# UNIVERZITA KARLOVA

## Právnická fakulta


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# Vybrané otázky práva ochrany klimatu se zaměřením na proces přenosu technologií

Diplomová práce

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# CHARLES UNIVERSITY

## Faculty of Law


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# Selected topics from climate change law with a focus on the transfer of technologies

Master's Thesis

Thesis' supervisor: JUDr. Karolina Žákovská, PhD.

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Zuzana Vrbová

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# Table of Contents

# GENERAL INTRODUCTION

The issue of climate change has been an increasingly prominent topic on the global agenda for over twenty years and its gravity has by now been acknowledged by the majority of the international community. This recognition stems from the vast array of data showing that our planet is getting warmer, extreme weather events take place more regularly than ever before and the scientists' consensus about the severity of the threat of global climate change is making the reality of it irrefutable.[1]

The hazardous consequences accompanying climate change have been described in a number of publications. Some of the most frequently mentioned impacts include natural phenomena such as sea ice melting, raising of the global sea level, changes of ocean currents, areal droughts and a fall in biodiversity due to the loss of plant and animal species that are unable to adapt to the change in climate. An aspect that used to be marginalized is the societal impact of the climate change. Changes to our natural habitat consequently influence the lives and lifestyles of humans and therefore causes social tensions in global societies. Recently, this aspect of the issue has been intensively discussed at the international fora dealing with climate change issues.[2]

The problem of the changing climate is therefore a new global matter of concern and might be the biggest challenge our society has ever had to face. The diversity and complex relationships of the associated aspects of it makes it extremely difficult to tackle and the only way of handling it, is to try to reach a global consensus and joined endeavor throughout a number of scientific fields and political levels. The solution on an international law level is represented by several international treaties, which will be introduced and compared in this paper, with a major focus on the latest one - the Paris Agreement from December 2015. Its rapid acceptance causing it to come into force

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[1] Nuccitelli, D., '97% global warming consensus paper surpasses half million downloads'. *The Guardian* (2016). Available at: https://www.theguardian.com/environment/climate-consensus-97-per-cent/2016/jun/23/97-global-warming-consensus-paper-surpasses-half-a-million-downloads. Accessed 15 March 2017.

[2] Social impacts of the climate change are predominantly mass migration caused by weather changes, aggravation of harvest which leads to the lack of food or famine, lack of water sources or spread of infectious diseases to new areas due to the move of their transmitters.

faster than most optimistic prognoses presumed, highlights the urge to address the problem of the change of global climate.

The legal framework regarding the issue started to be an important topic (especially within the United Nations) from the early 1990's when the United Nations Framework Convention on Climate Change (further also referred to as the *UNFCCC* or the *framework convention)* was issued. The global acceptance of the problem as an issue of enormous importance, however, took more than two decades. Within this period, few legal tools concerning the issue were developed, such as the Kyoto Protocol.

An important initial step concerning the information burden was undertaken at the 1988 Conference on the Changing Atmosphere in Toronto, where the panel of scientists supported the establishment of the Intergovernmental Panel on Climate Change (referred to as the *IPCC*) under the United Nations Environmental Program to support the climate science and provide international bodies with expert opinions and reports. The IPCC is an important scientific institution providing, especially the United Nations (referred to as the *UN*) offices, a scientific background for their decision making. The research and knowledge gathered and provided by the IPCC is therefore one of the major information sources of the thesis and the institution will be mentioned multiple times throughout the paper.

For instance, the IPCC's fourth report from 2007 suggests that when continuing in the sense of a *business as usual*[3] principle, global temperatures would rise by between 1.8 to 4 degrees Celsius over the twenty-first century in comparison with the pre-industrial levels.[4] The same report lays out a scenario discussing the results of such an increase (some were mentioned above) – including melting ice and snow cover, a rise of global sea level and increased frequency of extreme weather events. Therefore this level of warming, according to the IPCC, constitutes dangerous global warming.

[3] IPCC reports use the term 'business as usual', to describe the situation when industries, companies and individuals use non-innovative, classical techniques and procedures and do not decrease the overall production and consumption.

[4] IPCC, WG 1. 'Climate Change 2007: The Physical Scientific Basis', in *Fourth Assessment report: Climate Change 2007* (2007), Summary for Policymakers, p. 13.

International climate change legal framework therefore aims at reaching the goals suggested by the IPCC whilst acknowledging the warnings of its scientific panels.

Tackling climate change has, also thanks to the IPCC, become a great topic of a global debate. From a legal perspective, laws on international and national levels are already in force. However, it is necessary to question their effectivity and enforceability.

Primarily, since the paper will operate with certain terminology, it shall be clarified that whilst finding the solution of the climate crisis, two approaches should be considered. According to the IPCC reports, some changes in the global climate are still able to be averted, on the other hand, some are not and the society has to learn how to adjust to them. Therefore, from the legal perspective, two main approaches of how to handle the issue could be distinguished - mitigation measures and adaptation measures. The first one concerns steps which might lead to reversing climate change. The latter accepts that the climate has already changed and tries to find solutions on how to adapt to the new conditions. The processes of reversing the climate changes and adapting to them are partially connected to the issue of developing new technologies. These can help mitigate climate change by being more environmentally friendly than traditional processes or can be useful while acclimatizing to changes that have already occurred. Their research is of major importance and hence the whole second chapter of this thesis is dedicated to the topic.

To conclude, this paper proceeds as follows: two chapters are going to be presented. The main discourse of the first chapter is to analyse and criticize the legal outcomes of recent international climate change debates, especially the Paris Agreement, as the most recent complex climate treaty which will very likely direct the future development of climate change law. It describes the general issues when it comes to this relatively young branch of law and by analysing it, the objective is also to design the way it could be improved. The second chapter is devoted to a specific issue generated from the need to handle climate change - the process of the diffusion of environmentally sound technologies (also referred to as *environmentally friendly, green*

*or low-carbon technologies*).[5] Technologies undoubtedly play an important role in both mitigating global changes in climate and adapting to them. The issue of their transfer to the entities which do not possess them is therefore of crucial importance. Hence, the chapter will discuss the reasons behind the non-availability of environmentally friendly technologies, the general processes of their transfer, the channels established in order to facilitate it, obstacles related to it and will aim to design proposals for their improvement.

It shall be mentioned here as well, that since the topic of the thesis is quite broad and the title stands *Selected topics from climate change law with a focus on the transfer of technologies*, the author devoted the paper to only a few specific subject areas from the field whilst applying more focus to some of them. Therefore, not all the topics are covered and it is not in the scope of the thesis to discuss such a high number of questions that are connected to this topic.

As a source for some parts of this thesis, the author's semester paper from the year 2016 was used. The paper was enrolled in the Charles University Law School Annual Law Paper Competition (*SVOC*), where it was awarded as the third best in its category. The title of the paper was *'Paris Agreement: Legal Analysis and Consequences in Climate Change Law'* and its focus was predominantly the outcomes of the Paris Agreement. Also, another major source of information for this part of the thesis was the author's studies at the University of Oslo, primarily the course called *'International Climate Change and Energy Law'* under Professor Christina Voigt. Voigt was a representative of Norway during the 2015 Paris Agreement negotiations and was therefore able to delineate processes of the 21st Conference of the Parties of the UNFCCC which is a body that adopted this treaty.

[5] I.e. technologies aiming at improving the environment or being more environmentally friendly than traditional procedures and technologies, thanks to causing less emissions, not polluting water and other resources etc., as an example solar power production technologies could serve.

# 1. GENESIS OF THE CLIMATE CHANGE LAW

## 1.1. Origins of the Climate Change Law

Cornerstones for the development of climate change law, which is a relative newcomer within the field of international environmental law, could be seen in the 1938 and 1941 judgments in the *Trail Smelter case,*[6] later the case of French nuclear tests in the Pacific Ocean,[7] 1970's findings about the harmfulness of sulphur compounds causing acid rains, or rising awareness of the depletion of the ozone layer which started to be recognized in 1980's (the Montreal Protocol concerning the issue shall be mentioned here).

It shall be noted that the global climate is determined by the presence of naturally occurred greenhouse gases, such as carbon dioxide ($CO_2$), methane ($CH_4$), water vapor or nitrous oxide ($N_2O$). Scientific evidence suggests that due to their physical qualities, their increases intensify the so called *greenhouse effect* and global climatic change.[8] In 1988 and 1989, the General Assembly of the UN concluded that the climate change is a common concern of mankind and made the first effort to negotiate an international framework legal instrument.

At the beginning of the 1990's, the recognition that the state of the atmosphere has worsened and the urge to deal with the issue on the international law level arose. The United Nations Conference on Environment and Development (further also referred to as the *UNCED*), also known as the Rio Earth Summit held in Rio de Janeiro in June 1992 issued a document called Agenda 21. Its objective was, among others, to improve understanding of influences on the global atmosphere, to enhance international cooperation while protecting the climatic environment as well as outlining the social

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[6] Judgments in the Trail Smelter Case, 16 April 1938, 11 March 1941, established the international legal principle of prevention of transboundary air pollution.

[7] One of the first environmental issue addressed by the UN in the 1950s, resulted in 1963 Treaty on Banning Nuclear Weapon Tests in the Atmosphere, in Outer Space and Under Water.

[8] IPCC, WG 1. 'Climate Change 2007: The Physical Scientific Basis', in *Fourth Assessment report: Climate Change 2007* (2007). Available at: http://www.ipcc.ch/pdf/assessment-report/ar4/wg1/ar4-wg1-spm.pdf.

consequences of the atmospheric deterioration.[9] With regards to climate change, the Agenda 21 in its paragraph 9.9 comments:

'*...the need to control atmospheric emissions of greenhouse and other gases and substances will increasingly need to be based on efficiency in energy production, transmission, distribution and consumption, and on growing reliance in environmentally sound energy systems, particularly new and renewable sources of energy.'*

The necessity of a future complex solution of the possible climate change and sustainable development approach was therefore recognized in this 1992 UNCED document, together with the suggestions of the green technology development.

Considering only the development of the climate change law, some topics, such as the above mentioned ozone protection, are not going to be discussed in the thesis. The paper will be devoted to analyse and explain three legally binding strictly climate change instruments - the UNFCCC, the Kyoto Protocol and the Paris Agreement.

## 1.2. Framework Convention on Climate Change

### 1.2.1. The Rio Summit

In 1990, the General Assembly of the United Nations started an intergovernmental negotiation process with the aim to create a global framework climate treaty. That resulted in five sessions - the last one of them took place in 1992 when the United Nations Framework Convention on Climate Change (UNFCCC) was signed by 155 states. The convention entered into force in 1994 and now enjoys almost universal participation of 196 states (and the EU) around the world. It sets the most important general rules of the international climate change law which was later developed in a more complex legal area. The importance of the framework convention is significant - since it is a *framework* convention, it is going to be described here in this way, i.e. how it sets main principles, an objective and general commitments for future decision making in the field.

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[9] *See* para. 9.7 of the Agenda 21.

Few controversies were discussed during the climate change talks in 1992 and these have universal crossover to even recent climate debates. Firstly, the problem of what exactly should be done to prevent climate change had been brought up. Ideas such as lowering greenhouse emissions by setting limits that countries cannot overstep, increasing the sinks [10] that absorb $CO_2$ or the complete ban of emissions were presented.[11] Secondly, one of the political issues since the beginning was addressing those who shall take action primarily. The answers were ranging from those who have the capacity to actually implement the requisite measures and provide financing, to those who caused climate change by emitting huge amounts of greenhouse gases in the past during the industrial revolution, to those who are and will be emerging and are expected to be emitters or all the global community in general. It also started to be understood that the issue of climate change is not strictly an environmental but predominantly a social issue.

### 1.2.2. Main Provisions and Targets

The UNFCCC's main provisions include: rules on stabilizing greenhouse gas concentration at a safe level (with a persuasion of limiting emissions by developed countries according to soft targets), financial mechanism and especially engagement of developed countries to provide funding of costs related to the necessary arrangements, number of important principles (some were gradually overtook by the general international law) as well as for instance dispute settlement mechanisms. [12] The preamble anchors in its very first paragraph the central premise behind the creation of the treaty: *'Acknowledging that change in the Earth's climate and its adverse effects are a common concern of humankind,'* - the need for creating an international framework

[10] The term *sinks* refers to either natural carbon absorbers, such as plants and trees, or man-made devices, i.e. carbon capture and storage devices which are able to capture $CO_2$ from devices, buildings or air and subsequently transport and stock it or other further process carbon.

[11] Voigt, C. *The International climate change regime - UNFCCC* (lecture). February, 4, 2016. University of Oslo.

[12] Sands, P. et al., 2012. *Principles of International Environmental Law 3rd ed.* Cambridge: Cambridge University Press, p. 276.

convention was acknowledged for various reasons, such as the fact that climate change does not respect boundaries and a collective response is therefore needed.

An important decision making body under the UNFCCC was established by the Article 7 and is also mentioned in the opening Article 2 which together with that also states the objective of the treaty, as probably the most important leading idea of the climate change regime. Decisions are to be made by the Conference of the Parties (so called and further referred to as *COP*) and they should aim at stabilizing greenhouse gas concentrations '*at a level that would prevent dangerous anthropogenic interference with the climate system'*. The objective was set in a way so that it will be useable for all the future decisions made under the UNFCCC and had to be general yet dynamic enough. The wording of it is very important. The phrase *stabilizing concentrations* can be understood in a way that some greenhouse gases which will influence our global atmosphere already occur in the air and therefore to balance emissions and removals (sinks) has to be achieved[13] (this premise will further be interpreted in the Paris Agreement by using the words *net zero emissions*). The term *anthropogenic* targets the climate change caused by the acts of humans, since some natural causes of increasing concentration of the greenhouse gases exist as well. *Dangerous* implies that certain climate change can occur, however, it has to be kept on a level which is not harmful.[14] It shall be borne in mind though that according to the second part of the Article 2, the objective shall be achieved while taking into account development, ensuring food production and within a time frame allowing ecosystems to adapt to already occurred climate change.

Decisions adopted under the guidance of the ultimate objective have certain rules of procedure[15] and have to be adopted only by a consensus[16]. The UNFCCC therefore established a rule that it is the parties' consensus which is the only way on

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[13] Voigt, C. *The International climate change regime - UNFCCC* (lecture). February, 4, 2016. University of Oslo.

[14] According to the COP's Decision 1/CP.16 - Cancún Agreement, average increase of 2°C constitutes this dangerousness.

[15] These were not formally adopted but are being applied every COP, Article 18 of the UNFCCC contains rules on number of votes.

[16] *See* Article 7.2 (k) of the UNFCCC. The convention, however, does not say that the parties have to agree unitedly.

how to create international climate change law. The decisions are generally not legally binding, however, COP can decide to adopt a strictly binding treaty as well.

### 1.2.3. Principles as a Basis for the Climate Change Law Regime

The main principles are stated in Article 3. The UNFCCC is a framework convention - therefore to set up principles and interpretative guidance of the future legal instruments in the field is what the convention is focusing on. The main principles encompass firstly the *precautionary principle* – i.e. any measures preventing the climate change shall be adopted even without clear scientific certainties about the potential harm. However, the measures undertaken have to be cost-effective (i.e. *principle of cost-effectiveness*)[17]. In the fourth paragraph of Article 3 the *sustainable development principle* is anchored, which generally prescribes to balance economic, environmental and social concerns. One of the most controversial tenets of the UNFCCC is the *principle of common but differentiated responsibilities and respective capabilities*. The framework convention is taking into account the diversity of the way individual states contributed to the changes as well as their current economic and general capacity of them to take action and prescribed that the developed countries should take the lead while combating climate change. This division of states is an important aspect of the UNFCCC and also a feature that the Paris Agreement partially abandoned.

Article 4 (which also sets some of the commitments) and the convention's annexes therefore further expand the grouping of the states. The Annex-I of the UNFCCC lists the developed countries which were given obligations, while the Annex-II specifies virtually the most developed states. These have some additional obligations and more specific requirements (in comparison to countries listed only in the first annex). The Annex-II countries shall moreover provide financial resources, transfer technology and assist developing ones (i.e. *non-annexed countries*) in meeting adaptations costs. This way the convention designed a just international legal system by, in fact, misbalancing the positions of its parties which is not a commonly and widely

[17] The principle prescribes to reduce where it is being economic and is a guiding principle for establishment of the so called carbon markets.

accepted approach in international law.[18] The developing countries had de facto only the broadest obligations stipulated in Article 4.1.

After the acceptance of the UNFCCC, it became obvious that having only the framework convention in force is not enough to effectively combat an issue as far reaching as climate change. The convention needed to be more specified by its future protocols and this was also imbedded in the text of the treaty.[19] In 1995, it was the Berlin Mandate which ensured the negotiations on a more detailed protocol with legally binding obligations,[20] which later became known as the Kyoto Protocol. A major change in understanding some of the provisions of the framework convention came with the Paris Agreement in 2015.

## 1.3. Kyoto Protocol

### 1.3.1. Relationship to the UNFCCC

As concluded in the previous chapter, during the negotiations of the UNFCCC, no legally binding targets were agreed among the committed signatories. At the first session of the Conference of the Parties of the framework convention, which has been established as the highest decision-making authority under the framework convention, the Berlin Mandate was launched in order to further develop commitments of the parties and create legally binding emission targets.

The first and only protocol under the UNFCCC was initially adopted in December 1997 in Kyoto, Japan and entered into force in February 2005. The Kyoto Protocol has not entered into force right away since the requirements under its Article 25 had not been fulfilled for a few years after the process of signing (i.e. ratification by not less than 55 parties that are releasing 55 per cent of the global emissions). The reason for such a long acceptance of the protocol was the fact that the biggest emitter at

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[18] Voigt, C. *The International climate change regime - UNFCCC* (lecture). February, 4, 2016. University of Oslo.

[19] *See* Article 17 of the UNFCCC.

[20] 1st COP of the UNFCCC. *The Berlin Mandate.* Decision 1/CP.1 (1995).

that time, the United States, have signed the agreement, yet not ratified it.[21] The threshold was therefore not reached for a longer period of time. Eventually the USA pulled out of the protocol and did not ratify it, however, the Russian federation entered and the Kyoto Protocol came into force.

The problem of withdrawals from the protocol became an issue in general. According to the Kyoto Protocol: *'At any time after three years from the date on which this Protocol has entered into force for a Party, that Party may withdraw from this Protocol by giving written notification to the Depositary.'* [22] Canada, for example, eventually followed the United States and withdrew, therefore the Kyoto Protocol's current relevance, without some of the world leading countries on board, has often been questioned. Hence, the agreement has up to this date been accepted by 192 states.

While the UNFCCC is a treaty which is being defined according to the Vienna Convention on the Law of Treaties,[23] the document from Kyoto is a *protocol* which specifies and amends a treaty. In other words, the UNFCCC was created so that its parties agreed on the goal of stabilizing the greenhouse gas concentration while the Kyoto Protocol amends the original treaty and sets legally binding quantified targets for the countries to reach while stabilizing the emissions concentration.

### 1.3.2. Binding Commitments

One of the protocol's major features therefore is that it sets mandatory targets on greenhouse gas emissions but only for the UNFCCC's Annex-I countries (i.e. developed ones, as described in the previous chapter) and these have accepted it. The rule was established by Article 3: The targets range from -8 to +10 per cent[24] of the countries' 1990 emissions levels '*with a view to reducing their overall emissions of such gases by*

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[21] The official reasoning for this was that other major emitters such as China and India are not about to comply with the treaty, and that the protocol would probably cause serious harm to the economy of the USA.

[22] *See* Article 27.1 of the the Kyoto Protocol.

[23] *See* Article 2.1 of the Vienna Convention on the Law of Treaties.

[24] Some countries were, in fact, allowed to increase their emissions.

*at least 5 per cent below existing 1990 levels in the commitment period 2008 to 2012.'*[25] Diverse targets have been set for different countries. For instance 8 per cent reduction in the European Union (The EU has made its own internal agreement to meet its target by distributing different rates to its member states), 7 per cent in the United States (however the USA never became bounded by the rule), while some countries, such as Norway or Australia were allowed to increase the emissions.[26] These commitments were agreed to be valid for the so called First Commitment Period which ran from 2008 to 2012. The next Commitment Period was established in Doha, Qatar in 2012 according to the Decision 1/CMP.8. The Doha Amendment sets targets for the period of 2013 to 2020. The second period should have been designed to increase parties' commitments. However, only some did so, while others (such as Canada) withdrew during the negotiations. Some countries announced not having any reduction obligations while still following other measures of the protocol (in the case of New Zealand or Russia). The Doha Amendment never entered into force though because of the lack of acceptance of certain majority of parties. Thus, it is not legally binding.

Articles 2 to 9 of the Kyoto Protocol list actions which the developed countries can undertake to reduce the emissions, while also describing mechanisms to ensure the actions are duly taken. However, it is up to the countries to design the legal measures to ensure the coherence with the protocol themselves. The agreement offers flexibility in a way that countries can decide how to meet their targets. They are free to choose to partially compensate for their emissions by increasing sinks for instance or are also allowed to pay for foreign projects that result in emission cuts.

### 1.3.3. Mechanisms of the Protocol and Differentiated Responsibilities of Countries

The flexibility mechanisms established by Article 17 of the protocol are one of the most innovative facets of the agreement. They allows countries with quantified targets (i.e. only the developed ones) to *buy* credits in a form of assigned amount units

[25] In order to set up a quantified target, all greenhouse gases are converted into carbon dioxide equivalent amount (CDE).

[26] *See* Annex B of the Kyoto Protocol.

(*AAUs*)[27] - that gives countries an option to choose whether to undertake gas reductions domestically or to basically buy allowances (to emit emissions) from other countries which also have pre-determined obligations.[28] This reflects the idea that it does not matter where the emission cuts are conducted, since climate change is a transboundary problem. Thereby the so called emissions trading system was established. Still, according to the provisions, any such trading of allowances must be only supplemental to actions conducted domestically.[29]

Another flexibility measure is the so called Clean Development Mechanism (*CDM*) which is anchored in Article 12 and represents the possibility for the developed countries to invest in developing states' projects enhancing the reduction of greenhouse gases. The reduction caused by the investment is quantified and creditable within the obligatory reduction target of the developed country. The Article 12 leaves upon the upcoming meetings of the parties to set out guidance rules for the CDM. It was then the Marrakesh Accords (i.e. set of agreements of the 7th COP) that further developed the system of the CDM.

A similar way of coaction is being endorsed by the Article 6: The mechanism of Joint Implementation works similarly to CDM but the projects of developed countries are to be conducted in another developed state. This flexibility had not been used as frequently as the CDM though.[30]

The Kyoto Protocol also includes the compliance mechanism which is primarily non-punitive and focused on creating cooperation and helping the country to figure out an effective solution in order to be in compliance with the obligations.[31] Therefore when overstepping the emission targets or not adhering with the rules in another way, the protocol's enforcement branch can ask the party to create a compliance action plan,[32]

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[27] One AAU is an equivalent to one ton of CO2 equivalent.

[28] Sands, P. et al., 2012. *Principles of International Environmental Law 3rd ed.* Cambridge: Cambridge University Press, p. 287.

[29] *See* Article 6.1.d of the Kyoto Protocol.

[30] Voigt, C. *The International Climate Change Regime - The Kyoto Protocol* (lecture). February, 10, 2016. University of Oslo.

[31] Ibid.

[32] *See* Part XV, paras 5 and 6 of the Annex to the Decision 27/CMP1.

the country can be suspended of the rights to sell emission quotas or the reduction of an emission quota for the next commitment period could be prescribed.[33] Other sanctions are set out when non-compliance with methodological and reporting obligations and with requirements for flexibility mechanism is discovered.[34]

As described in the section regarding the UNFCCC, the framework convention emphasizes the role of developed countries in the reduction of human-induced greenhouse gas emissions. The Kyoto Protocol overtook the principle, so while the Annex-I and II countries have numbered targets of reductions, basically the only stricter obligation of developing countries is to document and report their commitments of reducing greenhouse gases to the COP after receiving funding. Comparatively, the non-annexed countries have the opportunity to be offered investments and transfer of technologies which the Kyoto Protocol both prescribes as suitable ways for developed countries to meet their obligations.[35]

The Kyoto Protocol served as a proof of international concern about the consequences of climate change, as well as a commitment to conclude climate conservations in the economic agendas of the states.[36] It represents the initial shift in thinking and acting of the states since they accepted to restrain their development and set quantified emission reduction targets.

## 1.4. The Paris Agreement as a Complex Climate Change Treaty

### 1.4.1. Acknowledgment of the Urgency of the Climate Change Issue

The scientific evidence of the anthropogenic influence on our climate exists,[37] however the global society is still hesitating to acknowledge it as a major problem of

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[33] This was not necessary since all countries complied with their targets in the first commitment period.

[34] *See* Part XV, para 4 of the Annex to the Decision 27/CMP1.

[35] Such as investing in emission reduction projects in developing countries.

[36] Voigt, C. *The International Climate Change Regime - The Kyoto Protocol* (lecture). February, 10, 2016. University of Oslo.

[37] IPPC. 'Climate Change 2007: Synthesis Report', (2007). Available at: http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr_full_report.pdf.

our civilization. The temperature should be prevented from rising more than 2 degrees Celsius over pre-industrial levels - even though this idea was recognized already a few years before the Paris Conference,[38] some experts considered this target to be too unrealistic to be contained in a legally binding international agreement.

At the end of the year 2015, many were celebrating the major negotiating success in Paris. The new agreement which set the goal of tackling global warming was born and it was recognized by all the 196 attending states (including the EU) that climate change is happening and there is an urgent need to take action. The biggest achievement of the new agreement is therefore the involvement of not just the European Union but also the United States (not considering the latest problematic development connected to the new government), China and industrializing India as the main political players of today. It is this global unity that is considered to be giving the agreement its power.[39]

This part of the paper therefore describes and discusses an outcome of the 21st Conference of the Parties of the UNFCCC which took place in Paris, December 2015 – so called *Paris Agreement* (also referred as the *Paris Accord*). It gives a critical overview of the agreement's provisions, it discusses them and present potential future development under this new treaty.

### 1.4.2. Structure of the Agreement

The Paris Agreement is in fact composed of two distinct documents. It is the Paris Decisions (further referred to as *the decision*), which contains a set of legally less binding provisions, followed by the binding agreement itself, which has a form of an annex to the decision (further referred to as *the annex*).

The decision includes acknowledgment of the main goals and principles of the agreement. In one of the first paragraphs, the ultimate objective is encompassed – *'to*

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[38] 17th COP of the UNFCCC. *Establishment of an Ad Hoc Working Group on the Durban Platform for Enhanced Action.* Decision 1/CP.17. (2011).

[39] Meyer, R., 'A Reader's Guide to the Paris Agreement'. *The Atlantic* (2016). Available at: http://www.theatlantic.com/science/archive/2015/12/a-readers-guide-to-the-paris-agreement/420345/. Accessed 20 July 2017.

*hold the increase in the global average temperature to well below 2 degrees and pursuing efforts to prevent it from increase above 1.5 degrees Celsius above pre-industrial levels*.'[40] Furthermore, it contains the parties' resolution about the adoption of the agreement and the main cornerstones of the decisions - that is for instance Nationally Determined Contributions (NDCs), questions of financing or technology transfer. Most of these are, to a certain extent, later given a character of an obligation in the second part – the annex, which is supposed to be strictly binding.

The fact that the agreement's first part does not contain binding provisions allowed its creators to include measures that are more challenging and probably would not be possible to be included in the binding annex.[41] Therefore the decision is understood to be more of a challenging and suggesting character and sets a proposal of ways how to reach the goals of the whole agreement, as well as technical and other details.

The second part – called the Paris Agreement (in the form of an annex) is a fully binding legal document. This can be concluded from using words such as *shall* which indicates an obligatory provision.[42] The document has been accepted and signed by 197 parties of the UNFCCC and hitherto (July 2017) ratified by 157 countries. The threshold for entry into force was then reached on October, 5 2016 and the agreement entered into force November, 4 2016.[43] That makes it one of the fastest accepted international agreements in history, which also suggests the relevancy of the issue. The threshold to enter into force had been set down as the acceptance of the total of 55 states which together covers 55 per cent of global emissions.[44]

In the first articles, the annex covers general purposes of the agreement – that is especially the temperature targets, adaptability measures or principle of common but

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[40] *See* para 1 of The Decision to the Paris Agreement.

[41] Voigt, C. *The Paris Agreement* (lecture). February, 18, 2016. University of Oslo.

[42] Bailliet, C. *Sources of International Law* (lecture). August 31 2015. University of Oslo.

[43] The Paris Agreement: Status of Ratification. *United Nations Framework Convention on Climate Change*. Available at: http://unfccc.int/paris_agreement/items/9444.php. Accessed 22 July 2017.

[44] *See* Article 21 of The Paris Agreement (Annex).

differentiated responsibilities (as a principle of major importance, it will be discussed further in this paper). Article 4 then sets mid and long-term mitigation goals, later followed by the rules about adaptation in Article 7. The next articles are devoted to other associated areas such as financing, compliance and transparency mechanisms and rules for ratification.

The whole structure and wording of the agreement is framed by the *concept of progression* – all the provisions are aiming at continual progress in effort of the countries. The agreement sets a dynamic process in order to tackle climate change. The treaty is also unique in a way that it introduces a so called *bottom up approach*. States themselves can decide about their action in order to cut emissions, it is under their consideration what tools to use and what measures to accept (it is only obligatory to introduce these measures but not strictly specified how they should look like). This way the Kyoto Protocol's top down approach[45] was left behind.

### 1.4.3. Legal Form

A mandate for a new document was adopted at the 2011 United Nations Climate Conference in Durban. It concluded that a new legally binding protocol or another agreed outcome should be developed, under the UNFCCC, which should be applicable to all parties of this convention.[46]

The agreement was therefore already from the beginning supposed to be a legal instrument under the existing UNFCCC. The question of what legal form the outcome should have specifically was an *elephant in the room* during negotiations.[47] To come up with a protocol was the first option. In that way, the agreement would operate under the existing provisions and procedures of UNFCCC, like the Kyoto Protocol. The parties would pursue in fulfilling their obligations under the current legal framework, which

[45] I.e. it is decided on the international level what each party is obliged to do - in the Kyoto Protocol each country had a numeral emission cut target in the treaty's annex.

[46] 17th COP of the UNFCCC. *Establishment of an Ad Hoc Working Group on the Durban Platform for Enhanced Action.* Decision 1/CP.17. (2011).

[47] Savaresi, A., 'The Paris Agreement: A Rejoinder'. *Blog of the European Journal of International Law* (2016). Available at: http:/www.ejiltalk.org/the-paris-agreement-a-rejoinder/. Accessed 22 February 2017.

was a solution that some parties preferred. On the other hand, some parties, such as the USA, preferred not to specify the legal form of the final document for the reasons of easier domestic implementation (in the USA in the form of a presidential order).[48]

The result was a completely new treaty, which is however still linked to the framework convention. This can be seen in the wording of the agreement, which makes references to UNFCCC principles[49] and its institutions. Also the fact that it is opened to signature only to the framework convention's parties[50] indicates its relationship to the framework convention. Thanks to these interconnections with the UNFCCC, it can be concluded that the Paris Agreement does not replace but more or less complements the 1992 treaty.

On the contrary, the agreement also includes inclinations that it is a whole new document, created separately from the UNFCCC. For example, it is referring to *developed* and *developing* countries[51] without giving any definition to what is meant by these. It was often emphasized that one of the main differences between the UNFCCC and the Paris Agreement is no distinguishing between countries when it comes to their obligations. To use interpretation based on the previous doctrine (that is not to impose obligations to developing countries) would therefore collide with the main idea of the new agreement (i.e. to impose rules to all parties equally) and thus it implies its partial independence.

It should also be emphasized that the Paris Agreement is a legally binding treaty under the Article 2.1 Vienna Convention on the Law of Treaties (*VCLT*). It is not a protocol under the Article 17 of the UNFCCC. The fact that it is a treaty is indicated especially by the last provisions of the annex – for example in Article 21. It describes ways of acceptance of this agreement, which are the same as prescribed by the rules in

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[48] Savaresi, A., 'The Paris Agreement: A Rejoinder'. *Blog of the European Journal of International Law* (2016). Available at: http:/www.ejiltalk.org/the-paris-agreement-a-rejoinder/. Accessed 22 February 2017.

[49] *See* e.g. Article 2 of The Paris Agreement (Annex).

[50] *See* Article 20.1 of The Paris Agreement (Annex).

[51] *See* e.g. Article 4 of The Paris Agreement (Annex).

VCLT for international treaties. This feature suggests that the document is supposed to operate as an international treaty.

Before entering to force, the document had a character of an annex to a COP decision and it was required to be accepted by the specific number of countries with prescribed percentage of $CO_2$ contributions to become a legally binding international agreement governed by the VCLT. According to Article 21 of the annex, it is intended to be on the thirtieth day after 55 parties, which together emit 55 per cent of the global greenhouse gas emissions, deposit one of the forms of approval – that can be for example an instrument of ratification or a simple acceptance (the threshold was reached the following year, as mentioned above). This wording follows VCLT, more specifically prescription in its Article 11:

'*The consent of a State to be bound by a treaty may be expressed by signature, exchange of instruments constituting a treaty, ratification, acceptance, approval or accession, or by any other means if so agreed.'*

The Paris Agreement agrees on any kind of approving instrument. That makes its adoption easier for some parties, since it can be accepted by an executive order for instance, such as the negotiators of the USA demanded.

To meet the threshold, it was more than clear, that the United States, as one of the biggest emitters and actors in the field of global politics, play an essential role for the treaty. The country eventually accepted and ratified the document and it entered into force. Its retraction, which got announced by the new president of the USA, might have a negative impact on the factual strength of the provisions under the treaty, however, not on its legal status and enforceability. Nevertheless, when analysing the effects of the Kyoto Protocol, which the USA was not party at all, the Paris Agreement might now meet with difficulties with the United States not being on board. The approach of the rest of the countries that ratified the agreement will be crucial for the document's future.[52]

[52] Voigt, C. *The Paris Agreement* (lecture). February, 18, 2016. University of Oslo.

### 1.4.4. Ultimate Objective and Main Principles

The agreement's main objectives are covered by Article 2 of the annex. It aims to '*strengthen the global response to the threat of climate change, in the context of sustainable development and efforts to eradicate poverty.'* The goal is to succeed in this by mitigation as well as adaptation. These two concepts shall be distinguished but are also interconnected. As mentioned above, mitigation includes measures which target to avoid or limit the factual climate change. Article 2.1 (a) of the annex deals with mitigation and also includes probably the most important and most discussed mitigation objective - that is to implement and pursue measures to hold the increase of temperature well below 2 degree Celsius above pre-industrial levels. In addition, states are obliged to aim at the target of 1.5 degrees. Especially the lower target was celebrated as a major achievement as a recognition of the climate change imminence.

The adaptation to the climate change could be understood as a way of how to get used to the already occurred changes caused by climate by adjusting certain procedures important to the humankind (e.g. developing new agricultural products and processes). Adaptation is covered by Article 2.1 (b) of the annex.

The last part of Article 2.1 (c) combines both these climate change approaches. It gives provisions on securing finance flows, which shall be used to reduce greenhouse gas emissions (i.e. mitigation) and to introduce development which would be resilient to climate change (adaptation).

These ultimate objectives are vital in order to they demonstrate the main premise which should then govern all the actions pursued by the countries. Therefore these are important especially from the view of teleological interpretation of the agreement's measures. Some of the mitigation and adaptation measures are also going to be discussed further in this paper.

An important leading rationale of the Paris Agreement is the principle of common but differentiated responsibilities, which in general imposes higher expectations on developed countries while tackling climate change. These are considered to be the ones that caused most of the recent environmental degradation

because of their fast technological development in the past.[53] It is connected to the principle of fairness then, that they should be the one bearing most of the obligations and costs nowadays. This issue is also linked to the matter of balancing the human rights and environmental restrictions. This was one of the main topics India was outlining during the 2015 climate talks in Paris. The rationale was: Why all the countries should now pursue quite severe environmental restrictions and therefore limit their own right to development when developed countries had the chance to develop in the past and are in fact those which caused current climate change?[54]

These two concepts were handled by the previous climate change regime with strict differentiation between *developed* and *developing* countries This system turned out to be not very efficient later, especially because of the fast developing and highly emitting China and emerging India. The Paris negotiators initiated if not full, then at least partial abandonment of this type of distinguishing. Also, because the climate situation was recognized as being urgent, the agreement does not include any kind of list of developed countries anymore and obligations should be the same for all its parties.[55]

However, while reading the agreement, one can notice that it is still using wording *developed* and *developing.* The principle of common but differentiated responsibilities is still reflected in the new agreement, which also specifically refers to it in Article 2.2. The distinction from the previous climate regime is that, this time, it is all the countries that shall take climate action (concluded from wording such as *all Parties* or from the obligation to submit nationally determined contributions by all the states). So while in Kyoto Protocol the principle could have served as a justification of imposing obligations primarily only upon the developed countries, the Paris agreement does not continue in this rhetoric. It still admits though, that the developed countries

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[53] Voigt, C. *The Paris Agreement* (lecture). February, 18, 2016. University of Oslo.

[54] Wilhite, H., Hansen, A. (Eds.); 'Will the Paris Agreement Save the World? An Analysis and Critique of the Governance Roadmap Set out in COP 21'. Workshop at Oslo Academy of Global Governance, University of Oslo (2016).

[55] Voigt, C. *The Paris Agreement* (lecture). February, 18, 2016. University of Oslo.

have to take the lead[56] and that the agreement is to be implemented in the light of different national circumstances.[57] To question the future adherence of emerging economies with the commitments and thus the relevance of the principle is very eligible.

### 1.4.5. Specific Mitigation and Adaptation Provisions

To hold the temperature *well below* 2 degrees Celsius but at the same time aspire towards the goal of 1.5 is a result of compromising requirements of two groups of states which both played important roles in Paris. These are so called Small Island States (*SIS*) and Least Developed Countries (*LDC*). It was the SIS group that demanded a target of 1.5 degrees as these are the states which are greatly vulnerable to climate change, especially because of the rising ocean levels. On the other hand, LDC were requiring higher temperature targets while asserting their right to development, since, as argued by LDC, these interests are not easily combinable. The temperature targets must be reached by peaking the emissions as soon as possible and later decline these rapidly, as the Article 4 of the annex states. This way a balance between anthropogenic emissions and emission removals by sinks should be reached and thus by the second half of the century *net zero emissions* (i.e. balance between the levels of gas emitted and captured or absorbed) target should be achieved.

One of the most specific mitigation obligations is the duty to formulate and submit National Determined Contributions (*NDC*). These are mentioned in Article 4 of the annex and are meant to include emission limits that will be followed by the state and their individual mitigation plans. The records concerning these will be open to public scrutiny and in this way, the compliance will be able to be controlled by the any organisation or individual (the so called *naming and shaming* system).

However, the agreement *de facto* does not force parties to comply with their NDCs. Article 4.2 says: '*parties shall pursue domestic mitigation measures with the aim of achieving the objectives of such contributions.'* The key words here are to '*aim*

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[56] *See* e.g. Article 4.4 of The Paris Agreement (Annex).

[57] *See* e.g. Article 2.2 of The Paris Agreement (Annex).

*achieving the objectives*'. This phrasing might result in states pursuing only minimal effort which still should be recognized as a fulfilment of the obligations under the agreement. Also considering the type of information that should be communicated is not specified by the annex and the non-binding Paris Decision does not provide further guidance (even though Article 4.8. refers to the decision which should help to understand this provision). Especially when looking back at the Kyoto Protocol, where the quality of information provided by countries was sometimes more or less poor, one would expect that NDCs would be given rules that are slightly stricter.[58]

Another weakness of the NDC system is that there is no time limitation for the states to submit their initial reports and for what time period the NDCs should be for. This was one of the aspects that the states could not agree on.[59] The parties are, according to Article 4.9, obliged to communicate NDCs every five years but it is not said when they should submit the initial report nor whether every new report should cover a period of one, five or ten years. Some indicated to submit the first reports by 2020 but some much later – for example by 2030. These differently set up conditions might make compliance and its control rather complicated. NDCs together with other longer term strategic plans shall be over time more and more ambitious. The reports about progress must be submitted regularly (every five years), so that the progress would be evident. A global stocktake which would evaluate countries' progress is also going to take place every five years.

However, the problem here might be the lax enforceability - the system of national binding commitments, submitting reports and stocktaking is going to be controlled only through opened publication of this information. Whether this will be enough of a strong motivation for states to hold to their promises might be doubtful.

Adaptation is anchored by the initial Article 2 of the annex and is being recognized as one of the ultimate objectives. Evaluating the adaptation programs is going to be part of the regular five-year stocktake. From the vague wording concerning

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[58] Rajamani, L., 'Differentiation in the Emerging Climate Regime'. *Theoretical Inquiries in Law* (2013). Volume 14, Issue 1: p.167.

[59] Bodle, R., Donat, L., Duwe, M., 'The Paris Agreement: Analysis, Assessment and Outlook'. Workshop: *Beyond COP21: what does Paris mean for future climate policy?* (2016).

communicating the adaptation measures, namely *'parties should, as appropriate'*, it can be concluded that there are no strict commitments for the states to inform the agreement's bodies about steps they undertook. The timing, the form and content are not specified enough in the agreement. Article 7.10 also sets a condition of *'not creating additional burden for developing countries'* while communicating the measures which could also cause reluctance while adhering to the rules.

As a part of the adaptation problematics, the topic of the so called *loss and damage*[60] was a heatedly debated, such as all the provisions concerning financing and possible compensation claims from developing states in case of damage caused to them.[61] It was especially the group of SIS and some other developing countries (which do and possibly will suffer from the climate change impacts the most) that demanded a special position for this agenda in the agreement. As a result, the provisions for loss and damaged were covered by Article 8, which emphasizes the pursuit of minimizing them. It also establishes the *Warsaw International Mechanism for Loss and Damage* as a permanent institution regarding this issue. This was a victory for developing states, since the position as a stable administrative body was now given to this institution. Prior to the Paris negotiations, it held just a limited mandate.[62]

The rules on adaptation are given less precise framework than the mitigation measures. The reason for this is a rather difficult position of a supranational body while recognizing individual needs of diverse countries. Adaptation must be handled in general by the states themselves, since climate and natural environment and therefore also the impacts of their changes, are different in every single country. The agreement uses quite soft language and firmly establishes only a common global adaptation goal.[63]

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[60] I.e. a topic of negative impacts of climate change on countries that cannot be avoided anymore and financing related to this.

[61] Meyer, R., 'A Reader's Guide to the Paris Agreement'. *The Atlantic* (2016). Available at: http://www.theatlantic.com/science/archive/2015/12/a-readers-guide-to-the-paris-agreement/420345/. Accessed 20 July 2017.

[62] Chronology: Loss and Damage. *United Nations Framework Convention on Climate Change*. Available at: http://unfccc.int/adaptation/workstreams/loss_and_damage/items/7545.php. Accessed 2 February 2017.

[63] *See* Article 7.1 of The Paris Agreement (Annex).

### 1.4.6. Financial Resources and Transfer of Technologies

Tackling climate change requires major changes in financial politics and broad investments in new areas. Although the final version of the agreement does not mention more or less any specific steps to proceed, it is clear that financial shifts shall include both state and private action. These are, among others, cutting the fossil subsidizing, reinvestments in green technologies or labelling. All these can be subordinated under a general provision in Article 2.1 (c), which supports finance flows for mitigation and adaptation processes.

A question of financing was another major issue during the negotiations. To secure investments in new technologies and financial flows to developing countries are both part of the core of the climate change actions. In spite of this, ultimately no specific rules for funding were agreed. Article 9 of the annex only prescribes developed countries to provide financial resources. Some parties suggested continuing in the financing scheme set by the UNFCCC – that is to follow the proposal from Copenhagen COP (which was not legally binding though) and transfer 100 billion USD a year to developing countries.[64] The number was eventually put into the text of the Paris Decision, which is not legally binding. However, this can actually be seen as an appropriate approach since the phrasing and not binding character allow the amount to increase, while taking into account current needs of developing countries.[65] The financial flows, both incoming and outgoing, are going to be controlled via the transparency scheme.

In terms of the transfer of funds, a need to provide developing countries with technologies and know-how was also recognized. As a part of mitigation and adaptation as well, innovation is crucial. The agreement refers to the previous UNFCCC's Technology Mechanism, which was created at the Conference of Parties in Cancún in 2010. Unfortunately, the instrument, which also includes financing tools, was rather not

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[64] 15th COP of the UNFCCC. Proposed Copenhagen Decision (*Copenhagen Accord*). Decision -/CP.15 (2009).

[65] *See* para 54 of The Decision to the Paris Agreement.

successful in the past. Both institutions[66] under the mechanism were criticized and did not bring many results.[67]

A legal institute limiting the transfer of technologies is, among others, predominantly the concept of intellectual property rights. The desired technologies are often protected by patents. These make the technologies expensive and therefore not easily accessible. In addition, the patent holder might not be willing to share his technology by issuing licences. The solution could be the so called *compulsory licensing*, which is a tool established under the World Trade Organization's Agreement on Trade Related Aspects of Intellectual Property Rights (further referred to also as *TRIPS*). Under the TRIPS provisions, in some cases governments can allow to share a product without the consent of a patent holder. This process can be quite controversial, but could possibly be used in justifiable cases.[68]

The fact that the Paris Agreement is not giving more space to the issue of transfer of technologies might be perceived as yet another of the flaws of the treaty. The topic, with all its complexity and problems aroused around it, is a discussed in more details in the second chapter of this paper.

### 1.4.7. Rules on Transparency and Compliance Mechanism

In order to be able to control the progress of parties and to build trust among states, a transparency framework was created by the Paris Agreement. Because the content of NDCs is not legally binding, it is needed to develop a transparency when it comes to states' domestic actions. Enhanced mechanism set up in Article 13 obliges to provide a report every second year about parties' progress towards implementation of their NDCs. The motive behind is that the mechanism should allow other states to create a certain pressure and be critical about each other if another country does not fulfil the

[66] Technology Executive Committee and Climate Technology Centre and Network.

[67] Wilhite, H., Hansen, A. (Eds.); 'Will the Paris Agreement Save the World? An Analysis and Critique of the Governance Roadmap Set out in COP 21'. Workshop at Oslo Academy of Global Governance, University of Oslo (2016).

[68] Prague Global Policy Institute Glopolis. 'Climate Change and Technology Transfer. Can Intellectual Property Rights Work for the Poor?' (2012). Available at: https://glopolis.org/en/_publications/climate-change-and-technology-transfer.

obligations properly. Possibly even more importantly, it allows also civil society to be involved - it can be critical towards their governments and influence them, essentially through general elections.

The transparency issue is interconnected with the flexibility principle. The compliance and transparency systems are not designed to be punitive and should not endanger national sovereignty. They are intended to respect that developing countries can have limited capacities and they are given more freedom regarding content or frequency of the reports.[69] Reported information about mitigation will be handed over to a technical expert review, which will consider achievements of NDCs submitted.

The question of compliance with a legally binding international treaty is always an immense topic within the international law area. The Paris Agreement's compliance mechanism is said to be designed to facilitate implementation and promote compliance.[70] It is important to bear in mind that the rules now apply to all the parties (thus not just developed) since all of them have now obligations. A committee of experts is established as well as main principles – it should function in a way that is transparent, non-punitive and non-adversarial. However, more rules about the compliance mechanism are not provided and that is raising concerns. Discussions around it, concerning the fact that the mechanism must have been designed in order to be applicable for all parties, did not allow it to be too far reaching.[71] More specific rules will probably be adopted at the following COP conferences as referred in the Article 15.3.

To conclude, as the transparency rules are in principle conceived as strict obligations, the system of compliance gives and impression of incompleteness. Obligations imposed on the parties are quite vague and just making efforts might seem as enough to be considered as in compliance with the treaty. This is understandable, concerning the interests and position of developing countries. One might argue however, that the negotiators should have tried to build up a system which would aim more at achieving specific results rather than just making promises. This will be a task

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[69] *See* para 90 of The Decision to the Paris Agreement.

[70] *See* Article 15.1 of The Paris Agreement (Annex).

[71] Voigt, C. *The Paris Agreement* (lecture). February, 18, 2016. University of Oslo.

for future COPs now, since political feasibility in Paris did not allow strict rules on this topic to be included.

## 1.5. Conclusion

The current climate change legal regime was officially established with the introduction of the United Nations Framework Convention on Climate Change negotiated in 1992 in Brazil. It is a framework convention that sets the leading principles of this branch of international law, its main objective focuses on setting the ideal targets and constitutes of bodies that are to make the specific decisions in the future. Since it was required to be universally accepted, its wording was developed not to be too strict. It might give the impression of being slightly ineffectual, however, it was designed to be more closely specified by the future protocols and other COP decisions.

To create a legally binding agreement with more concrete target was therefore highly needed. The Berlin Mandate from 1995 opened the way to a protocol roofed by the framework convention UNFCCC. The Kyoto Protocol's main task was to set numbered emission reduction targets while allowing certain flexibilities of how to reach them. The protocol continued in the idea of the UNFCCC when it came to separating parties of the framework treaty into groups of developing and developed countries, in order to apply stricter rules upon the latter group (the idea that was later left by the Paris Agreement). The Kyoto Protocol's first round was met with relative success however its more recent development could be questioned with some of the major emitters' secessions. Thus, the protocol followed the idea of unity considering the acknowledgment of the climate change problem which occurred at the UNFCCC's negotiations.

The most recent and most comprehensive international climate change treaty is the Paris Agreement. As an international treaty it has number of legally binding, as well as voluntary provisions. By these it creates a new, more sophisticated and modern climate change law regime which is however dependent on the will of the parties to adequately implement.

The outcomes of the Paris conference can be summed up in five main points.

Firstly, it set a common goal for all parties to aim at: to hold the increase of global temperature well below 2 degrees Celsius, and try to limit to 1.5 degrees. For this, mitigation and adaptation measures are provided by the agreement and they are characterised by both strict obligations as well as recommendations. In order to reach this target, a balance between emissions and sinks must be achieved.

The mitigation is secured by the regular reporting of Nationally Determined Contributions. These set a numerical target for a country's emissions. It is obligatory to submit these, but not to actually meet them. Whether a state does its best to fulfil its NDCs is going to be secured by transparency and compliance mechanism.

Obligations have now been set for all. Even though the new agreement still distinguishes between rules for developed and developing countries, all participants universally bear the same responsibilities.

A rule of ratcheting up was settled. States taking action should use a dynamic iterative process. It has to represent their progress while tackling climate change and should always represent their highest possible ambition. The first NDCs should therefore be as ambitious as possible in the light of countries' individual circumstances. Every five years a global stocktake will take place, where results will be evaluated and new ambitions presented.

Lastly, financing - technical cooperation and transfer of technologies should be provided. A starting point of 100 billion USD was specified in the Paris Decision, which should serve as a basis so the amount could eventually be higher.

The Paris Agreement is in its nature quite flexible, which was one of the intentions of the negotiators. Even though it specifically says that reservations are not allowed,[72] it leaves quite a lot of space for states' consideration of how to implement it. This however also raises concerns about its actual future impact regarding compliance and enforceability of the promises (not mentioning the influence of the actions conducted by the United States' administration in 2017). Implementation of the provisions by all the other countries is now of a crucial importance.

Whether the new agreement really is a historical triumph in the field of climate change law will probably be clearer within few years from now. The conference's

[72] *See* Article 27 of The Paris Agreement (Annex).

biggest achievement was that it created a political momentum. That needs to be maintained now, in order to consider the Paris Agreement to be a victory.

# 2. TRANSFER OF TECHNOLOGIES

## 2.1. The Role of Technologies in Climate Change

It is no doubt that modern technologies and research play an important role in the everyday lives of all individuals. Perhaps even far more reaching is their connection with the global economics and social development and their overall impact on the global society, which includes also the issue of tackling the climate change. Law, as a strong societal determinant naturally reacts on the modern issues connected to the climate change and technologies likewise.

Two main points of view could be distinguished when observing the current debate about the impact of the development of modern technologies on the global environmental conditions. Firstly and more traditionally, technologies development could be perceived as an antagonist to the environmental protection in general. To comprehend it in this way might seem justifiable especially while considering the impact of the continuation of the *business as usual* approach - the technological progression in rather obsolete point of view indeed unarguably contributes to the global climate change by emitting greenhouse gases or polluting soil and water, all by using traditional industrial techniques.

On the other hand, this perception of the development and technologies being an enemy to the protection of the natural environment might be somewhat outdated nowadays. The expansion of the concept of sustainable development starting off in 1980's[73] goes hand in hand with the clean technologies boom – these are becoming to be very attractive not just from the idealistic but also from the economical point of view. Businesses are searching for new attractive opportunities to invest in and modern technologies with low-carbon potential seem to be the way to proceed.

Therefore, it is truly eligible to perceive the modern technologies, especially the low-carbon ones aiming to mitigate or adapt to the climate change issues, as a new

[73] The concept of sustainable development was introduced in United Nation's report called Our Common Future in 1987. The report stated: *"The concept of sustainable development does imply limits - not absolute limits but limitations imposed by the present state of technology and social organization on environmental resources and by the ability of the biosphere to absorb the effects of human activities."*

challenge for the entrepreneurs. The acceleration of the development of these low-carbon technologies and their scattering definitely play an important role while stabilizing and minimizing the global greenhouse gas emissions - as also cited in the 2007 Bali Road Map[74] which names diffusion and development of technology as one of its strategic objective. In order to prevent hazardous consequences of climate change, and also to adjust to those that cannot be avoided, the abilities to try to mitigate the changes and adapt to them therefore have to be developed. The new technologies and procedures enabling this are highly needed to be distributed globally. Also under the recent Paris Agreement, the environmentally sound technologies and their transferability play a key role while meeting the obligations, which the parties agreed on.[75]

However, the ideas of the development and the diffusion of low-carbon technologies on the other hand could also be perceived as pulling two opposite ends of the rope. The problem of the erratic distribution of know-how and technological processes when it comes to the developed and developing countries is especially striking.[76] It is a matter of fact that technologies, such as more efficient energy-storage cells or carbon capture and storage (*CCS*) instalments[77], still demand a great deal of research and financing, however, some are already available and ready to be used. They can be rather unreachable for some entities though. Their transfer could be a complicated procedure, from multiple legal, economic, theoretical or more practical reasons. Therefore to understand the complexity of the problem of technology transfer is a mission of a high importance for climate scientists, policy makers, lawyers and economists.

In order to secure that the need for the low-carbon technologies will be satisfied, international mechanisms to support research, diffusion and financing of the modern

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[74] 13th Conference of Parties of the UNFCCC. *The Bali Roadmap,* Decision 4/CP.13 (2007).

[75] *See* Article 6 of The Paris Agreement.

[76] Dechezlepretre, A., Glachant, M., Haščič, I., Johnstone, N., Méniere, Y., 'Invention and Transfer of Climate Change–Mitigation Technologies: A Global Analysis'. *Review of Environmental Economics and Policy* (2011); Volume 5, Issue 1: p. 115.

[77] I.e. technologies that are able to capture the gas from a fixed source or from the air, transport it to a desired location and deposit it in containers or inject underground or seabed.

technologies were established. Acknowledging the importance of the issue, this part of the paper is aiming at shedding a light on why this transfer is of a major importance, describing the legal perspective of the processes - some of the obstacles they have to overcome (with a major focus on the intellectual property issue) as well as critically analysing their functionality. It shall be noted here, that many supporting schemes and financial aid programs, as well as issues opposing the transfer exist. This paper will be devoted to the introduction of only some of the legal obstacles to the transfer, few international mechanisms and legal tools, established by the international soft and hard law, facilitating the processes, which the author of the paper considers as important or auspicious.

## 2.2. Multiple Layers of the Term *Technology Transfer*

Environmentally sound technologies could be pictured as techniques and devices having the potential for a performance that is significantly more environmentally friendly (i.e. causing less emissions, not polluting water and other resources etc.) than by those of a comparable output. It is being very desirable and needed to transfer these technologies so that their benefits for the environment and society could be enjoyed by all the global society. Also, the pace of the diffusion is an important factor. In general, effective spread of a new piece of technology takes about 24 years.[78] It shall be advocated thus to start facilitating their transfer effectively and therefore strengthen the mechanisms enabling this betimes.

The term *technology transfer* itself could be defined in several ways. IPCC's definition as embodied in environmental conventions under the United Nations describes the term as:

*'a broad set of processes covering the flows of know-how, experience and equipment for mitigating and adapting to climate change amongst different*

[78] Lee, B., Iliev, I., Preston, F., 2009. *Who Owns Our Low Carbon Future? Intellectual Property and Energy Technologies*. London: Chatham House, p. vii.

*stakeholders such as governments, private sector entities, financial institutions, non-governmental organization (NGOs) and research/education institutions.'*[79]

The process of the transfer could be analyzed within multiple spheres (such as from the legal point of view, economic or social perspective). Primarily, this part of the paper is focusing on the legal institutes regarding the issue as well as tools maintained by international organizations functioning with the aim of diffusing technologies - facilitating the transfer from states which possess the demanded technologies and countries lacking them. Premise being here is that miscellaneous ways of technology endorsement (such as number of different forms of cooperation among private entities, so called public-private partnerships where state provides to a private body and vice versa and others) exist as well, this paper will not discuss these though and will focus on few selected topics.

Since the need for technology diffusion has been recognized as an important determinant of the low-carbon future and sustainable development (as for instance at the Bali Conference), the urge for international tools to secure the transfer became an important topic of a global climate debate. The fact that environmentally friendly technologies are being developed and owned by companies and states of the industrialized part of the world (predominantly Europe, the United States and Japan)[80] but are required in developing countries is in the center of this discussion. It is being embraced by the question of financing, since developing countries are mostly unable to bear the costs. States or private entities unwilling to provide these strategic assets affordably bring the issue to the whole new level and therefore it requires a complex international legal solution.

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[79] IPCC, WG 3. 'Methodological and Technological Issues in Technology Transfer' (2000), Special Report for Policymakers, p. 5.

[80] Dechezlepretre, A., Glachant, M., Haščič, I., Johnstone, N., Méniere, Y., 'Invention and Transfer of Climate Change–Mitigation Technologies: A Global Analysis'. *Review of Environmental Economics and Policy* (2011); Volume 5, Issue 1: p. 115.

## 2.3. Main Obstacles and Facilitators in the Process of Transfer of Technologies

Number of barriers limiting the transfer of environmentally sound technologies exists. They vary from the legal (such as intellectual property protection or tariffs and customs), economical (high price of products) to factual ones (limited knowledge considering the existence of technologies, inaccurate understanding of the actual needs or underdeveloped infrastructure including intellectual capacity).

Three base substantial vectors of the transfer of technologies can essentially be distinguished: that is licensing, imports and foreign direct investment. All these aspects are interconnected with other factors of provider's and recipient's economies, such as intellectual property rights (further also referred to as *IPR*) protection, environmental policies, subsidy schemes or actual ability to absorb new technologies.[81]

One of the issues, which should be mentioned at this point, is the lack of know-how and specialized training in developing countries. Technology transfer therefore often demands in the same time also the transfer of mental capacities. The solution of this problem might be internationally organized exchanges, however it is more frequently being carried out in the form of informal on-the-job trainings which cannot cover the actual need or group schoolings. Generally, the problem hence might arise when the technologies are, in fact, made available at a marginal cost but in the same time the training or necessary know-how is lacking. The issue will be mentioned in the paper hereafter.

Overall openness to the international trade can also constitute an issue for transfer of environmental technologies. States sometimes set various legal measures to impose tariffs and non-tariff barriers that might in varying degrees limit the international trade. The question whether certain limitation of the states' freedom to impose these barriers has been raised and according to the World Bank's research,

[81] WIPO. 'Global Challenges Report: Innovation and Diffusion of Green technologies: The Role of Intellectual Property and Other Enabling Factors.' (2015). Available at: http://www.wipo.int/edocs/pubdocs/en/wipo_rep_gc_2015_1.pdf. p.10.

doing so could in fact improve the ability of the technologies to be transferred.[82] Therefore the discussions on this question might be initiated in the future.

Following chapters will further discuss some of the above mentioned issues and examine few other topics - the obstacles of the more or less legal-economical character and their possible solutions, since these are the main object of this paper. Firstly, financing under international treaties or programs will be explored, later, other ways of maintaining accessibility (when finances are not available) of technologies is laid out, with a focus on compulsory licensing as this legal institute is being perceived by the author of this thesis as an auspicious mean of making technologies if not cost-free then at least cheaper and therefore more available.

### 2.3.1. Financial Mechanisms: the Poznan Program, GEF and GCF

Number of international entities facilitating financial flows for those who demand environmentally friendly technologies have already been established, some of them could be considered as successful projects. As the financial mechanism under the Paris Agreement has been outlined in the first chapter of this thesis, for the purpose of a complete explanation of how some of these processes work, two more mechanisms are to be introduced. These are being facilitated by the UNFCCC and are also incorporated into the Paris Agreement, therefore are considered as the financial mechanisms facilitated by the UN climate change policy.

The Global Environment Facility (*GEF*), an institution founded by the World Bank in 1991, is one of the more fruitful examples of international cooperation when it comes to environmental funding. The GEF is today one of the largest public funders aiming to support technology transfers by securing funding and providing knowledge based on lessons learned approach. The GEF also serves as one of the financial mechanisms of the UNFCCC[83] as well as the Convention on Biological Diversity and others. It introduces programs which target on financing environmental projects in developing countries by assisting them in cooperation with prospective investors. It

[82] World Bank. 'World Development Report 2010: Development and Climate Change.' (2010) Available at: https://openknowledge.worldbank.org/handle/10986/4387. p.161.

[83] *See* Article 11 of the UNFCCC.

holds its own funds, which are being used for specific projects and it also catalyzes additional investments from other entities. In 2004 the GEF issued a recommending strategy directive which set up five main obstacles to the technology transfer based on their experience from the lessons learned method - it says what areas countries and international bodies should focus their interest on. These rules have a character of soft laws and firstly the importance of strong policy frameworks is being emphasized (therefore especially governments should foster policies in favor of environmental sound technologies); secondly, those who have the capacity and access to information should spread awareness about technologies, their costs and uses; thirdly, market-based approaches should be promoted in order to facilitate the clean tech transfer; and lastly financing must be available for technology dissemination.[84] Especially the information issue is being emphasized. The knowledge about environmental technologies is often lacking in the public sphere (as discussed later in this paper) which does not support its effective transfer. Diffusion of information precedes the transfer of technologies.

The GEF's position in the global environmental politics grew stronger under the Poznan Strategic Program on Technology Transfer, established by the Conference of Parties of the UNFCCC (COP) on its fourteenth session in Poland in 2008. The conference managed to transmit technology transfer techniques into soft laws by issuing recommendations and directives for the UNFCCC signatories in specific areas of environmental concerns such as energy efficiency buildings or management of land use. Parties that attended the Poznan meeting acknowledged the problem of financing of the transfer and recommended the GEF, among others, as a suitable tool for transferring funds and providing advisory services.[85] Currently, the areas of concern of the GEF also include for instance financial support of the so called public-private partnerships,[86] another promising way of transferring environmentally sound technologies.

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[84] Global Environmental Facility: 'Transfer of Environmentally Sound Technologies: Case Studies from the GEF Climate Change Portfolio' (2010). Available at: http://documents.worldbank.org/curated/en/610301468160516462/Transfer-of-environmentally-sound-technologies-case-studies-from-GEF-climate-change-portfolio, p. 4.

[85] 14th COP of the UNFCCC. *Poznan Strategic Program on Technology Transfer.* Decision 2/CP.14 (2008), Art. 2.

[86] I.e. projects conducted by private entities that generate globally beneficial outcomes - public incentives are mostly needed (in a form of subsidies, tax returns, etc.).

As the GEF got established under the auspices of the World Bank, the UN followed in 2010 by launching the Green Climate Fund (GCF). The Decision 1/CP.16, more specifically its paragraphs 100 and 102, announces the agreement of the parties of the UNFCCC on creation of a specialized fund, which the multilateral funding of the parties should flow through. The entity works under the Article 11 of the UNFCCC:

*'A mechanism for the provision of financial resources on a grant or concessional basis, including for the transfer of technology, is hereby defined. It shall function under the guidance of and be accountable to the Conference of the Parties, which shall decide on its policies, programme priorities and eligibility criteria related to this Convention. Its operation shall be entrusted to one or more existing international entities.'*

The Article 11 has therefore set the ground for the financial mechanism. To effectively commence it was a task for the upcoming COP meetings. As financing is highly important but in the same time sensitive topic, the mechanism got officially introduced almost 18 years after signing the UNFCCC.

The same feature of the GEF and GCF is that the sources of finance come from the individual states with the biggest contributors being the US, the EU states and Japan (the financing coming from the US is currently going to be challenged by the new American president). As a primary trustee of the GCF, the World Bank got invited and by the end of the year 2017 a permanent trustee shall be appointed.[87] Therefore, the World Bank is currently being engaged in both of the major international climate change financing tools.

Both funds have also similar way of governance. GCF has its own project management tool, which helps with preparation of the development plans of countries and individual entities (so called Project Preparation Facility), then evaluates the projects submitted and offers financing. In most cases, both funds prefer public, i.e.

[87] Green Climate Fund.*United Nations Framework Convention on Climate Change*.Available at: http://unfccc.int/cooperation_and_support/financial_mechanism/green_climate_fund/items/5869.php. Accessed 11 July 2017.

governmental projects, however are willing to offer funding also to non-governmental entities.[88]

It shall be mentioned here that financial mechanisms and diverse supporting schemes operated by other international bodies such as the African Development Bank, or the United Nations Development Programme are often the source of funds that those who demand environmental support seek initially (in order to secure co-financing, i.e. from foreign sources as an addition to the own state one). To map these schemes and financial flows supporting the developing countries' development programs is more of a role to social science and economy though.

### 2.3.2. Technology Mechanism under UNFCCC

Sophisticated technology platform under the leadership of the UN got established at the 16th Conference of the Parties of the UNFCCC in Cancún in 2010. In order to enhance climate technologies' development and their transfer, parties agreed on launching the so called Technology Mechanism which consists of two interconnected bodies and which was created with the goal of supporting developing countries in their actions addressing the climate change. Subsequently, the scheme of various soft laws introduced by the UN (diverse COP decisions and resolutions) developed the technology transfer support mechanism which got embodied into the Paris Agreement as well.[89]

The Technology Executive Committee (*TEC*) is the first body of the UN Technology Mechanism - it serves as a policy arm of the mechanism which analyses issues and provides consultancy to countries. It operates through Climate Technology Centre and Network (*CTCN*), the second body of the mechanism, that is designed to work as an implementation body of the Technology Mechanism, that facilitates the transfer by assisting developing countries requesting the technologies, provides knowledge and information needed for an effective diffusion of inventions.

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[88] As concluded from the websites of the funds, e.g.: https://www.greenclimate.fund/documents/20182/44502/2906_-_Deployment_of_GCF_resources_for_climate_projects.pdf/d4778deb-66a8-4e94-8c3f-f277d7f0bce6.

[89] 21th COP of the UNFCCC. *The Paris Agreement* (2015). Art. 10.

Executive Committee shall be composed of experts in the field, these are appointed by the parties of the UNFCCC. Functions of the committee are listed in the paragraph 121 of the Decision 1/CP.16 - a decision of COP which established the mechanism. Some of them are as follows: providing an overview of technological needs and analysis of policy related to the development and transfer of technology for mitigation and adaptation, recommending actions to promote technology development and suitable policies, facilitate collaboration on the transfer between governments, private sector, non-profit organizations, research communities, catalyze development and technology road maps and other plans on all levels and producing guidelines and facilitative tools, etc.[90]

One of the functions of the UN Technology Mechanism is conducting the so called *technology needs assessment,* which helps developing countries to identify and analyze their needs when it comes to mitigation and adaptation technologies. Countries are also encouraged to develop their own *technology action plans* with a purpose of implementation of concrete technologies. The processes are being supported by the GEF (mentioned above) under the Poznan Strategic Program on Technology Transfer. According to the Paris Agreement, states shall periodically asses their progress in support of technology development and transfer (developed countries), as well as operating the environmentally sound technologies (developing ones).

## 2.4. The IPR Dimension of the Transfer of Technologies

The exploitation of know-how and procedures while accessing modern technologies is an important aspect of the global development. Developing countries mostly demand these kinds of goods from more advanced states rather than creating them themselves,[91] from the reason of low economic development. However, these are

[90] 16th COP of the UNFCCC.*The Cancun Agreements: Outcome of the work of the Ad Hoc Working Group on Long-term Cooperative Action under the Convention.* Decision 1/CP.16. (2010). Paragraph 121.

[91] Mukherjee, S., Bhattacharjee, S., 'Technology Transfer and the Intellectual Property Issues Emerging from It - An Analysis from a Developing Country Perspective'. *Journal of Intellectual Property Rights* (2004); Volume 9, Issue 1: p. 260.

often protected by the intellectual property legislation. The scope of laws protecting intellectual property rights (IPR) regarding climate change technologies is an important determinant of the availability and diffusion of these technologies. Instruments such as patents or utility design set the price of technologies for those who actually need them but also an attractiveness for researchers and companies to invest in development of new technologies. That means that IPR de facto support the development of clean technologies by providing a vision of future commercial return of an investment, but on the other hand also holds back their transfer when the prices of for instance patent licenses are set too high.

Since intellectual property laws belong rather to jurisdictions of individual states more than international treaties (Agreement on Trade-Related Aspects of Intellectual Property Rights for instance provides simply a framework for domestic legislations), how the IPR protection in receiving country is perceived by technology holder from another one, is not a negligible factor. If this protection is considered to be weak, the inventor could be reluctant to provide the demanded product fearing of misuse of that product and therefore economical loss. In addition, IPR's weak enforcement might also lead to limited enthusiasm when it comes to foreign investments into the domestic production and enterprises. The other way around, when the protection is rather strong, provision of the technologies can be aggravated by legal obstacles and high price to obtain them may impose limits for the countries interested in the products.

The IPR protection of adaptation technologies regulates the usage and availability of wide range of scientific and other technological inventions and procedures limiting the consequences of the climate change - IPR tools protect for instance breeders of climate resilient plants (like trade secrets or geographical indications) or weather forecasting technologies inventors.[92]

This paper will mainly describe the IPR regime considering technological inventions, mostly mitigation ones - some examples of these shall be mentioned here. Technologies of this kind aim to prevent climate changes from happening and are closely related to concepts such as CleanTech or eco-friendly technology, which has

[92] 10 Adaptation Technologies. *Climate Action Programme*. Available at: http://www.climateactionprogramme.org/news/10_adaptation_technologies. Accessed 21 February 2017.

lately been more and more in the discussion within the public sphere.[93] The mitigation technologies cover the field of renewable energy sources (with the aim of reducing emissions while producing electricity), energy-saving technologies and designs (which tend to use as little already-produced-electricity as possible), carbon capture and storage (CCS) technologies, so called end of pipe devices (treating pollutants at the end of a process)[94] etc.

### 2.4.1. TRIPS as a Complex IPR Treaty

IPR regarding technologies are being protected by few international treaties, starting with the Paris Convention for the Protection of Industrial Property from 1883 and continuing with the, probably the most important one, Agreement on Trade-Related Aspects of Intellectual Property Rights (*TRIPS*) negotiated in 1994 within the World Trade Organization (*WTO*). This complex international IPR treaty came into force in 1995 after the end of the Uruguay Round of trade negotiations conducted within the General Agreement on Tariffs and Trade (*GATT*). The TRIPS agreement sets minimum standards for the protection of intellectual property (according to and in compliance with the treaty, individual states create their own legislation) and creates an elaborate framework in comparison with the GATT itself as amended in 1994, which considered the IPR only on a very limited scale.

Article 7 of the TRIPS reflects one of the main premises of the agreement - that is a balanced approach towards IPR and societal interests. According to the article, one of the agreement's objectives is therefore to promote innovation while facilitating the diffusion of technology. TRIPS is laying down general standards for the IPR protection, albeit the balance is to be reached by the domestic legislation. As the transfer of technologies is concerned, the main provision is anchored in Article 8 of TRIPS (called *Principles*):

*'Appropriate measures, provided that they are consistent with the provisions of this Agreement, may be needed to prevent the abuse of intellectual property rights by*

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[93] Almlund, P., Jespersen, P., Riis, S., 2012. *Rethinking Climate Change Research: Clean Technology, Culture and Communication*. Roskilde University: Ashgate Publishing, p. 25.

[94] Ibid p. 26.

*right holders or the resort to practices which unreasonably restrain trade or adversely affect the international transfer of technology.'*

In general, the agreement is considered to be the most pervasive international treaty on intellectual property to date and is accepted by 162 countries (i.e. all WTO members). Therefore this paper will focus predominantly on international IPR measures under this agreement. The underlying provisions regarding technological transfer are as follows:

As mentioned, the basics are set out by the Article 7 of TRIPS titled *Objectives:*

*'The protection and enforcement of intellectual property rights should contribute to the promotion of technological innovation and to the transfer and dissemination of technology, to the mutual advantage of producers and users of technological knowledge and in a manner conducive to social and economic welfare, and to a balance of rights and obligations.'*

The most relevant provisions for the transfer of environmentally friendly technologies are then to be found in Section 5 (on patents) and Section 7 (undisclosed information).

The influence of the negotiations conducted by the developing countries is reflected in the outlined Article 7, which is thereafter broadened by Article 66.2. By this measure, member (i.e. WTO) states are encouraged to support and promote technology transfer from enterprises in their territory to the least-developed countries. Developing countries requested higher effectiveness of this provision, therefore a decision setting up a mechanism for better monitoring and implementation of the article was adopted in 2003. Developing countries are encouraged to report how the measure is functioning in practice.[95]

As the need for modern technologies mitigating the climate change has become clearer, it was mostly developing countries which started to express their apprehensions considering IPR protection to constitute an obstacle to the access to technologies. It was at the WTO's Doha Conference in 2001 and later UNFCCC conference in Cancún in

[95] TRIPS: Issues: Technology Transfer. *World Trade Organization.* Available at: https://www.wto.org/english/tratop_e/trips_e/techtransfer_e.htm. Accessed 5 July 2017.

2010 when the least developed countries initiated discussions on proposals for adopting provisions regarding better availability of (not only) environmental technologies.

In Cancún, IPR measures began to be discussed further - for the first time on the COP level. The conference adopted the Decision 1/CP.16 which established a Technology Executive Committee and Technology Centre and Network operating under the UNFCCC.[96] The purpose of the Committee is to *'further implement the framework for meaningful and effective actions to enhance the implementation of Article 4, Paragraph 5, of the Convention (technology transfer framework) adopted by decision 4/CP.7 and enhanced by decision 3/CP.13'*[97] The technology mechanism under UNFCCC has already been mentioned here.

The IPR issue, with the connection to the technology transfer, will be further discussed now. Patents as one of the most used ways of protection of inventions and know-how (and from their nature also the most relevant for the climate technologies) are going to be explained in the next chapter. However, in some jurisdictions inventors are also allowed to protect their products with other legal tools.[98] Two ways of technologies' IPR transfer can be distinguished: either the proprietary rights on the technology are being assigned to another entity or the user is granted a license to use it. The license can be specified to allow only the usage of the technology or it can give the licensee further rights to exploit the device or know-how. Mapping the recent history of patent protection might be useful for demonstrating how the technologies are nowadays distributed among countries and therefore where they should be shifted.

### 2.4.2. Patent Protection: Mapping the Diffusion of Patents

Patents constitute one of the key components in technological companies' strategies. A patent is a right granted for an invention, i.e. a product or a process that provides a new way of doing something or offers a new technical solution. It has to be a

[96] 16th COP of the UNFCCC.*The Cancun Agreements: Outcome of the work of the Ad Hoc Working Group on Long-term Cooperative Action under the Convention.* Decision 1/CP.16. (2010). Paragraph 117.

[97] Ibid paragraph 119.

[98] Such as utility model, plant variety rights or industrial design protection. These are implemented, for instance in German and Czech legal system, are not used as often as patents though.

solution of a specific technological problem, has to be new and be an outcome of an invention. To obtain a patent, technical information about the invention must be disclosed to the public in a patent application.[99] In order for a patent to be issued, the applicant has to file an application within the national jurisdiction - general rule is that consequently the applicant obtains protection of his invention within this country's jurisdiction, patents are thus territorial. Certain requirements have to be fulfilled, national legislative sets these individually, while following the framework rules outlined by the TRIPS.

Patent protection laws are therefore, in general, in discretion of individual states. Hence patenting systems and rules can be very diverse. The TRIPS agreement provides a legal framework for patenting with basic rules that all the specific systems have to follow in its Section 5. Probably most importantly, all WTO member states are under the Article 27.1 of the TRIPS obliged to make patenting available for all inventions, whether products, processes or others capable of industrial application.[100] TRIPS was the first international agreement of such strict wording. In the next paragraph however, the agreement allows members to exclude certain inventions from patentability. This has to be justified by protection of public order, human, animal or plant life or by the necessity to avoid serious prejudice to the environment.[101] Therefore, article 27.2 could allow countries to limit patentability of environmentally sound devices. Doing so might be justified by the environmental reasons. To interpret the provision in this way may perhaps be challenged in the future and should certainly create a justifiable approach towards limiting IPR protection in this field. It is being upon the domestic law makers to project these provisions into their legislations in the desired way.

According to the Article 33, a patent should be granted for a minimum term of 20 years. On the other hand, TRIPS also allows terminating the patent duration before

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[99] About IP: Patents. *World Intellectual Property Organization*. Available at: http://www.wipo.int/patents/en/. Accessed 5 July 2017.

[100] WTO members are therefore obliged to provide patent protection available "for any inventions, whether products or processes, in all fields of technology, provided that they are new, involve an inventive step and are capable of industrial application" - the terms 'inventive step' and 'capable of industrial application' shall be considered to be synonyms to 'non-obvious' and 'useful'.

[101] *See* Article 27.2 of the TRIPS Agreement.

the expiry date for reasons such as failure to pay maintenance fees, a situation when the patent was obtained by fraud or a decision of the titleholder to forego his rights.[102] Shortening the patentable period of the environmentally sound technologies was proposed at international meetings by some of the WTO states (will be mentioned hereafter).

Mapping the diffusion of the patent protection is a useful tool to comprehend the disproportion of the distribution of new technologies and therefore to conclude that the transfer is needed. Patenting is a useful tool - it increases economic efficiency, promotes free competition and therefore boosts incentives for research and development and it can reduce duplication of developed products. Within the past period of time, the number of patents protecting the environmentally sound technologies increased, at least for some kinds of them, significantly. For more specific information on this chapter, figures regarding especially the growth of patented environmentally sound technologies are provided in the Annex of this thesis (provided below).

The data concerning patent usage when it comes to climate change mitigation technologies were processed by the European Patent Office (*EPO*) and United Nations Environmental Program (*UNEP*) in 2010 when the agencies issued a research concerning the diffusion of patents - it evaluated data considering entities filing application for a patent and their country of origin. The research helps to understand the connection between IP and technological development - the applications for patents naturally follow the innovation trends. The findings of the research[103] will be briefly introduced here in order to demonstrate how modern technologies are mostly being developed, patented and used in developed or emerging countries and are, on the other hand, being unavailable to developing countries.

As the EPO's research suggests, the number of patents granted has tripled after the Kyoto Protocol came into force and it was especially the number of patents for

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[102] Sarnoff, J. et al., 2016. *Research Handbook on Intellectual Property and Climate Change.* Chicago: Elgar Publishing, p. 84.

[103] European Patent Office. 'Patents and clean energy: bridging the gap between evidence and policy' (2010). Available at: http://documents.epo.org/projects/babylon/eponet.nsf/0/cc5da4b168363477c12577ad00547289/$FILE/patents_clean_energy_study_en.pdf. Accessed 12 June 2017.

climate change technologies that show a rapid increase in previous years.[104] This fact indicates a high potential of these technologies for businesses. As the research also shows, the patents are mostly being held by developed countries, leading by the United States, Japan and Germany. Furthermore, almost 60 per cent of technologies concerning the $CO_2$ capture and storage are being distributed among only 10 corporations (data from 2010).[105]

The research also shows increase of patent protection filing within developing, yet lately vastly emerging economies such as India, China or Brazil alongside with the countries that are traditionally considered as being developed. This shift should not be seen as a proof of a global diffusion of technologies though since the research and innovation is mostly being conducted within these countries, technologies are not being transferred there. Thus, it is desirable to aim the technology transfer tools on the least developed parts of the world. Smaller, least developed economies are being left behind because of the lack of the financial sources and are therefore depending on the developed world. Supporting this argument, around 60 per cent of the correspondents of the research confirmed that they had not issued a license for their product to an entity residing in a developing country.[106]

To conclude the issue of patents and their spread, the fact that most of them are being held by few has to be emphasized, as well as their unavailability to developing countries and their private entities. These mostly possess insufficient funds to conduct their own research or purchase the know-how and devices especially because of their high prices due to the IP protection tools (or also the lack of knowledge about their existence or overall absence of interest of the developing countries). The high number of patent filings in the recent past might suggest that patenting is being exploited in order to gain financial profit out of a piece of technology which is highly needed, rather

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[104] *See* Figure 1and 2 in the Annex of the thesis.

[105] *See* Table 1 in the Annex of this thesis.

[106] European Patent Office. 'Patents and clean energy: bridging the gap between evidence and policy' (2010). Available at: http://documents.epo.org/projects/babylon/eponet.nsf/0/cc5da4b168363477c12577ad00547289/$FILE/patents_clean_energy_study_en.pdf. Accessed 12 June 2017.

than that boost in genuine innovation occurred.[107] The way to secure the diffusion of technologies which are highly needed in order to prevent the harmful climate changes is firstly financing (i.e. securing funding in order to facilitate the technology availability) and secondly, factual, especially legal tools with the capacity to make these more accessible, such as compulsory licensing, which will be discussed hereafter.

### 2.4.3. Compulsory Licensing: Definition and Evolution

One of the goals of the developing countries at the negotiations conducted at the previously mentioned Cancún COP conference was to introduce specific measures concerning the so called compulsory licenses. The purpose of these is to overcome obstacles while accessing the technology either when its purchase is unaffordable or the owner of the product is unwilling to offer it for licensing.[108]

Compulsory licensing could be defined as a situation '*when a government allows someone else to produce the patented product or process without the consent of the patent owner.*'[109] The patent owner however still obtains remuneration and the order does not limit him from exercising other rights connected to the product or technology. Sometimes it is the state itself that uses the patent without a commercial interest - this situation is referred as a *governmental use.* Another related institute is the so called *exploitation order*[110] when the government restricts the effects of the patent to secure that the invention will be available if needed for public welfare or security reasons. Patentee can then seek the compensation from the government (whereas within the compulsory licensing, it is being provided by the user himself - the main premise of the institute is to overcome unwillingness to offer the product).

The compulsory licensing system has been known already since 1925, when it was adopted into the Paris Convention for the Protection of Industrial Property, which allowed granting the license virtually without any limitations:

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[107] Sarnoff, J. et al., 2016. *Research Handbook on Intellectual Property and Climate Change.* Chicago: Elgar Publishing, p. 88.

[108] Ibid p. 75.

[109] Ibid p. 76.

[110] This is embedded for instance in the German patent laws.

*'(2) Each country of the Union shall have the right to take legislative measures providing for the grant of compulsory licenses to prevent the abuses which might result from the exercise of the exclusive rights conferred by the patent ...'* [111]

Modern layout of compulsory licensing in international environmental law was introduced in 1992 by the Agenda 21, which was adopted by the United Nations Conference on Environment and Development (UNCED). The access to privately owned technologies (including patented ones) was in the center of negotiations, which issued a set of recommendations as follows:

*'34.18. Governments and international organizations should promote and encourage the private sector to promote, effective modalities for the access and transfer, in particular to developing countries, of environmentally sound technologies by means of activities, including the following: ... e) In the case of privately owned technologies, the adoption of the following measures, in particular for developing countries: ... iv. In compliance with and under the specific circumstances recognized by the relevant international conventions adhered by States, the undertaking of measures to prevent the abuse of intellectual property rights, including rules with respect to their acquisition through compulsory licensing, with the provision of equitable and adequate compensation'*[112]

As the Agenda 21 did not offer broader layout for the IPR dimension of technology transfer, it finally got its most complex international legal framework by the TRIPS Agreement, which was adopted two years later.

### 2.4.4. TRIPS and compulsory licensing

The provision of Article 7 of TRIPS, i.e. balanced approach towards the protection and diffusion of technological ideas can also be mirrored in the agreement's focus on the issue of compulsory licensing. As historically first, TRIPS has set stricter rules for awarding any type of licenses and, for instance, completely forbids licensing of trademarks.

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[111] *See* Article 5 of the Paris Convention for the Protection of Intellectual Property.

[112] UNCED, *Agenda 21* (1992), Chapter 34.

Compulsory licensing is a special type of license under the TRIPS agreement. The treaty uses the term *use without authorization of the right holder* rather than the term *compulsory license*.[113] The minimum standards are laid down in the Article 31: in order for the compulsory license to be granted the provision requires that the decision follows public non-commercial interest, the efforts to obtain authorization on reasonable commercial terms must have been made and, consequently, these efforts were, after a reasonable period of time, not successful (this rule may be waived in the case of national emergency or other fringe situations and the patent holder ought to be informed), the license should be purpose limited and non-exclusive (and it has to be terminated when the circumstances which led to a specific situation which allowed for granting the authorization are not to about to recur), the authorization is to be exploited within the domestic market of the state authorizing it and the right holder is to be paid remuneration. The article goes a step further when it also regulates a situation when the exploitation of a patent is not possible without infringing another patent.[114] More specific rules for when the license can be issued must be provided by the national legislations, however, they shall not be contrary to the international law rules of TRIPS.

The TRIPS agreement has a far outreach in regulating the issue of compulsory licensing than any previous international treaty, especially in its recent long-time-discussed amendment from 2005 which came into force almost twelve years later, in January 2017. The amendment imbedded Article 31bis as well as an annex and appendix specifying the article. The purpose of these is to ease the WTO countries to grant licenses for affordable medicine and other medical material in order for them to be available for countries which cannot produce them domestically.[115] Under these articles, the WTO members are therefore quite free in allowing compulsory licensing while the conditions for the process are being laid out by these provisions. The countries are allowed to create domestic laws to specify grounds for issuing the compulsory license, which (and here the difference between the applicability of Article 30 and 31bis can be distinguished) can be used also outside the state borders. Article 31bis of TRIPS

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[113] *See* Article 31 of the TRIPS Agreement.

[114] *See* Article 31 (l) of the TRIPS Agreement.

[115] Amended TRIPS Agreement. *World Trade Organization.* Available at: https://www.wto.org/english/docs_e/legal_e/31bis_trips_01_e.htm. Accessed 3 July 2017.

therefore modifies the previous article by adding specific rules for pharmaceutical products when it, in fact, loosens the rules set out by the Article 31.

Before the TRIPS measures were in force, states' legislations were rather heterogeneous. Germany's IPR environment will be demonstrated here as an example. Measures on compulsory licenses were a part of the German Patent Act even before TRIPS started to focus on the issue.[116] To comply with the treaty and further elaborate the institute of compulsory licensing, the country amended the act that now requires fulfilling the general TRIPS conditions. According to the act, public interest for the issuance has to be recognized. A small discourse about the term *public interest* in the judgements of the German justiciary shall be made here. The competent court has to balance the interest of the people and the patentee's right to decide not to grant licenses. The simple fact that the patent holder is misusing his rights or that by not issuing the licenses he creates a monopoly, is not a sufficient justification. Rather, a strong compelling public interest has to be found.[117] It shall be still borne in mind though that it is needed to find a right balance between the proprietary interests of the patent holders (and therefore the whole patenting system premise which is to encourage research) and the public interest argument.

Proposals for compulsory licensing of environmentally sound technologies and other similar instruments have regularly been discussed not only within the WTO but also during the UNFCCC meetings. A few uttermost drafts arranging a complete ban for patenting these technologies were submitted for instance and, naturally, got quickly rejected by developed countries.[118] In general, ideas about certain exclusion for patents are a very sensible topic at the both UN and WTO meetings. The scope of exclusion (i.e. what technologies should be excluded from patenting and what defines them) would be very difficult to determine and even if the risk of climate change would be sufficiently justifying reason for the exclusion from patenting, the risk of creating a precedent for similar situations might be too high. Another proposed alternative was to

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[116] Von Falco, A., 'Compulsory Licenses as a Defense in Pharmaceutical and Biotech Patent Litigation'. *Future Science* (2016); Volume 5, Issue 6: p. 351.

[117] Ibid p. 352.

[118] Sarnoff, J. et al., 2016. *Research Handbook on Intellectual Property and Climate Change.* Chicago: Elgar Publishing, p. 81.

modify Article 27 of the TRIPS in a way that allows member states to create a case-by-case based system to evaluate which inventions are indispensable enough for limiting the climate change and are therefore eligible to be diffused.

As suggested by Indian representatives in the Committee on Trade and Environment of the WTO, limited time patents (shortly mentioned above) could also serve as a partial solution of unavailability of a patented technology. Their proposal reads:

*'While the term of protection for a patent under Article 33 of the TRIPS Agreement is a minimum period of 20 years from the date of filing, members may be allowed, ..., to reduce this to a much shorter term of protection so as to allow free access to patented environmentally sound technologies and products within a shorter period in order to deal rapidly with environmental problems.'*[119]

The proposal again serves as an example of one of the developing countries' suggestions of how to establish a better diffusion system for the technologies they are interested in. However, according to Article 27.1 of TRIPS (as mentioned above), environmentally sound technologies still cannot, at least on the international level, be treated differently from other patented inventions when it comes to the compulsory licensing or a complete prohibition of patenting. When considering public interest (as understood from the German case), that could be recognized while evaluating the need for environmental technologies, a different (e.g. shorter term of protection) treatment for these, however, could be justifiable - after all, the different treatment for medical products, where the public interest had been recognized, was already acknowledged. Specific provisions considering this could be implemented through an amendment to the TRIPS agreement and the proposal for this would have to be submitted by two-thirds of the members and subsequently would need to meet a consensus among the WTO states.[120] Adoption of provisions of similar content has not found a sufficient support among the, especially developed, member states up to date.

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[119] World Trade Organization - Committee on the Trade and Environment. *The Relationship of the TRIPS to the Development and Access and Transfer of EST&P*. Proposal of a Decision WT/CTE/W/66 (1997).

[120] *See* Article IX. of the Agreement Establishing the WTO.

As compulsory licensing can be seen as a way how to solve the issue of unavailability of adaptation and mitigation climate technologies, in the same time, it shall also be borne in mind that if the rights for the utilization of the product are forcibly taken away from the patent holder, it would mostly not involve necessary components which should be transferred together with the rights under the patent (such as know-how, specialized training or other type of cooperation of the patent holder). This could make the exploitation of the transferred instruments complicated or even impossible. Since the compulsory licensing scheme is already in operation and could be justifiable, this specific aspect should be recommended to focus on in the future climate technologies debate.

It shall also be emphasized that compulsory licensing mostly does not make patented products cheaper - it only overcomes their unavailability on the market. The patentee is still eligible for a remuneration which the seeker shall pay. If the funding still cannot be secured, the institute of exploitation order,[121] known, for example, from the German patent law, could be applied.

## 2.5. Evaluation of International TT Processes, a Case Study of Ethiopia

### 2.5.1. Experience of the Czech Diplomacy

The last chapter is devoted to the evaluation of international financial mechanisms and other legal tools supporting the shift of climate technologies while analyzing some of the issues surrounding the problematics from the practical perspective on an example of a developing country. It endeavors to offer recommendations in order to improve the functionality of the technology transfer processes (investments predominantly) and their applicability.

As a way how to explore the practical side of the matter, the situation in Ethiopia has been examined and will be used as a model example. For the purpose of the thesis,

[121] As mentioned previously, the institute gives government an option to restrict the effects of the patent to secure that the invention will be available if needed for public welfare or security reasons. Patentee can then seek the compensation from the government itself.

the Embassy of the Czech Republic in Addis Ababa has been contacted and knowledge provided by the Ambassador, Mgr. Karel Hejč, is therefore one of the main sources of information for this chapter. Additional source of information is an interview given by Ing. Věra Venclíková, a representative of the Business Platform for Foreign Collaboration, a Czech institution supporting the investments of the Czech companies in developing countries that was established by the Confederation of Industry of the Czech Republic, Association of Engineering Technology and Association of the Czech Railway Industry.

As the Ambassador of the Czech Republic in Ethiopia mentioned, the foreign technologies mostly reach the country in the form of foreign private investments. In praxis, the companies develop a product and then try to sell or operate it in the developing country. The initiative therefore mostly comes from the private spheres themselves without regard to international legal tools or supporting programs. One of the issues while installing the product or bringing it to the local market is the lack of information about the local environment (i.e. natural and societal conditions, specific needs of the country, information about infrastructures and others). Therefore some companies rather invest in a profound market research to find out whether their product could even be successful on the local markets. Some skip this step and find themselves in a situation when their product cannot find its space on the local market.

Better international information platform for private investors shall be established, or rather, reestablished. The Technology Mechanism under the UNFCCC has a similar goal - of searching for where the demand is and for what product. However, the UN mechanisms mostly work on the international, i.e. state level. States or other international bodies do have the access to the information, only they fail to reproduce it to the private entities. Most of the companies interested in applying their technologies in other countries' markets are lacking the information which are available to the states more easily. As already mentioned, systems of this character are already operating. However, their outreach on private sector is limited. Consequently, to figure out a more comprehensive system which engages private entities on much bigger scale, is one of the recommendations after conducting a research described in this paper. Also, individual states could be recommended to establish their own functioning information platforms whose existence would be well-known to the companies of the state, so that

they had knowledge that these kinds of information are available and could help them with targeting specific developing countries.

What might also be caused by the lack of information available to the private entities is the awareness about the fact that to transfer the technology is mostly not the only step the investors have to take. Together with the technology, the know-how must be shifted as well, in a form of schooling the locals how to, for instance, operate and fix the installed products. Private investors sometimes do not consider this aspect of the transfer. International tools securing the transfer of know-how and education are not efficient if even existing, therefore to focus on informing the investors and to realize the importance of the education that is needed to be transferred together with the technology and therefore support it (for instance on the international organizations' level) is very important aspect as well.

Lack of information of technical character might also constitute an obstacle while transferring the technology and, again, an international comprehensible source of knowledge, which would be open and known to private bodies, should be established. The problem might arise when the product is brought to the country but cannot be installed or operated because of lack of tools needed or the insufficiently developed or lacking infrastructure. To provide information about the local conditions via reachable channels, that are also cost-free, might do the business.

To establish and operate these information channels would obviously be the easiest if realized on the international organizations level - these have the global outreach and with some sort of system of soft or even hard laws it could be easier for them to gather and assemble these valuable information which would make investing in developing countries easier. And again, the information must be easily reachable and the knowledge about the existence of these channels shall reach the investors.

Considering the protection of intellectual property, the obvious issue is financing (in order to finance licenses for instance). In Ethiopia, various programs under the OECD and the UN are being conducted. The state projects are being financed by the state itself, however, the government always seeks for co-financing coming from the international organizations or banks, such as the African Development Bank. As concluded above, compulsory licensing, in the domestic legal ground, might be in some cases justifiable under the environmental protection reasons. In order to secure the

broad international bracing of the institute, global treaties would have to be amended or praxis accepted by international forums would have to be developed. From the experience of the Czech diplomacy in Ethiopia, issuing license compulsorily or rendering an exploitation order is mostly not the usual way of transferring a piece of technology (as explained above, the practice of using compulsory licenses is so far being more widely established in the medical area). Patent holders therefore follow the general way of offering the licenses. Entities that are not willing to do that are mostly out of the viewfinder of the state or international organizations. Launching an easily reachable international register of patented environmental technologies could be a way of handling this issue. On the other hand, the problem of stealing the transferred know-how, as well as cases of abusing the compulsory licensing system might arise, and that would probably constitute a huge opposition to this idea within the developed countries. This could be solved by some sort of insurance scheme - if the inventor's product or know-how got abused, damages would be awarded (to speculate about the burden of proof in these scenarios would be legitimate though but it is not in the scope of this paper to discuss it).

### 2.5.2. Czech Business and Investments in Foreign Projects

A short research conducted by the Business Platform for Foreign Collaboration[122] explored whether the weak protection of the intellectual property within the legal system of developing country, and therefore possible cases of stealing the know-how, discourage the companies from engaging in tenders for the foreign development projects. It should be mentioned here that although some international IPR protection systems are in function,[123] their outreach and success rate on the every-day-life basis is rather questionable since the area is mostly regulated by the domestic laws. That constitutes difficulties with procedures for filing the patent and the consequent

[122] The Business Platform for Foreign Collaboration 'Ochrana práv nehmotného vlastnictví v projektech rozvojové pomoci.' (2015). Available at: https://www.ppzrs.org/soubor/anketa-ochrana-dusevniho-vlastnictvi/.

[123] Such as the Madrid International Trademark system, The Patent Cooperation Treaty, which in some cases might be functional and able to construct a protection for a product or know-how internationally; the IP system within the European Union is probably the most successful one.

enforcement of the technology holder's rights and these uncertainties might discourage the businesses from transferring their technologies.

However, the survey has unveiled that most of the Czech companies interested in investing in developing countries are not greatly aware of the IPR issues and do not take them into consideration, or, if there is one, they expect that the project organizer (i.e. international body such as the EU or domestic government offices) takes over in dealing with this kind of issue. A small number of the respondents have their own procedures of preventing stealing of their know-how, in the form of frequent innovations of technological procedures and solutions.[124]

Furthermore, according to the survey, the Czech companies show interest to be involved in the projects involving investing in developing countries only on a limited scale. The reason behind it is a limited awareness about the opportunities as well as complicated conditions that have to be fulfilled or, when the projects include an engagement of the state, skepticism towards the state institutions (which is a typical feature of the Czech business environment). Again a proposal for an easily reachable register of possibilities for investments might be suggested here as a way of a solution. This register should contain information about needs and possibilities of the developing countries as well as recommendations for business of what to focus on.

An example is going to be presented now. In Ethiopia companies should not be encouraged to invest in photovoltaic power plants. Even though the country might seem to be an ideal candidate for solar energy power industry, in fact, conditions are not suitable for installations of this kind. The reason is that the country actually has too much sun which would lead to overheating of panels and therefore traditional solar technologies would not be functional. It is as well a very dusty country - these environmental conditions require more advanced solar technologies and consequently it might be more convenient to focus on different technologies for energy production. These types of information investors often lack and international '*catalogue*' might work as a useful tool.

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[124] The Business Platform for Foreign Collaboration 'Ochrana práv nehmotného vlastnictví v projektech rozvojové pomoci.' (2015). Available at: https://www.ppzrs.org/soubor/anketa-ochrana-dusevniho-vlastnictvi/.

Considering Ethiopia and Czech investors in the country, cooperation is mostly being carried out in a form of direct investments in specific projects, joint ventures[125] or establishment of an independent affiliate. For the latter two, Ethiopian laws require involvement of a local element (employees, partial owners, financial interest, etc.). This way investors are also partially forced to invest into local human capital together with transferring of know-how and technologies. The problem occurs when the investor's training is basically being exploited by other companies in a way that another corporation decides to give a better offer to a trained employee and therefore causes an outflow of a workforce. Difficulties caused by the social and moral reasons are thus another obstacle investors have to face, which probably cannot be solved legally in a country where law is not yet being effectively enforced.

## 2.6. Conclusion

The development of technologies is currently bound alongside the advancement of human civilization more than ever before and its influence on our environment and climate is growingly evident, albeit disputable. The perception that modern technologies only affect the environment in a harmful way is already almost overcome as science and industries are slowly gravitating towards a more sustainable and green approach for not only environmental reasons but also the economic benefactors. The devastating impact humankind has on our environment and the climate is becoming clearer and by realizing this, there has been an influx in demand for green technologies and therefore investing in them is becoming more attractive.

One of the reasons behind the growth in global awareness of the effects of climate change is that major international organizations such as the United Nations started to push their environmental policies since the early 1990's. Documents such as the Bali Road Map from 2007, decisions issued by the 16th Conference of the Parties of the UNFCCC in 2010 and finally the Paris Agreement in 2015, which all aim at preventing dangerous anthropogenic changes in our climate, apply particular emphasis

[125] A business created by two parties, mostly sharing costs and risks, with shared decision powers.

on the importance of the green technologies for the limitations of these changes. These technologies need to be transferred to countries that do not possess them, so that effective combat against climatic changes is secured. As proved by the research of the European Patent Office, countries that are considered to be more economically developed hold an absolute majority in registered patents for climate technologies. These technologies are therefore being developed in rich countries and developing states are dependent on them for their provision.

However, there are many obstacles the transfer of technologies has to face. Legal regulations, finance, social issues and habits as well as lack of knowledge are some of the main challenges. The general way of transferring technologies is through financial investments, however, a lack of thereof is probably the most imminent issue when transferring technologies. Developing countries very often seek at least partial monetary funding from the international bodies. Therefore international financing schemes have been established under number of supranational bodies. These include the World Bank group, the United Nations (its treaties use several financial mechanisms to fuel the technology transfer) and the OECD. In the thesis, a few programs established under the UN were explored. Its financial mechanisms are generally focused on aid in developing countries but there are few of them centered on the environment or climate solely - the Green Climate Fund does aim to provide resources in order to mitigate the climate changes and finance the technology transfer through, under the guidance of the Conference of the Parties of the UNFCCC and the Technology Mechanism. Their role is particularized on the issue of climate technologies, possessing knowledge about their existence and usability as well as giving financial resources to those demanding them. These funds proclaim themselves as successful tools serving their purpose; however, to prove their real functionality (which was one of the aims of the thesis) is difficult mainly because of the lack of neutral non-partial sources of information. Nevertheless, to include effective financial mechanisms in international environmental treaties shall continue to be supported, since their importance could be significant, particularly in the future.

One of the biggest legal obstacles to the transfer of technologies is intellectual property protection. Without the protection of the rights stemming from a technology's invention, research and development would miss some of its financial incentive and

stagnate, since the return of the expenses would not be assured. On the other hand, the protection makes technologies costly, since the license for usage has to be obtained by the one who is interested in the product. Besides, the owner of the technology might not be willing to offer a license for the product at all and thus the technology cannot be used or copied because of the IPR protection. In these scenarios, it might be justifiable to use an institute called compulsory licensing: the states decide the product has to be offered in the public sphere, however, the holder of the intellectual property rights is still awarded revenues.

The TRIPS agreement includes provisions on compulsory licensing valid outside of the borders of the issuing state. Under the present form of the agreement, these provisions are applicable chiefly to the pharmaceutical products. Whether the same system of treatment of environmental technologies could also be justified is debatable and it might be necessary to create a new amendment to the TRIPS agreement.

Research conducted and summarized in the thesis was eventually consulted with experts in relevant problematics. The ambassador of the Czech Republic in Ethiopia Mgr. Karel Hejč and executive director of the Business Platform for Foreign Development Cooperation Ing. Věra Venclíková were interviewed and talked about the impacts of international processes of the technology transfer. They both explained how the Czech businesses react on the international IPR laws and what the process of investing looks like. Problems connected to the topic are mostly caused by the lack of knowledge about the foreign lifestyle, sociopolitical aspects and technical environment which are of a very complex nature. Continuing in developing functional educational schemes in developing countries, strengthening international information databases, insurance systems for cases of stealing of the know-how and promoting collaboration between market and state actors could be a partial solution to the problem.

Amending the TRIPS agreement so that the binding international legal provisions on compulsory licensing without border limits or exploitation orders would be automatically applicable on environmental technologies might help the diffusion of the technologies. However, in the same time it could potentially act as a powerful tool for those making decisions about what technologies to apply the provisions on. Currently, states can autonomously adopt domestic measures to ensure that environmentally sound technologies will obtain a compulsory license or exploitation

orders. International laws would however safeguard the general rules for all states uniformly without regard to state borders. A prediction on how such measures would work, on which technologies and to what extent they would be applicable, is difficult to make in the up-to-date international legal environment. Until the international legislation on the topic is created, the domestic law makers shall be invited to adopt domestic laws allowing the usage of the compulsory license on technologies considered worth diffusing also outside of the country borders, while reflecting the public interest argument as comprehended by the German justiciary.

In summary, while the literature on the diffusion of environmental technologies is relatively sparse, it was possible to identify a number of issues. These were discussed in the paper and possible solutions were offered while the situation in Ethiopia with regard to the Czech business environment was evaluated and the practical impact on this country in the East-African region was considered.

# Master's Thesis Summary in Czech Language

# Teze diplomové práce v českém jazyce

## Úvod

Problematika globálního oteplování, respektive klimatických změn, je poslední dobou velice ožehavým tématem diskutovaným jak na domácím, tak i mezinárodním poli. Fakt, že naše planeta se otepluje, že má na tento děj velký vliv člověk a že přírodní i sociální dopady změny klimatu budou v budoucnu velmi tristní, byl již uznán většinou odborné i laické veřejnosti.[126] Důvodem pro to jsou například stále častěji se objevující hydrometeorologické extrémy, zaznamenané rapidní tání ledovců a permafrostu či úbytek biodiverzity. V poslední době bývá rovněž upozorňováno na sociální dopady změny klimatu - změny v přírodním prostředí člověka mají jistě i značný vliv na lidskou společnost, přičemž například problém takzvané klimatické migrace bude v budoucnu vyžadovat komplexní řešení a přizpůsobení se západních společností masivní vlně migrace.

Při uvědomění si komplexnosti celého problému nelze dojít k jinému názoru než tomu, že změna klimatu bude jednou z největších výzev, kterým lidstvo muselo doposud čelit. Řešení problému vyžaduje spolupráci mnoha vědeckých odvětví, mimo jiné i právního. V oblasti práva mezinárodního je téma řešeno v rámci několika mezinárodních smluv, přičemž ty základní jsou v této diplomové práci představeny. Pozornost je věnována především té nejnovější - Pařížské dohodě z prosince roku 2015, jejíž patrně největším úspěchem bylo její rapidní přijetí a ratifikace, kteréžto svědčí o urgentnosti současné situace (ovšem patrně také o jisté „měkkosti" celé dohody).

Důležitou vědeckou institucí, z jejíhož výzkumu čerpá prvotně Organizace spojených národů (dále také jako "OSN"), je takzvaný Mezinárodní panel pro změnu klimatu (dále také jen "IPCC" - *Intergovernmental Panel on Climate Change*). Zpráva vydaná IPCC v roce 2007 nastiňuje scénář zvýšení globální průměrné teploty o 1,8 až 4 stupně Celsia v případě, že lidská společnost bude pokračovat v takzvaném "business as

[126] Nuccitelli, D., '97% global warming consensus paper surpasses half million downloads'. *The Guardian* (2016). Dostupné z: https://www.theguardian.com/environment/climate-consensus-97-per-cent/2016/jun/23/97-global-warming-consensus-paper-surpasses-half-a-million-downloads. Cit. 15. 3. 2017.

usual"[127] přístupu, a to již v průběhu jednadvacátého století. Ve zprávě byly popsány katastrofické následky antropogenně způsobeného globálního oteplování a IPCC tak prakticky stanovil, jaké změny klimatu již lze kategorizovat jako nebezpečné.[128]

Výzkum IPCC byl jedním z důvodů pro OSN k zaujetí stanoviska k problému klimatických změn. V rámci této organizace vzniká většina inciativ, které mají tomuto předcházet, a to i v podobě mezinárodněprávních úmluv a jiných instrumentů - právě tyto diplomová práce zpracovává.

Tematicky ji lze rozdělit do dvou hlavních kapitol: první pojednává a kriticky hodnotí právní výstupy mezinárodních klimatických diskuzí (především Pařížskou dohodu, jakožto komplexní klimatickou mezinárodní smlouvu, která bude ovlivňovat budoucí podobu řešení tohoto globálního problému) a druhá se zaměřuje na konkrétní aspekt spojený s problematikou ochrany klimatu, tedy přenos technologií, jejichž cílem je změnám klimatu předcházet, zmírnit je nebo společnost na tyto adaptovat.

Jelikož tato práce nese název "Vybrané otázky práva ochrany klimatu se zaměřením na proces přenosu technologií", je na tomto místě třeba poznamenat, že autorka pojednává pouze o několika zvolených tématech, kterými se zabývají mezinárodní klimatické úmluvy, a z jejího pohledu důležitých aspektech, které jsou spojeny s transferem technologií.

Část práce vznikla přepracováním práce SVOČ, která se umístila v roce 2016 na třetím místě ve své kategorii. Velká část zdrojů byla opatřena při působení autorky na Univerzitě Oslo, kde se věnovala studiu práva životního prostředí se zaměřením na ochranu klimatu.

**Rámcová úmluva OSN o změně klimatu**

Problém globálního oteplování začal být na mezinárodním poli intenzivněji diskutován na konci 80. a začátku 90. let minulého století. Valné shromáždění OSN započalo s negociacemi, které vyústily k přijetí textu takzvané Rámcové úmluvy o

[127] Business as usual je princip hospodaření, který nezohledňuje moderní, k přírodě šetrnější postupy a jehož hlavním cílem je primárně pouze zisk, přičemž nejsou zohledňovány negativní externality výroby.

[128] IPCC, WG 1. 'Climate Change 2007: The Physical Scientific Basis', obsaženo v *Fourth Assessment report: Climate Change 2007* (2007), Summary for Policymakers.

změně klimatu (*United Nations Framework Convention on Climate Change* nebo také "UNFCCC"), a to v červnu 1992 na Konferenci OSN o životním prostředí a rozvoji v Rio de Janeiru. Participuje na ní v současnosti na 196 států celého světa a Evropská unie, patří tak mezi nejuniverzálnější mezinárodní dohody vůbec.

Pro pochopení celého klimaticko-právního rámce je důležité zdůraznit, že UNFCCC je úmluvou rámcovou. Zavádí právní principy ochrany klimatu, hlavní cíle celého systému a obsahuje rovněž zmocnění orgánů, které mají do budoucna vytvářet konkrétnější pravidla (takzvaná Konference smluvních stran rámcové dohody - "COP").

Východiskem celého systému je myšlenka, že *"změna klimatu Země a její nepříznivé důsledky jsou společným zájmem celého lidstva"*.[129] Článek 2 poté stanovuje hlavní cíl úmluvy a tedy i navazujících právních instrumentů:

*"Konečným cílem této úmluvy a jakýchkoli souvisejících právních dokumentů, které konference smluvních stran případně přijme, je dosáhnout, v souladu s odpovídajícími opatřeními úmluvy, stabilizace koncentrací skleníkových plynů v atmosféře na úrovni, která by předešla nebezpečnému narušení klimatického systému vlivem lidské činnosti. Této úrovně by mělo být dosaženo v takové lhůtě, která dovolí ekosystémům, aby se přirozenou cestou přizpůsobily změně klimatu, která zajistí, že nebude ohrožena produkce potravin, a která umožní, aby hospodářský rozvoj mohl pokračovat udržitelným způsobem."*

Pro pochopení je důležité interpretovat význam jednotlivých pojmů obsažených v této základní myšlence úmluvy. Ta byla po dlouhých vyjednáváních navržena tak, aby se od ní všechna budoucí rozhodnutí odrážela a aby byla dostatečně dynamická a dokázala tak zajistit dosahování stanovených cílů v delším časovém horizontu i v budoucnu. Zahrnuje v sobě cílení na lidstvem vytvořené emise, stabilizaci jejich koncentrace (tedy smíření se s tím, že zvýšená koncentrace nebezpečných látek způsobená lidskou činností se již v atmosféře nachází) a to na úrovni, která by neměla být pro lidskou společnost nebezpečná.[130]

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[129] UNFCCC, odst. 1 preambule.

[130] Voigt, C. *The International climate change regime - UNFCCC* (přednáška). 4. 2. 2016. Universitetet i Oslo.

Některé z hlavních myšlenek obsažených v článcích dohody jsou také principy mezinárodního práva obecného. Jde především o princip předběžné opatrnosti a princip udržitelného rozvoje, které jsou v současnosti v mezinárodním právu životního prostředí již zavedenými principy, nebo také zásada společné, ale diferencované odpovědnosti a rozdílných schopností států úmluvy. Pojetí tohoto principu v UNFCCC na téměř čtvrtstoletí určilo, jakým způsobem státy k pravidlům přistupovaly. Rámcová dohoda rozdělila státy na rozvinuté a rozvojové, přičemž na první skupinu dopadala striktní pravidla a emisní limity, zatímco druhá měla stanoveny jen minimální povinnosti.

Tento princip se odráží i v dalším mezinárodním instrumentu, který byl sjednán o pět let později - takzvaný Kjótský protokol. Naopak v Pařížské dohodě byl značně oslaben, čímž byla vlastně urgence problému oteplování zdůrazněna, když byly nyní povinnosti stanoveny všem státům společně.

**Kjótský protokol**

Rysem UNFCCC bylo, že nestanovovala žádné konkrétní cíle, ale prakticky pouze principy a nástin postupů, jak obecných cílů dosáhnout. Bylo na orgánu úmluvy - tedy shromáždění všech participujících států, tzv. COPu, aby v budoucnu tato konkrétnější ustanovení přijal. K tomu došlo v prosinci 1997 v Kjótu, kdy byl přijat protokol dle článku 17 UNFCCC, jehož úkolem bylo stanovit konkrétní závazky týkající se redukčních cílů pro rozvinuté státy, tedy hraniční hodnoty toho, jaké množství skleníkových plynů který stát může ročně vyprodukovat.

Emise jsou problémem globálním, Kjótský protokol tedy pracuje s premisou, že nezáleží na tom, kde budou skleníkové plyny emitovány, v atmosféře se totiž poté hromadí poměrně rovnoměrně. Na tomto staví protokolem zavedený flexibilní mechanismus, tedy systém obchodování s emisemi. Tento byl nejspíše největším přínosem protokolu a umožňuje státům nakupovat či prodávat povolenky na vypouštění skleníkových plynů. I přesto ale tento systém flexibility (stejně jako i další nástroje zavedené Kjótským protokolem) má působit pouze subsidiárně k vlastnímu snižování emisí na domácím území státu.[131]

[131] Kjótský protokol, článek 6.1.d.

Dalšími flexibilními mechanismy, které státům umožňují snižovat průměrné globální emise jiným způsobem než jejich limitováním na svém vlastním území, jsou takzvaný mechanismus čistého rozvoje (*Clean Development Mechanism*) a projekty společné realizace (*Joint Implementation*). Oba mechanismy zajišťují investování vyspělých zemí do projektů či zařízení v jiném státě, které mají potenciál nízkých emisí, přičemž je tento potenciál vyhodnocen a konečná hodnota se započítá do limitu, který je pro investující zemi stanoven.

**Pařížská dohoda**

Jak již bylo zmíněno, hlavní pozornost první části diplomové práce je věnována Pařížské dohodě, která byla sjednána na dvacátém prvním setkání stran Rámcové dohody o změně klimatu v prosinci roku 2015. Mnozí slavili přijetí textu s nadšením, jelikož dohoda reflektuje urgentnost problému globálního oteplování a univerzální shodu na tom, že je třeba učinit funkční opatření, aby byly změny zmírněny.

Na rozdíl od Kjótského protokolu není Pařížská dohoda přímým instrumentem fungujícím pod rámcovou úmluvou. Vznikla pod její dikcí, ale funguje jako samostatná mezinárodněprávní multilaterální smlouva. Byla podepsána 197 státy, což ji činí dohodou s téměř univerzálním dosahem. Dle dat z července 2017 byla ratifikována 157 státy. Účinnou se stala již v říjnu 2016, což ji rovněž činí jednou z nejrychleji přijatých mezinárodních dohod v historii.[132]

Z hlediska struktury je dohoda rozdělena na dvě části: první, tzv. rozhodnutí (*decision*) obsahuje právně méně závazná ustanovení, která mají charakter spíše doporučení a obecně stanovují odvážnější cíle, kterých by se země měly snažit dosáhnout. Druhá část, tzv. příloha (*annex*) pak obsahuje samotnou úmluvu, která je právně závazná. Celý dokument je vystaven na konceptu progrese - má státy vést k tomu, aby byly ve svých opatřeních stále ambicióznější a neustále se zdokonalovaly.

Cíl dohody je stanoven v jejím druhém článku. Dle něj je to *"zlepšit globální reakci na hrozby změny klimatu, a to v návaznosti na udržitelný rozvoj a úsilí o vymýcení chudoby,"* přičemž je stanoveno, že nárůst globální teploty je třeba udržet

[132] K tomu, aby dohoda vešla v účinnost, bylo třeba, aby 55 států, které jsou spoluodpovědny za 55 % světových emisí, odevzdalo ratifikační nástroje - tedy například listiny osvědčující domácí ratifikaci.

výrazně pod hranicí 2 stupně Celsia oproti hodnotám před průmyslovou revolucí. Státy přitom mají usilovat o to, aby nárůst nepřekročil 1,5 stupně. Některé státy usilovaly o nižší teplotní cíl (jako například státy Evropské unie či nízko položené ostrovní státy), jiné naopak o vyšší - tento postoj zastávaly nyní rychle se rozvíjející státy jako Čína a Indie, jejichž obavy o ohrožení jejich práv na rozvoj rámovaly veškerá Pařížská vyjednávání.[133]

Zde je třeba poznamenat, že Pařížská dohoda sice stále zastává princip společné, ale diferencované odpovědnosti a rozdílných schopností,[134] tedy bere v potaz vyšší historický podíl rozvinutých států na změnách klimatu, již ale neukládá povinnosti pouze jim, ale také státům rozvíjejícím se. Úkolem bohatších států (které ale v dohodě nejsou identifikovány a navazují tedy tak nejspíše na rozdělení obsažené v UNFCCC) je především poskytnout financování, technologie a jinou odbornou pomoc státům chudším. Důvodem pro opuštění dřívějšího striktního rozlišování byl především rapidní rozvoj a tedy i vzrůst hladin emisí především Číny.

Stranám není stanoveno, že mají pouze usilovat o snižování emisí, ale spíše o vyrovnávání hodnot emisí, které jsou vypuštěny a které jsou pohlceny. K tomu má dojít buď díky přírodním zdrojům - rostlinnými porosty, o jejichž obnovu a zachovávání mají strany usilovat, anebo uměle vytvořenými zařízeními na zachytávání a ukládání uhlíku (c*arbon capture and storage)* - souhrnně jsou v úmluvě tyto nástroje označovány jako propady uhlíku - *sinks*.

Jednou z nejdůležitějších povinností stran dohody je vytváření takzvaných vnitrostátně stanovených příspěvků zvaných *NDC* (*Nationally Determined Contributions*). Tyto musí státy připravovat, hlásit a plnit a budou diskutovány na setkáních stran Pařížské dohody, čímž budou kontrolovány a neformálně vynucovány.[135] Jejich obsahem má být závazek se států k dodržování limitů emisí a popis dalších opatření k jejich snižování či odbourávání, přičemž mají odrážet nejvyšší možné ambice každého jednotlivého signatáře. Pravidla týkající se NDC tvoří

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[133] Voigt, C. *The Paris Agreement* (přednáška). 18. 2. 2016. Universitetet i Oslo. Nutno poznamenat, že vybalancovávání práva na rozvoj s právem na ochranu klimatu je obecně obšírným problémem tohoto právního odvětví.

[134] Pařížská dohoda, článek 2.2.

[135] Pařížská dohoda, článek 4.

nejkonkrétnější povinnosti obsažené v Pařížské dohodě. Přesto jim lze vytknout poměrně laxní systém vynucování. Státy mají povinnost pouze usměrňovat na domácím poli vytvořená opatření tak, aby umožnila dosažení těchto stanovených závazků. Jejich kontrola a vynucování jejich dodržování má probíhat ale pouze přes veřejné skrutinium a systém *naming and shaming*. Při uvážení faktu, že podobný systém nahlašování závazků a jejich plnění obsahoval i Kjótský protokol (respektive rozhodnutí první konference stran Kjótského protokolu 27/CMP.1) a jeho úspěch byl přinejmenším pochybný, se očekávalo, že Pařížská dohoda tento systém zdokonalí.[136] Pro nahlášení NDC také není stanoven žádný časový rámec.

Při vyjednáváních v Paříži bylo uznáno, že omezení nebezpečných změn klimatu se neobejde bez značných finančních a technologických transferů. Krom zmínky částky 100 miliard USD v nezávazné první části dohody (tzv. Paris Decision) však konkrétní požadavky na financování dohoda nestanovila. Mezi nástroji, které mají napomoci přenosu technologií s potenciálem snižování emisí skleníkových plynů, zmiňuje úmluva mechanismus, který je zakotvený v UNFCCC, takzvaný Technologický mechanismus.

**Vztah technologií ke změnám klimatu**

Na problematiku technologií a jejich vztah ke změnám klimatu lze nahlížet ze dvou protichůdných úhlů pohledu. Tradičně může být technologický vývoj a užívání technologií chápáno v tom smyslu, že je v opozici k ochraně přírody. Při pokračování v jejich využívání ve smyslu principu "business as usual" je tento náhled na věc jistě ospravedlnitelný. S rozvojem konceptu udržitelného rozvoje[137] lze však vypozorovat zesílení trendu užívání technologií s menší uhlíkovou stopou, investice do nich či podnikání v oblasti technologií, které samy o sobě mají schopnost celkové globální emise snižovat.

Rozšiřování technologií, které mají schopnost výroby s nízkými emisemi, tedy snižovat celkové emise a tím omezovat globální změny klimatu anebo adaptovat společnost na tyto již nastalé změny (takzvané mitigační a adaptační technologie) hraje

[136] Voigt, C. *The Paris Agreement* (přednáška).18. 2. 2016. Universitetet i Oslo.

[137] Koncept byl představen na půdě OSN ve zprávě nazvané Naše společná budoucnost (Our Common Future) v roce 1987 a zdůrazňuje, že při technologickém pokroku a rozvoji je třeba, aby byla zohledňována schopnost biosféry přizpůsobit se efektům lidské činnosti.

důležitou roli při efektivním boji proti globálnímu oteplování. Tímto tématem se zabývá takzvaná Bali Road Map[138] z roku 2007, která rozšíření technologií jmenuje jako strategický cíl klimaticko-právního režimu. Rovněž Pařížská dohoda se klimatickým technologiím věnuje a zdůrazňuje důležitost jejich transferu od rozvinutých k méně rozvinutým zemím. Transfer se ovšem setkává s potížemi a to z hlediska ekonomických, právních, ale i praktických důvodů.

Diplomová práce, při vyhodnocení problematiky přenosu technologií jako kruciální pro vyrovnávání emisí a jejich pohlcování (tedy cíl, na který míří Pařížská dohoda), věnuje tomuto tématu svou druhou část a snaží se osvětlit, jaké jsou problémy, kterým tento proces musí čelit, přičemž hlavní pozornost je věnována problematice ochrany duševního vlastnictví.

**Hlavní překážky a mechanismy usnadňující přenos technologií**

Dle IPCC lze samotný pojem transfer technologií charakterizovat jako *"široký soubor procesů pokrývající přenos know-how, zkušeností a vybavení se schopností zmírnit a přizpůsobovat se změnám klimatu, s účastí vlád, subjektů soukromého sektoru, finančními institucemi, nevládními organizacemi a výzkumnými institucemi."*[139] Mezi nejčastější způsoby, jak jsou technologie šířeny, patří především dovoz, přímá zahraniční investice a poskytování licencí na chráněné produkty. Zda bude technologie efektivně poskytnuta a aplikována, záleží na mnoha faktorech poskytující i přijímající země - jde například o úroveň ochrany práv duševního vlastnictví (*IPR*), environmentální politiky, vládní podpory či technické vyspělosti zemí. Je nutné mít na paměti, že i přesto, že technologie je poskytnuta, ovšem přijímající subjekt nemá dostatečnou technickou infrastrukturu, zajištěné proškolení zaměstnanců či praktické využití daného produktu, není kýžený efekt zaručen.

K zajištění transferu „zelených" technologií byly především v rámci OSN vytvořeny některé mechanismy, jejichž úkolem je vytvářet informační základnu a zajišťovat facilitaci finančních toků k jejich podpoře. Zakotvuje je UNFCCC, Pařížská dohoda, ale také například Úmluva o biologické diverzitě. Mezi jeden z

[138] Třetí konference stran UNFCCC. *The Bali Roadmap,* Rozhodnutí č. 4/CP.13 (2007).

[139] IPCC, WG 3. 'Methodological and Technological Issues in Technology Transfer' (2000), expertní zpráva pro vlády, s. 5.

nejvýznamnějších patří takzvaný Globální fond pro životní prostředí (*Global Environment Facility*) založený skupinou Světové banky v roce 1991. Cílem mechanismu je především zajistit spolupráci mezi zdroji a cíli financování, vytváří také vlastní fondy. Jeho pozice byla posílena na Čtrnácté konferenci stran UNFCCC v Poznani, kde byl vytvořen strategický program na podporu technologického transferu.[140] Jako další mechanismus, který se soustředí primárně na klimatické technologie, lze zmínit Zelený klimatický fond (*Green Climate Fund*), jehož založení předpokládá již UNFCCC, byl ovšem zakotven až Šestnáctou konferencí stran UNFCCC o osmnáct let později - tento fakt demonstruje citlivost a složitost problematiky financování této oblasti.

Sofistikovaná platforma pro zajištění nejen financování nákupu klimatických technologií, ale také investic do výzkumu, vytváření akčních plánů a informačních toků byla vytvořena na konferenci v Cancúnu v roce 2010.[141] Skládá se ze dvou orgánů, jejichž hlavním cílem je poskytovat mnohostranný servis přenosu technologií a za tímto účelem vytváří systém doporučení, které mají formu *soft law*. Prvním je takzvaný technologický výkonný výbor (*Technology Executive Committee*) zaměřený na environmentální politiku a poskytování odborných konzultací. Skládá se z expertů jmenovaných stranami UNFCCC, kteří mají za úkol vytvářet zprávy týkající se relevantních mezinárodních i individuálních politik států, potřeb z hlediska rozšiřování technologií a asistovat transferu mezi vládami, nevládními a výzkumnými organizacemi i soukromoprávními aktéry. Druhá součást technologického mechanismu UNFCCC je Centrum a síť pro klimatické technologie (*Climate Technology Centre and Network*), které slouží především jako informační základna a implementační těleso mechanismu.

**Problematika ochrany duševního vlastnictví**

Problémem při přenosu některých technologií s nízkouhlíkovým potenciálem je skutečnost, že často bývají chráněny určitým druhem práv duševního vlastnictví.

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[140] Čtrnáctá konference stran UNFCCC. *Poznan Strategic Program on Technology Transfer.* Rozhodnutí č. 2/CP.14 (2008), Čl. 2.

[141] Šestnáctá konference stran UNFCCC. *The Cancun Agreements: Outcome of the work of the Ad Hoc Working Group on Long-term Cooperative Action under the Convention*. Rozhodnutí 1/CP.16 (2010).

Diplomová práce se zaměřuje především na patentovou ochranu a pracuje se studií z roku 2010 (vycházející z průzkumu Evropského patentového úřadu), která mapuje přihlašování patentů v různých státech a přináší poznatky o tom, kde k tomuto, a tedy i k technologickému vývoji a inovacím, dochází nejvíce.[142]

Studie odhaluje, že většinu patentů na nízkouhlíkové mitigační a adaptační technologie drží tradičně původci z nejvyspělejších zemí, především z USA, Japonska a Německa. Vzestup v počtu přihlášených patentů v posledních letech zaznamenaly rychle se vyvíjející země, především Brazílie a Čína. Šedesátiprocentní většina oslovených respondentů pak uvedla, že nikdy neudělila licenci ke svému výrobku subjektu, který sídlí v rozvojové zemi. Výzkum se tak snažil dokázat, že většina technologií s nízkouhlíkovým potenciálem je vyvíjena a produkována jen v několika málo zemích. Rozšíření jejich výroby a užívání je však, jak je naznačováno ve výše uvedených zprávách IPCC či závěrech zasedání Konferencí stran UNFCCC, pro omezování globálních klimatických změn velmi podstatné.

Pokud dojde k vynálezu patentovatelné technologie, jejíž autor si přihlásí ochranu a není ochoten poskytnout licenci, existují v rámci národních právních úprav[143] určité nástroje, jak potřebné vynálezy licencovat i proti vůli autora či v extrémních případech je i zpřístupnit bez licence, a to nejčastěji z důvodů zajištění bezpečnosti, zdraví či jiného vážného veřejného zájmu. Jde ovšem o kontroverzní opatření, při jejichž aplikaci je nutné pečlivě vyvažovat daný veřejný zájem a ochranu práv duševního vlastnictví. Je třeba také uvážit, že primárním účelem patentu je podporovat vývoj - bez vidiny zisku z výrobku v budoucnu si lze jen těžko představit, že by podnikatelé do vývojářství investovali.

Práce popisuje především institut povinného (nebo také zákonného) licencování.[144] Tento je zakotven v Dohodě o obchodních aspektech práv k duševnímu

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[142] Ghafele, R., Gibert B., 'A Changing Climate: the IP Landscape of Clean Energy Technologies'. *Journal of Intellectual Property Law & Practice* (2012); Vydání 7 č. 8: s. 624.

[143] Jsou to především vnitrostátní legislativy, které upravují problematiku autorského práva, mezinárodní jí dává pouze rámec či určité bariéry.

[144] Mimo tento existuje například i institut vládního užití, kdy licenční poplatky zaplatí stát a výrobek může být všeobecně užíván či vyráběn, nebo také exploitační nařízení, známé z německého patentového práva - v tomto případě jde o pozastavení práv z patentu kvůli závažnému veřejnému zájmu.

vlastnictví (TRIPS) a lze jej popsat jako situaci, kdy vláda dovolí subjektu odlišnému od vlastníka patentu vyrábět produkt nebo užít proces, a to bez souhlasu tohoto vlastníka.[145] Dohoda TRIPS zakotvuje povinné licencování především v článku 31. Podmínkou vydání povinné licence je, že musí být nejdříve prokázána snaha získat licenci za smysluplných obchodních podmínek, pokus nebyl úspěšný, licence nebude exkluzivní a poté, co její účel již není naplňován, musí být zrušena. Vlastník patentu má přitom stále právo na odměnu. Koncept tak pouze překonává nevoli nabídnout výrobek k licencování.

TRIPS také ve článku 31 stanovuje, že vydání povinné licence je omezeno na území státu, na kterém má daná vláda jurisdikci. Pod toto ustanovení je obecně, pokud domácí vláda uzná za vhodné a výše uvedená kritéria jsou splněna, možné podřadit nízkouhlíkové technologie. Územní koncept je poté překonán článkem 31bis, který je ovšem možno aplikovat jen na farmaceutické výrobky. Pro tyto mohou vlády vydat povinnou licenci, přičemž tato není omezena pouze pro domácí stát. Takto mohou být rozšiřovány medicinské výrobky do zemí, které je potřebují, a zdraví jejich obyvatel by mohlo být ohroženo patentovou ochranou daných produktů.

Lze polemizovat, zda by podobný režim, jaký je stanovený pro farmaceutické výrobky, mohl být aplikován i na nízkouhlíkové technologie. V současnosti toto není možné a změna by byla nejspíše proveditelná pouze přes komplexnější modifikace v mezinárodních i domácích právních úpravách.

**Přenos technologií v praxi: případová studie Etiopie**

Po představení teoretického rámce týkajícího se právní úpravy přenosu technologií se autorka obrátila na několik institucí s dotazem, jak popsané procesy fungují v praxi. Informace poskytl velvyslanec České republiky v Etiopii Mgr. Karel Hejč a projektová manažerka Platformy podnikatelů pro zahraniční rozvojovou spolupráci Ing. Věra Venclíková.

Jak bylo zmíněno v rozhovoru s velvyslancem, nové technologie do země přicházejí většinou ve formě přímých zahraničních investicí. Je často zájmem

[145] Sarnoff, J. a kol., 2016. *Research Handbook on Intellectual Property and Climate Change.* Chicago: Elgar Publishing, s. 76.

samotných podnikatelských subjektů technologicky do země investovat a mezinárodní facilitační mechanismy tak nebývají užívány příliš často. Problémem ovšem často bývá nedostatečná informovanost investorů o místním prostředí, zejména nepochopení jeho potřeb, dále nedostatečná infrastruktura a zdroje v místě investice či také například neznalost faktické sociální a kulturní základny. Pokud jde o užití například Technologického mechanismu OSN, informace, které tento systém opatřuje a které by byly investorům k užitku, jsou přístupné jednotlivým státům, ty ovšem nejspíš selhávají při jejich reprodukování relevantním subjektům.

Je také nutno připomenout, že přenos technologií musí jít ruku v ruce s přenosem know-how a znalostí - subjekt musí zajistit investování do lidského kapitálu, školení a pravidelného vzdělávání. Tento fakt je nutné si ze strany investorů uvědomit.

V případě Etiopie, a koneckonců většiny zemí, podnikatelé nejčastěji volí cestu klasického nabízení licencí. Subjekty, které vhodné technologie drží a které je přitom nechtějí nabízet, zůstávají mimo hledáček státních subjektů. Zde se nabízí řešení opět pomocí mezinárodního registru, který by zaznamenával informace o environmentálních technologiích a jejich držitelích. Toto řešení by však vyžadovalo propracovanější strategii především z důvodu jeho možného zneužití.

V poslední části diplomové práce je zpracována studie poskytnutá Platformou podnikatelů pro zahraniční rozvojovou spolupráci, která se zabývá otázkou, zda slabá ochrana práv duševního vlastnictví v rozvojových zemích odrazuje české podnikatele od investování v rozvojových zemích. Dle průzkumu mezi respondenty z řady průmyslových odvětví se čeští podnikatelé příliš nezabývají otázkou autorské ochrany svých produktů a postupů. Pokud se účastní tendru či projektu zaštiťovaného organizací jako například Evropská unie, očekávají, že problém bude řešen na úrovni organizátorů. Někteří respondenti chrání své produkty častou inovací.

Obecně ovšem účastníci průzkumu uvedli, že nemají přílišný zájem o investování v rozvojových zemích, a to často z důvodu těžké dostupnosti, obav z neznámého podnikatelského prostředí či nedůvěry ve státní subjekty organizující projekty.

## Závěr

Změna globálního klimatu jistě patří mezi největší současné výzvy naší společnosti. Národní i mezinárodní organizace a další aktéři se začali problematice intenzivněji věnovat na začátku 90. let minulého století. První a doposud stále velmi relevantní úmluvou v této oblasti je Rámcová úmluva OSN o změně klimatu z roku 1992. Zavádí základní premisy klimatického práva, jeho cíle, rozhodovací instrumenty a zastřešuje i další dva důležité dokumenty v této právní oblasti - Kjótský protokol, který rámcovou úmluvu doplňuje o konkrétní cíle snižování emisí a Pařížskou dohodu z roku 2015, která instituty úmluvy z roku 1992 modernizuje a přináší aktuálnější pohled na věc, spojený s urgencí problému oteplování a nutnosti podniknout kroky k jeho zmírnění či přizpůsobení se mu.

Právě přijetí Pařížské dohody bylo oslavováno jako velký úspěch na poli mezinárodního práva životního prostředí. Úmluva vešla rychle v platnost, kdy téměř veškeré státy světa se zavázaly plnit povinnosti v ní stanovené. Na rozdíl od dvou předchozích dohod, úmluva z Paříže stanovuje práva a povinnosti prakticky rovnocenně všem státům světa, a to jako rozvinutým, tak těm rozvíjejícím se. Vyčítat jí lze jistou "bezzubost" některých opatření – diplomová práce se snažila rozkrýt, jaké nedostatky by mohly pro úmluvu být v budoucnu největším problémem. Především systém vymáhání povinností bude v budoucnu nejspíš v centru debaty, jelikož prakticky jediná možnost kontroly a vymáhání povinností bude přes zveřejňování toho, jak si která strana dohody v dodržování závazků vede, popřípadě v udělování rad, jak cílů dosáhnout. Přehnaný optimismus kolem nové klimatické úmluvy tak prozatím není příliš namístě.

Druhá část diplomové práce se zaměřila na problematiku přenosu klimatických technologií. Velká část mezinárodních klimatických dohod zdůrazňuje nutnost předávání technologií a know-how, které mají potenciál snižovat globální uhlíkovou stopu a tedy zmírňovat klimatické změny, či adaptovat lidskou společnost na ně. Pro tyto účely byl například v rámci OSN vytvořen takzvaný Technologický mechanismu, jehož úkolem je předávání informací o nízkouhlíkových a jiných technologiích, zajištění spolupráce mezi investory a příjemci, a to včetně financování projektů souvisejících s těmito technologiemi.

Přenos technologií ovšem naráží na množství překážek, a to jak praktického, právního, tak i ekonomického rázu. Diplomová práce se zabývala tím, jaké tyto překážky jsou a zda a jak by je šlo překonat.

Jednou z bariér při přenosu mohou být zákony z oblasti práva ochrana duševního vlastnictví, a to především patentová ochrana. V některých případech může být překonána, zejména jelikož jednotlivým státům z mezinárodních úmluv (především TRIPS) vyplývá možnost vydávat takzvané povinné licence. Jejich užití však může být značně kontroverzní a účinky jejich vydání nejisté. Autorka diplomové práce navrhuje možné řešení v podobě aplikování ustanovení dohody TRIPS, které se týkají povinných licencí farmaceutických výrobků i na nízkouhlíkové technologie. Jedním z problémů, které by při tomto mohly vyvstat, je například nevědomost o existenci některých technologií, které mají potenciál snižovat uhlíkovou stopu. Pro zvýšení povědomí o nich by tedy bylo vhodné ustanovit snadno dostupné registry. Takto by se povědomí a tím pádem potenciál do těchto technologií investovat mohl zvýšit. Autorka závěrem shrnuje, že zavedení navržených postupů by vyžadovalo rozsáhlou studii a nutnost mezinárodní spolupráce.

# Annex

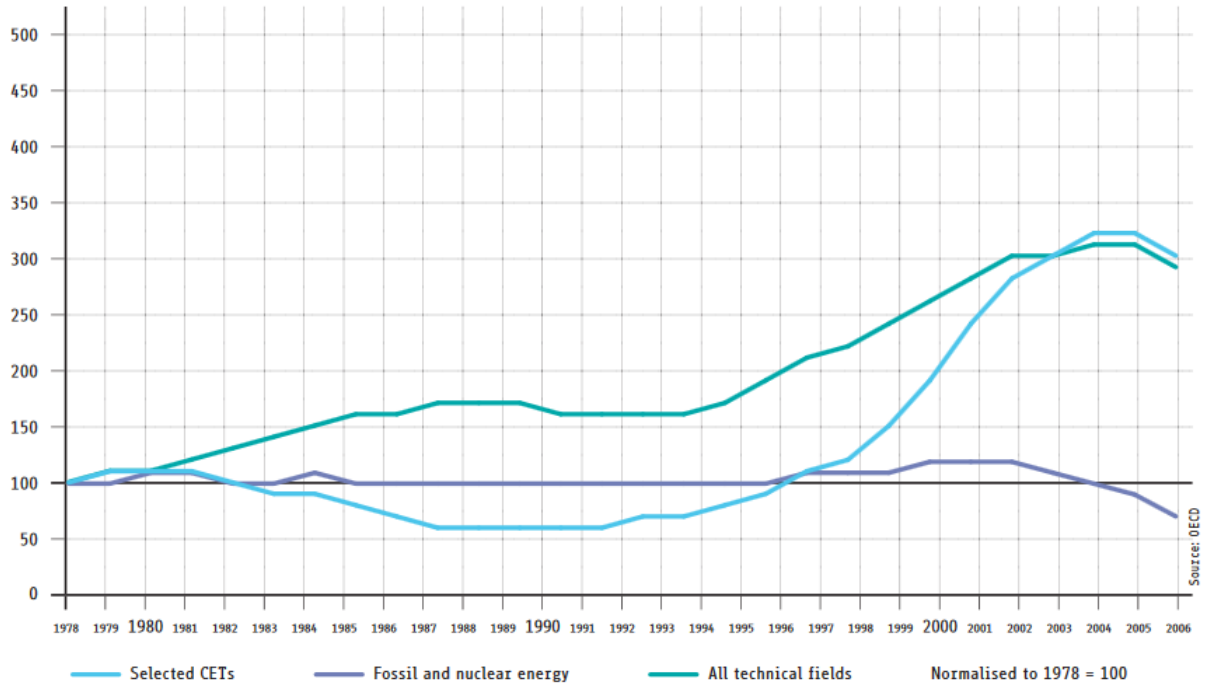


Figure 1: Growth of patent applications of Clean Energy Technologies (CETs) globally. Rapid growth appeared after the introduction of the Kyoto Protocol in 1997. Source: European Patent Office, International Centre for Trade and Sustainable Development, United Nations Environmental Program. Munich 2010, p 29. Available at: http://documents.epo.org/projects/babylon/eponet.nsf/0/cc5da4b168363477c12577ad00547289/$FILE/patents_clean_energy_study_en.pdf.

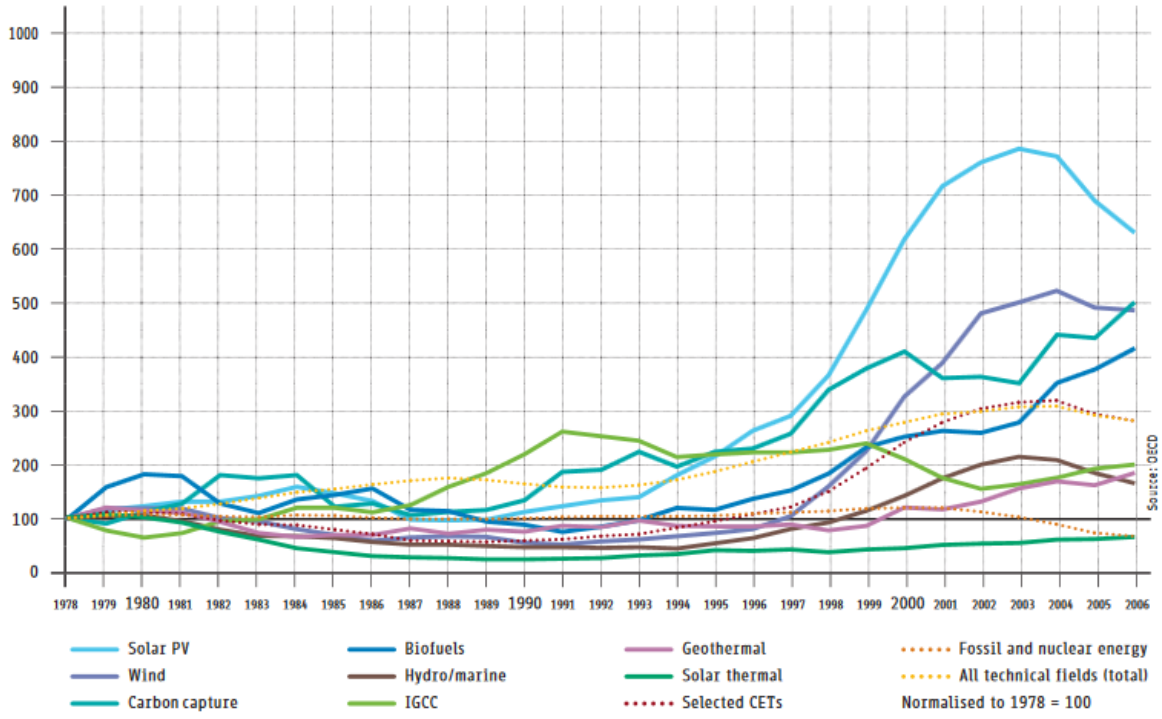


Figure 2: Growth rate of claimed priorities for specific types of environmentally sound technologies. Source: European Patent Office, International Centre for Trade and Sustainable Development, United Nations Environmental Program. Munich 2010, p 29. Available at: http://documents.epo.org/projects/babylon/eponet.nsf/0/cc5da4b168363477c12577ad00547289/$FILE/patents_clean_energy_study_en.pdf.

| | 1988-1997 | n | % | 1998-2007 | n | % |
|---|---|---|---|---|---|---|
| Carbon capture | BOC | 157 | 9.7 | PRAXAIR | 206 | 6.3 |
| | MITSUBISHI | 138 | 8.6 | AIR LIQUIDE | 162 | 5.0 |
| | AIR PRODUCTS | 93 | 5.8 | AIR PRODUCTS AND CHEMICALS | 141 | 4.3 |
| | KANSAI | 78 | 4.8 | BOC | 113 | 3.5 |
| | AIR LIQUIDE | 58 | 3.6 | SHELL | 100 | 3.1 |
| | PRAXAIR | 53 | 3.3 | MITSUBISHI | 96 | 3.0 |
| | UNION CARBIDE | 45 | 2.8 | EXXON | 81 | 2.5 |
| | UOP | 34 | 2.1 | CECA | 70 | 2.2 |
| | LINDE | 32 | 2.0 | GENERAL ELECTRIC | 59 | 1.8 |
| | UNITED TECHNOLOGIES | 28 | 1.7 | INSTITUT FRANÇAIS DU PÉTROLE | 57 | 1.8 |
| | Total | | 44.0 | Total | | 33.0 |
| Carbon storage | MITSUBISHI | 18 | 38.0 | SHELL | 98 | 21.0 |
| | AGRICULTURAL GAS | 9 | 19.0 | INSTITUT FRANÇAIS DU PÉTROLE | 43 | 9.3 |
| | NKK | 5 | 10.0 | TERRALOG | 23 | 5.0 |
| | SEEC | 4.5 | 9.4 | EXXON | 20 | 4.2 |
| | ELECTRIC POWER RESEARCH INSTITUTE | 2.5 | 5.2 | SCHLUMBERGER | 18 | 3.9 |
| | BAL | 2 | 4.2 | CDX GAS | 17 | 3.7 |
| | UNOCAL | 2 | 4.2 | AIR PRODUCTS | 15 | 3.2 |
| | DANIEL STEWART ROBERTSON | 1 | 2.1 | DIAMOND QC TECHNOLOGIES | 14 | 3.0 |
| | HEINZ SEBASTIAN | 1 | 2.1 | DROPSCONE | 11 | 2.4 |
| | GAZPROM | 1 | 2.1 | BHP BILLITON | 8.5 | 1.8 |
| | Total | | 96.0 | Total | | 57.0 |

Table 1: Major patent applicants in carbon capture and carbon storage technologies. The coverage of 96 per cent by only eleven companies is especially striking. Source: European Patent Office, International Centre for Trade and Sustainable Development, United Nations Environmental Program. Munich 2010, p 45. Available at: http://documents.epo.org/projects/babylon/eponet.nsf/0/cc5da4b168363477c12577ad00547289/$FILE/patents_clean_energy_study_en.pdf.

# List of Abbreviations

AAU – assigned amount units

CCS – carbon capture and storage

CDM – Clean Development Mechanism

CMP – Conference of the Parties of the Kyoto Protocol

COP – Conference of the Parties of the UNFCCC

CTCN – Climate Technology Centre and Network

EPO – European Patent Office

EU – European Union

GATT – General Agreement on Tariffs and Trade

GCF – Green Climate Fund

GEF – Global Environmental Facility

IPCC – Intergovernmental Panel on Climate Change

IP – intellectual property

IPR – intellectual property rights

LDC – least developed countries

NDCs – nationally determined contributions

OECD – Organization for Economic Cooperation and Development

SIS – small island states

TEC – Technology Executive Committee

TRIPS – The Agreement on Trade-Related Aspects of Intellectual Property Rights

UN – United Nations

UNCED – United Nations Conference on Environment and Development

UNEP – United Nations Environment Programme

UNFCCC – United Nations Framework Convention on Climate Change

VCLT – Vienna Convention on the Law of Treaties

WIPO – World Intellectual Property Organization

WTO – World Trade Organization

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# Abstract

The first chapter of this thesis discusses the recent development of climate change law. It explores the reason as to why it is at the centre of a global debate, which is predominantly due the increasingly pronounced consequences of climatic changes on human society and the environment. Furthermore, it describes the most important requirements in tackling the issues presented by international climate change treaties. This includes the United Nations Framework Convention on Climate Change, acting as a base for the whole international climate change regime, the Kyoto Protocol as a legal tool with specified emission targets and most recently, the Paris Agreement, which serves as an independent international treaty however is still under the guidance of the framework convention. The author predicts that the Paris Agreement will determine the future direction of this legal field and therefore puts particular focus on this treaty in the first chapter of the thesis. The paper aims to uncover its weaknesses - questioning the enforceability of some of the measures that rely on the autonomy of states to implement and the lack of ambition in some of its targets.

The second chapter expands on one of the key issues related to the main topic. The author emphasizes how the importance of environmentally friendly technology in tackling climate change became acknowledged, the role in which they will and do play and the adaptation to them. Thus, multiple countries that do not possess the resources for effective diffusion are of major importance in order to reach the goals set by the international legal regime. The thesis discovers that technology patents are distributed unevenly, ergo proving that not all countries have access to these much needed technologies. The reasons behind this are explained by describing obstacles of the technology transfer, such as the fact the technologies are protected by intellectual property laws. The author tries to offer possible solutions to overcome these difficulties, for instance via the application of provisions concerning compulsory licensing of pharmaceuticals anchored in the Agreement on Trade Related Aspects of Intellectual Property Rights.

# Abstrakt

První část diplomové práce se zabývá obecně vývojem mezinárodního práva ochrany klimatu. Vysvětluje, proč je v současnosti tato oblast práva v centru pozornosti, a to především z důvodu stále častěji zmiňovaných dopadů globálních teplotních změn na životní prostředí a lidskou společnost. Uvádí, jaké mezinárodní smlouvy oblast ošetřují – jde o Rámcovou úmluvu OSN o změnách klimatu, která funguje jako právní rámec pro celý klimaticko-právní režim, Kjótský protokol, jakožto právní nástroj ukládající konkrétní povinnosti co se týče snižování emisí a Pařížskou dohodu, která vznikla pod dikcí Rámcové úmluvy, ovšem dá se považovat za novou samostatnou mezinárodní smlouvu. Autorka predikuje, že právě tato dohoda bude udávat směr celého právního odvětví, a proto se v první části práce soustředí především na tuto mezinárodní multilaterální smlouvu. Odhaluje její nedostatky, především jistou neambicióznost některých bodů dohody a problematickou vymahatelnost jednotlivých ustanovení, kterážto se bude silně odvíjet od dobrovolnosti států implementovat je do svých domácích právních systémů.

Druhá část se detailněji zaměřuje na jeden aspekt vztahující se ke generální problematice uvedené v první části. Autorka zdůrazňuje důležitost nízkouhlíkových technologií při snižování emisí a jejich roli v klimaticko-právním odvětví. Nutnost efektivního rozšiřování těchto technologií bude kruciální pro dosahování cílů vyplývajících z mezinárodních smluv. Práce užívá data týkající se patentů k prokázání toho, že ne všechny státy světa mají přístup k těmto technologiím. Na základě těchto zjištění je nastíněno, co jsou hlavní překážky přenosu technologií, přičemž prostor je dán především problematice ochrany duševního vlastnictví. Autorka nabízí možná řešení problémů spojených s transferem technologií, jako například užití ustanovení týkajících se povinného licencování farmaceutických výrobků z Dohody o obchodních aspektech práv k duševnímu vlastnictví TRIPS, a uvádí i praktickou stránku věci uvedením příkladu rozvíjejícího se státu Etiopie.

## Key Words

Climate Change Law

Transfer of Technologies

United Nations Framework Convention on Climate Change

Paris Agreement

Intellectual Property Law

## Klíčová slova

Právo ochrany klimatu

Transfer technologií

Rámcová úmluva o změně klimatu

Pařížská dohoda

Právo duševního vlastnictví