to the evolution of science or necessities of its implementation: new chemicals can be increased in the list of controlled substances, targets can be reassessed by a two-thirds majority and during the annual meetings the parties can make diverse operational adjustments to the implementation of the treaties.(Elspeth, 2013) Whenever the Protocol needs to be altered, there are three instruments to do so: amendments, adjustments, and decisions.(Finkelman, 2008) The Montreal Protocol responds to the political objective to protect the ozone layer, therefore the decision of listing or delisting chemicals is in the end a political decision based on scientific knowledge.(Jacobs, 2014)

At the same time, the Montreal Protocol has developed a mechanism to provide flexibility in its implementation. For example, the countries have to meet some specific reduction targets in a limited amount of time, however, there are no rules on how to achieve the objectives.(Plein, 2007) This helps the countries to use the most efficient elements available to them, according to their level of development and their context. The implementation processes of the Protocol rely also on an Implementation Committee that has an informal procedure which has proven to be more efficient than other formal quasi-judicial mechanisms.(Cardesa-Salzmann, 2012)

The Montreal Protocol was negotiated and developed to confront an uncertain dynamic problem. The philosophy behind the treaty has been that of the "start and strengthen' approach: "Throughout its 25-year history, the Montreal Protocol has started by addressing a problem, learned by doing, gained experience and confidence, and then done more." (Zaelke et al., 2012, p. 235) This fluid and practical approach is evident in how the latest models having shown that initial observations underestimated the damage of ozone depletion (Benedick, 2008), consequently evolved modifications that have proven to be efficient and necessary. That approach allowed the introduction of concepts such as the "best available technology" (BAT) which became essential in the development of the Montreal Protocol, by making use of the latest developed technology in its implementation. Concretely, that was reflected in Article 6 which states: "the Parties shall assess the control measures provided for in Article 2 on the basis of available scientific, environmental, technical and economic information". The law-makers were aware that technology was constantly evolving and it was necessary to create a legal mechanism to allow those discoveries to be incorporated in the implementation of the Protocol.

To sum up, flexibility has been key to confronting the new scientific discoveries and the challenges that each reassessment posed. Moreover, it was so necessary that the Protocol has been amended five times and adjusted fourteen times in a period of fewer than 30 years, due to discoveries of other potentially damaging substances. That is an important indicator of how necessary was to provide flexibility to such an important agreement.

2.3 TO PREVENT RATHER THAN TO PAY: THE INTRODUCTION OF THE PRECAUTIONARY PRINCIPLE

The Montreal Protocol was an atypical treaty, being "not a response to existing conditions, but rather a preventive action on a global scale." (Benedick, 2008, p. 16) The precautionary principle encourages action against a threat to harm the health or environment when there is not sufficient evidence yet of the causal relations. This principle provides a balance between a risk and the cost of unnecessary regulation, since its primary function is to counteract the potentially catastrophic consequences of an underestimated risk.(Karlsson, 2006). According to the same author, the uncertainty might be interpreted:

As lack of scientific data and knowledge regarding effects, exposure or causal relationships related to a threat, to such an extent that prevents accurate establishments or interpretations of risk assessments. Here, not only threats predicted on the basis of scientific facts or scientifically based suspicion, but also those based on well-grounded practical experience or laymen knowledge of adverse environmental change, might invoke the precautionary principle. Since each type of environmental problem shows unique characteristics, any interpretation of ‘‘threat’’ and ‘‘uncertainty’’ should be contextual and discussed in each specific case. (Karlsson 2006, p. 340)

As it was mentioned before, the scientific evidence that emerged during the 70s established a relation between the ODS and the damage to the atmospheric layer; through researchers thought it could potentially become a significant environmental risk, the relation remained inconclusive. (Jacobs, 2014) Since the Protocol was born without conclusive scientific evidence, it was necessarily subject to reassessment every 4 years at least. However, the international community pushed forward the agreement, because even if the evidence turned out to be exaggerated, the consequences could have been extremely costly or simply could have been irreversible. (Gareau, 2015) The Montreal Protocol recognizes a precautionary approach, in its preamble describing itself as:

Determined to protect the ozone layer by taking precautionary measures to control equitably total global emissions of substances that deplete it, with the ultimate objective of their elimination on the basis of developments in scientific knowledge, taking into account technical and economic considerations

Acknowledging that special provision is required to meet the needs of developing countries for these substances,

Noting the precautionary measures for controlling emissions of certain chlorofluorocarbons that have already been taken at national and regional levels

The Montreal Protocol embodies as a whole the precautionary principle. There is no specific article, besides the preamble, that addresses

directly to this principle. However, it is implicit along the treaty and due to its nature. It is now credited for being the first environmental agreement in applying the precautionary principle. (Willi et al., 2021).

2.4 THE PROBLEM OF THE DEVELOPING COUNTRIES: THE PRINCIPLE OF COMMON BUT DIFFERENTIATED RESPONSIBILITIES

It is evident that not every country has the same legal, scientific, technical or economic capacities. Moreover, as it was suggested before, not every country has also the same responsibility for the damage created. In this regard, it was clear that the Montreal Protocol could not make a flat treaty implementing common obligations upon some states that could not fulfill them. Therefore, it introduced the principle of common but differentiated responsibilities, entitling less developed countries to have an extra period to fulfill the obligations contained in the treaty.(Hey & Anesen, 2005) The two articles that embody these principles are the fifth and tenth articles of the Montreal Protocol. According to article 5:

> Article 5. Special Situation of Developing Countries
>
> 1. Any Party that is a developing country and whose annual calculated level of consumption of the controlled substances is less than 0.3 kilograms per capita on the date of the entry into force of the Protocol for it, or any time thereafter within ten years of the date of entry into force of the Protocol shall, in order to meet its basic domestic needs, be entitled to delay its compliance with the control measures set out in paragraphs 1 to 4 of Article 2 by ten years after that specified in those paragraphs.

This article creates a clear differentiation of the obligation for developed and developing countries. However, it does not exempt from the obligation, it only provides the countries who need it more time to achieve their goals. In the words of Barret: "the Montreal Protocol requires all countries, rich and poor alike, to cut back on their production and consumption of CFCs. Developing countries were given easier, initial limits, but they were expected to get to the same final end-points as the rich countries."(2008, p. 248) However, since article 5 does not contain specific

mechanisms to fulfill this obligation at that time (Jordan & O´Riordan, 2004, p. 171), it should be read in conjunction with article 10. This latest article provides the obligation of providing assistance to the developing countries to help them to achieve their goals:

> Article 10. Technical Assistance
>
> 1. The Parties shall, in the context of the provisions of Article 4 of the Convention, and taking into account in particular the needs of developing countries, co-operate in promoting technical assistance to facilitate participation in and implementation of this Protocol.

This article has enabled more developed countries to transfer technical assistance to help to achieve the Protocol objectives. In this regard, Andresen & Hey consider that there is an obligation from the developed countries to assist developing states to achieve the implementation of measures and policies, and for those purposes, it is essential to transfer technical and financial sources.(2008) Without this obligatory transfer of technology developing states could have taken much longer in achieving the objectives of the agreement with the damaging consequences for the planet.

The principle of common but differentiated responsibilities was reinforced by the London Amendment of 1990 which changed the deadlines for developed and developing countries.(Green, 2009) Furthermore, a Multilateral Fund was created, financed by developed countries and United Nations which compensates the compliance costs of developing countries in a scale of assessments (Barret, 2008). This Fund is nowadays a well-established system that also receives donations and it provides a necessary additional support where the Montreal Protocol and the international market are not able to produce the necessary incentives (Plein, 2007)

2.5 A SENSE OF COMPROMISE AMONG THE INTERNATIONAL COMMUNITY

The international community is composed by states, but also by NGOs, international organizations, enterprises, and collectives of people, among others (Roshchin, 2017). In the case of the negotiations of the Montreal Protocol, the individuals and collectives of people generated a lot of pressure on their governments to achieve an agreement to reduce and ultimately to

forbid the usage of ODSs. NGOs also had a role in creating pressure for the decision-makers to get concrete results.

For some time, NGOs were pressuring governments, yet the breakout point happened when many groups of individuals started to pressure their governments across Europe, the USA and the developing countries (Epstein et al., 2014). Those groups started to coordinate between each other and even held an important international meeting in London with the purpose of pressuring the governments to agree on tight schedules to get rid of the ODSs (Epstein et al., 2014).

The involvement of people, locally, generated pressure from the bottom up to their authorities. This not only caused authorities to take action in this matter but also citizens to provoke public meetings and media participation, among other publicity which increased substantially the decision-making transparency (Elspeth, 2013). For example, in the United States, the interest of the people incentivized the Environmental Protection Agency (EPA) to publish information regarding the negotiations of the Montreal Protocol (Elspeth, 2013).

In general, people were galvanized by a diversity of factors, among them the evidence that without a healthy ozone layer there was a significant risk of getting skin cancer (Sustein, 2006). As Sunstein mentions, "it is not difficult to energize people with the vivid image of a loss of the earth's protective shield." (2006, p.9). The people significantly affected their consumer behaviors to avoid ODS in the atmosphere; for example, there was an extended refusal to purchase aerosol spray cans. This also creates pressure on the industry, that needed to adapt their productions to the demands of a market of people aware of the damaging ODSs. The industry found more helpful to work with the governments to take action and to agree on a common bottom line for the production of certain chemicals.

2.6. ABSENCE OF SOFT-LAW

A very controversial concept of international law is the term "soft law". It is hard to define but mainly it refers to legal statements that are not binding (Boyle, 1999). In that category we can find some aspirational norms or promises, resolutions that are not binding (like the United Nations General

Assembly resolutions), codes of conduct, declarations, and even some articles embodied in international treaties that do not possess a precise or certain nature (Pergantis, 2009). The main idea behind these sets of instruments is that they give legal effects but not at the same level that a real law (Klabbers, 1999). In other words, is a concept that for its imprecision is within shades of grey of a juridical or a political concept. It can be criticized that it has a level of vagueness, but that is inherent in every legal rule and every day this situation is being improved (Goldmann, 2012).

Soft law can serve to strengthen institutions, to provide principles of interpretation, to be the first step before creating pieces of hard law, among other function (Skjærseth et al., 2006). In other words, it has a function for international law and it might be useful in building international dialogue or to create a level of compromise without having to get into complex process such as the ratification of a treaty. For their nature, they tend to be easy to amend or to modify. Finkelman has even proposed that "soft law may serve to protect the global environment more effectively than agreements containing obligatory rules." (2008, p.72).

However, it is very easy to go from soft-law to non-law, like it might have happened in various parts of important agreements such as the Paris Agreement (Rajamani, 2016). The arising soft-law in diverse international agreements has created a level of contradictions between those, generating a complexity that confuses any level of analysis (Chinkin, 1989). That´s perhaps one of the reasons why many times scholars and practitioners tend to ignore soft-law (Ellis, 2012). Moreover, it has even been considered detrimental for the effects it may have complicating unnecessarily the things. In this regard, Klabbers considers:

Perhaps, then, it is time to get rid of soft law altogether. Not only does soft law have nothing to contribute to the solution of the political problems of the day, it only contributes to the types of smokescreens that bureaucrats and politicians may be fond of, but that in the end are a danger to our cherished Rule of Law.(1999, p. 391)

The Montreal Protocol is not based on soft-law. Along the text, as it was mentioned above, almost every article incorporates the word "shall", denoting that it is an obligation. Also, the articles establish obligations

within a framework of time, and they are written precisely in the agreement. There is not even a phrase or article that could be interpreted as one of soft-law. So, the whole agreement is one piece of hard-law, precise, determined and obligatory as it was already analyzed.

3. ANALYTICAL SUMMARY: THE CONNECTION OF THE LEGAL ELEMENTS

The Montreal Protocol has been an efficient agreement that achieved its goals within a reasonable cost (Sustein, 2006). The Protocol by adding explicitly restricted substances to its annexes provided predictability and certainty to the state-parties. The precautionary principle is perhaps the cornerstone of the logic of the agreement that lead to its negotiation and further implementation. The idea of presumably irreversible and serious damage to the atmosphere provoked a reaction of the international community that participated. Evidently, not every country had the same capacity so an obligation of cooperation and a differentiated responsibility was introduced in the agreement, so all the countries are in conditions to participate. Another important factor is that the obligations were written in a clear manner, utilizing annexes to define the ODSs subject to regulation. It is also remarkable of the agreement the avoidance introducing "soft law" in an excessive or inopportune manner.

These legal categories cannot be analysed independently in a vacuum. They operate within a context as they were the right measures for an unknown environmental situation, as it was suggested before the quantity of damage and the exact relation between ODSs and ozone layer depletion did not count with scientific certainty yet. But, perhaps, more importantly, the effectiveness of the agreement was to introduce all these instruments in one single legal piece, therefore its success is due to their application as a whole. For example, a very well legally established precautionary principle would not be effective if there is no significant participation from the international community, this applies both ways. There is an undeniable correlation between all these legal techniques.

Notwithstanding the great achievements of the Montreal Protocol, there are many issues that still need to be attended. To confront those

challenges, country delegates continue regularly meeting to adjust the regulations and implementation processes, rather than just waiting for an eventual recovery of the ozone layer (Gareau, 2015). For example, Gareau tells that there are new reported chemicals potentially harmful to the ozone layer, also some ODSs that were not regulated by the Montreal Protocol, among other challenges (2015). For instance, Plein considers that there are problems with the black market for ODSs which might be especially challenging for underdeveloped countries (2007). Or the increasing of stratospheric chlorine from short-lived chemicals which are not controlled by the Montreal Protocol (Hossaini et al., 2015). And, even intra-institutional challenges that are constantly reassessed and calibrated by the constant meetings of the parties.

CONCLUSIONS

Is in the best interest of humanity to protect the Ozone Layer. And there is no doubt that the Montreal Protocol is a successful agreement to that end. Scientific measures show that the ozone layer has been recovering since the adoption of that instrument. It has also had other positive effects on the environment like helping to reduce global warming.

International law has created a whole legal regime to protect the environment that consists of numerous agreements as well as principles, other legal instruments, and its own logic. Those condense the interests or common concerns of the international community. The legal architecture of an agreement is important to be effective for its own goals. In that regard, the article has provided evidence that the Montreal Protocol success is due, in great part, to its solid legal architecture. The six elements proposed above, namely certainty and predictability, flexibility, precautionary principle, common but differentiated responsibilities, a sense of compromise among the international community, and absence of soft-law; have been harmonized and balanced in the Montreal Protocol, in a way that when these elements are applied as a whole, they have shown to be the cornerstone of a solid, clear, and undoubtedly effective international law treaty. There are many reasons to believe that it might be difficult to find another international agreement with the same level of success.

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