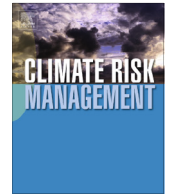




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“Climate change damages”, conceptualization of a legal notion with regard to reparation under international law

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ABSTRACT

The damages related to climate change are a concerning issue for the international community, as no country will escape the impacts of climate change. Indeed, it is a preoccupation for the countries (mostly vulnerable) that will suffer those damages, but also for the States that emitted greenhouse gases which fear to have to repair them. That's why the international negotiation related to the climate regime use the ambiguous term “loss and damage” to design the impacts related to climate change.

The purpose of this article is to know if the term “loss and damage” is a useful one in view of reparation under international law or if it is necessary to conceptualize the “climate change damage” notion employed by the doctrine. More precisely, the central question is the following: why is it necessary to conceptualize the “climate change damage” notion?

Even though “loss and damage” could formally be a legal concept, it is substantially useless with regard to reparation under international law because it is too ambiguous.

Therefore, we judged necessary to clarify the concept of “climate change damage” used by the doctrine but that unfortunately defines it insufficiently. Indeed, it could be useful for the doctrine but also for the lawyers of vulnerable countries and the judges to dispose of a legal notion in order to consider the reparation of the damages related to climate change under international law. Consequently, we propose in this article a definition of climate change damage that could be useful with regard to reparation under international law.

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Abbreviations: AOSIS, Alliance of Small Island States; COP, Conference of the Parties; ILC, International Law Commission; IPCC, Intergovernmental Panel on Climate Change; LDC, Least Developed Countries; SBI, Subsidiary Body for Implementation; UN, United Nations; UNFCCC, United Nations Framework Convention on Climate Change; WIM, Warsaw international mechanism for loss and damage.

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0. Introduction

“Maybe it is true that words hide from us more the invisible things than they reveal of the visible ones¹” wrote Albert Camus. This is particularly true of the notion of “climate change damage”. What does the “climate change damage” notion mean and may it lead to legal consequences?

Before contemplating the notion of “climate change damage”, it is necessary to clarify the terminologies that constitute this concept, which are “climate change” and “damage”. Firstly, the term “climate change” is defined, in the article 1 of the United Nations Framework Convention on Climate Change (UNFCCC), as “a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods”.² The UNFCCC established the climate regime in 1992 which primarily aimed to mitigate greenhouse gases in order to avoid the impacts of climate change. Despite mitigation efforts, climate change has had and will continue to have impacts, necessitating a focus on adaptation. From adapting to the impacts of climate change, the discourse at the international level and more particularly the Conference of the Parties (COP) has begun to consider the “loss and damage”. “Loss and damage” is not mentioned in the UNFCCC or the Kyoto Protocol but is used by the COP and defined, in an informal document of the Subsidiary Body for Implementation, as “the actual and/or potential manifestation of impacts associated with climate change in developing countries that negatively affect human and natural systems”.³ This definition is really different from the definition of “damage” in international law, that it is necessary to understand before focusing on “climate change damage”. Therefore, secondly, it seems that classic Roman law – the root of continental European (civil) law – did not contain a general concept of damage, but rather factual situations differentiated by the actual nature of the harm.⁴ The general concept of damage appeared more recently in the Justinian Code and especially in the common Roman law of the Middle Ages.⁵ Despite the tendency to formulate a general concept of damage in civil codifications, the concept has taken shape in two different forms.⁶ In legal systems in which only anti-judicial damage is redressed, injury of a subjective right is generally required in order to obtain compensation.⁷ In contrast, in a broader definition that dates back to “las Siete Partidas” (the Seven-Part Code), damage is defined as every “detriment, harm or injury suffered in the heritage or the person because of the fault or wrongdoing of someone else”.⁸ In international law, and more particularly according to the International Law Commission (ILC), “injury includes any damage, whether material or moral, caused by the internationally wrongful act of a State”.⁹ However, these definitions alone do not enable us to understand the entire scope of the concept of “climate change damage”. And as the lecturer might have reasonably noticed, “climate change damage” is not the notion used within the international negotiations related to climate change but it is “loss and damage”.

If “loss and damage” is the notion used within the climate regime, why write an article about the “climate change damage” term that does not appear in the UNFCCC and other legal instruments? The main reason is that damages related to climate change are an issue of growing importance for the international community, as no country will escape the impacts of climate change¹⁰ and there are not legal solutions associated to “loss and damage” for the moment. To illustrate this idea, in the Paris agreement, adopted during the COP 21 in December 2015, it is specifically written that “loss and damage” does not involve or provide a basis for any liability or compensation.¹¹ In the meanwhile, research suggests that the limits of adaptation are

¹ Authors’ translation of the French quote by Albert Camus “Il est vrai peut-être que les mots nous cachent davantage les choses invisibles qu’ils ne nous révèlent les visibles”.

² United Nations (1992, art. 1, p. 3).

³ Subsidiary Body for Implementation (2012b, § 2).

⁴ Barros (2006, p. 219).

⁵ Barros (2006, p. 219).

⁶ Barros (2006, p. 220).

⁷ Barros (2006, p. 220).

⁸ Barros (2006, p. 220).

⁹ International Law Commission (2001, art. 31 al. 2, p. 91).

¹⁰ UNEP Global Environmental Alert Service (2014, p. 1) and IPCC (2014a,b).

¹¹ Conference of the Parties (2015, § 51, p. 8).

already being exceeded in many societies,¹² which could result in “escalating losses or require transformational change”.¹³ Moreover, according to a study realized by the non-governmental organization Action Aid, even in a successful mitigation scenario and after adaptation action has been taken, the mean costs of impacts between 2000 and 2200 will have been reduced by only 33% compared with a business-as-usual scenario, still leaving US\$275 trillion of remaining cumulative impacts over the period 2000–2200.¹⁴ Furthermore, the Intergovernmental Panel on Climate Change (IPCC) indicates that the existing incomplete estimates of global annual economic losses for warming of ~2.5 °C above pre-industrial levels are 0.2–2.0% of income.¹⁵ Finally, a recent study estimates that climate change reduces projected global output by 23% in 2100 relative to a world without climate change.¹⁶ Consequently, lawyers, judges, vulnerable States to climate change might be interested in having a legal concept, such as “climate change damage”, to find legal solutions for the reparation of those damages under international law.

Therefore, the central question is the following: why is it necessary to conceptualize the “climate change damage” notion? According to us, it is necessary to conceptualize the “climate change damage” notion understood as a reparable damage under international law for two reasons: first, the “loss and damage” concept seems unsatisfactory with regard to legal reparation (Part 1) and, second, the doctrine insufficiently defines “climate change damage” in view of reparation under international law (Part 2).

1. An unsatisfactory concept of “loss and damage with regard to legal reparation

The conceptualization of the “climate change damage” notion, in order to permit the application of a legal regime, is justified only if “loss and damage”, the notion used by the Conference of the Parties (COP), is unsatisfactory with regard to this purpose. In this respect, formally, “loss and damage” could be considered a legal concept (1.1); however, substantially, it is unsuitable for the application of the international legal regime (1.2).

1.1. “Loss and damage”, formally a doubtful legal concept

The conceptualization of “climate change damage”, as a legal notion in order to be able to apply it a legal regime, makes only sense if the “loss and damage” term is not considered as a legal concept. Therefore, it is necessary to identify if “loss and damage” is formally a legal concept. To do so, we will determine in which instruments “loss and damage” is mentioned, and then resolve if those instruments are legal ones.

First of all, in relation to the mentions of the “loss and damage” notion, it should be highlighted that it is cited neither in the UNFCCC nor in the Kyoto Protocol, even though it is a term which pre-dates the current climate regime given that it appeared in the context of the climate treaty negotiations. Indeed, in 1991, in negotiations of the UNFCCC itself, more precisely at the fourth session of the Intergovernmental Negotiation Committee, the Alliance of Small Island States (AOSIS) proposed the establishment of an international insurance pool as a “collective loss-sharing scheme”¹⁷ to “compensate the most vulnerable small island and low-lying coastal developing countries for loss and damage arising from sea level rise”.¹⁸ However, “loss and damage” did not crystallize in the text of the UNFCCC. Given that the UNFCCC and the Kyoto Protocol traditionally constitute the climate regime,¹⁹ it could be deduced that “loss and damage” is not a legal concept as it is not mentioned in those legal instruments.

However, “loss and damage” is used in the COP’s decisions and has quite a long pedigree in international climate negotiations.²⁰ Indeed, during the COP 13 in Bali in 2007, as part of efforts to negotiate the post-Kyoto climate regime, Parties agreed to address enhanced action on adaptation considering disaster reduction strategies and means to address loss and damage associated with climate change impacts in developing countries that are particularly vulnerable to the adverse effects of climate change.²¹ At COP 14, AOSIS advanced a proposal for a “Multi-Window Mechanism” to address loss and damage.²² However, it was not taken up by the Parties to the UNFCCC either in 2008, or in 2012 after it was re-tabled as a submission.²³ Then, at COP 16 in Cancun, a work programme was established to consider approaches to address loss and damage from the impacts of climate change.²⁴ At COP 18, in Doha, in 2012, Parties decided to establish institutional arrangements to improve understanding, strengthen coordination and enhance action and support, to be able to address loss and damage at COP 19.²⁵ In addition, Parties identified national actions and further work – including research – that could help developing countries

¹² UNEP Global Environmental Alert Service (2014, p. 2) and Warner et al. (2012).

¹³ UNEP Global Environmental Alert Service (2014, p. 2) and Dow et al. (2013).

¹⁴ Action Aid (2010, p. 11).

¹⁵ IPCC (2014b, p. 73).

¹⁶ Burke et al. (2015, p. 238).

¹⁷ Mace and Schaeffer (2013, p. 3).

¹⁸ INC (1991, p. 2) and INC (1992, p. 126–127).

¹⁹ Urrutia (2010, p. 603).

²⁰ Burns (2015, p. 5).

²¹ Conference of the Parties (2008, § 1(c)(iii), p. 4).

²² Alliance of Small Islands States (2008).

²³ Verheyen (2012, p. 4).

²⁴ Conference of the Parties (2011, § 26, p. 6).

²⁵ UNEP Global Environmental Alert Service (2014, p. 2) and Conference of the Parties (2013, pp. 22–23).

address loss and damage.²⁶ In 2013, at COP 19, the Warsaw international mechanism for loss and damage (WIM) was created to address loss and damage.²⁷ The first function of the WIM is to enhance knowledge and understanding of approaches to address loss and damage, strengthen dialogue, coordination and coherence among relevant stakeholders and enhance action and support to address loss and damage.²⁸ Consequently, it is clear that the notion “loss and damage” is frequently used in COP’s decisions.

Nevertheless, can COP’s decisions be considered legal instruments? The legal status of the COP’s decision constitutes a debate among the doctrine, in which we will not enter because the purpose of this article is the conceptualization of “climate change damage” and not the status of COP’s decisions. However, according to Urrutia, the legal status of the Parties’ decisions, that in principle are not obligatory, is pretty much debated, and its qualification depends on each decision, knowing that in practice [the Parties’ decisions] operate most of the time *de facto* as obligatory.²⁹ Consequently, if we consider the COP’s decisions as obligatory legal instruments, the simple fact that they mention “loss and damage” – even though they do not define it – makes this term a useful one in view of reparation under international law. In this case, the creation of the notion “climate change damage”, understood as a legal concept and more precisely a reparable damage in international law, would be useless. However, is it possible to identify “loss and damage” as a useful legal concept substantially? (1.2)

1.2. “Loss and damage”, substantively an unsuitable concept with regard to the application of a legal regime

The conceptualization of “climate change damage” is only justified if “loss and damage”, formally considered as a legal concept, does not permit reparation from a legal point of view regarding its content. Therefore, we will now focus on the definition of “loss and damage”.

As mentioned previously, “loss and damage” is not defined by the COP’s decisions. Only the Subsidiary Body for Implementation (SBI), in an informal document, proposes a definition of “loss and damage” understood as “the actual and/or potential manifestation of impacts associated with climate change in developing countries that negatively affect human and natural systems”.³⁰ Several issues emerge from this definition. First, it refers to “impacts” and not “damage” or “injury” – which is the terminology used by the International Law Commission.³¹ All activities generate impacts, but not all of them are damages under international law. Second, the definition of “loss and damage” indicates that only developing countries are the ones suffering such impacts. In this regard, first of all, it is necessary to mention that all the countries are going to be affected by climate change, even though developing countries might be more affected than developed countries. Then, in international law, there is no differentiation between subjects to define damage. The only valid criterion to identify a reparable damage is the internationally protected interest of the subject,³² not the subject itself. Finally, loss and damage is composed by two notions with opposed meaning. Indeed, “loss” is defined as “negative impacts in relation to which reparation or restoration is impossible, such as loss of freshwater resources” whereas “damage” means “negative impacts in relation to which reparation or restoration is possible, such as windstorm damage to the roof of a building, or damage to a coastal mangrove forest as a result of coastal surges”.³³ Is it not a paradox to have a concept of “loss and damage” composed of two terms with opposite meanings? Moreover, there are no legal or financial consequences attached to the concepts of loss and of damage taken separately. Why then invent two different definitions? This makes the schizophrenic notion of “loss and damage” even more unclear. Has this been done to deliberately avoid having a clear legal concept whose implications for State liability can be readily ascertained?

Additionally, loss and damage seems to be more a technical and scientific notion than a legal one. Indeed, it is useful to point out that loss and damage emanating from climate change impacts can be economic in nature, such as loss of income or damage to property and assets, and non-economic, which include the cultural, social and mental impacts of climate change, as well as the loss of biodiversity and ecosystem services, amongst others.³⁴ Furthermore, the SBI states that “loss and damage refers to impacts on human systems, which are often channelled through the negative impacts of climate change on natural systems (for example, sea level rise and glacial melt result from climate change stimuli, and these shifts in natural systems in turn result in loss and damage in human systems, such as loss of habitable land or freshwater)”.³⁵ Likewise, it has indicated that loss and damage includes the effects of the full range of climate change related impacts, from increasing (in number and intensity) extreme weather events to slow onset events and combinations of the two.³⁶ Finally, it has a temporal dimension in the sense that “loss and damage is reflected in historical and present (observed and occurring) manifestations of climate change, but the concept also includes potential future loss and damage, the forecasting of which relies on assumptions of parameters

²⁶ UNEP Global Environmental Alert Service (2014, p. 2).

²⁷ Conference of the Parties (2014).

²⁸ UNEP Global Environmental Alert Service (2014, p. 2) and Conference of the Parties (2014, pp. 6–7).

²⁹ Urrutia (2010, p. 603).

³⁰ Subsidiary Body for Implementation (2012b, § 2).

³¹ According to the International Law Commission (ILC), in article 31 of the Draft Articles on the Responsibility of States for Internationally Wrongful Acts of 2001, “injury includes any damage, whether material or moral, caused by the internationally wrongful act of a State”.

³² Bollecker-Stern (1973, p. 18).

³³ Subsidiary Body for Implementation (2012b, § 2, p. 3).

³⁴ UNEP Global Environmental Alert Service (2014, p. 1) and Morrissey and Oliver-Smith (2013).

³⁵ Subsidiary Body for Implementation (2012b, § 12, p. 5).

³⁶ Subsidiary Body for Implementation (2012b, § 9, p. 4).

such as emissions, vulnerability and the exposure variables of the affected human (or natural) system”.³⁷ Consequently, it seems complicated to contemplate “loss and damage” as a legal concept useful in case of reparation, knowing, besides that the United States insisted in having the following sentence written in the Paris Agreement adopted at COP 21 in 2015: “loss and damage” does not involve or provide a basis for any liability or compensation.³⁸

Moreover, there are some divergences concerning the definition of “loss and damage”. Indeed, the SBI, “at its thirty-fifth session, invited Parties, relevant organizations and other stakeholders to submit to the secretariat, by 17 September 2012 views and information on the possible elements to be included in the recommendations on loss and damage in accordance with decision 1/CP.16”.³⁹ Therefore, “several meeting participants⁴⁰ considered that loss and damage refers to the residual impacts that mitigation and adaptation actions are not able to prevent, while some others⁴¹ viewed loss and damage as part of the spectrum of the adverse effects of climate change that adaptation efforts can address”.⁴² However, “there was broad consensus that the extent of loss and damage is dependent upon the levels of mitigation of greenhouse gas emissions and adaptation to the adverse effects of climate change”.⁴³

Furthermore, the doctrine also has divergent definitions of “loss and damage”. Indeed, according to some authors, Mizan et al., loss and damage are “those impacts of CC that will neither be mitigated nor adapted to”.⁴⁴ However, Verheyen establishes three types of loss and damage: avoided, unavoided and unavoidable.⁴⁵ Avoided loss and damage is used to characterize the impacts of climate change that are avoided by mitigation and adaptation.⁴⁶ Unavoided loss and damage could have been avoided, but has not been avoided because of inadequate mitigation and adaptation efforts.⁴⁷ Consequently, the more successful mitigation and adaptation efforts are, the less loss and damage will be incurred.⁴⁸ Lastly, there is some loss and damage that is unavoidable no matter how ambitious mitigation and adaptation efforts are.⁴⁹ Therefore, the definition given by Mizan et al. would correspond only to the definition of unavoidable loss and damage given by Verheyen, letting aside the avoided and unavoided loss and damage. In consequence, the doctrine does not seem to agree on the definition of loss and damage, making this term even more obscure and less appropriate for the reparation of damages related to climate change.

To conclude, the definition of “loss and damage” given by the SBI, in an informal document, seems to be more technical than legal. Moreover, in the same document, the SBI highlights two different definitions of loss and damage whether understood as “residual impacts that mitigation and adaptation actions are not able to prevent” or as “as part of the spectrum of the adverse effects of climate change that adaptation efforts can address”. Those divergences appear also among the authors of the doctrine. Therefore, “loss and damage” is not an adequate concept with regard to the reparation of the damages related to climate change. Consequently, we propose the conceptualization of “climate change damage” understood as a reparable damage related to climate change in international law (2).

2. A necessary conceptualization of “climate change damage given the insufficient definition by the doctrine

Given that “loss and damage” is not satisfactory with regard to the application of a legal regime, the conceptualization of “climate change damage”, understood as damage related to climate change that is reparable under international law, could be interesting for lawyers, judges, States vulnerable to climate change and also physical and moral persons suffering damages related to climate change. “Climate change damage” is a notion that is already employed by the doctrine but insufficiently defined (2.1); therefore, we will propose some reflections about the constitutive elements of “climate change damage” (2.2).

2.1. An insufficient definition of “climate change damage” by the doctrine

“Climate change damage” is a notion neither mentioned in the UNFCCC or the Kyoto Protocol nor in any COP decision. It is a term used by the doctrine given that several authors⁵⁰ refer to it in texts related to prevention, responsibility, reparation,

³⁷ Subsidiary Body for Implementation (2012b, § 10, p. 5).

³⁸ Conference of the Parties (2015, § 51, p. 8).

³⁹ Subsidiary Body for Implementation (2012a, p. 1).

⁴⁰ The meeting participants were Nauru and Alliance of Small Island States (AOSIS), Norway, Bolivia, Ecuador, China, El Salvador, Guatemala, Thailand, Philippines and Nicaragua, the Least Developed Countries (LDC), Ghana and finally the African Group.

⁴¹ The other meeting participants were the European Union and Albania, Bosnia and Herzegovina, Croatia, The Former Yugoslav Republic of Macedonia, Montenegro and Serbia, the LDCs and the USA.

⁴² Subsidiary Body for Implementation (2012c, § 12, pp. 5–6).

⁴³ Subsidiary Body for Implementation (2012c, § 13, pp. 5–6).

⁴⁴ Khan et al. (2013, p. 9).

⁴⁵ UNEP Global Environmental Alert Service (2014, p. 2) and Verheyen (2012).

⁴⁶ UNEP Global Environmental Alert Service (2014, p. 2) and Verheyen (2012).

⁴⁷ UNEP Global Environmental Alert Service (2014, p. 2) and Verheyen (2012). It is interesting to note that Warner’s claim that loss and damage amounts to “the negative effects of climate variability and climate change that people have not been able to cope with or adapt to” (UNEP Global Environmental Alert Service, 2014, p. 1; Warner et al., 2012), only corresponds to Verheyen’s unavaoided loss and damage category.

⁴⁸ UNEP Global Environmental Alert Service (2014, p. 2).

⁴⁹ UNEP Global Environmental Alert Service (2014, p. 2) and Verheyen (2012).

⁵⁰ Brown and Seck (2013), Burkett (2009), Byrne (2010), Cullet (2007), Faure (2007), Faure and Nollkaemper (2007); Koivurova (2007), Stallard (2009), and Voigt (2008).

insurability. However, they do not define this concept, they take it for granted. Is it so clear what “climate change damage” means?

We found only one author, Verheyen, that defined the “climate change damage” concept in her book untitled “Climate change damage and international law – Prevention Duties and State Responsibility”.⁵¹ Concerning the definition of “climate change damage”, Verheyen writes that it “is a broad term which encompasses both residual damage and the risk of such damage, which might lead to legal obligations to reduce that risk”.⁵² To understand this definition, let’s focus on the meaning of “residual damage”, “risk” and comprehend what the legal obligations correspond to. First, according to the author, “residual damage” occurs when adaptation measures are not possible or are not carried out because of economic or technical constraints.⁵³ Contrary to one of the definitions of “loss and damage”, “climate change damage” does not contemplate damages that “adaptation efforts can address”.⁵⁴ Moreover, as the author points out, under international law, States are not obliged to undertake all adaptation measures imaginable, but can themselves determine what is “adequate”.⁵⁵ Consequently, residual damage could thus occur to a greater extent in one country over another depending upon a determination of what constitutes adequateness.⁵⁶ Then “risk” is “the expected loss due to cessation of life, personal injury, property damage or disrupted economic activity resulting from a particular hazard for a given area and reference period”, and based on mathematical calculations, it is the product of hazard and vulnerability.⁵⁷ Risk deals with uncertainty and normally uncertain damages are not repairable under international law. Finally, the author outlines that “with respect to any legal obligation to avoid residual damage there are [...] two possible responses: mitigation, i.e. tackling the problem at the source, which, with respect to any possible impacts could be called indirect damage prevention; and adaptation, which is directed much more at the prevention of a specific impact and could therefore be defined as direct damage prevention”.⁵⁸ To be more specific, on the one hand, mitigation consists for a State in “limiting its anthropogenic emissions of greenhouse gases and protecting and enhancing its greenhouse gas sinks and reservoirs”.⁵⁹ On the other hand, adaptation in natural or human systems is a response to actual or expected climate stimuli or their effects, which moderates harm or exploits beneficial opportunities.⁶⁰

Contrary to “loss and damage”, it is interesting that the author mentions explicitly legal obligations in the definition of “climate change damage” because it opens the door to the application of a legal regime in view of eventual reparation in case one of the previously mentioned obligations is not respected by a State. However, it is surprising because in international law, damage is generally defined by the elements that constitute it and not by the consequences it leads to. Indeed, in public international law, the definition of damage is the infringement of material or moral interests of a State, an international organization or every other international subject and private persons.⁶¹ Moreover, according to the International Law Commission (ILC), in article 31 of the Draft Articles on the Responsibility of States for Internationally Wrongful Acts of 2001, “injury includes any damage, whether material or moral, caused by the internationally wrongful act of a State”.⁶² On the one hand, material damage relates to injury to the activities or property of the victim whose economic consequences are quantifiable and can therefore be remedied in the same form i.e. with monetary compensation.⁶³ Climate change damage encompasses an array of potential material damages such as damage to infrastructure from coastal erosion and flooding⁶⁴ declines in crop production,⁶⁵ or loss of fisheries.⁶⁶ On the other hand, moral damage may include distress, suffering, tampering with the victim’s core values, and changes of a non-pecuniary nature in the person’s everyday life.⁶⁷ Furthermore, moral damage consists namely, first, in the violation *per se* of a State right and, second, in an infringement to dignity, honour or prestige of a State.⁶⁸ Climate change damage can also include moral damages such as loss of culture and sovereignty,⁶⁹ and decline of indigenous knowledge.⁷⁰ Apart from material and moral damages, climate change damage can further comprise environmental damage, defined as every alteration of the environment and its components due to human activity,⁷¹ such as, for instance, loss of biodiversity and ecosystem services.⁷² In consequence, Verheyen defines “climate change damage” by the legal obligation it

⁵¹ Verheyen (2005).

⁵² Verheyen (2005, p. 36).

⁵³ Verheyen (2005, p. 35).

⁵⁴ Subsidiary Body for Implementation (2012c, § 12, p. 6).

⁵⁵ Verheyen (2005, p. 35).

⁵⁶ Verheyen (2005, p. 35).

⁵⁷ Downing et al. (1999, p. 5).

⁵⁸ Verheyen (2005, p. 35).

⁵⁹ United Nations (1992, art. 4 § 2 (a), p. 5).

⁶⁰ Verheyen (2005, pp. 34–35).

⁶¹ Salmon (2001, p. 358). Authors’ translation of the sentence “Atteinte aux intérêts matériels et moraux d’un Etat, d’une organisation internationale ou de tout autre sujet de droit international ainsi que de personnes privées”.

⁶² International Law Commission (2001, art. 31 al 2, p. 91).

⁶³ Dupuy and Kerbrat (2014, p. 541).

⁶⁴ Wallimann-Helmer (2015, p. 477).

⁶⁵ World Food Program Regional Bureau for Asia (2014, pp. 2–3).

⁶⁶ Climate Nexus (2015).

⁶⁷ Inter-American Court of Human Rights (2005, § 82).

⁶⁸ Arangio-Ruiz (1989, § 14, p. 6).

⁶⁹ Nishat et al. (2013, p. 24).

⁷⁰ Morrissey and Oliver-Smith (2013, p. 11).

⁷¹ Salmon (2001, p. 359). Authors’ translation of the sentence “Toute altération néfaste de l’environnement et de ses composantes due à une activité humaine”

⁷² Roberts et al. (2014, p. 1).

might lead to more than the type of damage it encompasses, such as material, moral or environmental damage. Moreover, she does not evoke the reparation or, more precisely, the criterion of the “climate change damage” in order to be reparable, which is what vulnerable States – but also lawyers and judges – are interested in. Therefore, we propose some reflections about the criterion of “climate change damage” in order to be reparable under international law (2.2).

2.2. Reflections about the constitutive elements of “climate change damage”

In order to establish the constitutive elements of “climate change damage” with regard to reparation, we will first determine the elements that do not constitute it and, second, the ones that are important for its conceptualization.

First of all, to operate a negative delimitation of the “climate change damage” concept, we will exclude the elements of the definition of “loss and damage” and of “climate change damage” given by Verheyen that do not match with the reparation of the damages related to climate change through the application of a legal regime. First, and contrary to the definition of “loss and damage”, it must be clear that climate change damages correspond to damages and not impacts. This precision narrows the concept of “climate change damage” because, as mentioned previously, all activity generates impacts but not all impacts are damages as understood by international law.

Second, and contrary to the definition of Verheyen, we wonder if the inclusion of the “risk” in the definition of “climate change damage” is opportune. Indeed, risk implies hazard⁷³ and thereof uncertainty and as outlined previously uncertain damage is normally not reparable. Therefore, for the purpose of the reparation of “climate change damage”, it might be more adequate not to incorporate the notion of risk in the definition of “climate change damage” but rather consider the precautionary principle, mentioned in international policy declarations⁷⁴ and in article 3.3 UNFCCC,⁷⁵ as a complement of the definition. Even though, in international law, the precautionary principle is a guiding principle and not a concrete obligation of conduct, its application reverses the burden of proof that a certain activity does not or will not cause damage onto the State willing to enter into an environmentally sensitive activity.⁷⁶ Moreover, article 3.3 prescribes mitigation as primary course of action by Parties but still has significant implications for the adaptation policies of governments because Parties that foresee damage will be required to take adaptive action in order to prevent further damage.⁷⁷ Therefore, the precautionary principle encourages the States that are emitting greenhouse gases to mitigate them and the vulnerable ones that are going to suffer damages to take adaptation measures.

Finally, contrary to the definition of “loss and damage”, we do not think that the definition of “climate change damage” should make a difference between developing and developed States. Indeed, according to the Intergovernmental Panel on Climate Change, “in recent decades, changes in climate have caused impacts on natural and human systems on all continents and across the oceans”.⁷⁸ Therefore, all States are potential victims who will suffer “climate change damages” and there is no valid justification to exclude developed countries from the definition of climate change damage. It is true that developed countries are less vulnerable to climate change than developing countries and have better means to adapt to the impacts of climate change. Moreover, the climate regime foresees the principle of common but differentiated responsibility and respective capacities (CBDR-RC) in the article 3.1 UNFCCC.⁷⁹ This UNFCCC article refers to the capacity of industrialised countries to mitigate climate change, but also “the adverse effects thereof”, i.e. it establishes the leadership role with respect to climate change damage as well.⁸⁰ However, the CBDR-RC principle does not imply that developed countries cannot suffer climate change damages. Moreover, in international law, it is the legally protected interest that permits to determine if a State may obtain the reparation of damage not a differentiation of subject inscribed in the definition of damage. The legally protected interest is one of the elements of the reparable damage in international law which conducts us to study those elements in order to determine the climate change damage understood as reparable damage.

Therefore, to positively conceptualize “climate change damage” as a reparable damage, we will analyse the elements of a reparable damage in international law. According to Bollecker-Stern, the damage, connected to a wrongful act by a causal link and resulting from the infringement of an international protected interest, might generally be reparable.⁸¹ More precisely, “damage” is not a fatidic concept but a concept constructed by law and characterized by and extrinsic element, the connexion to the wrongful act, and an intrinsic element, the infringement of a subjective right.⁸²

On the one hand, the extrinsic element corresponds to the causal link defined as the relation that has to exist between the internationally wrongful act and a damage in order for the reparation of this damage to be imposed to the author of the

⁷³ *Supra* p. 14.

⁷⁴ Rio Declaration (1992, principle 15).

⁷⁵ According to article 3.3 UNFCCC, “The Parties should take precautionary measures to anticipate, prevent or minimize the causes of climate change and mitigate its adverse effects”.

⁷⁶ Verheyen (2005, pp. 75–76).

⁷⁷ Verheyen (2005, pp. 76–77).

⁷⁸ IPCC (2014a, p. 4).

⁷⁹ According to article 3.1 UNFCCC “The Parties should protect the climate system for the benefit of present and future generations of humankind, on the basis of equity and in accordance with their common but differentiated responsibilities and respective capabilities”.

⁸⁰ Verheyen (2005, p. 69).

⁸¹ Bollecker-Stern (1973, p. 18).

⁸² Combacau and Sur (2014, pp. 529–530).

wrongful act.⁸³ This element is problematic in relation to climate change given that it is complicated to prove the causal link between the greenhouse gas emissions and the damage. In consequence, the extrinsic element makes it more difficult for a damage related to climate change to be considered reparable in public international law. However, for the same reason, Tol and Verheyen make a distinction between general and specific causation. General causation refers to a causal link between an activity and the general outcome; whereas specific causation requires the proof that a specific activity has caused a specific damage in order to put a “figure to a claim” and to link this to a particular actor.⁸⁴ According to the authors, specific causation cannot be proved, whereas the general causation can easily be admitted. Indeed, while it is impossible to attribute specific emissions of a specific country to specific impacts (or harm), there is a causal link between each ton of greenhouse gas emitted and the change in radiative forcing.⁸⁵ They conclude that even though the shares of contributions differ and only lead to the resulting changes in accumulation, they are equally causal in a legal sense.⁸⁶

On the other hand, the intrinsic element of the damage which is the infringement to a subjective right corresponds to a legally protected interest.⁸⁷ Each legal system opens more or less the notion of legally protected interest with the purpose to give reparation to categories more or less extensive of subjects, according to the political idea that it makes of their dignity and if it finds out opportune to cover the damages that they suffer.⁸⁸ As a result, the legally protected interest is important because it acts as a cursor to determine the damages related to climate change that might be reparable and consequently delimits the concept of “climate change damage”.

In consequence, and according to the previously developed elements, we would like to propose a definition of climate change damage understood as a residual damage, whether material, moral or environmental, that might lead to reparation under international public law.

3. Conclusion

The damages related to climate change are a concerning issue for the international community, as no country will escape the impacts of climate change.⁸⁹ Indeed, it is a preoccupation for the countries (mostly vulnerable) that will suffer those damages, but also for the States that emitted greenhouse gases which fear to have to repair them. That’s why the international negotiation related to the climate regime use the ambiguous term “loss and damage” to design the impacts related to climate change.

The purpose of this article was to know if the term “loss and damage” was a useful one in view of reparation under international law or if it was necessary to conceptualize the “climate change damage” notion employed by the doctrine.

Even though “loss and damage” could formally be a legal concept, it is substantially useless with regard to reparation under international law because it is too ambiguous.

Therefore, we judged necessary to clarify the concept of “climate change damage” used by the doctrine but that unfortunately defines it insufficiently. Indeed, it could be useful for the doctrine but also for the lawyers of vulnerable countries and the judges to dispose of a legal notion in order to consider the reparation of the damages related to climate change under international law.

Consequently, we propose in this article a definition of climate change damage understood as a residual damage, whether material, moral or environmental, that might lead to reparation under international public law.

References

- Action Aid. (2010). Loss and damage from climate change: the cost for poor people in developing countries. Discussion paper. <http://www.actionaid.org/sites/files/actionaid/loss_and_damage_-_discussion_paper_by_actionaid_-_nov_2010.pdf> (accessed 31.03.2016).
- Alliance of Small Islands States, 2008. Proposal to AWG-LA, Multi-Window Mechanism to Address Loss and Damage from Climate Change Impacts http://unfccc.int/files/kyoto_protocol/application/pdf/aosisinsurance061208.pdf (accessed 31.03.2016).
- Arangio-Ruiz, G., 1989. Deuxième rapport A.C.D.I., vol. II. Ière partie.
- Barros, E., 2006. Tratado De Responsabilidad Extracontractual. Jurídica de Chile, Santiago de Chile, p. 1232.
- Bollecker-Stern, B., 1973. Le Préjudice Dans La Théorie De La Responsabilité Internationale. Editions A. Pedone, Paris, p. 382.
- Brown, C., Seck, S., 2013. Insurance law principles in an international context: compensating losses caused by climate change. *Albert Law Rev.* 50 (3).
- Burke, M., Hsiang, S., Miguel, E., 2015. Global non-linear effect of temperature on economic production. In: *Nature* 527.
- Burkett, M., 2009. Climate reparations. In: *Melbourne J. Int. Law* 10.
- Burns, W., 2015. Loss and Damage and the 21st Conference of the Parties to the United Nations Framework Convention on Climate Change <http://ssrn.com/abstract=2710086> (accessed 31.03.2016).
- Byrne, M., 2010. Climate crime: can responsibility for climate change damage be criminalised? In: *Carbon Clim. Law Rev.* 3.
- Climate Nexus, 2015. The Road Through Paris, Loss and Damage <http://www.theroadthroughparis.org/negotiation-issues/loss-and-damage>, accessed 31.03.2016.

⁸³ Salmon (2001, p. 664). Authors’ translation of the sentence “Relation qui doit nécessairement exister entre un fait internationalement illicite et un dommage pour que la réparation de ce dernier puisse être imposée à l’auteur du fait illicite”.

⁸⁴ Tol and Verheyen (2004, p. 1112).

⁸⁵ Tol and Verheyen (2004, p. 1112).

⁸⁶ Tol and Verheyen (2004, p. 1112).

⁸⁷ Combacau and Sur (2014, p. 530).

⁸⁸ Combacau and Sur (2014, p. 530). Authors’ translation of the sentence “Chaque système juridique ouvre plus ou moins la notion d’intérêt légalement protégé, de manière à donner un droit à réparation à des catégories plus ou moins larges de sujets, selon l’idée politique qu’il se fait de leur dignité et selon qu’il paraît opportun de les couvrir des dommages (au sens large) qu’ils subissent”.

⁸⁹ UNEP Global Environmental Alert Service (2014, p. 1) and IPCC (2014a,b).

- Combacau, J., Sur, S., 2014. *Droit International Public*. Lextenso, Issy-les-Moulineaux, p. 820.
- Conference of the Parties, 2008. Report of Conference of the Parties, on its thirteenth session, held in Bali from 3 to 15 December 2007, Addendum. United Nations Framework Convention on Climate Change (UNFCCC). Decision 1/CP.13.FCCC/CP/2007/6/Add.1.
- Conference of the Parties, 2011. Report of Conference of the Parties, on its sixteenth session, held in Cancun from 29 November to 10 December 2010, Addendum. United Nations Framework Convention on Climate Change (UNFCCC). Decision 1/CP.16. FCCC/CP/2010/7/Add.1.
- Conference of the Parties, 2013. Report of the Conference of the Parties on its eighteenth session, held in Doha from 26 November to 8 December 2012, Addendum. United Nations Framework Convention on Climate Change (UNFCCC). Decision 3/CP.18.FCCC/CP/2012/8/Add.1.
- Conference of the Parties, 2014. Report of the Conference of the Parties on its nineteenth session, held in Warsaw from 11 to 23 November 2013, Addendum. United Nations Framework Convention on Climate Change (UNFCCC). Decision 2/CP.19. FCCC/CP/2013/10/Add.1.
- Conference of the Parties, 2015. Report of the Conference of the Parties on its twenty-first session, held in Paris from 30 November to 13 December 2015, Addendum. United Nations Framework Convention on Climate Change (UNFCCC). Decision 1/CP.21. FCCC/CP/2015/10/Add.1.
- Cullet, P., 2007. Liability and redress for human-induced global warming: towards an international regime. *Climate Change Risk* 26A (43A).
- Dow, K., Berkhout, F., Preston, B., Klein, R.J.T., Midley, G., Shaw, R., 2013. Commentary: Limits to Adaptation. *Nature Climate Change* 3.
- Downing, T., Olsthoorn, A., Tol, R., 1999. *Climate, Change and Risk*. Routledge, London.
- Dupuy, P.-M., Kerbrat, Y., 2014. *Droit International Public*. Dalloz, Paris.
- Faure, M., 2007. Insurability of damage caused by climate change: a commentary. In: *Univ. Pennsylvania Law Rev.* 155.
- Faure, M., Nollkaemper, A., 2007. International liability as an instrument to prevent and compensate for climate change. *Climate Change Risk* 26A (43A).
- INC, 1991. Vanuatu: Draft annex relating to Article 23 (Insurance) for inclusion in the revised single text on elements relating to mechanisms (A/AC.237/WG.II/Misc.13) submitted by the Co-Chairmen of Working Group II. Intergovernmental Negotiating Committee for a Framework Convention on Climate Change, Working Group II. <<http://unfccc.int/resource/docs/a/wg2crp08.pdf>> (accessed 31.03.2016).
- INC, 1992. Report of the Intergovernmental Negotiating Committee for a Framework Convention on Climate Change on the Work of its fourth session, held at Geneva from 9 to 20 December 1991. A/AC.237/15. <http://unfccc.int/resource/docs/a/15_2.pdf> (accessed 31.03.2016).
- Inter-American Court of Human Rights, 2005. Gutiérrez Soler v. Colombia. Series C No. 132.
- IPCC, 2014a. Summary for policymakers. In: Field, C.B. (Ed.), *Climate Change 2014: Impacts, Adaptation, and Vulnerability*. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge University Press, Cambridge, p. 4. <https://ipcc-wg2.gov/AR5/images/uploads/WG2AR5_SPM_FINAL.pdf> (accessed 31.03.2016).
- IPCC, 2014b. *Climate change 2014: synthesis report*. In: Core Writing Team, Pachauri, R.K., Meyer, L.A. (Eds.), *Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*. IPCC., Geneva, Switzerland, p. 151. <http://www.ipcc.ch/pdf/assessment-report/ar5/syr/SYR_AR5_FINAL_full_wcover.pdf> (accessed 31.03.2016).
- International Law Commission, 2001. Yearbook of the International Law Commission. Volume II (Part Two). Report of the International Law Commission on the work of its fifty third session (23 April–1 June and 2 July–10 August 2001). A/56/10. Responsibility of States for Internationally Wrongful Acts.
- Khan, M., Riddick, S., Roberts, E., 2013. Assessing Microinsurance as a Tool to Address Loss and Damage in the National Context of Bangladesh. CDKN, <<http://www.lossanddamage.net/download/7078.pdf>> (accessed 31.03.2016).
- Koivurova, T., 2007. International legal avenues to address the plight of victims of climate change: problems and prospects. In: *J. Environ. Law Litig.* 22.
- Mace, M.J., Schaeffer, M., 2013. Loss and Damage under the UNFCCC: What Relationship to the Hyogo Framework? <<http://www.lossanddamage.net/download/7248.pdf>> (accessed 31.03.2016).
- Morrissey, J., Oliver-Smith, A., 2013. Perspective on Non-economic Loss and Damage: Understanding Values at Risk from Climate Change. <<http://www.lossanddamage.net/download/7213.pdf>> (accessed 31.03.2016).
- Nishat, A., Mukherjee, N., Roberts, E., Hasemann, A., 2013. A Range of Approaches to Address Loss and Damage from Climate Change Impacts in Bangladesh. CDKN, <<http://www.loss-and-damage.net/download/7069.pdf>> (accessed 31.03.2016).
- Roberts, E., Van der Geest, K., Warner, K., Andrei, S., 2014. Loss and Damage: When Adaptation is not Enough. UNEP Global Environmental Alert Service. <http://www.unep.org/pdf/UNEP_GEAS_April_2014.pdf> (accessed 31.03.2016).
- Stallard, H., 2009. Turning up the heat on Tuvalu: an assessment of potential compensation for climate change damage in accordance with State responsibility under international law. In: *Canterb. Law Rev.* 15.
- Salmon, J., 2001. *Dictionnaire De Droit International Public*. Bruylant, Bruxelles, p. 1240.
- Subsidiary Body for Implementation, 2012a. Thirty-Seventh Session Doha, 26 November to 1 December 2012, Views and Information from Parties and Relevant Organizations on the Possible Elements to be Included in the Recommendations on Loss and Damage in Accordance with Decision 1/CP.16. United Nations Framework Convention on Climate Change (UNFCCC), FCCC/SBI/2012/MISC.14.
- Subsidiary Body for Implementation, 2012b. Thirty-Seventh Session Doha, 26 November to 1 December 2012, A Literature Review on the Topics in the Context of Thematic Area 2 of the Work Programme on Loss and Damage: A Range of Approaches to Address Loss and Damage Associated with the Adverse Effects of Climate Change. United Nations Framework Convention on Climate Change (UNFCCC), FCCC/SBI/2012/INF.14.
- Subsidiary Body for Implementation, 2012c. Thirty-Seventh Session Doha, 26 November to 1 December 2012, Report on the Regional Expert Meetings on a Range of Approaches to Address Loss and damage Associated with the Adverse Effects of Climate Change, Including Impacts Related to Extreme Weather Events and Slow Onset Events. United Nations Framework Convention on Climate Change (UNFCCC), FCCC/SBI/2012/29.
- Tol, R., Verheyen, R., 2004. State responsibility and compensation for climate change damages – a legal and economic assessment. *Energy Policy* 32.
- UNEP Global Environmental Alert Service, 2014. Loss and Damage: When Adaptation is not Enough http://na.unep.net/geas/getUNEPPageWithArticleIDScript.php?article_id=111 (accessed 31.03.2016).
- United Nations, 1992. United Nations Framework Convention on Climate Change (UNFCCC). FCC/INFORMAL/84/Rev.1 GE.14-20481 (E).
- Urrutia, O., 2010. El régimen jurídico internacional del cambio climático después del "Acuerdo de Copenhague". *Revista de Derecho de la Pontificia Universidad Católica de Valparaíso* 34.
- Verheyen, R., 2005. *Climate Change Damage and International Law – Prevention Duties and State Responsibility*. Martinus Nijhoff Publishers, Leiden, p. 406p.
- Verheyen, R., 2012. Tackling loss and damage: a new role for the climate regime? <http://www.lossanddamage.net/download/6877.pdf>, accessed 31.03.2016.
- Voigt, C., 2008. State responsibility for climate change damage. In: *Nordic J. Int. Law* 77.
- Wallimann-Helmer, I., 2015. *Justice for climate loss and damage*. *Climate Change*, vol. 469.
- Warner, K., Van der Geest, K., Kreft, S., Huq, S., Harmeling, S., Kusters, K., De Sherbinin, A., 2012. Evidence from the Frontlines of Climate Change: Loss and Damage to Communities Despite Coping and Adaptation Loss and Damage in Vulnerable Countries Initiative. Report No. 9. United Nations University Institute for Environment and Human Security (UNU-EHS), Bonn, <<http://www.ehs.unu.edu/file/get/10584.pdf>> (accessed 31.03.2016).
- World Food Program Regional Bureau for Asia, 2014. Loss and Damage: Repairing Shattered Lives. Black and White Paper Series, No. 1 <<http://documents.wfp.org/stellent/groups/public/documents/newsroom/wfp269945.pdf>> (accessed 31.03.2016).