



Claiming Damages for Climate Change A Law and Economics Perspective

Research Paper, October 2019

Francesca Leucci, LL M
EDLE candidate (European Doctorate of Law and Economics)
Università di Bologna | Erasmus Universiteit Rotterdam | Hamburg Universität
francesca.leucci@edle-phd.eu / francesca.leucci@coleurope.eu

Disclaimer:

This publication received financial support from the European Parliament. Sole liability rests with the author and the European Parliament is not responsible for any use that may be made of the information contained therein

With the financial support of the European Parliament



Abstract:

Climate change litigation is progressively spreading throughout the globe as a result of political failures. Despite the seriousness of global climate conditions, little progress has been made at international and domestic level in addressing effectively the causes of climate change. As a reaction to these political failures, many different actors including NGOs and private citizens are increasingly walking the legal pathway. This tendency is resulting in a shift of decision-making from policy-makers to judges.

A considerable amount of research has focussed on climate change litigation in recent years and it has drawn interesting conclusions. For example, the Sabin Centre for Climate Change Law of the Columbia University has recently carried out the first global assessment of climate change litigation. According to this study, the number of cases has been growing for the last years. Moreover, it has been claimed that many legal obstacles remain. By way of illustration, specific procedural steps and issues regarding justiciability, legal standing and administrative costs are likely to prevent effective defence for the right to healthy and sustainable ecosystems.

An unresolved issue in climate change litigation on liability is how to assess damages to the environment. Despite its crucial role in related lawsuits, the methodology of damage assessment remains unclear in legislation. As a consequence, we might expect that the law on liability for damages caused by climate change is not efficient from a law and economics perspective. In particular, it is reasonable to expect that fewer claims for damages are brought before the court due to uncertainty in damage assessment.

Starting from the 1960s, scholars of law and economics have analysed the relationship between judicial assessment of damages and behaviour of parties in the field of liability. According to the economic theory, under the foresight of having to pay damages, injurers might invest in optimal care and they might adopt efficient levels of activity. However, computation of damages is not always an easy task for courts. Various issues can prevent judges from reaching precise estimations. For example, non-pecuniary losses are difficult to assess because judges cannot observe them directly. In particular, damages for environmental harm raises this issue because a full internalisation of social costs to the environment seems to be impossible. As a result, incentives for taking optimal care risk to be suboptimal and to ultimately result in underdeterrence.

A possible solution to damage assessment would be available in the field of Ecology but legal scholars are not familiar with it. This is known as “Ecosystem Services Accounting” and it offers a sophisticated and reliable tool that takes into account most of the consequences of polluting activities. To illustrate the point, the evaluation of ecosystem services has been implemented in land use policies in order to improve biodiversity protection. Nevertheless, only a few studies have considered whether ecosystem services might play a role in European legislation and policy. In particular, ecosystem services remain unknown in the field of environmental liability. For this reason, we might expect that judges in civil law countries would not easily rely on it while assessing damages for climate change.

Given the above, this paper will propose to introduce a new regulatory framework on damage assessment based on ecosystem services. For instance, various guidelines have been published by international and European institutions (UNSD, World Bank, European Commission) after the System of integrated Environmental and Economic Accounts – Experimental Ecosystem Accounting (SEEA-EEA) was published in 2012. Hence, a step further would be to link accounting applications to the Environmental Liability Directive or the other legislative tools that provide a basis for climate change litigation. In fact, clear guidelines on damage assessment would reduce uncertainty and, thus, help achieve more effectively the goals of climate change policies.

Table of contents

- I. Introduction**
- II. THE PROBLEM**
- III. THE FUTURE: A THREEFOLD PERSPECTIVE**
- IV. THE SOLUTION**
- V. Conclusions**

I. INTRODUCTION

“An increased sense of global urgency and public awareness around climate change-related risks, along with national laws and international commitments, is driving a new class of litigation”¹.

Climate change represents one of the greatest challenges of our time. The fact that human activities have an impact on climate conditions is not under question anymore. The latest reports from the Intergovernmental Panel on Climate Change, UN Environmental Programme, International Energy Agency and World Economic Forum advocate integrated and urgent measures to curb emissions and to adapt to climate change. These organisations are progressively backing with solid scientific evidence occurrence of events and causal links that otherwise would remain unclear. Nevertheless, while scientific consensus arises, responses to climate change multiply together with the diversity of stakeholders engaged at any level of the community.

Among the various responses to global warming, the European Union initially embraced a pure regulatory approach through adaptation of existing legal instruments regarding energy and environment. However, legislation requires implementation, enforcement and cooperation in order to be effective and this combination of factors become virtually unattainable within a multilevel environmental governance². Therefore, litigation started to play a role as a corrective³ tool in the hands of those remaining outside climate conventions, policy-making and legislative assemblies⁴. Although climate-related litigation first developed in the U.S. after 2001⁵, it slowly emerged also in Europe and everywhere in the world.

This paper wishes to unveil the existing obstacles to the effective litigation in the field of climate change and to propose a specific solution to tackle the most puzzling issue, the assessment of monetary compensations for climate change.

¹ White & Case LLP “Climate Change Litigation: A new Class of Action” (2018). Report available at: <https://www.whitecase.com/publications/insight/climate-change-litigation-new-class-action>

² Cassotta, Sandra, *Environmental Damage and Liability Problems in a Multilevel Context. The case of the environmental liability directive*, (2012) Kluwer Law International.

³ It must be clear that the underlying goal of litigants in this specific domain is not to make judges replace policy-makers but rather to push politicians to address adequately the causes of climate change.

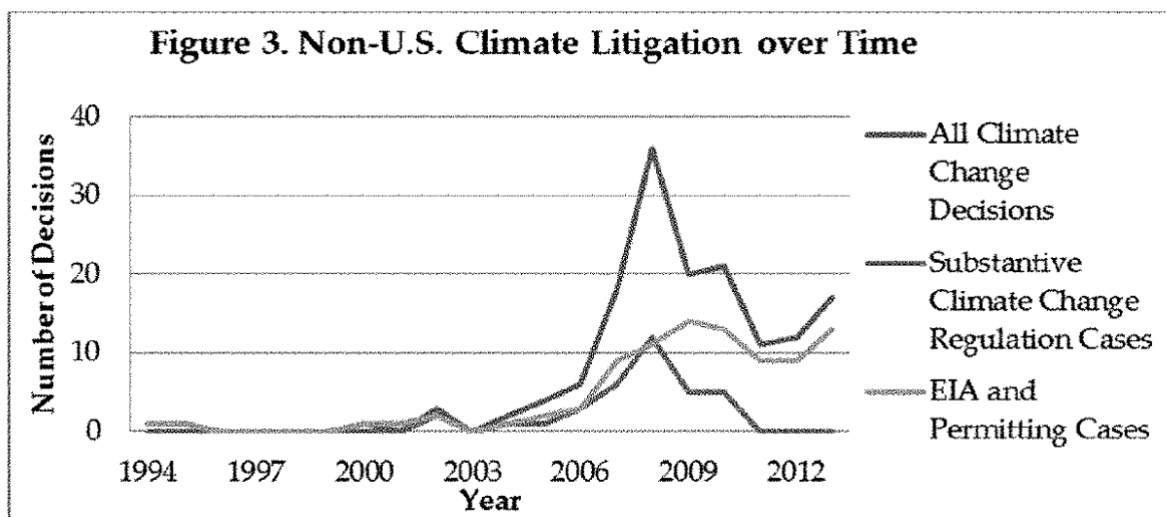
⁴ Gupta, Joyeeta, “Legal Steps Outside the Climate. Convention: Litigation as a Tool to. Address Climate Change” (2007) Blackwell Publishing.

⁵ The year 2001 is indeed the one of the U.S.’s withdrawal from the adoption of the Kyoto Protocol. This happened under Bush’s administration.

II. THE PROBLEM

1) Climate change litigation: an overview

In 2007 the Sabin Centre for Climate Change Law of the Columbia Law School carried out the first global assessment of climate change litigation. The main result of this assessment is represented by a huge database that tracks developments of suits related to climate change. While regularly updated, it now brings together 1092 cases from the U.S. and 297 cases from non-U.S. countries⁶. Despite it is not yet complete, it offers sounding and objective arguments about the growing importance of litigation in the field of climate change. More precisely, the study shows that the origins of climate litigation mainly date back to the 2000 with two remarkable peaks in 2007 and 2013. The graph below summarises these findings⁷:



The causes of such findings are not so obvious. Some authors believe that an increasing number of actors ranging from NGOs to private citizens are walking the legal pathway in response to the international and national political failure in addressing climate changes. While this argument would explain a progressive increase in climate-related litigation over the last decade, it must be noted that climate change legislation has considerably grown during the same period. According to a study of 66 countries by GLOBE International Fund,

⁶ Source: <http://climatecasechart.com/>

⁷ M. Wilensky, "Climate Change in the Courts: An Assessment of Non-U.S. Climate Litigation," *Duke Environmental Law & Policy Forum* 26, no. 1 (Fall 2015), p. 149.

⁸ Preston, Brian J. "Climate Change Litigation (Part 1)." *Carbon & Climate Law Review* 5, no. 1 (2011): 3-14.

approximately 500 laws addressing climate change were adopted by the end of 2013⁹, especially in high-emitting countries. From this perspective, the extent and breath of new legislation seems to contradict the previous argument on political failures and thus requires further investigation.

Apparently, a growth in the stock of legislation sends a signal of political commitment, but a closer look at it reveals limitations and it eventually results in different conclusions. To illustrate this point, the new wave of legislation addressing climate change mainly promote clean sources of energy, on one hand, and energy efficiency, on the other hand. The aim of the former is to reduce dependence on fossil fuel and traditional sources of energy, whereas the latter wants to reduce costs and to increase competitiveness. It is undeniable that these legislative initiatives make a positive contribution to global climate conditions. However, this is not yet sufficient to keep the increase in global temperature below 2 grades Celsius, as set down by the international community in 2015 in Paris. At the same time, it is undeniable that it represents a step further in the path towards more ambitious post-2020 deals¹⁰. Indeed, more courageous negotiations cannot be built on fragmented national legislative experiences.

Bearing in mind that legislation does not bring automatically to efficient solutions to climate change, the relationship between legislation and litigation remains still vague and difficult to predict. While we would expect less litigation once laws are adopted and they enter into force, a direct relationship may also occur for other practical or legal reasons. First, legislation contributes to more awareness of reciprocal rights and duties within the society. Secondly, legislation provides affected citizens with legal basis for bringing a formal claim before the court and asking for remedies. In other terms, legislation lays down the real foundations for litigation aimed at enforcing the regulation.

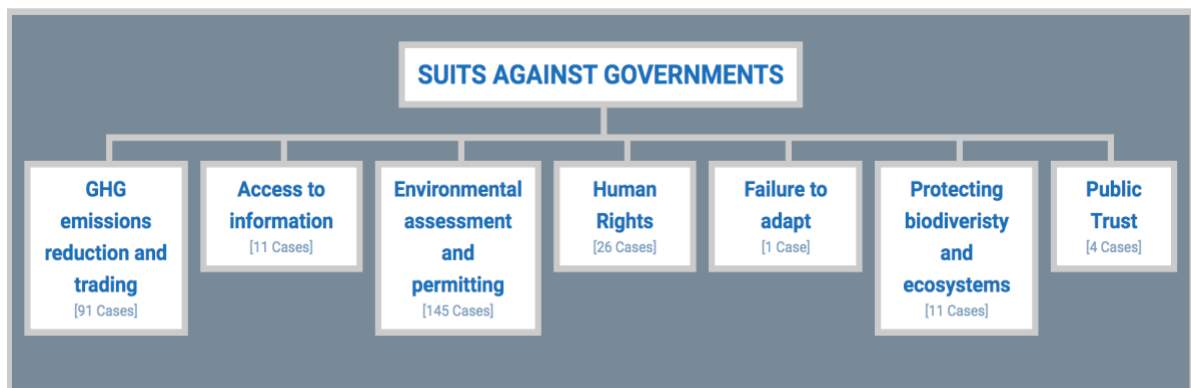
Given this correlation between legislation and litigation, many environmental groups and individuals have been filing an increasing number of lawsuits in the last years, addressing not only private parties (major emitters of greenhouse gases) but also public governments. Some

⁹ As reported in the study, the 66 countries examined represent approximately 88% of global emissions of greenhouse gases. The stock of legislation addressing climate change has increased from less than 40 in 1997 to almost 500 in 2013, with a considerable acceleration between 2008 and 2010 in response to international pressures. The study has been conducted by GLOBE International and the Grantham Research Institute on Climate Change and the Environment at the London School of Economics. It is available here: <http://www.lse.ac.uk/GranthamInstitute/wp-content/uploads/2014/03/Globe2014.pdf>

¹⁰ *Ibidem*, p. xi.

authors¹¹ argued that litigation is not likely to have a positive impact on the effects of climate change. This conclusion is implied especially by the fact that courts have limited competence over the behaviour of companies located in foreign countries. Therefore, efficient solutions to the infringement of international human rights law are not likely to come out from judicial decisions. However, climate change litigation based on human rights represents only one of the possible causes for action before the court.

The following graph shows the distribution of cases when the defendant is a public body¹²:



Many different classifications of the case law on climate change have been carried out by scholars of various domains. For instance, in addition to the classification showed above, litigation in the field of climate change can be also broken down in four main categories. First, we have the so-called ‘*mitigation claims*’, which are based on requests to mitigate or to reverse the damage. Secondly, the category of ‘*adaptation claims*’ includes those claims aimed at improving resiliency or adapting to climate impacts. Thirdly, ‘*damages claims*’ designate all demands wishing to recover money for losses caused by climate change. The last and fourth category of ‘*informed decision making claims*’ concerns cases in which claimants seek for improved consideration of climate change in decision making¹³.

¹¹ Posner, Eric A., “Climate Change and International Human Rights Litigation: A Critical Appraisal” *University of Chicago Law & Economics, Olin Working Paper no. 329 (2007)*:

¹² Non-U.S. Climate Change Litigation is available here: <http://climatecasechart.com/non-us-climate-change-litigation/>

¹³ We use here the classification provided by the Environmental Law Alliance Worldwide, a network of attorneys and scientists, built in 1989 to help communities across borders to defend their rights to healthy environments. Nowadays, this network brings together more than three hundred advocates throughout the globe willing to share legal and scientific knowledge and to replicate the most successful strategies. Their work on climate change legal strategies is available here: <https://www.elaw.org/climate>.

Regarding the territorial distribution of climate change litigation, empirical studies of non-U.S. cases show that claims related to climate change have arisen mainly in five jurisdictions: Australia, New Zealand, the European Union, Spain and the United Kingdom¹⁴. The first remarkable decision on climate change was adopted in 1990 by the Columbia Court of Appeal on petition for review of rules of the National Highway Traffic Safety Administration¹⁵. Despite the fact that petitions were denied in the end, the ruling needs to be mentioned because the Court held that petitioners had standing to sue on air pollution grounds under the Clean Air Act. Indeed, courts accepted only in recent years climate change as a factor to consider when deciding upon development projects¹⁶.

As far as the legal basis is concerned, actions can be grounded on domestic tort law, administrative law (where claims regard administrative decisions, such as planning proposals or development projects), environmental laws (where claims are aimed at enforcing environmental law in order to achieve mitigation or adaptation to climate change), constitutional law (for the protection of human rights). In line with this variety of legal bases, climate change issues can be disputed before a multitude of *fora* ranging from international courts (*e.g.*, the International Court of Justice or the International Tribunal of the Law of the Sea) to regional bodies (*e.g.*, the European Court of Justice) or even before domestic courts.

2) The European litigation on climate change

Given this background scenario on climate change litigation, it is now useful to provide some information specifically related to the European area. According to a comprehensive study of non-US litigation in the field of climate change¹⁷, the majority of EU litigation falls within the category of “*substantive government group*”, which refers to the group of suits addressing substantive climate change mitigation or adaptation actions by governments. To explain it better, this group refers to claims seeking for judicial orders to promulgate certain statutes or

¹⁴ Wilensky, *supra* note 2, p. 151.

¹⁵ *City of Los Angeles and City of New York v National Highway Traffic Safety Administration, et al.* 912 F.2d 478 (DC Cir, 1990). However, the first case that expressly mentioned climate change can be considered the one appealed by the environmental non-governmental organization, Greenpeace Australia Ltd., before the Land and Environment Court of New South Wales against the authorization for the construction of a coal-fired power station. In this case, the plaintiff alleged that the project would have produced emissions with adverse effect on climate change (*Greenpeace Australia Ltd v Redbank PowerCo Pty Ltd* (1994) 86 LGERA 143).

¹⁶ Preston, note 1, p.2.

¹⁷ Wilensky, note 7, p. 165.

to adopt policies to reduce GHG emissions. The group includes also claims in response to climate change laws and regulations and, more broadly, any enforcement actions against governments or public agencies failing to comply with their responsibilities. Conversely, claims on rights

In spring of 2015, the local Court of Den Haag ordered the Dutch State to reduce carbon emissions by 2020 in order not to violate its international obligations. This decision was lately upheld on appeal by the High Court and confirmed on 9 October 2018, hence representing a milestone in the fight against climate change. Its symbolic value significantly changed the way we conceive the governance over environmental issues and it ended up in upgrading the role of judges in the debate. Furthermore, the ruling plays a key role in the discussion about public participation on environmental issues. To illustrate this point, it is worth providing a summary of the facts behind the decision.

The background of the ruling has as a protagonist a Dutch foundation whose name evokes a combination between urgency and agenda, the so-called Urgenda foundation. It was established by academicians (the Dutch Institute for Transitions at Erasmus University Rotterdam) in order to develop programmes against climate change through the engagement of people from many different areas of expertise. Having established the lack of commitment of the Prime Minister to cut emissions after sending him an informal letter and receiving a negative replay, Urgenda submitted the case on behalf of 886 individual plaintiffs. The object of the claim simply consisted of a formal request for injunctive relief. In other words, it was asked to declare that the State was legally obliged to lower the amount of CO₂ emissions from 25% to 40% by 2020, compared to the 1990 level.

In order to justify the mentioned request, Urgenda provided a clear-cut reasoning unfolding well-written arguments. While on the side of scientific evidence, the claim is backed by the latest findings of the UN International Panel on Climate Change (IPCC), on the other hand, regarding legal evidence, the claim is based on international sources of law. Among the principles of customary international law, the basic rule is presented as the “no harm” principle related to cross border nuisance. According to this principle, any State is allowed to

use its territory in a way that can harm and cause injuries to the territory of another State¹⁸. In addition to the no harm principle, the claimant maintained that the Dutch State was not complying with written international rules, like Article 2 and 8 of the European Convention on Human Rights, which deal respectively with the right to life and the right to privacy and family life and call for positive action by States. Final arguments were rooted into national tort law on nuisance and Dutch precedents on *pro rata* liability for pollution-related damages.

It must be noted that the State's defences involved arguments based on the implemented national policies to mitigate the effects of climate change as well as on the expected results by 2030. The global scope of the issue was also presented as a counterargument against the accuse of *pro quota* liability. However, the court in the end rejected these objections based on scientific and legal reasoning that basically adhered to the claimant's perspective.

Having said that, the Urgenda case now stands as a landmark case with unquestioned precedential value¹⁹, since it represents the first successful climate liability lawsuit. In 2015, some authors stated "*for some, the topic of climate change liability may still seem like nice legal 'hocus pocus', useful for academics with too much imagination, but not a tool that realistically could be used to force emitters of greenhouse gases towards preventive measures.*"²⁰. Despite this common belief, Urgenda demonstrated that liability for climate change is not just an artifice but a real and effective tool to tackle climate change.

The Urgenda decision served as a general model in Europe and acted as a catalyst for numerous new cases. In 2017 Friends of Irish Environment (FIE) filed a case against the Irish government claiming that the government was accountable for not taking sufficient action against climate change. More specifically, the claimant alleged that the State by adopting the National Mitigation Plan incurred in the infringement of Ireland's Climate Action, the Low

¹⁸ UN Climate Treaty, consideration 8. The reference to this Treaty is quite important in the case at hand, since the Netherlands is cited in Annex I as one of the developed countries that are recognised as leading countries in reducing emissions of GHG.

¹⁹ Loth, Marc, "Climate change liability after all: A Dutch landmark case" *Tilburg Law Review: Journal on international and comparative law*, v. 21, no. 1, (2016): pp. 5-30. On the same topic: Lin, Jolene, "The first successful climate negligence case: a comment on Urgenda Foundation v. the State of the Netherlands Ministry of Infrastructure and the Environment" 5 *Climate Law* 65 (2015); McKinstry, Robert, "Potential implications for the United States of the Urgenda Foundation v. Netherlands decision holding that the UNFCCC and international decisions required developed nations to reduce emissions by 25% from 1990 levels by 2020" (2015); Faure, Michael and Peeters, Marjan, "Climate change liability" Edward Elgar Publishing no. 4 (2011).

²⁰ Faure and Peeters, *supra*, p. 255.

Carbon Development Act 2015 and the Constitution (human rights obligations)²¹. The case attracted significant public support and attention especially over the four days of public hearing. Nevertheless, in January 2019 the High Court rejected the claim arguing that the adoption of the Mitigation Plan was lawful and consistent with Ireland's national and international obligations related to climate change. While informing the public that Friends of Irish Environment is considering to appeal the decision, one of the spokespersons for FIE commented the decision in this way: *"It is regrettable that citizens had to turn to the courts to try to compel our government to do what it has repeatedly agreed is necessary to avoid the worst impacts of climate breakdown (...). By failing to dramatically reduce our emissions, the Irish government is ignoring public calls and a political consensus for more ambitious climate action."*²²

However, the wave of climate change litigation did not take place only at national level. The European Court of Justice has been also engaged in the debate through infringement procedures²³ initiated by the European Commission. In particular, in May 2018 the Commission referred to the ECJ six European countries (France, Germany, U.K, Hungary, Italy and Romania) for breach of air-quality limits for nitrogen dioxide and, more in general, for failure to provide *"credible, effective and timely"* plans to reduce emissions. Furthermore, always in May 2018, the Commission issued letters of formal notice to Germany, Italy, Luxembourg and the United Kingdom for breach of EU vehicle-type approval legislation. In this way, the Commission wishes to contribute to improve air quality in Europe by legally challenging European States.

Another interesting case before the ECJ has been launched by a group of ten families from Portugal, Germany, France, Italy, Romania, Kenya, Fiji and Sweden with the aim of forcing the EU to take more stringent actions to reduce GHG emissions. The plaintiffs' claim was grounded on the consideration that EU's existing targets by 2030 were not sufficient to tackle

²¹ FIE argued that the 2017 National Mitigation Plan did not provide for the necessary decarbonisation of Ireland's economy and therefore breached the Climate Change and Low Carbon Development Act 2015 in addition to a potential violation of Irish citizens' constitutional and human rights.

²² Clodagh Daly (<https://www.friendsoftheirishenvironment.org/climate-case>).

²³ An infringement procedure is a legal action that the European Commission can pursue against a European country when this fails to implement EU law. The Commission generally takes initiative based on her investigations or complaints from citizens. However, a formal lawsuit before the ECJ starts only if the country concerned does not comply with EU law after receiving a letter of formal notice and a further formal request to comply. In this case, the Commission may ask the Court to impose financial penalties upon the country.

the threat of climate change, hence resulting in a potential risk for human rights. In the specific case at hand, the parties alleged two claims for annulment and for injunctive relief. The nullification action wanted to declare three EU legal acts as void for failing to set sufficient GHG targets, whereas the second claim sought compensation under Article 268 and 340 of the TFEU in the form of injunction for the damage that the applicants have suffered as a consequence of the Union's breach of its obligations related to climate change. In the end the ECJ dismissed the case for procedural reasons without ruling on the merits. Indeed, the main reason for dismissal was given by the lack of *locus standi* by the claimants. To illustrate better this point, it was maintained that the applicants were not “*individually concerned by the contested acts*” and failed in distinguishing themselves from any other natural and legal persons that may in principle enjoy the same infringed rights and thus claim for their protection²⁴.

Various types of suits that garnered intense public support and media coverage were based on other legal bases, like administrative law or company law (*e.g.*, for failure to disclose information).

However, our focus is only on the category of civil liability litigation since it is the only one raising the most interesting difficulties when it comes to the assessment of damages.

3) Climate Change Litigation and Liability

Given the background scenario above illustrated, litigation based on liability for climate change represents only one of the possible legal avenues that plaintiffs can undertake to effectively prevent the effects of global warming. In the previous section lawsuits based on the infringement of human rights have been mentioned. These cases are based on international conventions and national constitutional provisions. However, climate-related actions can be also based on tort law and this is generally observable at the domestic level. The question we wish to address in this section is whether a suit on liability for climate change could be grounded on European legal bases and, consequently, brought before the European Court of Justice.

²⁴ Order of the ECJ of 21 June 2019 (case T-330/18 Carvalho and Others v. European Parliament and Council)

It must be noted in the beginning that claims for damages caused by climate change refer to a specific category within the case law on torts. Action for damages attain indeed peculiar goals, they engage specific types of defendants and, moreover, they are based on peculiar legal provisions. Regarding the goals, these suits aim at recovering monetary compensation for costs of adaptation and for losses suffered due to climate change. For this reason, the type of defendant depends on the allocation of responsibility for the harm caused to the claimant. From this point of view, these claims can be addressed either to public bodies (the emitting state) or to private entities (polluting companies). Finally, the legal basis can be provided by international principles (*e.g.*, the polluter pays principle), constitutional provisions and civil code rules (tort law). According to the legal cause, climate change litigation for liability can be generally divided into three categories²⁵: civil liability, administrative liability and consequential litigation. The previous sections have already showcased the practice of the courts in the field of administrative liability. It must be herein observed that it refers to public breaches of obligations related to the planning system or the regulation of GHG emissions, whereas consequential litigation regards claims against corporations that did not undertake preventive action. Since the focus of the present research is on the issue of monetary damages, the branch of litigation that will be here addressed is only that one of civil liability.

The term “*civil liability litigation*” encompasses all situations of liability that refer to an unreasonable wrongdoing (*tort* in common law and *delict* in civil law). Civil wrongs can be further broken down into: private nuisance (unjustifiable interference with the enjoyment of others’ property rights), public nuisance (unjustifiable interference with rights that belong to the public) and negligence (unjustifiable breach of duty of care that should have been adopted towards the plaintiff). All these cases can encounter difficulties when applied to the specific domain of climate change. For example, private nuisance requires evidence of a direct causal link between global warming and the use of someone’s property through the action of inaction of a specific wrongdoer. It is thus evident that scaling down a global phenomenon, like climate change, into single apportioned liabilities is not usually grounded on sufficient scientific evidence. Conversely, public nuisance requires different types of proofs related to the type of suffered harm and its unlawful nature (that can be also tricky to demonstrate).

²⁵ Vujanic, Vanesa “Climate change litigation and EU Environmental Liability Directive” *Zbornik radova Pravnog fakulteta u Splitu*, 48, 1 (2011), p: 141. The classification is based on Heinzerling, L., “Climate Change, Human Health, and the Post-Cautionary Principle” *The Georgetown Law Journal*, 96 (2007-2008).

Given the broad classification above, the first issue to deal with is the one of the legal cause for litigation. In other terms, suits for civil liability can be initiated provided that specific legal provisions grant a justification for it. Where specific legal provisions are not existing, a specific regime on climate change related liability needs to be created. It is thus worth questioning whether the EU Environmental Liability Directive²⁶ might provide a suitable legal basis in climate change litigation.

The European civil liability system offers the possibility to compensate three main heads of damages: private losses (loss of private income), clean-up costs (costs of remediation) and preventive measure costs. Compensation for damage to the environment was initially not granted by courts since traditional damages only regarded persons and property. However, growing awareness of the value of the environment and scientific evidence of potential threats to it has slowly raised the need for better protection of the environment by rule of law²⁷. For this reason, it is now possible to ask compensation for monetary damages that are the consequence of the environmental harm.

Any discourse about liability for environmental damages in Europe has to start with a reference to the Council of Europe's Convention on Civil Liability for Damage Resulting from Activities Dangerous to the Environment (the "Lugano Convention")²⁸. In spite of its broader scope in terms of notion of damage and type of remedies, the Convention has not been ratified, hence it does not apply to environmental damages. Therefore, the Environmental Liability Directive (ELD) seems the only piece of legislation that can be used as a legal basis for climate change litigation on liability at the European level. Nevertheless, it must be highlighted that the ELD does not cover damages to private property or personal injuries that are often related to climate change (ELD, Article 2). Unlike the Lugano Convention, the ELD only covers the harm to the environment and, namely, to biodiversity²⁹.

²⁶ Directive 2004/35/CE of the European Parliament and of Council on environmental liability with regard to the prevention and remedying of environmental damage, L 143/56, adopted on 21 April 2004, entered into force on 30 April 2004, amended by Directive 2006/21/EC, OJ L 102, adopted on 11 April 2006, entered into force 01 May 2006.

²⁷ It is well known that this process of growing awareness started at the international level and progressively filtered down at domestic level. Moreover, it must be highlighted that international steps were undertaken after the occurrence of dramatic natural events. For instance, the Brundtland Report which represents a milestone in the history of sustainability, came straight after the Chernobyl accident in 1986.

²⁸ Convention on Civil Liability for Damage Resulting from Activities Dangerous to the Environment adopted on 21 June 1993.

²⁹ However, the White Paper on Environmental Liability of 2000 proposed to cover both traditional damage (to property, economic loss or personal injury) and environmental damage (not generally regulated by national

In addition to the choice of compensating only environmental damages³⁰, the ELD shifted from a civil law system of liability regulation to an administrative law system where the competent authority has the obligation of repairing the impaired natural resources instead of forcing the polluter to pay monetary damages. This difference needs to be stressed since it means that traditional damages caused by climate change to someone's property cannot be claimed within the framework of the ELD and they need to be grounded on civil law or tort law bases³¹.

Other obstacles concerning the opportunity of grounding climate change litigation on the ELD stay in the characters of the polluting event and the causality link. Regarding the former, the ELD shall not be applied to natural events, unless the nature of the phenomenon is such that it cannot be deemed as exceptional. Regarding the latter, the application of the ELD is undermined by the diffusive character of polluting events. Finally, legal exceptions to the application of the polluter pays principle represent an additional limitation to the scope of the Directive. For instance, there is no liability if the polluter can prove that the damage arose from compliance with a public order (ELD, Article 8(3)).

As a last point, it must be remarked that many GHG emissions are regulated under the Council Directive 96/61/EC on Integrated Pollution Prevention and Control (that set down a permit system) and these kinds of activities are listed in the Annex III of the ELD that concern strict liability. Therefore, it can be concluded that all activities causing GHG emissions and that requires a permit can be sued under the ELD strict liability scheme. Then, the only difficulty in litigation would remain causality. The next section will address this and other procedural obstacles in climate change litigation.

To conclude, the combined application of Article 2, paragraph 1 on the definition of '*environmental damage*' and Article 3, paragraph 1, letter (a) on the '*scope*' of the Directive provide legal basis for a request for action under Article 12 of the ELD. This kind of action is a request addressed to a competent authority in order to prevent or to remediate an imminent

legal systems in the EU). In the end, the ELD abandoned the idea of covering both types of damages (ELD, Preamble, Point 14).

³⁰ Winter, Gerd, Jans, H., Jans, *et al.*, "Weighing up the EC Environmental Liability Directive", *Journal of Environmental law*, vol. 20 (June 2008).

³¹ Vujanic, *supra*, p. 149.

threat or an environmental damage already occurred. It will be then up to the competent authority to recover the costs that the operator incurred in relation to preventive and/or remedial action (Article 8 of the ELD). Nevertheless, it is worth stressing that a compensatory remediation according to Annex II of the Directive only covers “*interim loss of natural resources and services pending recovery*” (Annex II of the ELD, 1.1.3), whereas different legal bases should be recalled in case of traditional damages to property or personal injuries.

The above implies that monetary compensation for environmental damages is hardly attainable under the European Directive on Environmental Liability. However, compensation can be always achieved through national legal frameworks complemented by international law.

4) Obstacles in climate change litigation

Critical issues in litigation are represented by: justiciability, legal standing, causality and administrative costs. While justiciability refers to specific requirements and conditions that must be met in order for a court to hear and decide on a case, the legal standing regards only the party that brings the case before the court. More specifically, justiciability refers to conditions concerning the claimant, but also the dispute between the parties, the timing and the rationale for the case. When a case is justiciable it can be said that the court has judicial authority on it and then the condition of legal standing can be assessed. With the term legal standing we intend the ability to bring a case in the court based on the proof of a sufficient connection between the party and the infringement of law. This linkage can be implied from the law where directly applicable to the claimant or it is the result of a case by case examination. Once the issue of justiciability and legal standing have been solved, causality remains the major obstacle to win a case in the field of environmental law. Causality is the proof of a causal link between the cause of the harm and the harm itself. It generally needs to be backed by scientific evidence. Finally, administrative costs are the costs normally involved in filing any lawsuits. They are measured in terms of time and money.

The above mentioned issues generally represent critical topics in any lawsuits. Therefore, their role in litigation specifically related to climate change needs further clarification. In particular, causality is the first concerning issue in this domain since it relies on the availability of scientific data. It is indeed straightforward that the mere observation of an increasing

number of extreme weather events, like higher average temperatures, rising sea levels and melting ice is not enough to determine a causal link between these types of events and GHG emissions that cause subsequent harm to the environment. The underlying reasons for this are twofold: the diffuse character of pollution, on one hand, and the inability to track emissions from their source to the atmosphere. The fact that extreme weather events are not predictable in the long run adds a further issue of uncertainty. Climate events seem more as the probabilistic reaction to a process that cannot be precisely predicted because too many factors play a role in it. In conclusion, the issue of causality involves the demonstration of a link between natural facts and human facts that is surely not easy.

The issue of whether a specific extreme event of climate change can be attributed to human influence has been a long-standing question in science. Scientists traditionally maintained that it is impossible to attribute the cause of these types of events to human beings although risk increase due to human activity is undeniable. Claims for damages associated to climate change require this kind of evidence on the attribution of specific harms to humans. However, in order to prove liability for climate change the question should be reframed in terms of counterfactual probability (what would have been the risk of that specific weather event in the absence of human contribution). It must be noted that counterfactuals are not directly observable and they mainly rely on computer simulations that the court have to accept.

The issue of damage assessment will be investigated in the next section. Before delving into the next topic, it must be recalled that the Urgenda case is also interesting in this regard since the Court admittedly stated that the State held a duty of care towards Dutch citizens because of the high probability of damages and the “*enormous*” magnitude of damages.

Having said that litigation on climate-related liability presents a high number of benefits in terms of social welfare, it must be highlighted that critical issues still risk to undermine its potential. In the previous section we have listed some of them but here we will be more specific. Providing evidence on the causality link between climate change and the loss suffered by the victim is the first obstacle for plaintiffs in this domain. Problematics in this regard arise because of lack of lawyers’ competence and because of scientific uncertainty. However, while incompetence can be easily overcome by calling on experts (although this solution is highly expensive), lack of scientific consensus as to the implications of climate change remains out of control for lawyers. Indeed, scientific evidence of causality is hardly

available with special regard to personal liability³². Legal standing also represents an issue to take into account. In the U.S. courts tend to recognise legal standing even if there is no scientific certainty³³.

5) Damages and liability

The present section wishes to explore a specific issue in climate change litigation on liability and, namely, that of damage assessment in judicial proceedings. Several questions surround the issue of damages in this domain and they will be addressed in the following paragraphs. Before delving into the topic, it must be said that according to some scholars³⁴, the fact that monetary compensations in the E.U. have significant lower amounts compared to the U.S. is among the reasons for reluctance towards litigation. Other causes concern the requirements for filing class actions and costs of legal representatives³⁵. In other terms, the fear of high administrative costs prevents many plaintiffs from filing a lawsuit³⁶.

First of all, the term “*damages*” needs to be clarified and distinguished by the close “*damage*”. While the latter regards generally speaking any type of harm, the former specifically refers to an amount of money that provides an equivalent replacement for the harm suffered by the alleged victim. Given these definitions, it is clear that damages are the consequence of harm.

Bearing in mind the legislative background illustrated above, the discourse needs to be shifted to the layer of the jurisprudence. As mentioned above, some cases on liability have been already filed before national and European judges. However, the issue of damages has not yet fully explored in the literature. For instance, in the cited case of Carvalho against the European Parliament and the Council, the claim for injunctive relief was grounded on the non-contractual liability of the European Union and it consisted of a request for current and future

³² Studies published by the Intergovernmental Panel on Climate Change (IPCC) represent a good starting point for lawyers in order to build a better knowledge on climate change. Yet, due to the long process of publishing, their reports do not provide the most up-to-date information. Better knowledge can come from the Climate Accountability Institute (CAI). Its last report on carbon tracks back the last century’s emissions to ninety fossil fuel and cement producers, thus enabling clear apportionment of the responsibilities for climate change.

³³ Although some cases prove otherwise, like *Kivalina vs. ExxonMobile* where the U.S. District Court of California denied *locus standi* upon the plaintiffs.

³⁴ Cofre, Jose, Rock, Nicholas *et al.*, “Climate Change Litigation” in “A Guide to Carbon Law and Practice”, *Globe Law and Business London* (2008).

³⁵ Vujanic, *supra*, p. 145.

³⁶ Shavell, Steven, “Economic Analysis of Litigation and the Legal Process” NBER Working Paper No. w9697 (May 2003).

damages based on the harm directly caused by GHG emissions to human health³⁷. The case law shows indeed the absence of a methodology in assessing environmental damages and namely damages caused by global warming.

From a legal and economic perspective, ceiling on damages or exclusion of damages because of the impossibility to forecast events or high damages lead to suboptimal care and excessive activity (Ulen and Cooter). Moreover, if courts tend to exclude the so-called “difficult-to-measure” elements of harm (*e.g.*, a future decline in profits from an accident), this is justifiable only if the cost of ascertaining a component of harm exceeds the value of the improvement in incentives that its inclusion would bring. Otherwise, rough estimates would be a better solution to the omission of speculative components of harm (Shavell 2007).

³⁷ As argued by the claimants, the damage caused by climate change consists in the change of their living conditions, their livelihoods and activities. This is particularly evident where professions are dependent on moderate temperatures, like in the agricultural and touristic sector. However, this argument seems to confound the impact of emissions on human health and consequences in term of private losses.

III. THE FUTURE: A THREEFOLD PERSPECTIVE

1) Climate change and Science: how much certainty on climate change?

In its 5th Assessment Report of 2014, the Intergovernmental Panel on Climate Change for the first time confirmed that climate change is real and it is primary caused by human-made emissions of greenhouse gasses. Interestingly, the report provided a list of extreme weather events occurring with increasing frequency and that are the effect of climate change, such as rising sea-levels, floods, heat waves, droughts, desertification and water shortages. These phenomena have a direct and indirect impact on human rights throughout the world, with special regard to rights to life, water, food, health, housing and development. It is straightforward that adverse impacts of climate change are not equally distributed across human beings, but they tend to affect in a more negative way persons and communities already in disadvantageous situations due to geography, poverty, gender, age and cultural background. As an example, people living in more complex and vulnerable places are facing more serious threats because of climate change compared to others. However, the impacts from climate change are expected to increase exponentially with presumably devastating effects on endangered species and ecosystems.

In the wake of the 2014 IPCC Report, in May 2019 the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) released its Global Assessment on Biodiversity and Ecosystem Services that includes a valuable and short Summary for policy-makers. According to this Summary, “*climate change is a direct driver that is increasingly exacerbating the impact of other drivers on nature and human well-being*”. While confirming that high temperatures, heavy precipitations and droughts will significantly increase throughout the globe in the upcoming years, it is clear that extreme events will bring to further exacerbate the amount of monetary losses with errors in predictions depending on unpredictable factors, such as the resilience and vulnerability of ecosystems.

Interestingly, climate-related litigation has increasingly arisen as the consequences of climate change have become more apparent and less questionable both in scientific literature and in public opinion. This tendency is thus expected to continue in the future.

2) Climate change and Policy: new solutions for climate change?

Over the last 15 years, climate change has come to occupy a very much prominent place on the European agenda. By way of illustration, the 2020 Climate and Energy Package³⁸ was the first comprehensive set of targets for smart, sustainable and inclusive growth. It represented a step further after the ETS system³⁹ by means of clear goals and two new fields of intervention, such as renewable energies and energy efficiency. Other programmes were lately introduced in order to tackle climate change through various tools. For instance, the Life Programme in 2013 was adopted to fund projects that can trigger changes in policymaking on climate change by focusing on mitigation, adaptation and climate governance. Moreover, the Roadmap for moving to a competitive low carbon economy in 2050⁴⁰ set down long-term goals to reduce emissions by 2050 in four different sectors (power sector, transport, buildings, industry). Generally speaking, the EU Climate Change Policy encompasses a variety of tools that range from directives to strategies, action plans, schemes, green papers and white papers. These tools mainly address climate change by setting targets⁴¹. However, a new tendency in policy might shed a new light on the issue of damages caused by climate change. Banking on climate change seems to pave a new way to address global warming. It can also provide useful tools for accounting damages.

According to the latest EEA Technical Report on economic losses from climate-related extremes in Europe⁴², disasters caused by extreme weather events in the EU States amounted to approximately EUR 426 billion over the period from 1980 to 2017 (data on damages provided by NatCatSERVICE of Munich Re⁴³ and EUROSTAT). The calculation was conducted on four categories of natural hazards (geophysical, meteorological, hydrological

³⁸ Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC.

³⁹ Directive 2003/87/EC establishing a system for greenhouse gas emission allowance trading within the EU.

⁴⁰ Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions — A Roadmap for moving to a competitive low carbon economy in 2050 (COM(2011) 112 final, 8.3.2011).

⁴¹ For a complete list of all EU tools to tackle climate change *see*: <https://eurlex.europa.eu/summary/chapter/environment/2001.html?root=2001>

⁴² European Environmental Agency, Report on "Economic losses from climate-related extremes in Europe" (2019):

<https://www.eea.europa.eu/downloads/efb8ac2f19e7464db01757ef0627e6a2/1554216645/assessment-2.pdf>

⁴³ NatCatSERVICE is one of the most important databases of natural catastrophe loss and it is managed by the Munich Reinsurance Company, based in Munich. Their data are not publicly accessible.

and climatological) and it is coordinated by the JRC despite the fact that there is no obligation upon EU Member States to report economic losses from climate events to the EEA.

3) Climate change and Law: who will be liable for climate change?

States have no legal obligation to cut emissions in the absence of signed and ratified treaties, but we might question whether a similar obligation can arise from other principles or obligations that have been already undertaken at the international level. This is for instance applicable to international human rights law whose binding nature upon States has been backed by sufficient written legislation and jurisprudence. Furthermore, connecting climate change damages to human rights seems to become even more plausible in the light of the above mentioned scientific predictions. Indeed, the expected level of emissions according to science will be such that human rights of millions of people risk to be severely jeopardised in the future. Nevertheless, identifying the precise actions that States are expected to undertake in order to be considered compliant with their legal obligations remains a puzzling issue.

In order to make a step further in this discussion, a group of international legal experts gathered in 2015 to answer the question of what national actions are meant to be done to comply with the legal obligations of curbing emissions. The result of this collective work went under the name of “*Oslo Principles*”⁴⁴ and it consists of a detailed commentary of climate-related obligations upon States and enterprises grounded on the best interpretation of international law, human rights law and environmental law. Moreover, the original list of principles has been complemented by the so-called “*Climate Principles of Enterprises*”⁴⁵ which focused on the responsibility of private businesses.

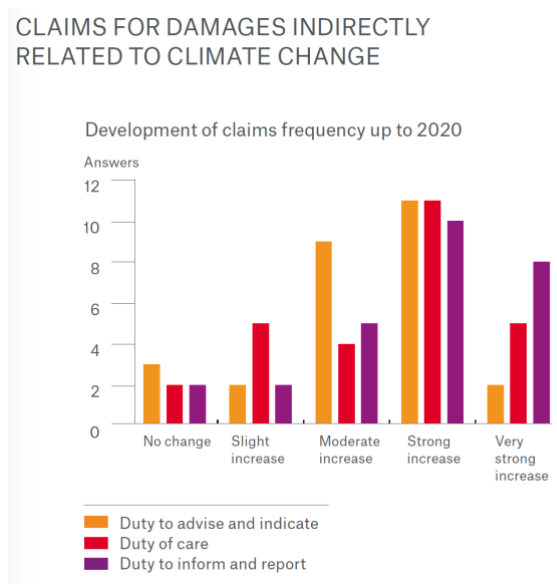
The peculiarity of Climate Principles of Enterprises stays in the fact that they were formulated by a group of judges and therefore they mirror the underlying idea of the role played by private companies within the framework of climate change. Jaap Spier, advocate general in the Dutch Supreme Court until 2016 and one of the experts working on the Principles, admitted that: “*Very, very few enterprises currently meet their obligations – if they did [climate change] would mostly be solved*” and “*if you assume companies don’t [change] at some stage, I have*

⁴⁴ <https://globaljustice.yale.edu/sites/default/files/files/OsloPrinciples.pdf>

⁴⁵ <https://climateprinciplesforenterprises.org/resources/>

not the slightest doubt that courts will understand that they must step in". These words make clear how courts are increasingly conscious about their new role in the general governance of climate change and, on the other hand, how corporations might be deemed liable for the consequences of climate change if they do not introduce principles of reducing emissions in their management and planning.

In the wake of the growing awareness about the role of corporations, law firms are increasingly publishing reports with predictions about expected levels of litigation and subsequent suggestions for their clients. The graph below presents the results of an online survey on climate-change-liability risk that was carried out by *Germanwatch*, an impartial organisation working on the analysis of worldwide consequences of politics and economies in Northern States.



The study was conducted in 2008 on a total of 32 experts in the field of environmental liability law. It summarizes the view of the respondents regarding expected developments of claims for damages. Claims for damages have been divided into three categories according to the type of infringed duty that caused the claim (duty to advise, duty of care and duty to inform).

As can be seen from Tab. 1, only a small percentage of respondents believe that there will be no change in the frequency of claims for damages related to climate change up to 2020. Indeed, the majority of the answers point to a strong increase for all the three types of duty breaches. More specifically, between 10 and 12 respondents think that all types of claims will significantly increase by the established time. However, requests for damages related to the

duty to inform are expected to show the greatest increase. Moreover, respondents do not agree about the future size of claims derived from violations of the duty of care. In particular, Tab.1 illustrates that this type of claims is expected to increase with a moderate or strong tendency. Conversely, future claims based on the duty to advise are expected to increase less than the other two types.

In summary, when averaging the results⁴⁶ from the three groups, experts predict a nonsignificant difference among the three groups of claims as to their increase up to the year 2020 although future litigation for climate change damages will be mainly based on allegations for infringed duties to inform and report. Evidently, companies should receive better advice on how to reduce the risk of future lawsuits related to this type of duty. In particular, it can be inferred from the table that companies need to put more effort in the enforcement of the duty to inform if they want to avoid litigation costs.

The study above needs to be complemented by an additional study that has been recently published on the prestigious journal of *Nature Climate Change*⁴⁷. This paper analyses the impact of climate change on the stability of the global banking system, hence unveiling a new and surprising correlation. Indeed, consequences of climate change on financial actors have been only little explored over the last years. The study at hand provides new scientific evidence for a correlation between extreme weather events, like floods, landslides and storms, and variations in economic growth and production that can ultimately result in higher risks for infrastructures with subsequent impact on insurance premiums and bank crises. In particular, the authors maintain that damages caused by extreme weather events will increase the frequency of banking crises from 26% to 248% with a subsequent impact on the GDP. The final observation is that financial regulation will not effectively moderate bailout costs without conducting a climate-economy integrated assessment.

The last study has been mentioned since it highlights the importance of a full estimation of climate impacts through an uncommon tool (regulation of the banking sector). In other terms, if it is true that macro-policies have to be combined with mitigation/adaptation strategies and

⁴⁶ The complete results of the survey are available at: <http://www.climatemainstreaming.net/litrisktp>

⁴⁷ Lamperti, Francesco, Bosetti, Valentina, Roventini, *et al.* “The public costs of climate-induced financial instability” *Nature Climate Change* 9 (November 2019): 829–833, doi:10.1038/s41558-019-0607-5.

investments on low carbon projects, it is apparent that a correct estimation of climate change damages is gaining more and more relevance in any domains of law.

4) Climate Change and Liability: a Law and Economics Perspective

The following section gives an overview of the traditional theory of law and economics related to torts. The goals of tort law will be first presented in order to provide the theoretical framework for the following analysis on environmental harm and damages. Furthermore, goals of tort law according to the law and economics perspective enable implications as to whether foreseeable remedies to accidents allow to attain them.

The early appearance of the economic theory of torts dates back to the seminal book *The Costs of Accidents*⁴⁸ by Guido Calabresi. According to the author, accident costs may be classified in three categories: primary costs (injury costs and injury avoidance costs), secondary costs (risk-spreading costs) and tertiary costs (administrative costs)⁴⁹. The first subgroup consists of the costs of precautionary measures and the expected losses from the accident. The second subgroup involves the costs of loss spreading as a result of accidents. The third and last category refers to the costs incurred by legal systems in order to minimise the previous classes of costs. This classification is useful to better clarify costs that can be reduced. Indeed, strategies to minimise costs from accidents change according to their characteristics. In particular, primary costs may be reduced by providing potential tortfeasors with incentives for a higher level of care or a lower level of activity. Secondary costs, on the other hand, may be reduced by allocating losses upon the group of people that can better bear them. Minimisation of administrative costs⁵⁰ will further contribute to lower primary and secondary costs⁵¹.

⁴⁸ Guido Calabresi, *The Costs of Accidents. A Legal and Economic Analysis* (1970).

⁴⁹ Guido Calabresi, *The Costs of Accidents*, 24.

⁵⁰ To better explicate the third category of accident costs, it must be recalled what has been defined as the third characteristic of the economic analysis of law in the literature, that is its normative evaluation of norms (Shavell, *supra*, 4). In other terms, the law and economics wants to evaluate norms in terms of their impact on social welfare, whereas this concept is often left unclear under other approaches of legal analysis.

⁵¹ But the same result can be achieved by improving the assessment of damages in court.

After Calabresi, the basic economic theory of torts has been developed by other scholars, like Posner⁵², Brown⁵³ and Shavell⁵⁴ who equally put emphasis on the minimisation of social costs instead of victim compensation⁵⁵. Therefore, we can argue that reducing accident costs (as a tool to achieve deterrence) remains the principal function of tort law and economics. In addition to that, Shavell further enriched the concept of deterrence by clearly distinguishing between unilateral and bilateral accidents⁵⁶. Unilateral accidents are those where only one party can influence the accident risk, whereas in bilateral accidents also the victim might play a role in causing the accident with his or her activity. This distinction allows to identify better the incentives needed in each of these situations in order to improve efficiency⁵⁷ in tort law. The law of accidents is indeed deemed as efficient when it provides potential injurers and potential victims with optimal incentives to minimise the costs of care and of expected damages. These costs are calculated by means of a cost-benefit analysis that compares the costs of taking care with the benefits gained from the reduction in accident risks⁵⁸. Therefore, the objective of tort law from an economic perspective is not to incentivise the highest level of care, since it will probably outweigh the benefit. Conversely, efficient tort law should provide the only party able to influence the accident risk with incentives to adopt that level of care where the marginal cost equalises the marginal benefit. Scholars of law and economics refer to this level of care as optimal or efficient⁵⁹. Providing incentives to adopt the efficient level of care represents the economic essence of tort law or liability.

⁵² Richard A. Posner, "A Theory of Negligence," *The Journal of Legal Studies* 1, no. 1 (1972): 29-96.

⁵³ John P. Brown, "Toward an Economic Theory of Liability," *The Journal of Legal Studies* 2, no. 2 (1973): 323-49.

⁵⁴ Steven Shavell, "Strict liability versus negligence," *Journal of Legal Studies*, 1980 9, no. 2 (January 1980): 1-25.

⁵⁵ Although "no one will argue that prevention of accidents is not a way of victim protection as well" (Faure and Partain, *supra*, 146). Victim compensation and the idea of bringing justice in the social system can be attained also by pursuing deterrence as primary goal (Calabresi, *supra*, 24-26).

⁵⁶ Steven Shavell, *Economic Analysis of Accident Law* (Cambridge, Massachusetts and London, England: Harvard University Press, 1987), 6, 9.

⁵⁷ Efficiency is defined by the literature as one of the two policy objectives that can lead the analyses conducted by economists (Ulen and Cooter, *supra*, 7, 9). Economists gave several definitions of efficiency: efficiency of the production process (when the producer cannot produce more output at a lower cost), *Pareto efficiency* (the situation in which it is not possible to make one consumer better off without making another one worse off), *Kaldor-Hicks efficiency* (state of welfare where one group gains more than another group but their gains pay off the potential losses of the other group). On the primacy of efficiency as a policy value that should lead the economic analysis, see Louis Kaplow and Steven Shavell, *Fairness versus Welfare* (Cambridge, Massachusetts and London: Harvard University Press, 2002). For an opposite view, *ex multis*, Daniel Farber, "What (If Anything) Can Economics Say About Equity?," *Michigan Law Review* vol. 101, 1791-1823. Farber criticizes Kaplow and Shavell for their conception of social welfare as a solution to any equity issues.

⁵⁸ Shavell, (1987), 7.

⁵⁹ Ulen and Cooter, *supra*, 190, 201.

IV. THE SOLUTION

POLITICAL OBJECTIVES AND STRATEGIES AT EU AND NATIONAL LEVEL

This last section wishes to bridge the gap between European policy objectives in the field of climate change and problematics regarding climate change litigation in the field of liability. We will show how EU policy goals on climate change can be effectively addressed through the system of claiming damages if we look at the field of Ecological Economics. Ecologists have been working on ecosystem services since the 70s. Moreover, this new tool of interpreting the relationship between humans and nature has received growing attention in international and regional institutions, such as the UNSD, the World Bank and the European Commission. Nevertheless, the application of ecosystem services in the field of liability for climate change has not been fully explored neither in the academic literature nor in the political debate. We will explain reasons, advantages and practical ways to substantially improve climate change litigation through the ecosystem services.

1) The EU and the climate: policy objectives

The EU has reformed its legislation in order to address climate change in several forms (*e.g.*, new rural development policy priorities for restoring and enhancing ecosystems within the Common Agricultural Policy or the Directive on Energy Efficiency). Then, supports for low-carbon electricity production have progressively spread out through the entire EU. Just to mention some examples: Sweden introduced tax incentives for biofuels, France committed to reduce the proportion of nuclear energy from 75% to 50% by 2025, Poland set targets to increase energy efficiency, Switzerland set very ambitious reduction targets and other measures for buildings and transportation.

However, the most important piece of legislation related to climate change was adopted by the European Union in 2008 and it is known as *Climate and Energy Package*. It includes four pieces of complementary legislation regarding the revision of the ETS, the reduction of GHG emissions, the promotion of renewable energy and, finally, a legal framework for safe geological storage of CO₂⁶⁰.

⁶⁰ [The European Union (EU) – the only supranational entity evaluated in the index – is ranked under high performing countries at 16th place in this year's CCPI. As a whole, the EU accounts for about 9% of global GHG emissions. With relatively high per capita emissions and currently not on track to

2) The Ecosystem Services: presenting the solution

According to the definition provided by Robert Costanza in 1997, the term “*ecosystem services*” refers to “*the benefits that people derive from functioning ecosystems*”. This definition relies upon the word “*ecosystem*” that is generally understood to mean a dynamic complex of plant, animal, microorganism communities and non-living environments interacting as a functional unit (Millennium Assessment, 2005). Broadly defined, ecosystem services include: provisioning services such as food, timber, water and fiber; regulating services that affect climate, floods, disease, wastes and water quality; cultural services that provide recreational, aesthetic and spiritual benefits; lastly, supporting services such as soil formation, photosynthesis and nutrient cycling.

Given said that, it is noteworthy that the concept of nature’s service first entered the academic literature in 1977 with the article by Walter Westman: “*How Much are Nature’s Services Worth?*”. Few years after, in 1981, Ehrlich replaced the original term of “*nature’s services*” with the current “*ecosystem services*”. This new stream of academic papers was the product of growing awareness of the depletion of natural resources in the 1980s. As a consequence of the political debate at that time, a new transdisciplinary field known as “*ecological economics*” was created. The aim of the ecological economists was to bridge the gap between ecosystem ecologists and environmental economists. Therefore, the concept of benefits from nature represented the basis for building new scientific literature.

achieve its under-ambitious 2030 target, the EU is rated medium in the category GHG Emissions. On both Renewable Energy and Energy Use, the EU’s performance is rated medium. The improved overall rating of the EU is mainly due to its high rating in the Climate Policy category. Experts commend that especially since the withdrawal of the United States of America from the Paris Agreement, the EU needs to take a proactive role at the international level and come forward with improved GHG targets. Therefore, the adoption of measures to reach 2030 targets, first discussions on lifting the 2030 GHG target and a proposal of a EU’s long-term strategy with a climate neutrality goal by 2050 are seen important, not only for progress within the EU’s member states, but also for the Union’s role in international climate diplomacy. As the EU consists of 28 Member States, the ranking reflects accumulated different national performances.] <https://newclimate.org/wp-content/uploads/2018/12/CCPI-2019-Results.pdf>

Subsequent to this, twenty years after the early appearance of the concept of nature's services, Gretchen Daily edited the first book on the economic value of ecosystem services. Her aim was to bring together world-renowned scientists from a variety of disciplines in order to assess the condition of ecosystem services in the world and to establish the implications of impaired services for humans. Moreover, in 1997, the first workshop on the total value of ecosystem services and natural capital took place in California.

It must be noted that the broad use of the term “*ecosystem services*” is generally equated with any biophysical relationships, notwithstanding the typology of impact on people. However, in the field of ecological economics, ecosystem services are only functions capable to contribute positively to the human wellbeing. For this reason, some authors argued that one of the main limitations of the ecosystem approach is represented by its inherent anthropocentrism. In the wake of that, recent literature introduced the term of “*nature's contribution to people*”⁶¹ which includes both beneficial and harmful effects on people's wellbeing.

To conclude, in this dissertation the term ecosystem services is used to refer to any positive functions that people derive from natural resources.

The term “*ecosystem services*” entered the policy agenda thanks to important science-policy projects, like the Millennium Ecosystem Assessment in 2005, the Economics of Ecosystems and Biodiversity in 2010 and the establishment of the Intergovernmental Panel on Biodiversity and Ecosystem Services (IPBES) in 2012. Since 2009, even the EU has developed a standardized definition of ecosystem services (CICES). Thousands of scientists and policy makers around the world strive to incorporate nature's value in their work. National governments, international organizations and the business community are increasingly interested in incorporating ecosystem services into decision making in order to achieve a full assessment of their impact on nature (Sharon et al., 2018). This is happening from one side to the other of the Pacific Ocean (President of the U.S. *Memorandum for Executive Departments and Agencies on Incorporating Ecosystem Services into Federal Decision Making* 2015, Environment Canada 2010, UK National Ecosystem Assessment).

⁶¹ Sandra Diaz, Unai Pascual, Marie Stenseke, Berta Martín-Lopez, Robert T. Watson, Zsolt Molnár, Rosemary Hill *et al.*, “Assessing nature's contributions to people: Recognizing culture, and diverse sources of knowledge, can improve assessments” *Science* (2018), 359 (6373): 270-272.

Ecosystem services help assess trade-offs, negative consequences and benefits of human actions in a better way than focusing merely on how a pollutant is affecting the quality of one natural resource. According to this different perspective, the focus would shift from the impact on water quality, for example, to the impact on commercial fish catch, recreational activities and property values for neighbours. Given the benefits of ecosystem services methodologies as decision-making tools for more effective policies, especially environmental agencies have incorporated ecosystem functions in their analyses. However, explicit references to ecosystem services remain absent from regulatory frameworks because modern environmental laws were drafted before the emergence of the concept of ecosystem services. It is also true that no law prevents administrative bodies from introducing ecosystem services in their policies, so the reason for such reluctance might be in the lack of expertise, the uncertainties in application and politics.

In the light of the above, the economic analysis applied to judicial reasoning on damage compensations unfolds in urgency for clear written rules that can solve from the top the issue of the choice between possible methodologies. A possible solution would be to set down a framework on damage assessment based on the economic value of ecosystem services and, namely, on “*Payments for Ecosystem Services*” (PES)⁶². While ecosystem services imply a new approach to decision-making based on the awareness of multiple values of natural resources, PES focus only on the economic and social value of ecosystem services and biodiversity.

The underlying reasoning for paying for ecosystem services is very simple. A value to ecosystem services might be specifically ascribed at the moment when the service is scarce and there are people available for paying to obtain it. Once the benefits provided by natural resources have been successfully enlisted, the following step would be to clearly identify the users of them. Who is indeed taking benefits from enjoying the landscape (cultural ecosystem service) or drinking water (provisioning service)? Where nobody would be available for paying, the government should intervene through regulation or taxation (classical case of market failure). However, in theory private actors might negotiate and find private solutions.

⁶² For an overview of recent examples in the field of PES: Bettina Matzdorf, Carolin Biedermann, Claas Meyer, Kristin Nicolaus, Claudia Sattler, Sarah Schomers, “*Paying for green? Payments for ecosystem services in Practice. Successful examples of PES from Germany, the United Kingdom and the United States*” (Münchenberg, 2014).

Payments for Ecosystem Services are based on the economic assumption that private actors can negotiate. This assumption relies, in turn, on a set of circumstances, such as correct information on costs and benefits and clearly defined property rights to natural resources. To explain it better, a payment for reducing negative externalities on the quality of air can be done if it is clear who provides the service and who is going to take the benefit. Therefore, the opportunities provided by PES ultimately rely on the legal framework at play. Moreover, PES are not supposed to replace environmental taxation or other regulatory laws but to supplement it⁶³. PES represent an option to pay for provisioning of ecosystem services according to the existent and country-specific asset of property rights, obligations and social norms.

But how to determine the amount of payment for ecosystem services? First of all, it should be clarified that the purpose of payments for ecosystem services might be twofold: offset of negative externalities, on one hand, and incentive to provide positive externalities, on the other hand. For instance, it would be possible to ask a polluter to pay an environmental tax to internalize the negative externalities produced by his polluting activity. However, it might also be possible to pay the owner of a land for taking a positive action to maintain a certain quality of the environment or to restore ecosystem services that have been lost. As a consequence, the amount of money should be calculated looking at the WTP of people for that specific service and the opportunity costs for the costs of production. In other words, transaction costs should be first taken into account in order to assess whether a PES would be economically viable.

The above mentioned costs for setting up a system of payments for ecosystem services should be then compared with their advantages. In fact, PES should theoretically be more efficient and effective compared to regulatory instruments, because they allow a more efficient allocation of resources. Those who are paid for providing the service are also the ones that have a better interest and better information about that.

Practical examples of PES for carbon sequestration (and thus climate change) come from Germany and the United Kingdom. These two countries have already implemented two similar projects of voluntary carbon markets. The Woodland Carbon Code in the U.K. sets

⁶³ *Ibidem*, 12.

standards for carbon credits. Private businesses and individuals can buy credits to implement afforestation projects. Moorfutures in Germany equally allows private actors to buy certificates by rewetting peatlands and reducing carbon loss. However, PES for services related to the quality of air and, more broadly, to climate change have been already implemented around the world and they all offer methodologies to quantify negative/positive externalities on the environment.

V. Conclusions

Litigation on liability for damages caused by climate change is a real and effective tool to tackle global warming. Its role has exponentially spread around the world in recent times, due to the unbalance between failures in policy-making and growing awareness of natural phenomena. Opposite trends in politics and science opened up new opportunities and they shifted the room for debate from political assemblies to courtrooms. Judges are thus becoming more and more aware of their role in this scenario and some of them have progressively undertaken relevant decisions that can effectively push policy-makers towards more sustainability. However, some procedural obstacles continue to undermine the effectiveness of liability laws. Liability is an instrument that, where correctly designed, might provide potential polluters with incentives for optimal care taking. However, the optimal provision of these incentives seems difficult to achieve where negative externalities affect the environment due to difficulties of calculating accident costs in advance. Indeed, monetary compensations that fail in internalizing the full cost of pollution lead to undervaluation of environmental damages and, ultimately, underdeterrence. For this reason, clear guidelines that clarify how to quantify damages would offer a possible solution to improve the efficiency of liability rules. They could be based on the concept of ecosystem services and the methodology of payments for ecosystem services. In particular, damages caused by climate change might be viewed as positive externalities instead of negative externalities.

Our final conclusions can be summarized as it follows:

1. The concept of Ecosystem Services should be used by EU policy-makers in the domain of the environment.
2. The development of markets for ecosystem services and biodiversity should be supported with the involvement of private actors and the aim of reducing transaction costs.
3. Liability for damages caused by climate change should be based on payments for ecosystem services.