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Loss and damage from climate change impacts: A political science perspective

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ABSTRACT

Despite being one of the most controversial issues to be recently treated within climate negotiations, Loss & Damage (L&D) associated to climate change impacts has attracted little attention among International Relations (IR) scholars. Yet, the discipline can greatly contribute to the debate, not only by enhancing understanding of the negotiation process and related outcomes but also by offering insights on how the issue could be fruitfully moved forward. The work is structured as a collection of four individual papers, aiming at bringing an IR/political science perspective on L&D at different scales of analysis. The first one is a theory application paper, and employs a multifaceted notion of power, drawing from the neorealist, liberal and constructivist schools of thought, in order to explain how L&D milestones were reached. The second paper performs a Critical Discourse Analysis of Parties' positions in Climate Change Negotiations to i) reconstruct the emergence, evolution and interaction of L&D discourses; ii) get insights on Parties' negotiating strategies; and iii) identify potential stumbling blocks. In the third paper interviews with key L&D negotiators are undertaken to i) investigate sensitive and contentious elements in L&D discussions under the UNFCCC and ii) identify ways to build common ground across competing positions. The fourth paper is a case study and assesses institutional constraints to adaptation in a vulnerable coastal lagoon system through social network analysis.

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EXECUTIVE SUMMARY

In recent years, the topic of Loss and Damage (L&D) associated with climate change impacts has attracted increasing attention both in the research and policy arenas. While an official definition under the United Nations Framework Convention on Climate Change (UNFCCC) is still missing, L&D can be broadly referred to as the negative impacts materializing in particularly vulnerable developing countries after mitigation and adaptation efforts have been undertaken. The concept expands on that of climate change impacts by stressing the unavoidability and irreversibility of certain effects (eg., loss of biodiversity, territory, cultural heritage) and by emphasizing the role played by constraints and limits to adaptation as drivers of adverse outcomes.

The issue has been spearheaded by the Alliance of Small Islands States (AOSIS) since the early 1990s and has traditionally been tied to calls for compensation. This is arguably the main reason why it took more than 20 years for the L&D debate to be institutionalised under the UNFCCC. Fundamental milestones were reached in 2013 with the creation of the Warsaw International Mechanism on L&D (WIM) and in 2015 with the stipulation of the stand-alone article on L&D in the Paris Agreement.

Such institutional advancements greatly contributed to attract the interest of the climate change academic community. Important inputs to the L&D debate have been provided by disaster and climate risk management researchers, climate change attribution scientists, economists and international lawyers. The role of political scientists and International Relations (IR) scholars has instead been marginal so far. This is only partly surprising. Climate adaptation-related issues have been largely overlooked by the discipline. While contributions on mitigation are somewhat more common, as the need for international cooperation is more evident, this is not the case for adaptation and its (possible) failures and limits (i.e., L&D).

Yet, there are a number of reasons why acting on adaptation and its limits/constraints should be of global interest – and thus investigated by IR scholars. These include the self-interest of states that, in a globalised and interconnected world, are exposed to the effects of social, economic, political, environmental, and technological events occurring at very long distance. As a result of these interdependencies, benefits, failures and limits of adaptation can extend from the local to the global level. Yet, it is not just about interests. Norms, values and justice imperatives also feature as a base

for collective action on adaptation and play an even more important role when considering L&D. Whether states are moved by self-interest or by ideational elements, the case is there for deeper engagement and contributions by IR scholars into the L&D debate. In particular, an IR and political science perspective can importantly enhance understanding of the negotiation process and related outcomes, and offer insights on how the issue could be fruitfully moved forward.

The Thesis is structured as a collection of four individual papers, bringing an IR/political science perspective on L&D at different scales of analysis. The first is a theory application paper co-authored with Swenja Surminski (London School of Economics) and Jaroslav Mysiak (Euro-Mediterranean Centre on Climate Change) and featuring as a chapter of the IIASA edited book "*Loss and damage from climate change. Concepts, principles and policy options*" (Forthcoming). The paper employs a multi-faceted notion of power, drawing from the neorealist, liberal and constructivist schools of thought, to explain how L&D milestones were reached. By taking the "structuralist paradox" in L&D negotiations as a starting point, the analysis unveils the key importance that discursive power had in the attainment of L&D outcomes. Framing L&D in ethical and legal terms appealed to standards shared or agreed beyond the UNFCCC context, including the basic moral norms linked to island states' narratives of survival and the reference to international customary law. However, the paper argues that a change of narrative may be needed to achieve collective action on L&D and to avoid turning the issue into a win-lose negotiation game. A fruitful way forward could be to conjointly frame L&D in terms of the benefits for developed countries that acting on adaptation and its possible limits and failures could bring, ranging from more resilient global supply chains to avoided climate refugees and enhanced security. This way, action would not feel as a unilateral concession by developed countries to vulnerable ones: it would rather be about elaborating patterns of collective action on an issue of common concern.

The second paper explicitly embraces a constructivist theoretical stance and performs a Critical Discourse Analysis of Parties' positions in Climate Change Negotiations to i) reconstruct the emergence, evolution and interaction of L&D discourses; ii) get insights on Parties' negotiating strategies; and iii) identify potential stumbling blocks. It builds on Fairclough's three-dimensional framework for critical discourse analysis, taking decision 2/CP.19 as the core communicative event. Consistently, the decision is analysed at three different levels: as a text (micro scale); as a discursive practice (meso scale); and as a social practice (macro scale). The analysis makes use of a wide

range of materials including previous decisions, High Level Segment statements and Parties submissions. It reconstructs Parties' conflicting views on the positioning of L&D vis-à-vis the adaptation space (L&D as a part of, or as beyond adaptation) and the scientific, ethical and legal arguments employed to support these standpoints. It highlights, in particular, the strategic importance which the "compensation argument" had in determining developing countries' capacity to influence the UNFCCC process up to the inclusion of a specific article on L&D in the Paris Agreement. While calls for compensation might have lost momentum as a result of the Warsaw and Paris talks, the paper argues that their potential is far from exhausted as rooted in a more general request for climate justice which the UNFCCC has not yet addressed. The paper was published on the *Journal of Risk Research* in October 2016.

The third paper directly engages key negotiators in identifying sensitive and contentious elements in L&D discussions under the UNFCCC. By means of in-depth semi-structured interviews, the paper maps a number of underlying issues fuelling controversy and making the L&D debate particularly difficult. These include: i) the indeterminacy of problem formulation; ii) the existence of different levels of discussion (political *vs* technical); iii) the connection with other disputes within and beyond the UNFCCC; and iv) the emotional dimension of the debate. Building on the analysis, the paper identifies L&D as a "messy" or "wicked" problem and acknowledges the inefficacy of approaching it through linear thinking and traditional problem-solving. It thus concludes with some recommendations on how to build on such messiness and promote constructive cooperative relations among Parties in L&D negotiations. The paper is part of an ongoing research collaboration with Olivia Serdeczny (Climate Analystics) and Lisa Vanhala (University College London) exploring elements of controversy in moving towards the operationalization of the so-called third function of the WIM, which aims at enhancing action and support on L&D.

The Thesis concludes with a case study testing the potential of Social Network Analysis (SNA) in diagnosing and proposing solutions to overcome institutional barriers to adaptation. While L&D has been widely conceptualized as stemming from social and physical adaptation limits and constraints, little attention has been paid to the role of local institutions in driving socio-ecological systems towards inadequate adaptation outcomes. In particular, deficiencies in multi-actor collaboration – and in the underlying social networks - can significantly inhibit the effectiveness of adaptation. The paper employes a social analytical approach for diagnosing institutional barriers in the

governance arrangements of a fragile coastal socio-ecological system located in southern Mexico and potentially faced with irreversible losses. Concurrent consideration is given to : i) who the actors working or interested in adaptation are; ii) what are the networks through which they collaborate; and iii) how the structure of the "collaborative network" relates to their abilities to address the issue. As *a descriptive tool*, SNA proves to be useful to map the relational architecture of the system of interest. It makes it possible to reveal network characteristics that are important for collective action including: network fragmentation in subgroups; density of relations; centralization around a few actors. As a *diagnostic tool*, SNA allows for comparing the actual topology of the network with what is required for achieving societally desired adaptation outcomes and for identifying agents that can act as enablers for change. The paper is co-authored with Luca Farnia (Fondazione Eni Enrico Mattei), Emiliano Ramieri (Thetis) and Melania Michetti (Euro-Mediterranean Centre on Climate Change).

CHAPTER I

THE POLITICS OF (AND BEHIND) THE UNFCCC'S LOSS AND DAMAGE MECHANISM[1]

FOUNDATIONS FOR AN INTERNATIONAL RELATIONS' CONTRIBUTION TO THE DEBATE

In recent years, the academic community dealing with climate change has made important contributions to the Loss & Damage (L&D) debate, especially by (i) framing it through a disaster and climate risk management perspective (Joern. Birkmann & Welle, 2015; Fekete & Sakdapolrak, 2014; Mechler et al., 2014; Mechler & Schinko, 2016); (ii) looking at the connection between L&D and the limits to adaptation (Warner & van der Geest, 2013, 2015); (iii) outlining the main contributions attribution studies could offer to the assessment of L&D (Huggel, Stone, Auffhammer, & Hansen, 2013; James et al., 2014); and (iv) discussing L&D's connection with the concept of state responsibility in international law (Mace & Verheyen, 2016b; Mayer, 2014; Tol & Verheyen, 2004; Verheyen, 2012, 2015). Some authors have also provided historical overviews on the emergence of L&D in the international debate, analysed the role of the UNFCCC in addressing it, and discussed the possible implications of the Warsaw International Mechanism (WIM) (Huq, Roberts, & Fenton, 2013; Mathew & Akter, 2015; McNamara, 2014; Roberts & Huq, 2015; Stabinsky & Hoffmaister, 2015). Against this background, contributions by political science and International Relations (IR) scholars have been almost absent (recent exceptions are Johnson (2017), Vanhala and Hestbaek (2016) and Calliari (2016a)).

[1] The paper, co-authored with Swenja Surminski and Jaroslav Mysiak, is to be published as a chapter of the IIASA's edited book "*Loss and damage from climate change. Concepts, principles and policy options*" (Springer, forthcoming);

This is only partly surprising. Limited attention has been devoted to climate change within the discipline, especially when considering adaptation-related issues (Crump & Downie, 2015). While contributions on mitigation are somewhat more common, where the need for international cooperation is more evident, this is not the case for adaptation and its (possible) failures and limits (i.e., L&D). Yet, there are a number of reasons why acting on adaptation and its limits/constraints should be of global interest (Khan, 2016) – and thus investigated by IR scholars. These include the self-interest of states that, in a globalised and interconnected world, are exposed to the effects of social, economic, political, environmental, and technological events occurring at very long distance. As a result of these interdependencies, benefits, failures and limits of adaptation can extend from the local to the global level. Yet, it is not just about interests. Norms, values and justice imperatives also feature as a base for collective action on adaptation (Brown & Weiskel, 2002) and play an even more important role when considering L&D. Whether states are moved by self-interest or by ideational elements, the case is there for deeper engagement and contributions by IR scholars into the L&D debate.

Moreover, beyond the climate change negotiations overall, L&D specifically provides a very interesting case to be studied by IR scholars as it allows for enhancing our understanding of power dynamics in the climate change negotiations setting which is complex, asymmetrical and multilateral. Decision-making under the UNFCCC relies on consensus: disagreement around the voting majority required for certain decisions has prevented the adoption of the rules of procedure (draft art. 42) up to now. This implies that, differently from other multilateral fora where each Party is bestowed a single vote and thus given equal weight, final outcomes in the UNFCCC will likely mirror Parties' capacity to shape and influence the decision making process. In this context, it is important to point out that on their initiative developing countries managed to establish the WIM in 2013 and obtain a dedicated article on L&D in the Paris Agreement (PA) in 2015. A leading role in the process was assumed by the Alliance of Small Island States (AOSIS), a coalition of small island and low-lying coastal countries sharing similar development challenges and vulnerabilities to climate change impacts, and regarded among the most vocal groups in climate talks. Generally as the parties with less negotiation power, at least in terms of sheer delegation sizes, these achievements appear particularly remarkable.

The case of AOSIS has been interestingly considered to exemplify the so-called "structuralist paradox" in negotiations (Betzold, 2010), i.e., the case that weaker parties are often able to effectively negotiate with stronger parties and get something out of the process (Zartman & Rubin, 2002). AOSIS' capacity to influence the UNFCCC has been explained in terms of moral leadership (de Águeda Corneloup & Mol, 2014), capacity to "borrow power" (Betzold, 2010), promotion of collaborative approaches to knowledge building and cooperative institutional mechanisms (Larson, 2003). While importantly shedding light on a relatively overlooked topic, these contributions focus on limited timeframes[2] and, by design, are not able to capture evolutions and diversifications in the use of power sources. Moreover, none of them specifically addresses L&D negotiations. Thus, the topic deserves separate treatment: although relying on a bulk of negotiation strategies, the proliferation of negotiation streams within the UNFCCC suggests that AOSIS are likely to draw on different negotiation sources to pursue different negotiation objectives.

In this paper we address these gaps by specifically focusing on the L&D process and by building on a long timeframe in order to consider its emergence and evolution from the negotiation of the UNFCCC (1991) to the entry into force of the PA (2016). Taking the "structuralist paradox" in L&D negotiations as our starting point, we look beyond aggregate measures of power (like GDP, population size or military forces) and consider different sources of influence that AOSIS might have activated to shape L&D outcomes. To this aim we analyse L&D negotiations through the lenses of the main schools of thought in IR – the neorealist, liberal and constructivist (Snyder, 2004)- to better understand the complexities of finding international agreement on L&D issues. This approach might look unorthodox, given that these schools of thought are based on hardly reconcilable premises. Nevertheless, conceptual pluralism around the notion of power is much needed to understand how global outcomes are produced (M. Barnett & Duvall, 2005), as different forms of power might capture different and interrelated ways through which actors are enabled or constrained in pursuing their objectives.

[2] Betzold (2010) focuses on AOSIS's negotiating strategies in the climate change regime from 1990 to 1997; de Águeda Corneloup and Mol (2014) consider the period 2007-2009; while Larson (2003) analyses AOSIS' 1994 position paper: "Draft Protocol to the United Nations Framework Convention on Climate Change on Greenhouse Gas Emissions Reduction".

The paper is organised as follows. We first provide an overview of the L&D process within the UNFCCC from AOSIS's first proposals to the PA, looking at the historic developments and actions by different actors that led to L&D becoming a pillar of the UNFCCC architecture. We then consider the negotiating process through the lenses of IR theories, in order to understand how L&D outcomes have been produced. By analysing the actors involved, their positions, the negotiation process and related outcomes, we finally identify opportunities, both for research and policy, to move this contested discourse forward.

POSITIONING OF L&D IN THE UNFCCC NEGOTIATIONS

The debate on L&D has been spearheaded by the Alliance of Small Island States (AOSIS) since the early 1990s. During the very negotiations that led to the UNFCCC, the group proposed the establishment of, what they called, an international insurance scheme to be funded by mandatory contributions from industrialised parties on the basis of their Gross National Product (GNP) and relative GHG emissions (INC, 1991). The scheme was to compensate small island and low-lying developing nations for L&D resulting from sea level rise (SLR) (Linnerooth-bayer *et al.* 2003, AOSIS 2008). While the proposal was eventually dropped, discussion on compensation and insurance (in a wider sense) as a means for addressing the adverse effects of climate change continued through a set of expert workshops convened in 2003 and 2007 on the basis of COP decisions 5/CP 7 and 1/CP 10 (Mace & Verheyen, 2016b). An expanded version of the 1992 proposal was submitted in 2008 by AOSIS to the Ad Hoc Working Group on Long-term Cooperative Action under the Convention (AWG-LCA). This *MultiWindow Mechanism to Address Loss and Damage from Climate Change Impacts* in SIDS and other developing countries particularly vulnerable to the impacts of climate change comprised three inter-dependent components: (1) insurance; (2) rehabilitation/compensation; (3) risk management (AOSIS, 2008). The idea of an "*international mechanism addressing risk management and risk reduction strategies and insurance related risk sharing and risk transfer mechanisms*" was reiterated a year later in the AOSIS proposal for a Copenhagen Protocol (UNFCCC, 2009).

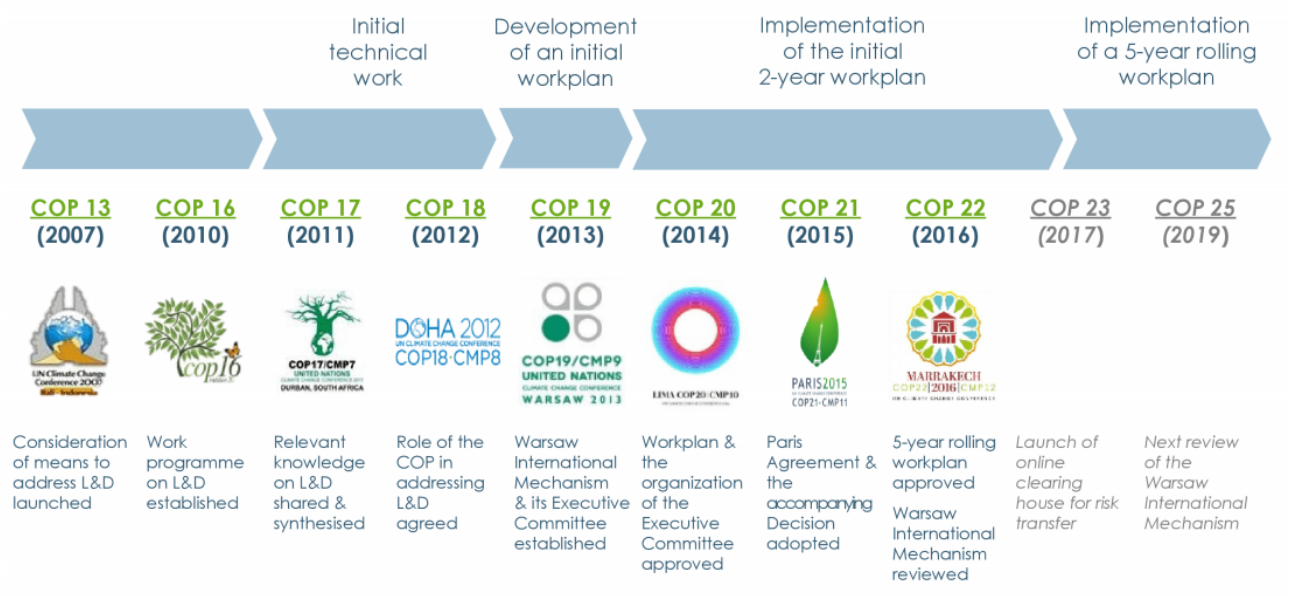

Figure 1: Timeline of L&D milestones. Source: UNFCCC (2017)

After mentioning L&D in the 2007 *Bali Action Plan* (UNFCCC, 2008), formal UNFCCC activities on the issue were initiated by the 2010 *Cancun Adaptation Framework* (UNFCCC, 2011c) with the establishment of an ad hoc work programme. The latter was meant to advance technical work on L&D during the course of 2011 and 2012 on three thematic areas: (1) assessing the risk of L&D and the current knowledge on the same; (2) a range of approaches to address L&D from both extreme and slow onset events, taking into consideration experience at all levels; (3) the role of the Convention in enhancing the implementation of approaches to address L&D. Since its inception, the work programme conducted several calls for submission, asking Parties and Observers for input on specific questions. These calls gave Parties, Observers and also non-admitted organizations the opportunity to lay out their views on thematic issues, institutional questions, governance arrangements and suggestions on how to take the L&D work programme forward. As part of the Doha Climate Gateway (2012), Parties decided to establish institutional arrangements to address L&D at COP 19. This resulted in the creation of the Warsaw International Mechanism (WIM), aiming to advance knowledge generation, coordination and support to address L&D associated with the adverse effects of climate change, including extreme and slow onset events, in particularly vulnerable developing countries (UNFCCC, 2014b). Figure 2 shows the positioning of the Executive Committee of the WIM (ExCom), which the COP established to guide the implementation of functions of the

WIM through an initial two-year work plan, in the UNFCCC architecture. The ExCom is a body constituted under the UNFCCC, and is guided by and accountable to the COP.

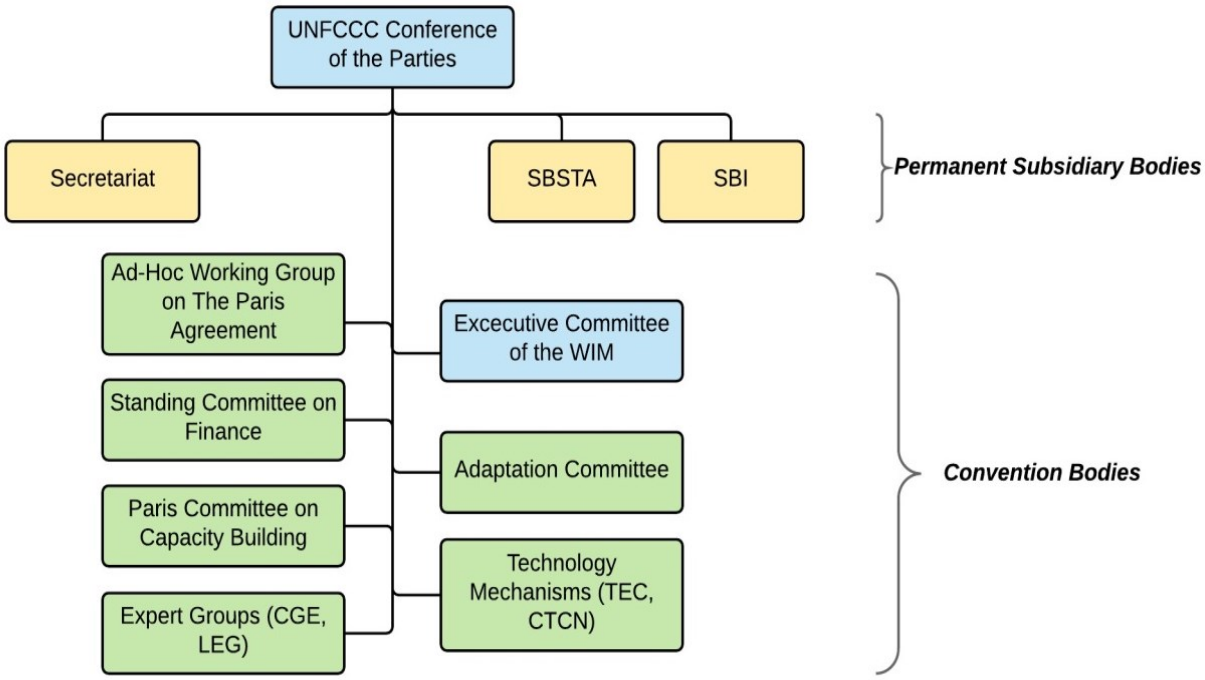

Figure 2:The WIM in the UNFCCC architecture. Source: Adapted from UNFCCC, 2014a

COP 20 finalised the governance of the ExCom by bestowing 10 members each to Annex I and non-Annex I Parties[3]. However, disagreement around regional representation within Annex I parties caused substantial delays in the nomination of ExCom members, in the convening of the ExCom first meeting (September 2015) and in the implementation of the activities of the WIM as a result. The balanced representation among Parties is also reflected in the Chairmanship, with the two Co-chairs being elected from Annex 1 and non-Annex 1 respectively to serve for 1 year[4]. The ExCom may establish expert groups, subcommittees, panels, thematic advisory groups or task-focused *ad hoc* working groups to help execute its advisory role.

[3] Members from non-Annex I Parties include 2 members from each of the African, the Asia-Pacific, and the Latin American and Caribbean States, 1 member from SIDS, 1 member from the LDC Parties, and 2 additional members from non-Annex I Parties.

[4] Co-chairmanship, as for 11 October 2017, is attributed to Jamaica and the EU.

The current two-year work plan of the WIM is composed of 9 action areas focusing on: (1) Particularly vulnerable developing countries, population, ecosystems; (2) Comprehensive risk management approaches; (3) Slow onset events; (4) Non-economic losses; (5) Resilience, recovery and rehabilitation; (6) Migration, displacement and human mobility; (7) Financial instruments and tools; (8) complementing and drawing upon the work of and involvement other bodies; and (9) development of a 5-year rolling work plan. As for the latter, an indicative framework for its activities was approved at the Marrakech Climate Change Conference (2016) (UNFCCC, 2017). COP 22 was also called to review the WIM, including its "structure, mandate and effectiveness". Decision 4/CP.22 established a periodical review of the WIM, with the first review to be held in 2019 and subsequent reviews to take place no more than five years apart. Reviews should consider progress on the implementation of the ExCom's work plan but also adopt a long-term vision to reflect on how the WIM may be enhanced and strengthened. As an input to the 2019 review, the decision called for a "technical paper (to) be prepared by the secretariat elaborating the sources of financial support".

Besides the WIM, a major institutional milestone on L&D was reached with the adoption of the PA. A stand-alone article 8 recognises L&D as distinct from adaptation, elevating it almost as a third pillar of climate action. Through the article "Parties recognize the importance of averting, minimizing and addressing loss and damage associated with the adverse effects of climate change, including extreme weather events and slow onset events"(UNFCCC, 2015a). The article sanctions the permanence of the WIM, whilst leaving the door open for it to be "enhanced and strengthened" through future COP decisions. It also calls Parties to work "on a cooperative and facilitative basis" to "enhance understanding, action and support" in areas including early warning systems, comprehensive risk assessment and management, risk insurance facilities, climate risk pooling, and non-economic losses (UNFCCC, 2015a).

ACTORS AND POSITIONS IN THE L&D DEBATE

The inclusion of L&D as a distinct concept from adaptation in the PA was the result of a series of politically charged negotiations fuelled by a range of actors with a variety of viewpoints. The role

played by each of these actors, including their negotiation positions, is briefly discussed in this section.

DEVELOPING COUNTRIES AND THEIR REPRESENTATIVE GROUPS

As recognized above, developing countries and their representative groups have provided much of the impetus for the adoption of L&D as a separate pillar for climate action. AOSIS has been particularly important, having first campaigned for the inclusion of L&D in climate change negotiations in the early 1990s and continuing to do so in conjunction with other representative groups. Other key events have included:

- In 2005 at COP11, Bangladesh on behalf of the LDC Group called for the compensation of climate change damages (Vanhala & Hestbaek, 2016);
- In 2013, G77 with support from AOSIS and LDCs pushed for (and achieved) the adoption of the WIM (Calliari, 2016a); and
- Prior to the commencement of COP21, members of the G77, China bloc, the Climate Vulnerable Forum, LDCs, AOSIS and the Africa Group all emphasized the importance of L&D to the Paris negotiations (Hoffmeister & Huq, 2015).

The negotiating position of developing countries in general has been to (i) consider L&D as distinct from adaptation; (ii) treat climate change negotiations as an appropriate forum to discuss L&D; (iii) hold developed countries liable for L&D; and (iv) call for compensation (Huq & De Souza, 2016). At the same time, they have raised concerns that the emphasis of L&D discourse on financial compensation could have a trivializing effect on addressing the underlying needs of developing countries (Hoffmaister, Talakai, Damptey, & Barbosa, 2014).

DEVELOPED COUNTRIES

Developed countries have generally been critical and provided the opposite stance to developing countries on negotiations around L&D. Particular resistance was made in recognising L&D as distinct from adaptation. This is reflected, for instance, in developed countries' attempts to have L&D treated outside the PA through a COP decision or eventually inside the text of the agreement but

under the same article as adaptation. As for compensation, they have mostly avoided any references to such a concept, and have tried instead to shift the attention to non-economic L&D, such as "losses of lives and negative impacts for health", and "loss of biodiversity and ecosystem services necessary to sustain livelihoods" (Norway, 2013). The US also raised ethical concerns, by claiming that considering compensation would have meant "put[ting] a monetary value on the lives, livelihoods and assets of the most vulnerable countries and populations" (UNFCCC, 2012b).

Not surprisingly, in Paris they rejected compensatory language (e.g. "rehabilitation", "compensation" and "liability") for fear of creating a legal liability for L&D suffered by developing countries (Huq & De Souza, 2016). Former U.S. Secretary of State John Kerry explained the US' reluctance in relation to this as follows: "We're not against [loss and damage]. We're in favour of framing it in a way that doesn't create a legal remedy because Congress will never buy into an agreement that has something like that…the impact of it would be to kill the deal" (Goodell, 2015).

Ultimately, Article 8 can be viewed as a compromise for developed countries; although they conceded the treatment of L&D as a separate pillar for climate action, they made it clear that they continue rejecting any liability for L&D, and emphasised a strong role for climate risk management. This attempt to move the L&D discourse under the less contested and binding disaster risk reduction framework or under the wider humanitarian arena is not new and has characterised developed countries' position since the inception of the L&D work programme. A central argument for it has been the extreme difficulty in attributing "the incidence of loss and damage to climate change, as opposed to natural climate variability and/or vulnerabilities stemming from non-climatic stresses and trends like deforestation and development patterns", as put by the US (UNFCCC, 2012b).

NGOs

Generally speaking, NGOs have been highly supportive of the efforts of developing countries to create a liability and compensation mechanism for L&D. Such support has generally flowed from concerns with climate justice; for example, ECO noted at the time of COP19 that L&D is a matter of "climate justice…It is time for those who are mainly responsible for climate change to act here in Warsaw" (Vanhala & Hestbaek, 2016). In particular, NGOs:

- *Have advocated for the development of an L&D mechanism*. For example, Germanwatch and the Munich Climate Insurance Initiative (MCII) (together with other partner institutions) launched the Loss and Damage in Vulnerable Countries Initiative in 2012 (CDKN, GERMANWATCH, ICCCAD, MCII, & UNU-EHS, 2012). Similarly, the ACT Alliance, a network consisting of 140 humanitarian and development organisations, advocated for L&D during COP19: "Governments should recognise that we cannot choose between mitigation, adaptation and loss and damage. … The lower the mitigation ambition, the higher the adaptation need. The lower the adaptation support available to help poor communities and countries, the more serious the limits to adaptation become from climatic changes, the more loss and damage ensues"(Vulturius & Davis, 2016)
- *Have helped to stimulate interest in L&D in developing countries*. For example, LDCs participating in a MCII workshop developed much greater interest in the development of an L&D mechanism than they held prior to participation (Vanhala & Hestbaek, 2016);
- *Have acted as enablers for change*. For example, the pro bono Legal Response Initiative (LRI)[5] operated by WWF-UK and Oxfam-GB has provided legal support to LDCs during climate change negotiations. A similar role was played by the Foundation for International Environmental Law and Development (FIELD), a non-governmental research institute based at the Law Department at SOAS, University of London (see for instance Hyvarinen (2012)). A recent advisory group employed by the Republic of Marshall Islands and AOSIS is the New York based Independent Diplomat (Carter, 2015);
- *Have sought public support on L&D*. For example, through reports produced by ActionAid, Care, and WWF (ActionAid, 2010; ActionAid, Care, & WWF, 2013, 2012);
- *Have continued to pursue options for compensation outside of climate change negotiations*. For example, Greenpeace has used the Philippines Human Rights Commission to accuse a number of major companies of human rights abuses for carbon emissions. The Commission on Human Rights of the Philippines contacted those companies in 2016 to give them an opportunity to respond to Greenpeace's allegations (Vidal, n.d.).

[5] http://legalresponseinitiative.org/

THE PRIVATE SECTOR AND THE INSURANCE INDUSTRY

There is limited evidence of private sector actors playing a role in the development of L&D as a concept and mechanism, with the exception of some insurance companies. Indeed, from a private sector point of view, the conceptual separation of L&D, adaptation, and disaster risk reduction might appear a highly theoretical and academic exercise, with limited relevance (Surminski & Eldridge, 2015). However, back in 2011, when the UNFCCC consulted on an L&D mechanism, a number of responses to the UNFCCC called for greater engagement with the private sector in climate risk management. For example:

- Norway has noted that 'broad participation from stakeholders [including the private sector] would be crucial to a good outcome of the work programme' (Norway, 2011);
- Gambia has asked 'to seek (private sector) contribution for a successful mechanism to address L&D in LDCs' (Gambia, 2011) – but explicit detail of what this 'contribution' means remains lacking. Gambia also referenced the need to provide the private sector in LDCs with tools and information to help them respond to the risk of L&D. The submission specifically mentions 'climate services for users in both the public and private sector in LDCs and other vulnerable countries, (… including the) strengthening of meteorological services in developing countries to facilitate free sharing of data and information' (Gambia, 2011).
- The World Health Organization, International Labour Organization, and UNISDR have all made similar calls in a general context. However, while these submissions point to a clear deficit in integrating the private sector, they do not provide much detail on the expectations that come with it.

The US has been more specific in explaining the aim of this engagement: 'increase collaboration with the private sector (…) to achieve effective and comprehensive risk management. (...) We should also prioritize the development of strategies that leverage private sector resources and create market-based mechanisms that are not overly reliant on public sector budgets, and that are sustainable in the long term' (USA, 2011).

For completeness, ExCom's 2016 report makes a number of references to the private sector. In particular the ExCom (SBSTA & SBI, 2016):

- will recommend to the COP that the private sector be invited to cooperate and collaborate on issues relating to L&D where relevant.
- has initiated engagement with the private sector to identify how to enhance the implementation of comprehensive risk management approaches relating to L&D.
- has reached out to private investors to encourage them to incorporate climate risk and resilience into development projects.

The only sector that has been engaged in the L&D discussions under the UNFCCC is the insurance industry. In fact, the dominant focus on insurance-related instruments within the WIM is likely to have been influenced by the presence and engagement of these insurance companies.

A particularly prominent role has been played by MCII. MCII was initiated by the reinsurance company Munich Re in 2005 in response to the rising interest in insurance-related solutions for climate adaptation. It brings together a broad range of insurers, policy researchers, NGOs and other climate change experts in a single forum. The UNFCCC is recognised as an 'observer' and 'friend' of MCII. Between 2008 and 2011, MCII's submissions to the UNFCCC focused on the role of insurance for weather-related risks in the context of adaptation (MCII, 2012). Notably, some elements of a 2008 MCII proposal for a climate risk management module, comprising prevention and insurance pillars to facilitate adaptation (MCII, 2008), were eventually included in the Cancun Adaptation Framework and the SBI Work Program on L&D.

Other parts of the insurance industry are also showing an emerging interest in L&D. This has been highlighted by the Philippines, which hosted a UNFCCC Standing Committee on Finance forum in early September, 2016. The forum was designed to support the work of the WIM and ExCom. The programme for the forum was designed by the UNEP FI Principles for Sustainable Insurance (PSI) Initiative, and members of the Philippines insurance industry participated in the forum by providing technical expertise. A separate event was also hosted by the PSI together with the Philippines Insurers and Reinsurers Association the day following the forum (UNEPFI, 2016). This event involved discussion of the L&D, and involved members of ExCom.

THE L&D NEGOTIATION PROCESS THROUGH THE LENSES OF IR THEORIES

In the previous section attention was drawn to the different actors involved in L&D negotiations, describing their positions and contributions. In particular, we emphasised that developing countries' negotiators, including AOSIS, after long negotiations managed to reach at least a partial victory in terms of the WIM and Art. 8 of the PA. This section aims at explaining this somewhat surprising victory, approaching the field of L&D from different IR perspectives so as to better understand the complexities of finding international agreement on L&D solutions. More specifically, we look at L&D negotiations through the lenses of the main school of thoughts in IR, namely neorealism, liberalism and constructivism (Snyder, 2004). We believe that a pluralistic approach is necessary to understand how global outcomes are produced (M. Barnett & Duvall, 2005).

A neorealist viewpoint is useful to highlight resource-endowment asymmetries and highlight strategies to overcome them. Neorealism is a very influential strand in IR and sees states as pursuing their self-interest (which is ultimately security or wealth) in an international system defined by anarchy. States possess varying capabilities, or power, that they use to turn deals in their favour. The power States possess depends on their resource endowment, including the economy, population, and military forces. Nevertheless, aggregate measures of power might explain little about power positions when considering a specific bargaining circumstance (climate talks, in this case). What becomes relevant, instead, is "issue-specific power"; that is, the amount of relevant resources a Party can use for a specific conflict or concern (Habeeb, 1988). In a multilateral setting such as the UNFCCC, two main resources acquire particular relevance and are considered for our analysis: delegation size and capacity.

Liberalism shares some assumptions with realism (anarchy of the international system and rationality of actors), but rejects power as the sole explaining factor and stresses the role of international cooperation and mutual benefits in shaping international outcomes. In particular, liberalism postulates that (i) it is the interdependence among state preferences to influence world politics [that promotes international cooperation,] and that (ii) states' preferences mirror the views of some subset of (domestic) social groups (Moravcsik, 2008). The first assumption derives from the special emphasis liberals place on globalisation as a characteristic of the international political-economic system. In an interconnected world, characterised by high degrees of complexity and feed-back effects, state interactions are daily occurrences in a number of realms, including society, economy,

politics and technology. These interactions are fuelled by specific state preferences (as determined by domestic actors), without which a state would not have any incentive to engage in the international context. Liberalist lenses are thus useful to investigate how asymmetry between states' preferences affect L&D outcomes.

Finally, constructivism is a relatively recent theoretical paradigm, challenging in many aspects both realist and liberal theories in explaining international negotiations and power relations. What fundamentally distinguishes constructivism from the former schools of thought is its ontological assumption of the world as being socially constructed. This means, as Hurd (2008) puts it, that "*how people and states think and behave in world politics is premised on their understanding of the world around them, which includes their own beliefs about the world, the identities they hold about themselves and others, and the shared understandings and practices in which they participate*". One of the most important contributions of constructivism is showing that norms matter (Price, 2008) and thus ethical and legal standards are important in guiding world politics (Snyder, 2004).

We suggest all these viewpoints are necessary to understand L&D negotiations. In the following sections we apply such competing theories to the L&D case by assuming the particular perspective of small island states, AOSIS being their most proactive proponent on the L&D issue.

NEOREALISM

In terms of aggregate power, AOSIS –a coalition of socially, economically and environmentally vulnerable small island nations- would be defined as a low-power actor in international negotiations. Its members are home to less than 1% of the world population; the sum of their 39 GDPs equals the annual economy of the city of London[6]; and almost half of the states have no or limited armed forces (Barbey, 2015). Yet, such traditional indicators of power might explain little in a specific bargaining situation like climate negotiations. In this setting, two "issue-specific power" resources acquire particular relevance: delegation size and capacity. Both are reflections of a country's GDP. The size of national budgets influences the number of personnel and experts in the government and the ministries back home that can develop national negotiation positions, as well as

[6] Own calculations based on the World Development Indicators by the World Bank (2015)

the size of the delegations (Panke, 2012). Developing countries often cannot afford to send big negotiating teams to COPs, and some initiatives have been put in place in response to that. One of them is the *Trust Fund for Participation in the UNFCCC* established under the Convention, which is nevertheless based on limited and decreasing voluntary contributions and can only support around two additional delegates per eligible developing Party (UNFCCC 2016). These circumstances inevitably hamper developing countries' full participation in the negotiation process. Delegations composed of a small number of people only are unlikely to possess the range of technical expertise needed to follow different negotiation streams and are physically unable to cover simultaneous or exhaustingly long sessions (Chasek, 2005; Michaelowa & Michaelowa, 2012). The smaller the delegation, the less it will also be able to participate in the informal side of UNFCCC negotiations (where the most contentious issues are likely to be solved) and to exploit the networking opportunities offered by COPs. As an example, Kaya and Schofield (2015) found that the size of national delegations positively affects the amount of loans received by the GEF.

AOSIS' "issue-specific power" is evident when considering the evolution of the group's delegations at COPs. A comparison among the sizes of UNFCCC Party-groupings between 1995 and 2011 (own elaboration based on Böhmelt (2013)[7]) confirms AOSIS as the smallest one, with its size increasing at a slower pace compared to other non-Annex 1 Parties (Figure 3).[8]

[7] Latest available data.

[8] We are aware that a more accurate consideration of AOSIS' resource-endowment in L&D negotiations would require disaggregated data on the number of delegates effectively working on the issue, to be compared with their counterparts in other groups. Unfortunately this information does not yet exist.

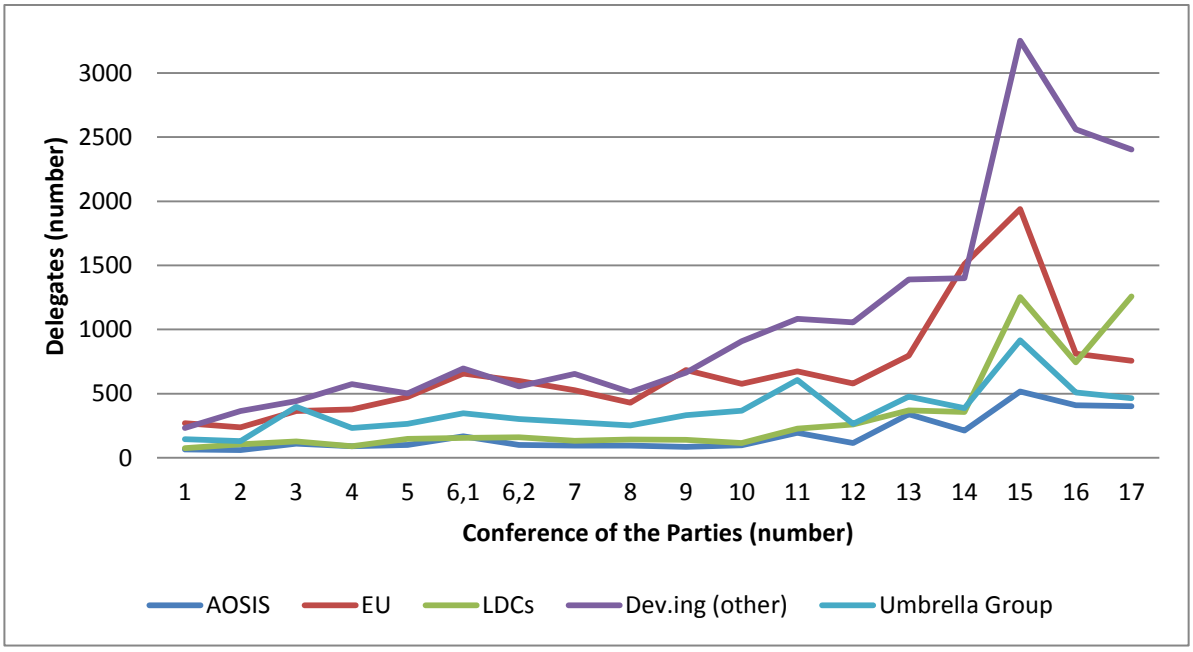

Figure 3: Evolution of Party groupings/coalitions. Dev.ing (other) refers to G77 & China minus AOSIS. Own elaboration based on Böhmelt (2013)

Although some authors consider size as an indicator of bargaining skills (Weiler, 2012), other non-material resources like knowledge and expertise influence Parties' capacity at the negotiating table. Developing countries are typically ascribed a "capacity gap", only partially alleviated by the support offered by non-state actors (Schroeder, Boykoff, & Spiers, 2012). The case of AOSIS is somewhat different as the personal leadership of its negotiators and the early engagement of NGOs as knowledge brokers turned the group into one of the most vocal and proactive in climate talks. This is at least true when considering some key issues like the 1.5°C target, adaptation and L&D, on which the group has been more cohesive. On topics of specific concern, members have started to increasingly negotiate out of the group, for instance on the issue of reducing emissions from deforestation and forest degradation (REDD) (Betzold, Castro, & Weiler, 2012)

Yet, it is not just about resources. "Issue-specific power" can be increased using "behavioural power", i.e. tactics to alter perceived or real power structures (Habeeb, 1988). Teaming up with NGOs was one of the strategies employed by AOSIS to rectify power asymmetries on L&D. The other was to pull resources and gain influence through coalition-building with other non-Annex I groupings. The alignment with LDCs, the African Group and the G77 + China was arguably a result of a conceptual "reshaping" of the L&D concept in the 2000s. While originally AOSIS' claims

only focused on losses resulting from sea level rise (as in its 1991 proposal), consideration for the residual impacts from slow onset events as a whole and the financial risk associated with extremes (e.g. AOSIS 2008) made a stronger case for other developing countries to support the cause. This is not to say that all these groupings had the same position on L&D and, even less, the same idea about what L&D is. If AOSIS stressed the life threatening dimension of L&D, the LDCs focused more on the connection with development and how L&D could affect the quality of life, livelihoods, food security, and social fabric at the community/household level. At the same time, Bolivia defined L&D as lost development opportunities and pointed at the deferral of payments to international institutions, debt relief and similar measures as a way to address them (UNFCCC, 2012b). However, common denominators laid in the request for L&D to be a stand-alone pillar in UNFCCC architecture and in the need for supporting developing countries' limited capacity to address climate change impacts. The G77 + China is worthy of separate consideration. While its position was decisive for the establishment of the WIM and the creation of a separate article on L&D in the PA (see, for instance, the work done within the Ad Hoc Working Group on the Durban Platform for Enhanced Action – ADP), future alignment with AOSIS' positions cannot be taken for granted. This is mainly because of the heterogeneity of the group which makes synthesis among its members' positions challenging to reach. Recent examples of difficulties in finding common ground include the review of the WIM at COP22 (Calliari, 2016b) and the quarrels between China and AOSIS on the need (supported by the former) to erase the reference to "particularly" vulnerable developing countries in defining beneficiaries of L&D support[9].

While AOSIS has surely benefitted from liaising with other developing countries in bringing L&D high on the UNFCCC Agenda, this cannot deterministically explain why outcomes on L&D were obtained. Coalition-building in itself is not a sure means for any grouping to impact substantively on negotiations (Cooper & Shaw, 2009) and even less in a consensus-based setting such as the UNFCCC (Deitelhoff & Wallbott, 2012). As the institutional context does not level power asymmetries –for instance through a one state-one vote system- weaker Parties will be unable to succeed by relying on their resource-endowment only. Thus, trying to explain L&D negotiations through "realist eyes" does not allow for going beyond the "structuralist paradox". It is therefore worth investi-

[9] Personal observations at COP 22.

gating other sources of power beyond the neorealist perspective to get more insight on how AOSIS' outcomes on L&D were obtained.

LIBERALISM

By stressing the role played by preferences, *liberals* point to their interdependence as a determinant of bargaining outcomes. Some liberals ascribe particular importance to economic preferences in determining state behaviour. In the L&D case, developed countries would be incentivised to support their vulnerable developing counterparts so as to guarantee their viability as commercial partners or to safeguard their delocalised supply-chains. Global trade systems can indeed transmit a variety of negative impacts, as exemplified by the billion dollar losses incurred by the American corporation Intel that resulted from the collapse of the Thai electronic industry following flooding in 2011 (Struck, 2011). Actually, this liberal argument was also employed by AOSIS when it called on the international community to consider the "increased interdependence of global economy and society" and to address "the cascading effects that climate change impacts in poor and vulnerable regions can globally have" as it would be "cost- effective" (AOSIS, 2008). It is worth noting, however, that this argument was incidentally used by developing countries and that they largely approached the debate in ethical and legal terms.

While making the case for increased international cooperation on L&D, liberal theory also allows for highlighting some of the "hampering factors" that have affected developing countries in L&D negotiations. These are related to the liberal conceptualisation of power, which differs significantly from realist theory. According to Kehoane and Nye (1977), one form of international influence derives from the "asymmetric interdependence" of preferences among states. The more interdependent a state is and the more intense its preference for a given outcome, the more power others potentially have over it (Moravcsik, 2008). In other words, the salience an actor attaches to an issue is inversely linked to its success at the negotiating table as the actor will be more willing to make concessions to get the result (Schneider, 2005). Moreover, salience is linked to the existence of an outside option: if a state has alternatives to the negotiated agreement it will exploit the circumstance to ask for a higher "price" to take part in it. Translating this reasoning to L&D negotiations, it easy to see how AOSIS has negotiated since the beginning from a disadvantageous position. By virtue of their extreme vulnerability and the existential threat posed by climate change, small is-

lands states can only rely on ambitious mitigation efforts and support for adaptation and rehabilitation by developed countries to address L&D. This has two intertwined implications: (i) as they do not have control over the issue at stake (mostly in terms of mitigation), small island states can do nothing but wait for developed countries to act; and (ii) not having bargaining power, small island states are forced to accept a sub-optimal solution compared to what they would prefer.

Beyond salience, liberals stress the importance that domestic actors have in shaping negotiating outcomes. Governments facing a strong opposition back home –and thus looking less powerful- can convince counterparts that only a minimum commitment is possible (Schneider, 2005). While not really applying to AOSIS' member states (as domestic actors should agree with the survival of their country), this can be interestingly observed in a relevant counterpart of the L&D debate: the US. One of the *leitmotifs* of the US delegation at COP21 was that any reference to legal remedies in the PA would have encountered the opposition of the Congress and had the effect "to kill the deal". The US ratification constraint (Putnam, 1988) forced AOSIS to put aside their responsibility claims and go for a compromise solution. Talks between the US and small island states, labelled a "meeting of the minds" by Secretary Kerry (Friedman, 2015), were held at the onset of the second negotiation week, with Saint Lucia minister Fletcher describing their objective as "ensur[ing] that everybody was comfortable with the agreement" (CarbonBrief, 2015). Yet, the compromise solution (paragraph 52 of the accompanying decision to the Agreement excluding basis for any liability or compensation claims) did not make everybody comfortable. The Philippines expressed deep concern and Bolivia stated that "*no clause can deny people and countries' rights to ask for compensation*" and that "*all the necessary institutional means will be used so that [climate] justice can be made*"(Bolivia, 2015).

As made evident by this discussion, a liberalist view of L&D negotiations does not really help to explain the structuralist-paradox. In fact, it reinforces it. This is the result of considering, as in realism, negotiation outcomes a function of the (static) characteristics –being Parties' features or capabilities- of a particular negotiation. In other words, for liberals and neorealists it is material power (military hardware, strategic resources, and money) that ultimately matters (Hurd, 2008). On the contrary, constructivists argue that both material and discursive power are necessary for understanding world politics (Hopf, 1998). We therefore turn our attention to the constructivist approach and the role that ethical and legal discourses have had in shaping L&D negotiations.

CONSTRUCTIVISM

Along the constructivism line, L&D negotiations would have been shaped not only by material power or state interest but also by a competition between states around different understandings and framings (i.e. discourses) of L&D. Developing countries have largely framed L&D in ethical and legal terms and made a case for this conceptualisation since the beginning of climate talks. They have pointed to the unfairness of climate change (affecting first those least responsible for the problem) and to the threats for survival it poses for the most exposed societies. By analysing developing countries' submissions to the SBI and ADP (2011-2015) and High Level Segment statements from COP 16 to COP 21 (see Calliari (2016a) for the material employed), it is possible to find references to the concepts of *fairness, international solidarity; equity* and *intergenerational equity*. The legal counterpart of these ethical arguments is the concept of state responsibility–compensation, which seeks reparation for *wrongful acts* attributable to states. In terms of citation frequency, this is the most-cited principle in the (wide) sample of submissions we analysed, and it is often accompanied by the *Polluter Pays Principle; Common but differentiated responsibility and respective capabilities (CBDR-RC)* and references to *precautionary measures*. On the contrary, as explained above, developed countries have mostly avoided any references to compensation, and have tried instead to shift the attention to non-economic L&D. This is interesting if we consider that, up to the establishment of the WIM, developing countries tended to associate L&D to (in principle) the quantifiable and monetizable effects of climate change, like physical impacts – e.g. loss of land because of sea level rise – and economic impacts, such as the loss of development opportunities advanced by Bolivia (UNFCCC, 2012b). As a whole, developed countries have tried to shift L&D to the less contested DRR and humanitarian frameworks; used scientific knowledge (issues of attribution) to neutralise the developing Parties' compensation claims; and employed ethical claims to avoid the 'monetisation' of the discourse, by hinting at the inappropriateness of placing price tags on the lives, livelihoods and assets of the most vulnerable societies (Calliari, 2016a).

If power, in a simplified constructivist view, is about "convince[ing] others to adopt [ones] ideas" (Snyder, 2004), can AOSIS be deemed successful on the L&D issue? Can the WIM and Article 8 be seen as a result of AOSIS' discursive power? Undoubtedly, the developing countries were able to institutionalise the idea of L&D as something *beyond adaptation* both in the text of Decision 2/CP.19 establishing the WIM and with a stand-alone article for L&D in the PA. Thus, they were able to

"convince" developed countries on this point. The result was obtained by framing the L&D debate in such a way that Parties' resources and interests became irrelevant as the playground was moved into the legal and moral fields. While narratives of survival (and thus moral issues) have also been employed by AOSIS in other UNFCCC negotiation streams (for instance, in asking for ambitious mitigation actions), the massive recourse to state Responsibility-compensation claims was the main factor in determining AOSIS' outcomes. It can be argued that, rather than being an objective per se, calls for compensation were used strategically to get concessions from Annex 1 Parties. This idea is somehow reinforced by looking at when compensation claims were made (Table 1). Most of them concentrated before 2013, at the time of the discussion for an institutional mechanism to address L&D (what was going to be the WIM). After that, reference was made episodically by AOSIS and the G77 + China in the proposal for a Climate Change Displacement Coordination Facility. Among the performed functions, the facility was to provide "compensation measures for people displaced by climate change" – a provision that was dropped without excessive clamour on the road to Paris. And while at COP 21 requests for compensation were "traded" for a dedicate L&D article, they re-appeared in a number of interpretative declarations to the instruments of ratification of the PA (see Bolivia, the Philippines, Nauru, Marshall Islands, Cook Islands, Solomon Islands and Tuvalu). This is not to imply that such calls for retributive justice were not genuine: they are consistent with the unfairness that developing countries' ascribe to the climate change problem. However, some tactical considerations are discernible behind their use in climate talks.

Table 1: Party/Grouping calling for compensation in the period 1991-2016. *Mexico identifies compensation among the mechanisms that could be "identified, prioritized and developed"

Year	Party/Grouping
1991	AOSIS
2008	AOSIS; Sri Lanka
2009	Brazil; Colombia; India; Nicaragua on behalf of Guatemala, Dominican Republic, Honduras, Panama and Nicaragua; Turkey; Tuvalu; Cook Island; Algeria on behalf of the African group; AOSIS; Bolivia;
2010	Bolivia; Ghana; AOSIS; Maldives; The Bolivarian Republic of Venezuela on behalf of Cuba, Bolivia, Ecuador and Nicaragua; Alba;
2011	Mexico*, Sri Lanka
2012	AOSIS; Gambia for the LDCs; Swaziland for the African Group; Ghana; Bolivia with Ecuador, China, El Salvador, Guatemala, Thailand, Philippines, Nicaragua;
2013	AOSIS
2014	Central American Integration System
2015 (pre-PA)	AOSIS, G 77
2015-2016 (post-PA)	Bolivia, Nicaragua, Cook Islands; Micronesia (Federated States of); Nauru; Niue; Solomon Islands; Tuvalu

In terms of the "status" that L&D has in the UNFCCC architecture, AOSIS and other developing countries were less successful in "convincing" their counterparts in placing L&D as a truly third pillar of climate action. In particular, L&D does not seem to be placed on an equal footing with mitigation and adaptation in the climate regime designed by the PA. In particular, no reference is made to Article 8 by other treaty provisions. It is not mentioned in the purpose of the Agreement (Article 2), in the context of the "ambitious efforts" required to achieve it (Article 3), in the related transparency framework (Article 13), or in the global stocktake process (Article 14). This signals not only the "last minute" nature of the agreement reached at COP 21, but also –and most importantly- the contested status that L&D continues to have under the UNFCCC. Besides the symbolic meaning of keeping L&D separate from adaptation, Article 8 contains nothing more than tentative and cautious language.

FROM THEORY TO PRACTICE: NEXT STEPS AND KEY QUESTIONS FOR MOVING THE L&D DISCOURSE FORWARD

Despite being one of the most controversial issues to be recently treated within climate negotiations, L&D has attracted little attention among IR scholars. Yet, the discipline can greatly contribute to the debate, not only by enhancing understanding of the negotiation process and related outcomes but also by offering insights on how the issue could be fruitfully moved forward. This paper specifically adopted a multi-faceted notion of power, drawing from the neorealist, liberal and constructivist schools of thought, in order to explain how L&D milestones were reached. This allowed for overcoming the "structuralist paradox" in negotiations, i.e. the apparently surprising capacity of weak parties to take home results while negotiating with stronger parties.

Developing countries' achievements on L&D (WIM and Article 8) are only surprising when considering power in its purely materialistic form. If discursive power is added to the picture, then achievements can be ascribed to developing countries' capacity to shape their fate rather than to fortunate circumstances. This is not to say that material power does not play any role. Developing countries are faced with resource and capacity constraints which make it harder for their needs to be fully addressed within the UNFCCC. Consistently, NGO support will continue to play a crucial role in levelling current asymmetries in terms of capabilities, together with other initiatives to fund developing countries' participation in the process.

Yet, other sources of power besides the realist and liberal ones can be decisive for obtaining desired international outcomes. Our analysis has shown the key importance that discursive power, by framing L&D in ethical and legal terms, had in the attainment of L&D milestones. First, it moved the debate to a playground where resources and interests became irrelevant, therefore putting developed and developing countries on an equal foot. Second, it appealed to standards somehow shared or agreed beyond the UNFCCC context, including the basic moral norms linked to island states' narratives of survival and the reference to international customary law (state responsibility-compensation principles). This was useful to prove the need for action on L&D recurring to standards in principle recognized by both contending parties in other international arenas. Although this was not enough to impose developing countries' view on what L&D is and how it

should be addressed, it at least moved developed countries' position towards the direction paved by the former.

At the same time, however, this strategy prevented Parties from starting a process towards the creation of shared meaning and understanding around L&D. Indeed, definitional issues have been carefully avoided in order not to stumble into the taboo reference to compensation. As a result, no official definition of L&D has been agreed at the UNFCCC level yet and Parties rely on a working one formulated under the SBI (UNFCCC, 2012d). This is not just a matter of form, but a more important matter of substance. Without clarity around L&D conceptual boundaries, it will ultimately be difficult to go beyond the explorative mandate the WIM was given. In particular, concrete guidance is needed in order to implement the WIM's third function on enhancing "action and support to address loss and damage", which importantly includes finance. This implies, for instance, establishing relevant criteria to identify L&D projects on the ground and thus defining the level of adaptation exceeding which L&D materializes. Does L&D arise when social, technical and physical limits are surpassed, or should also economic and institutional constraints making adaptation difficult to take place be considered? The answers cannot but be political.

Yet, we are not claiming that agreeing on a definition is the only way to have meaningful action on L&D. We are aware that the discussion still causes discomfort and may lead to political deadlock. We thus believe that a more fruitful way forward entails adopting a different perspective and agreeing on shared principles against which action could be tested. Such shared principles would ideally delimit an L&D working space where solutions can be developed. This could turn particularly useful for defining tools to address irreversible losses, which are mostly associated with slow-onset events. While there is general accord around the use of comprehensive risk management approaches (including risk assessment, reduction, transfer, retention), how to deal with impacts from slow onset events remains an open question. This is probably the case as compensation has been historically proposed as a way to address them, and being a taboo concept it has prevented discussion on other creative or transformative instruments.

A change of narrative is therefore needed. Framing L&D exclusively in terms of justice might have turned the issue into a win-lose negotiation game. A fruitful way forward could be to conjointly frame it in terms of the benefits for developed countries that acting on adaptation and its possible

limits and failures could bring. They could range from more resilient global supply chains to avoided climate refugees and enhanced security. Such mutual gains should be explored and made more evident. As a result, acting on L&D would not feel as a unilateral concession developed countries make to vulnerable ones: it would rather be about elaborating patterns of collective action on an issue of common concern.

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CHAPTER II

A CRITICAL DISCOURSE ANALYSIS OF PARTIES' POSITIONS IN CLIMATE CHANGE NEGOTIATIONS[10]

INTRODUCTION

The years-long negotiations on loss and damage (L&D) associated with climate change impacts reached a milestone during the twenty-first session of the UNFCCC Conference of the Parties (COP 21) with the inclusion of a dedicated article in the Paris Agreement. Article 8 recognizes the importance of 'averting, minimizing and addressing' L&D, and the role of sustainable development in reducing the associated risk. It sanctions the permanence of the Warsaw International Mechanism (WIM), created in 2013 to advance knowledge gathering, coordination and support to address L&D associated with the adverse effects of climate change, including extreme and slow onset events, in particularly vulnerable developing countries (UNFCCC, 2014b). At the same time, it leaves the door open for the WIM to be 'enhanced and strengthened' through future COP decisions. The article calls on Parties to work 'on a cooperative and facilitative basis' to 'enhance understanding, action and support' in areas including early warning systems, comprehensive risk assessment and management, risk insurance facilities, climate risk pooling, and non-economic losses.

Discussion on L&D, formally initiated with the 2007 *Bali Action Plan* (UNFCCC, 2008) and later embedded in the *Cancun Adaptation Framework* (UNFCCC, 2011c), has been campaigned by the Al-

[10] The paper is based on Calliari E. (2016), Loss and damage: a critical discourse analysis of Parties' positions in climate change negotiations, Journal of Risk Research, Pages 1-23 [online]

liance of Small Island States (AOSIS) since the early 1990s. AOSIS' claims have mainly focused on the establishment of a compensation mechanism, able to indemnify the developing countries for those unavoidable impacts that materialize when both mitigation and adaptation actions have been undertaken. However, the WIM does not consider the most advanced economies accountable for past and ongoing human-induced climate change, nor does it make any tangible commitment for helping low-income and small developing island states to cope with L&D.

The WIM's focus on knowledge and expertise sharing activities reflects the on-going disagreement on the exact boundaries of the L&D concept. The developing countries consider L&D to be something beyond adaptation, referring to those impacts that can no longer be addressed by mitigating emissions or helping countries to adapt. On the other hand, developed countries refuse the idea that L&D is something qualitatively different from adaptation, and contain the concept within its scope. This dispute seems far from settled. At the UNFCCC level no formal discussion has yet been undertaken on what L&D could signify. A mere working definition has been adopted, vaguely describing L&D as 'the actual and/or potential manifestation of impacts associated with climate change in developing countries that negatively affect human and natural systems' (UNFCCC, 2012d). The definition distinguishes losses from damages on the basis of the 'irreversibility' of the negative impacts, where the former are those for which restoration is impossible and the latter those that can instead be repaired. Emphasis is also placed on the difficulties in evaluating L&D from an economic point of view, given the challenges in attaching monetary values to important factors such as life, culture, livelihood, territory and statehood, among others.

The issue of L&D has attracted increasing attention among the climate change academic community, although being almost disregarded in the field of international relations. Efforts have been made to provide historical overviews on the emergence of L&D in international talks, to analyse the role of the UNFCCC in addressing it, and to discuss the possible implications of the WIM (Huq et al., 2013; Mathew & Akter, 2015; McNamara, 2014; Roberts & Huq, 2015; Stabinsky & Hoffmaister, 2015); to frame it through a disaster risk management and reduction perspective (Joern. Birkmann & Welle, 2015; Fekete & Sakdapolrak, 2014; Mechler et al., 2014); to outline the main contributions attribution studies could offer to the assessment of L&D (Huggel et al., 2013; James et al., 2014); to show its connection with the concept of state responsibility (Mayer, 2014; Tol & Verheyen, 2004; Verheyen, 2012, 2015). Some authors (Warner & van der Geest, 2013, 2015) have

taken a promising look at the connection between L&D and the constraints and limits to adaptation literature (W. Neil Adger et al., 2009; Dow et al., 2013; IPCC, 2014), breaking as yet unexplored ground for future research.

Despite this growing academic interest, the main conceptual and operational issues around L&D remain widely debated (Wrathall et al., 2015). Important questions include the qualification of L&D as a different category within climate change impacts and the consequent need for it to be addressed with an *ad hoc* instrument. Arguably, the sole circumstance of its materialising in particularly vulnerable developing countries, as mentioned in the working definition as well as in the Warsaw Decision, seems a necessary but not sufficient condition. Framing L&D as the actual or expected climate change impacts which exceed the scope of adaptation might provide a better ground for qualifying them. Yet, positioning L&D *vis-a-vis* the adaptation space is indeed problematic. Should only the social, technical and physically hard limits to adaptation be considered in defining L&D? Or should the financial, institutional, cultural, behavioural constraints that could in principle be overcome but that in fact prevent effective adaptation actions to take place also be considered? Should the latter hold true, distinguishing action on L&D from other adaptation -but also development and disaster risk reduction- strategies would become ultimately difficult. While it might exceed the scope of this paper to examine these definitional issues, it interestingly explore how the related conceptual uncertainties and ambiguities have translated at the negotiations level. In particular, this paper aims at reconstructing the emergence and interaction of different discourses, i.e. forms of understanding and representing L&D, under the UNFCCC and the way they eventually shaped both the structure and the content of the WIM. To do so, it employs a Critical Discourse Analysis (CDA) as a strategy not only for interpreting but also for explaining discourse structures (Fairclough & Wodak, 1997). The choice of CDA is also instrumental for gaining insights into the unfolding of power relations among Parties on L&D, given the interest of critical studies on the relationship between power and language. In particular, CDA particularly focuses on the ways discourse structures enact, confirm, legitimate, reproduce, or challenge relations of power and dominance in society (van Dijk, 2001).

Hence, the paper contributes to the existing literature on L&D in three ways: (1) by providing a systematic analysis of how discourses on L&D have emerged and evolved within climate negotiations; (2) by highlighting the main elements impeding a common framing of (and thus action on)

the issue; (3) by offering insights into the negotiating strategy on L&D of the developing countries' and their capacity to influence the UNFCCC process. It is organised as follows. The first section provides an overview of the theory and method of discourse analysis: particular attention in given to the CDA approach and its theorization by Norman Fairclough. The subsequent analysis applies Fairclough's three-dimensional model for CDA to Decision 2/CP.19 establishing the WIM. The latter was chosen as the core communicative event, for it represents a fundamental milestone in the L&D discussion under the UNFCCC. The Decision is analysed in connection with other official UNFCCC documents, which include previous COP decisions (1/CP.16, 7/CP.17, 3/CP.18), High Level Segment statements made by Heads of States and Governments at COP 19/CMP 9, and Parties' submissions to the Subsidiary Body for Implementation (SBI), the Subsidiary Body for Scientific and Technological Advice (SBSTA), and the Ad Hoc Working Group on the Durban Platform for Enhanced Action (ADP). The findings are discussed in the light of the negotiation process leading to the inclusion of Article 8 on L&D in the Paris Agreement. The main sources of discord are identified in Parties' positioning of L&D vis-à-vis the adaptation space (L&D *as a part of* or as *beyond* adaptation) and in the ethical (*fairness concerns and non-economic L&D*), scientific (*issues of attribution*) and legal (*State Responsibility for wrongful acts*) arguments employed to support these standpoints. Particular attention is placed on analysing the strategic importance the State Responsibility-compensation argument had in determining the capacity of the developing countries to influence the UNFCCC process. Although after Paris compensation may no longer be the elephant in the room, the discourse analysis suggests a potential for it to re-emerge. Disputes of this type are symptoms of a more general need for climate equity and justice that the UNFCCC has not yet addressed.

METHODS AND MATERIALS

Although there is no generally accepted definition of *discourse* in social science (Pedersen, 2009), it might be generally interpreted as a particular way of talking about and understanding the world, or one aspect of the world (Jorgensen & Phillips, 2002). Discourse analysis is a strategy for revealing how the understanding of the world is built through language and how, conversely, language contributes to changing social reality. It draws attention to the way discourse is produced, what it excludes, the way some kinds of knowledge become significant while other do not, and the way power relations are reflected in language (Friman, 2013; Hesse-Biber & Leavy, 2011).

Discourse Analysis is rooted in a social constructionist approach within social sciences and humanities (Pedersen, 2009). Despite the common epistemological premises, a number of approaches can be found that differ *inter alia* with respect to the role of discourse in the construction of the world and the analytical focus (van Dijk, 2001). Among them, CDA is primarily concerned with 'the connections/relationships between language use, its producers and consumers, and the social and political contexts, structures, and practices in which it occurs' (Waugh, Catalano, Masaeed, Do, & Renigar, 2015). In this sense, the notion of context is crucial for CDA (Meyer, 2001), with discourses being understood as historically produced and interpreted, as well as structured by existing power relations and ideologies. Given the relevance of extralinguistic factors such as culture, society, and ideology (Meyer, 2001), CDA calls for a wide range of analytical tools to be employed and a transdisciplinary approach to be followed (Fairclough, 2003).

In critical discourse studies particular relevance is given to the relation between language and power (Wodak, 2001). Consistently, they focus on the ways discourse structures enact, confirm, legitimate, reproduce, or challenge relations of power and dominance in society (van Dijk, 2001). Attention is given to social problems and political issues, in an attempt not only to interpret but also to explain discourse structures (Fairclough & Wodak, 1997). Investigating power relations in society helps to reveal inequalities and thus to contribute to social change. In this sense the analysis is meant to be critical. As negotiations under the UNFCCC are characterized by marked power asymmetries, CDA turns out to be useful for detecting whether such asymmetries were reflected in L&D discussions. Although CDA theory and methodologies are commonly employed in IR research (Farrands, El-Anis, & Pettiford, 2015), their application to the context of climate change ne-

gotiations is still at an early stage (see, for instance Friman, 2007, on historical responsibility in climate talks).

Among CDA approaches, the paper builds upon Norman Fairclough's theoretical contribution to critical discourse studies for his emphasis on the empirical and systematic analysis of language use in social interactions. A central idea in his work is that discourse is not only constitutive, but also constituted (Fairclough, 1992). Therefore, a two-way relation is established: discourse is a social practice that reproduces and changes knowledge but at the same time it is also shaped by social practices and structures. Thus, contrarily to other approaches to discourse analysis, his keeps a distinction between discursive and non-discursive practices. Discourses include texts, talks and other semiological systems, while there are other practices (economy, for instance) that follow different logics and need to be studied with different analytical tools. For the analysis of COP Decision 2/CP.19, the paper adopts his three-dimensional model for CDA (Fairclough, 1992). The starting point is the consideration of two important elements of the discourse: (1) the *communicative event* (e.g., a text or a speech); (2) the *order of discourse*, i.e. the configuration of all discourse types used in a specific field. The communicative event has three dimensions, each of which is to be covered by a specific analysis:

(1) it is a *text*, and should be subject to a linguistic analysis including vocabulary, grammar, syntax (*micro scale analysis*);

(2) it is a *discursive practice*: attention should be given to how the text is produced and consumed, focusing on the way power relations are enacted. The underlying hegemonic processes, through which consensus around meanings emerges, should be explored (*meso scale analysis*);

(3) it is a *social practice,* which implies consideration of how the discursive practices reproduce or restructure the existing order of discourse and how this translates into social change (*macro scale analysis*).

The analysis of COP Decision 2/CP.19 (*communicative event*) in section 3 is carried out according to these three dimensions, although not in the order described above. This is because Fairclough's model offers multiple entry points for analysis: the scale chosen for beginning with is not relevant

as long as all the three scales are analysed and their mutual interconnection is shown (Janks, 1997). Consistently, section 3 starts with the analysis of the discursive practice (*meso scale*) in order to provide the reader with an overview of the particular discourses employed by Parties up to the Warsaw Conference.

The text of 2/CP.19 constitutes the core of the analysis and is examined in connection with other relevant documents, including previous COP decisions (1/CP 16, 7/CP 17, 3/CP 18), High Level Segment statements made by Heads of States and Governments at COP 19/CMP 9 (n=133), Parties' submissions to the SBI, SBSTA and ADP (n=33), press releases and other relevant documents available at the UNFCCC website. Table 2 shows the materials employed at the different scales of the analysis. The use of such a wide range of materials was functional to reconstructing in an organic way the different discourses adopted by Parties on L&D from the early 1990s onwards.

Table 2: Primary and secondary sources used for carrying out the CDA

	Type of document	Title	Notes
Micro scale	*COP Decision*	Decision 2/ CP 19.Warsaw international mechanism for loss and damage associated with climate change impacts (UNFCCC, 2014b) Warsaw international mechanism for loss and damage associated with climate change impacts. Proposal by the President. Draft COP decision -/CP.19, (UNFCCC, 2013d)	
Meso Scale	*COP Decision*	Decision 1/CP 16. The Cancun Agreements: Outcome of the work of the Ad Hoc Working Group on Long-term Cooperative Action under the Convention (UNFCCC, 2011c); Decision 7/CP 17. Work programme on loss and damage (UNFCCC, 2012e); Decision 3/CP 18. Approaches to address loss and damage associated with climate change impacts in developing countries that are particularly vulnerable to the adverse effects of climate change to enhance adaptive capacity(UNFCCC, 2013c).	
	High Level Segment statements by Heads of States and Governments	High Level Segment statements by Heads of States and Governments at COP 19/CMP 9 (UNFCCC, 2013b)	Number of individual submissions: 113[11]
	Submissions by parties and organizations to the SBI	Views and information on elements to be included in the work programme on loss and damage. Submissions from Parties and relevant organizations.(UNFCCC, 2011a)	Number of individual submissions: 22
		Views and information on the thematic areas in the implementation of the work programme (UNFCCC, 2011b)	Number of individual submissions: 7
		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 (UNFCCC, 2012a)	Number of individual submissions: 3
		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.	Number of individual submissions: 13

[11] Submissions by Egypt, Iraq, Jordan, Kirgizstan, Libya, Morocco, Qatar, Sudan, Syrian Arab Republic, Tunisia, Belarus, Tajikistan, United Arab Emirates were not analysed because of linguistic reasons.

		Add.1(UNFCCC, 2012b)	
		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. Add. 2 (UNFCCC, 2012e)	Number of individual submissions: 2
		Approaches to address loss and damage associated with the adverse effects of climate change. Submission by Lithuania and he EU (EU, 2013a)	
		Institutional arrangements under the UNFCCC for approaches to address loss and damage associated with climate change impacts in developing countries that are particularly vulnerable to the adverse effects of climate change to enhance adaptive capacity (Norway, 2013)	
		Input from the G77 & China in preparation for COP19 on loss and damage associated with climate change impacts in developing countries that are particularly vulnerable to the adverse effects of climate change (G77 and China, 2013b)	
		Views and information on elements of an international mechanism to address loss and damage from the adverse effects of climate change: Submission of Nauru on behalf of The Alliance of Small Island States (AOSIS, 2013b)	
	Submissions by parties and organizations to the ADP	Submission by the Republic of Nauru on behalf of the Alliance of Small Island States (AOSIS). Plan of Work for the Ad-hoc Working Group on the Durban Platform for Enhanced Action (AOSIS, 2012) Statement by Nauru on behalf of the Alliance of Small Island States at the Opening of the Ad Hoc Working Group on the Durban Platform for Enhanced Action 4 June, Bonn, Germany (AOSIS, 2014)	
	Earth Negotiations Bulletin by IISD reporting Service	Warsaw Highlights: Wednesday, 20 November 2013 (ENB, 2013d) Warsaw Highlights: Friday, 15 November 2013."(ENB, 2013b) Warsaw Highlights: Saturday, 16 November 2013."(ENB, 2013c) Summary of the Warsaw Climate Change Conference:11-23 November 2013 (ENB, 2013a)	
Macro Scale	*International treaty*	Draft Paris Agreement (ADP, 2015) Adoption of the Paris Agreement. Proposal by the President. Draft decision -/CP.21◎(UNFCCC, 2015a)	
	Earth Negotiations Bulletin by IISD reporting Service	Summary of the Lima Climate Change Conference: 1-14 December 2014 (ENB, 2014) Summary of the Paris Climate Change Conference: 29 November – 13 December 2015 (ENB, 2015)	

CRITICAL DISCOURSE ANALYSIS OF THE WARSAW DECISION (2/CP.19)

MESO SCALE ANALYSIS

The analysis of the discursive practice (*meso scale* in Fairclough's model) is here taken as a starting point for understanding how the 'authors' of Decision 2/CP.19 (i.e. negotiators) drew on existing discourses when producing the text. It entails (a) eliciting the particular ways in which the authors understand and represent the issue, and (b) detecting how such views interacted. This section first systematises the Parties' positions on L&D building on the submissions and statements delivered up to the Warsaw Conference. It then traces their emergence and interplay within the UNFCCC, focusing in particular on the negotiation dynamics during COP19.

Discourses on L&D under the UNFCCC

As already recalled, developing and developed countries frame L&D in two conflicting ways, the former claiming L&D to be something *beyond* adaptation and thus requiring additional and distinct instruments, and the latter including L&D *within* the scope of adaptation. These opposite views were embedded in several submissions and statements by Parties to the SBI between 2011 and 2012. For instance, Gambia referred to L&D as those '*impacts that cannot be avoided by mitigation and can go beyond and exceed LDCs adaptive capacity*'(UNFCCC, 2011b). Bolivia (Plurinational State of), Ecuador, China, El Salvador, Guatemala, Thailand, Philippines and Nicaragua followed suit by defining L&D as being ' *"beyond adaptation", (…) additional to adaptation, focusing on challenges of both identifying and addressing the instances when adaptation is no longer possible*'. The position was also echoed by Ghana, Gambia on behalf of LDCs (UNFCCC, 2012b) and by Swaziland on behalf of African states (UNFCCC, 2012c). AOSIS, at the SBI Opening Plenary in Warsaw, reiterated the concept by qualifying L&D as '*something else entirely*' from mitigation and adaptation (AOSIS, 2013a). This conceptualization of L&D as a third pillar of climate action has been based on the existence of tipping points in socio-ecological systems - see for instance Bolivia and Gambia in their submissions to SBI 37 (UNFCCC, 2012b)-, as well as barriers in the capacity to adapt (UNFCCC, 2011b) and respond (AOSIS, 2013a). As for the impacts considered, statements by developing countries focus on current or expected adverse effects of climate change that are in principle quantifiable and monetizable. These include, for instance, physical impacts –e.g. loss of land because of sea level rise – and economic impacts, as in the case of the loss of development opportunities advanced by Bolivia (UNFCCC, 2012b). Consistently, the remedies sought are pragmatic in nature. They point

to the establishment of insurance tools to contrast the financial risk posed by extremes as well as the creation of compensation/rehabilitation/solidarity funds. Financial support for disaster risk reduction activities has also been identified as a key factor for avoiding or reducing the potential for L&D to materialise.

Calls for compensation, in particular, have been advanced by AOSIS since the early 1990s. During the very negotiations of the UNFCCC, the group proposed the establishment of an international insurance scheme to be funded by mandatory contributions from industrialised parties on the basis of their Gross National Product (GNP) and relative GHG emissions. The scheme was to compensate small island and low-lying developing nations for loss and damage resulting from sea level rise (SLR) (AOSIS, 2008; Linnerooth-bayer et al., 2003). Traces of this proposal can still be found in article 4.8 of the 1991 Convention, where it calls on parties to consider appropriate actions 'including (…) funding, *insurance* and the transfer of technology' (Linnerooth-bayer, Mace, & Mechler, 2013). The idea was advanced again in 2008 and 2012, in the form of a *MultiWindow Mechanism to Address Loss and Damage from Climate Change Impacts* in SIDS and other developing countries particularly vulnerable to the impacts of climate change (AOSIS, 2008). The mechanism comprised three inter-dependent components: (1) an Insurance Component; (2) a Rehabilitation/Compensatory Component; (3) a Risk Management Component. The Compensatory component was deemed necessary to address the residual L&D resulting from slow onset events, '*such as sea level rise, increasing land and sea surface temperatures, and ocean acidification'*. Interestingly, the proposal cites State Responsibility among its guiding principles, together with the Polluter Pays Principle, common but differentiated responsibilities and respective capabilities (CBDR-RC), precautionary principle, principles of equity and intergenerational equity, and international solidarity. The reference to State Responsibility is of particular interest here as inextricably linked to the concept of compensation. The latter is indeed a type of reparation envisaged in the case of *State Responsibility for wrongful acts.* Although debated, some authors (Tol & Verheyen, 2004) believe it is possible to hold a state generally responsible for climate change damages for breaching the *no harm rule* under international customary law. This same argument has been often employed by developing Parties, although it caused some discomfort among industrialised ones (Warner & Zakieldeen, 2011). Besides the AOSIS grouping, calls for compensation have been advanced by Sri Lanka (UNFCCC, 2011a), Bolivia (Plurinational State of), Ecuador, China, El Salvador, Guatemala, Thai-

land, Philippines and Nicaragua (UNFCCC, 2012a), Swaziland on behalf of African states (UNFCCC, 2012b), and have culminated in a joint proposal by G77 and China for a L&D mechanism comprising '*means of rehabilitation and/or compensation*' (G77 and China, 2013a).

On the other hand, developed countries have mostly avoided any references to compensation, and have tried instead to shift the attention to non-economic L&D, such as '*losses of lives and negative impacts for health*', and '*loss of biodiversity and ecosystem services necessary to sustain livelihoods*' (Norway, 2013). The U.S. also raised ethical concerns, by claiming that an '*international mechanism that includes insurance and compensation/ rehabilitation pillars would have to put a monetary value on the lives, livelihoods and assets of the most vulnerable countries and populations* (UNFCCC, 2012b). Consistently, they sought to move the L&D discourse under the less contested and binding disaster risk reduction framework (Verheyen, 2012). For instance, the EU stated that '*comprehensively addressing loss and damage surpasses the remit of the UNFCCC'* and called for '*strengthen[ing] synergies with the humanitarian and disaster risk community'*. The appropriateness of the DRR policy arena was justified by the US in that it was impossible to attribute '*the incidence of loss and damage to climate change, as opposed to natural climate variability and/or vulnerabilities stemming from non-climatic stresses and trends like deforestation and development patterns*' (UNFCCC, 2012b). Such an attempt to shift the cause of L&D to domestic factors was highly criticised by the developing countries (UNFCCC, 2012a, 2012b), which emphasised how '*damage and loss can be exacerbated due to underlying vulnerabilities*' but that vulnerability and risk drivers could not be seen as the cause of climate change, as manifested through changes in extremes and slow onset events.

As for the conceptualization of L&D, developed countries have hardly engaged in definitional issues within their official submissions. Norway glibly underlined how '*approaches to reduce the risk of loss and damage are (…) an integrated part of mitigation and adaptation efforts* (UNFCCC, 2012a). Along the same lines, the EU stated that '*addressing loss and damage should be seen in the context of mitigation and adaptation and not as a separate issue*' (UNFCCC, 2012b). The US, while opposing the creation of a dedicated mechanism, called on the Convention to enhance '*adaptation action (…) in order to reduce the risk of loss and damage* (UNFCCC, 2012b). In general, they have opposed the establishment of a third pillar besides adaptation and mitigation, claiming that it would have just added complexity to the already intricate institutional structure of the UNFCCC (see for instance, Norway 2013).

Interaction of discourses up to COP 19

The establishment of the WIM is the result of a long process only culminating in Warsaw, through which the developing countries –and AOSIS in particular- were progressively able to influence the UNFCCC. The proactive role of AOSIS within climate change negotiations has been widely recognised and explained through its capacity for borrowing power (Betzold, 2010) in a context of asymmetric negotiations (Zartman & Rubin, 2002). In the specific case of L&D, AOSIS was able to gain the support of the developing countries as a whole, as confirmed by the submissions on L&D forwarded by the groupings of several developing countries and, most importantly by the G77/China. AOSIS could also count on the support of environmental NGOs both directly - in terms of technical and scientific expertise (Betzold, 2010) and indirectly - in the form of a general endorsement of their positions (ActionAid, 2010; ActionAid et al., 2013; ActionAid, Care, & WWF, 2012; ActionAid, Care, WWF, & Germanwatch, 2012) and in the active campaigning made before and during COPs. Arguably, most of the results were obtained by resorting to 'context based strategies', i.e. referring to principles and norms. In particular, the recourse to widely accepted principles of international law, such as those referred to in the MultiWindow Proposal (AOSIS, 2008), contributed to reinforce AOSIS' negotiating power (Hafner-Burton, Victor, & Lupu, 2012). Moreover, the well-established argument of insular states being the least responsible for climate change but the most adversely impacted by it, added to the moral legitimacy of AOSIS' claims beside the legal one. Taken together, these strategies led the issue of L&D –as framed by the developing world- to gain increasing visibility within climate change talks and to get the support of practitioners and academics. On the other hand, developed countries mostly opted for defensive strategies, trying to neutralise the L&D discourse through recourse to disaster risk reduction and standard narratives of climate change adaptation.

Despite such increased negotiating power, the developing countries had a hard time in pursuing their interests at COP 19. This is shown by the analysis of the High Level Segment statements by Heads of States and Governments as well as the IISD reporting services coverage of the Warsaw Climate Change Conference. L&D was one of the major outcomes to be expected from the Warsaw meeting. Yet, Parties endorsed this agenda item with a differentiated sense of urgency. Among the 113 High Level Segment Statements analysed, the establishment of the mechanism was referred to in 52 of them, among which only 4 were put forward by developed countries. Among them, the

EU (2013b) and Ireland (2013) called for progress on, *inter alia*, the L&D mechanism. On the contrary, the statements by Russia (Russian Federation, 2013) and by the Umbrella Group (2013), while recognizing the importance of adaptation for the most vulnerable countries, stressed that '*drawing on existing arrangements provides the best means to address loss and damage*'.

These diverging views were only the prelude to a complex negotiating process. Difficulties in agreeing on the mechanism within the SBI resulted in several manifestations of impatience among negotiators, with the Philippines expressing '*deep concern*' over the lack of progress on L&D together with Fiji for G77/China, Nauru for AOSIS, and Nepal for LCDs (ENB, 2013b). Without significant progress on the issue, the SBI adopted its conclusions (UNFCCC, 2013a) forwarding them to the COP for further consideration (ENB, 2013c). The blockage continued within the high level segment of the COP, where some developing countries expressed disappointment over the developed countries' lack of commitment (ENB, 2013d). The COP President requested ministerial support to continue consultations: the outcome was then presented to the COP for adoption (UNFCCC, 2013a). The text (Decision 2/CP.19) was finally adopted, as orally amended in the plenary, after a long debate about the provision placing the mechanism under the Cancun Adaptation Framework (ENB, 2013a).

MICRO SCALE ANALYSIS

A comparison between the text of the Draft COP decision proposed by the President (UNFCCC, 2013d) and the text that was finally adopted -Decision 2/CP.19 (UNFCCC, 2014a)- illustrates the points on which compromise was reached. Coupled with the linguistic analysis (*micro scale* in Fairclough's model), it also reveals the knots in the conceptualisation of L&D that Parties were not able to untie. Three main formulations were added to the draft proposal by the President in order to reach a final resolution:

> *(1) 'Also acknowledging that loss and damage associated with the adverse effects of climate change includes, and in some cases involves more than, that which can be reduced by adaptation,' (preamble);*

(2) *'subject to review at the twenty-second session of the Conference of the Parties (November–December 2016) pursuant to paragraph 15 below,' (§1 of the Decision);*

(3) *'including its structure, mandate and effectiveness,' (§15 of the Decision)*

The first formulation was introduced to accommodate the opposite understandings by the developed and developing countries on L&D. A systematic reading of 2/CP.19 reveals that the text defines the relationship between L&D and adaptation in two opposing ways. According to line 6 of the Decision, L&D '*includes, and in some cases involves more than, that which can be reduced by adaptation*', while at line 13 the WIM is placed '*under the Cancun Adaptation Framework*'. The first statement recognizes L&D as something which, in some cases, can go beyond adaptation and thus recognizes the claims of the developing countries. On the contrary, the second statement –placing L&D under the *Cancun Adaptation Framework*- suggests a relationship of subordination between the concepts, with L&D being a part of adaptation as argued by the developed countries. This is a case of 'constructive ambiguity', a tool often used in diplomacy to surmont situations of impasse (Berridge and James 2001). It is employed when parties have strong and contradictory interests and views and/or the negotiations are running short of time (Pehar, 2011).

The incapacity to agree on a shared definition on L&D is also shown by the insertion of the second and the third formulations, requiring a review of the mechanism '*including its structure, mandate and effectiveness*' at COP 22 in 2016. Arguably, the requirement was included following the request by the developing parties' to leave the door open for L&D to be separated from adaptation during the 2016 revision.

Another interesting consideration can be made on the basis of the linguistic analysis and deals with the issue of climate change attribution. In Decision 2/CP.19 and in those adopted since Bali, L&D is referred to as being *associated* with climate change impacts, including extreme weather events and slow onset events. This might represent another case of constructive ambiguity in its lexical form. The verb 'associate' implies a connection between two things either because they occur together or because one produces the other (Stevenson, 2011). Thus, the verb can entail different relationships linking the concepts: they can be on the same level, being simply connected, or one can be subordinated to the other, as caused by the latter. Additional research should be done

to understand why this specific expression has been used in the negotiations process. It could possibly signal a compromise among Parties on the legitimacy of L&D to be discussed within the climate change arena. Indeed, the term is broad enough to include the possibility for L&D to be treated under the UNFCCC, without explicitly and formally recognizing any strict causal link with climate change impacts. This would be consistent, for instance, with the claims by some developed countries that it is impossible to disentangle domestic issues of vulnerability and exposure when accounting for L&D. Alternatively, the expression could simply refer to the current uncertainty in attributing extreme events to anthropogenic climate change (IPCC, 2012, 2013), where it is still problematic for very rare weather events to gain enough statistical power to detect a trend (Huggel et al., 2013).

The issue of attribution is of the outermost importance when talking about compensation as the causal link between the damage and the act/omission is a necessary condition for ascribing responsibility to a State. However, it might not always be possible to prove the causal link between GHG emissions and meteorological change and to establish a link between the latter and related adverse impacts. Distinguishing the contribution and the signs of other factors, especially exposure and vulnerability, to L&D is equally complex. In the absence of such causal links, it becomes difficult in the end to make claims for compensations. Yet it is interesting to note how these uncertainties are often linguistically put aside by the developing countries. Arguably, the attempt is to avoid confronting the possibility that the lack of robust scientific evidence might imply (and more importantly, might be used) to delay action. An example is provided by Nauru's submission to COP 19 where the alleged causal link between L&D and climate change impacts is made explicit by the very title: 'Views and information on elements of an international mechanism to address loss and damage *from* the adverse effects of climate change' (AOSIS, 2013a), where the preposition 'from' semantically indicates the source or cause of something (Stevenson, 2011).

MACRO SCALE ANALYSIS

Moving now to the *macro scale* in Fairclough's model, we can draw attention to the question of whether the existing order of discourse on L&D has been transformed by discursive practices at COP 19 negotiations. Undoubtedly, the developing countries were able to introduce and institu-

tionalise a 'new' discourse on L&D in the final text of Decision 2/CP.19 in referring to it as something *beyond adaptation*. This was important not only from a conceptual point of view, but also to give dignity and strength to the claimed need for the elaboration of different and additional means to address L&D beside adaptation. Nevertheless, the way in which the developing countries conceptualised L&D was not fully endorsed by other Parties – at least, not up to the Paris climate change conference. What reasonably happened in Warsaw was that developed countries 'learned' this new discourse for the purpose of closing the negotiation process, but at the same time they refrained from internalizing it. Indeed, new discourses may come into an institution without being enacted or inculcated (i.e. owned by subjects), or they may be enacted but never fully inculcated (Fairclough, 2003).

This impression is reinforced by the way L&D was dealt with during the subsequent negotiation rounds. One could recall, for instance, the hard time AOSIS had in inserting a mere reference to L&D and the WIM in the preamble of the *Lima Call for Climate action* at COP 20 (ENB, 2014). Lively exchanges of views also characterised discussions under the ADP with regard to the inclusion of L&D in the Paris Agreement. While the developing countries were advocating the insertion of a dedicated article on L&D, calling for it to be '*a central element of the Paris agreement*', and treated as '*separate and distinct*' from adaptation, the developed countries campaigned against including any reference in the final text. The proposal by the US, Canada, Switzerland, Norway, Japan, and New Zealand with the general support of the EU, while suggesting the permanence of the WIM after 2020, offered to address L&D by means of COP decisions (ADP, 2015), a tool whose legal binding nature is highly debated (Beyerlin & Marauhn, 2011). As a response, the G/77 and China raised the stakes by advancing the establishment of a new mechanism under the agreement which was to replace the WIM and feature a climate displacement coordination facility '*to address the displacement of people as a result of extreme impacts of climate change*' (ADP, 2015). During COP 21 itself, negotiations on L&D proved to be contentious from the very start and it took an entire week to get the first formal advancement on the issue. It was only with the release of the first Draft of the Agreement on November 5th that two options for L&D to appear in the final text were included: as a separate article or as a part of the adaptation provisions (UNFCCC, 2015b).

It is true that the developing countries eventually managed to get a stand-alone article on L&D, formally crystallising the idea of its being something distinct from adaptation. In this sense they

scored a historic victory. Yet the discussions recalled above show the fragility of the consensus reached from Warsaw onwards and eventually cast doubts on the very results obtained in Paris. L&D looks like a foreign body within the Agreement architecture, as no reference is made to Article 8 by other treaty provisions. It is not mentioned in the purpose of the Agreement (Article 2), in the context of the 'ambitious efforts' required to achieve it (Article 3), in the related transparency framework (Article 13), or in the global stocktake process (Article 14). This signals not only the 'last minute' nature of the agreement reached at COP 21, but also -and most importantly- the contested status that L&D continues to have under the UNFCCC. Besides the symbolic meaning of keeping L&D separate from adaptation, Article 8 contains tentative, cautious language, calling again for an explorative rather than an operative mandate. Overall, the attempt by the developing countries to transform the order of discourse by elevating L&D to a third pillar of climate action, subsequent to the 'preventive' phase of mitigation and the 'managing' phase of adaptation (CDKN, 2012), seems to have been only partially achieved.

DISCUSSION

The CDA carried out in the previous section made it possible to reconstruct the emergence and the evolution of discourses on L&D under the UNFCCC, by showing how their interaction eventually resulted in the establishment of the WIM. It illustrated the conflicting views of Parties on the positioning of L&D vis-à-vis the adaptation space (L&D as *part of* or as *beyond* adaptation) as well as the narratives employed to support these standpoints. As a whole, the developed countries' discursive practice aimed at neutralising the conceptualization of L&D as a new pillar of climate action by shifting its focus towards the alternative (and less contested) humanitarian and disaster risk policy frameworks. Science was also used to delegitimise compensation claims, by stressing the impossibility of distinguishing the contribution of climate change to L&D from other factors, such as natural climate variability or existing patterns of vulnerability and exposure. Finally, ethical claims were also made to avoid the 'monetisation' of the discourse, by hinting at the inappropriateness of placing price-tags on the lives, livelihoods and assets of the most vulnerable countries and populations.

The ethical imperative raised by the developing countries was substantially different. It pointed instead to the unfairness of climate change (affecting first those least responsible for the problem) and to the threats for survival it posed for the most exposed communities. The legal counterpart of the ethical imperative, i.e. the State Responsibility-compensation argument, equally became a *leit-motiv* in the conceptualization of L&D by the developing countries. However, as the analysis of statements and submissions shows, its employment might have lost momentum in climate talks. It surely represented a cornerstone in the requests by the developing countries up to the Warsaw conference in 2013. It was indeed the main request embedded in the 1991 insurance scheme proposal for addressing the impacts deriving from SLR. The 2008 MultiWindow Proposal widened the range of the hazards considered by including extremes, and consistently called for an insurance component to manage the associated financial risks. Yet the compensatory component continued to stand out and be campaigned as the sole way to address the unavoidable impacts resulting from slow onset events. This standpoint was maintained not only by AOSIS, but also by the groupings of other developing countries (e.g. the Bolivarian Alliance for the Peoples of Our America - ALBA) and even most importantly, by the G 77 as a whole. After Warsaw, however, calls for compensation have become episodic. Briefly after the conclusion of COP 19, the developing countries' negotiators on L&D downplayed the importance of financial compensation, stating that it '*may represent a normative solution to the perils of vulnerable countries, but does not necessarily mean that the underlying needs are addressed'* (Hoffmaister et al., 2014). An analysis of recent submissions by Parties indicates little recourse to the concept. As an interesting exception, an early 2015 draft of the Paris agreement mentioned '*compensation measures for people displaced by climate change*' among the functions to be performed by the proposed Climate Change Displacement Coordination Facility (Wentz & Burger, 2015). The provision was nevertheless dropped – without excessive clamour- in subsequent talks.

The parabola of the 'compensation argument' suggests a progressive transformation of this concept from being an 'end' to being a 'mean'. It could be argued that rather than being an objective *per se*, compensation has been used by AOSIS as a bogeyman to increasingly get concessions on L&D from the developed countries. Such a strategic use of the concept may not have characterised the positions small islands from the beginning but may have appeared at a later stage, when it became clear that the lack of legitimation of the L&D issue under the UNFCCC would eventually

prevent any meaningful advancement on the issue. Hence, calls for compensations may have been used strategically to obtain the institutionalisation of the L&D discourse under the UNFCCC, first through the WIM and then through its crystallisation by article 8 of the Paris Agreement. In this perspective, the establishment of the mechanism may have had more a symbolic rather than a practical significance. The impression is reinforced by the outcome of COP 21, where Parties eventually confirmed an explorative rather than an operational mandate for the WIM.

The limited recourse to the State Responsibility-compensation argument can also be explained by a progressive loss of appeal due to the difficulties in its activation. In fact, the applicability of a legal remedy to L&D is arguable, especially when considering issues of attribution of extremes to anthropogenic climate change. Another emerging concept such as state liability, i.e. responsibility for acts not prohibited by international law, has been proposed as a better framework for the issue (Hyvarinen, 2012)[12]. There are however two drawbacks in the employment of the state liability argument. The first concerns its viability as a legal option: the concept is still rudimentary within International Law and the possibility to employ it as a general principle of customary law is disputable. So far it has been envisaged only by the Convention on International Liability for Damage Caused by Space Objects (1972). The second issue touches upon the political opportuneness of using such an argument. Although not referring to fault -no international obligation has to be breached-, liability would inevitably imply compensation and again cause discomfort among Parties.

With calls for compensatory justice being put aside, it would be tempting to think that the underlying requests and needs of the developing countries have been eventually satisfied, though this is probably not the case. L&D continues to be a particularly thorny matter because it is inherently connected to other controversial and unresolved discourses under the UNFCCC: those of historical responsibility and differentiation. Talking about historical responsibility means recognising that past GHG emissions should be taken in consideration when deciding who has caused the present

[12] Indeed, this kind of more sophisticated and solidaristic responsibility (Conforti, 2002), allows for sidestepping the stringency of the act-damage causal link required for state responsibility. With the primary aim being that of safeguarding victims, causality is more flexibly determined taking into account the complexity of the ecological system, including uncertainty, presence of multiple overlapping causes, and the temporal separation between act and damage (Barboza, 2011).

situation and who should therefore take on a larger responsibility in addressing the problem (Friman, 2007). Moreover, when coupled with the concept of differentiation, historical responsibility has become the rationale for and the way to concretely operationalising equity (Friman & Hjerpe, 2015). Yet a consensus on how these concepts should be interpreted and -most importantly- made operational seems far from being reached, and this ultimately prevents the L&D issue from making significant progress.

In this perspective, the compromise reached on article 8 of the Paris Agreement might be more fragile than it seems. Paragraph 52 of the accompanying decision states that the article should not '*involve or provide a basis for any liability or compensation*' claims (UNFCCC, 2015a). This formulation was the result of the diplomatic work carried out behind the scenes by the US and the small island representatives, in which the latter probably gave up the possibility of a legal remedy in order to have the 1.5°C temperature goal placed in the text. President Obama's pledge of a contribution of USD 30 million to climate risk insurance schemes in the Pacific, Central America and Africa (Rowling, 2015) might also have contributed to paving the way for a compromise. The solution, however, was not supported by developing countries as whole and indeed marked a division among them with respect to the way L&D should be advanced in climate talks. The Philippines expressed deep concern and Bolivia stated that 'no clause can deny people and countries' rights to ask for compensation' and that 'all the necessary institutional means will be used so that [climate] justice can be made' (Bolivia, 2015). The issue of compensation might not be the 'elephant in the room' anymore. However, the statements by Bolivia and the Philippines suggest that –far from being settled- the dispute is likely to emerge again and play a role in the development of climate negotiations in the years to come.

CONCLUSIONS

Despite being one of the hottest topics to have emerged within climate negotiations in recent years, the issue of L&D still lacks a clear conceptualization. At the negotiation level, it has been the centre of a polarized and heated debate between the developing and developed world which has contributed little to developing a shared meaning. This paper has employed a critical discourse analyt-

ical approach to reconstruct and explain the different positions endorsed by Parties on L&D, and to analyse how their interaction eventually resulted in the establishment of the WIM. It has traced the negotiating strategies of Parties up to the Warsaw and Paris Conferences, by identifying the legal, scientific and ethical arguments employed to support them. It has highlighted the ample reliance by the developing countries on legal reasoning and their framing of L&D as a case of State Responsibility for wrongful acts. This paper has shown how the corollary concept of compensation, which has dominated the discussion since the early 1990's, may have been employed in a strategic way to obtain a formal legitimation of the L&D discourse within the UNFCCC rather than a remedy *per se*. On the other hand, it has unveiled the defensive strategies put in place by the developed countries and the use of scientific knowledge and ethical considerations to neutralize the developing parties' requests.

The CDA carried out in this paper has not only aimed at 'making sense of the past' and explaining negotiating dynamics up to the present. Rather, its ambition has been to identify current stumbling blocks that need to be overcome to advance action on L&D. The current disagreement on the positioning of L&D vis-à-vis the adaptation space is surely one of them. The institutional advancements obtained on L&D, as exemplified by the creation of the WIM and Article 8 of the Paris Agreement, in fact do not correspond to any comparable progress in its understanding. Without (political) agreement on its conceptual boundaries, meaningful action on L&D will be eventually difficult to promote and the WIM will be confined to its explorative rather than operational mandate. Science and research can effectively support this process by providing relevant knowledge and contributing to neutralise the ideologisation of discourses. However, as the debate on climate change attribution shows, this role must be carefully undertaken. The politicisation of science, especially in policy domains where positions are polarised, is a concrete risk.

A second (and major) stumbling block lies in the connection of L&D to other contested discourses under the UNFCCC, namely historical responsibility and differentiations. The issue of L&D has at its core a more general request for climate equity and justice that the UNFCCC has not yet addressed. This paper has therefore pointed out the importance of looking at the L&D issue in a systemic way, connecting it to other discursive dynamics under the UNFCCC as well as to other relevant policy arenas where key Gordian knots that prevent action on L&D could be cut.

Finally, this paper has highlighted the need for a deeper investigation of power dynamics within the UNFCCC. By employing a CDA, it has adopted a retro perspective approach and provided insights on the unfolding of power relations on L&D up to the Paris agreement, analysing their current crystallisation within the WIM and identifying political barriers that need to be overcome. This can provide a useful basis on which future IR research can build upon. L&D indeed represent an interesting case of the so-called *structuralist paradox* in negotiation (Zartman & Rubin, 2002), that is the capacity of weaker negotiating parties (the developing countries, in this case) to negotiate with stronger ones and get significant results (e.g., the WIM). Future research is needed to identify the sources of negotiating power of the developing countries and to understand how these can evolve and impact future negotiation rounds. The ultimate objective should be to identify entry points for fostering international cooperation on L&D, and thus contribute to the advancement of this complex, multifaceted issue.

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CHAPTER III

A MAP OF "CONTENTIOUS ISSUES" IN LOSS AND DAMAGE CLIMATE NEGOTIATIONS

INTRODUCTION

Loss and damage (L&D) has been described as one of the most contentious issues to have emerged within climate negotiations in recent years. The main source of discord among Parties has concerned its positioning vis-à-vis adaptation, with developing countries calling for separate provisions under the UNFCCC and identifying compensation as a key component of responses, and developed countries denying the need for provisions other than adaptation and rejecting any notion of responsibility.

A major milestone in L&D negotiations was reached with the adoption of Paris Agreement (PA) and the devotion of a stand-alone article to L&D. Through Article 8 "Parties recognize the importance of averting, minimizing and addressing loss and damage associated with the adverse effects of climate change, including extreme weather events and slow onset events"(UNFCCC, 2015a). They agree to work "on a cooperative and facilitative basis" to "enhance understanding, action and support" in areas including early warning systems, comprehensive risk assessment and management, risk insurance facilities, climate risk pooling, and non-economic losses (UNFCCC, 2015a). Work is to be guided by Warsaw International Mechanism for L&D (WIM), created in 2013 to broadly deal with climate change impacts in particularly vulnerable developing countries (UNFCCC, 2014b).

At the same time, Parties resolved that Article 8 should not "involve or provide a basis for any liability or compensation" claim. The clause was inserted to meet the concerns of the United States

(USA), which feared that any reference to legal remedies would have encountered the opposition of the US Senate and had the effect to "kill the deal". With compensation claims being pushed outside the UNFCCC's remit, one could reasonably expect L&D discussion not to be intractable anymore. On the contrary, tensions persist especially with respect to the operationalization of the third function of the WIM, which aims at enhancing action and support on L&D, including finance.

Following the review of the WIM at COP 22 in Marrakech, it has become clear that this will constitute a key area for future work on L&D. It is therefore important to understand what keeps fuelling contention among Parties and how constructive cooperation can be enhanced. The paper thus aims at answering the following questions: Why does discussion of L&D continue to be so contentious? What are the main stumbling blocks in negotiations and can they be removed?

We rely on elite interviews with key L&D negotiators representing a wide range of perspectives and country groupings. The empirical results allow us to map a number of underlying issues fuelling controversy which make addressing the issue particularly difficult. These include: i) the indeterminacy of problem formulation; ii) the existence of different levels of discussion (political *vs* technical); iii) the connection with other disputes within and beyond the UNFCCC; and iv) the emotional turn taken by the debate.

We identify L&D as a "messy" or "wicked" problem and acknowledge the inefficacy in approaching it through linear thinking and traditional problem-solving. We thus conclude with some recommendations on how to build on such messiness and promote constructive cooperative relations among Parties in L&D negotiations.

APPROACH AND METHODS

The empirical results are based on 11 in-depth semi-structured interviews conducted with key negotiators and former negotiators on L&D under the UNFCCC. Respondents were identified among those meeting at least one of the following criteria: i) being a current or former member of the WIM Executive Committee (ExCom); ii) having participated at COPs where L&D milestones were reached (Cancun, Doha, Warsaw and/or Paris). An effort was made to ensure geographical representativeness and to capture the positions of the main negotiating groups.

Interviewees included 4 negotiators from developed countries (interviewees 1, 2, 3 and 4); 2 from Africa (interviewees 5 and 6); 1 from Latin America (interviewee 7); 1 from the Arab Group (interviewee 8); and 3 from both Caribbean and Pacific Ocean Small Island Developing States (SIDSs)(interviewees 9, 10, 11). The sample included varying degrees of involvement in the L&D process, ranging from 3 to more than 10 years of experience. Interviews were conducted between July and September 2017 over the phone, skype and in person, and lasted between 30 minutes and 1.5 hours.

Negotiators were asked to i) identify 3 topics in L&D negotiations likely to generate tensions; and ii) critically reflect on three thematic areas where progress on L&D could be enhanced, i.e. Slow Onset Events (SOE), Permanent Losses (PL), and Finance. These areas were identified by scrutinizing current technical work being undertaken under the guise of the WIM and through participant observation at WIM and COP meetings. In particular, SOE were chosen in light of the predominant focus on comprehensive risk management and responses to extreme weather events within the WIM ExCom's work. The inclusion of permanent losses was motivated by the discrepancy between their mention as a bullet point in Article 8 and the lack of a related working area within the 5-year workplan of the mechanism. Finally, finance was selected because it has long been an area of contention and these tensions continue to undermine constructive discussion on the topic. In particular, at COP 22 in Marrakech, Parties were unable to reach agreement on the activities to be pursued on finance leading to the inclusion of a "placeholder for finance" in the indicative framework of workstreams based on which the next 5-year working plan of the WIM will be developed.

Interviewing negotiators on topics that are still very much a point of contention poses specific challenges in terms of reliability and validity. As Berry (2002) points out, interviewees are not obliged to be objective and tell the truth: rather they can consciously or unconsciously have a purpose in the conversation and have some specific points they want to make. This becomes particularly relevant when interviewing negotiators, in that they may be seeking to justify or elaborate on the positions they have taken in the negotiations. In some ways, the interview is at risk of becoming a negotiation-by-proxy rather than an authentic conversation about the reality of an event or experience. We have sought to mitigate this risk in two ways. First, we paid specific attention to triangulating across interviews and sought to identify multiple sources to verify a position or point made. Second, with those negotiators that seemed to be justifying or elaborating on a negotiating position

we took the opportunity to ask the subject to critique his or her own case so as to take the interview subject away from his or her own perspective. We believe these two tactics are useful in highlighting the range of standpoints from which negotiators were speaking.

RESULTS: CONTENTIOUS ISSUES

The main point of controversy in the L&D debate has traditionally been identified in developing countries' call for compensation for anthropogenic climate change impacts. Compensation and liability have been the cornerstone of their requests since the AOSIS proposal in 1991 (INC, 1991) and up to COP 21. Developed countries have tenaciously opposed the legalistic framing, sought to keep the concept of L&D firmly within the sphere of adaptation activities and have emphasized the overlap between L&D with the less contested (and binding) disaster risk reduction (DRR) and humanitarian spheres. Opposition was such that the US Secretary of State Kerry famously stated that any reference to liability and compensation in the Paris Agreement would "kill the deal" (Goodell 2015). A compromise was eventually found between the USA, Least Developed Countries (LDCs) and Alliance of Small Island States (AOSIS), and liability for L&D was explicitly excluded under the UNFCCC through Paragraph 51 of decision 2/CP21 accompanying the Agreement.

There was a consensus among the negotiators we interviewed that compensation and liability is one of the topics that has historically been contentious and is still likely to generate controversy in L&D negotiations. As one small island states negotiator puts it, "*anything that hints of liability and responsibility creates tensions*" (interviewee 10). At the same time, and as a result of the compromise reached in Paris, negotiators do not identify the UNFCCC as the appropriate forum for calls for compensation (interviewees 2 and 10). This does not imply that compensation claims by developing countries have disappeared. Rather, as a developed country negotiator highlights:

> *There is nothing stopping an island or another country from suing another country through other channels. It was just anything that comes out from this agreement in terms of operationalizing it, will not be in the frame of liability and compensation.*

In this sense, the Paris Agreement could represent a fundamental first step towards making L&D negotiations less confrontational. However, our research shows that while compensation and liability are the most visible stumbling-blocks there are a range of underlying issues which also play

a role in blocking progress. By engaging negotiators on explicitly thorny L&D-related aspects – i.e. progress on SOE, PL and finance - it is possible to unveil a number of underlying issues fuelling controversy and making the debate particularly difficult. These include: i) the indeterminacy of problem formulation; ii) the existence of different levels of discussion; iii) the connection with other disputes within and beyond the UNFCCC; and iv) the emotional turn taken by the debate. Each of these "contentious issues" is briefly discussed below.

PROBLEM DEFINING OR PROBLEM DENYING?

L&D lacks a clear conceptualization at the UNFCCC level and relies on a (vague) working definition adopted within the SBI (2012). While some have argued that shared meaning is necessary to advance progress (Page & Heyward, 2017), other have suggested that any attempts to devise a definition would inspire antagonistic sentiments and lead to political deadlock (Boyd, James, Jones, Parker, & Otto, 2017). Parties "agreed to disagree" and used ambiguous language to institutionalize L&D through decision 2/CP.19 and article 8 of the PA. This definitional void has been attributed to the existence of different and hardly reconcilable frames or perspectives on L&D (Boyd et al., 2017; Vanhala & Hestbaek, 2016).

Exercises in trying to classify different understandings of L&D – while useful to clarify stakeholders' viewpoints - might divert attention from a more profound and substantial question: is L&D recognized as a problem by all Parties sitting at the negotiation table? Is talking about L&D perceived as legitimate? As a developed country negotiator puts it (interviewee 1):

> *I don't understand in what way loss and damage would be different or separate from mitigation or from adaptation (...) people are saying loss and damage is the new issue… I fundamentally disagree. I would say that loss and damage was actually the reason the whole convention on climate change was started.(…) We have a problem that nobody agrees on what the nature of problem really is, and people are trying to twist (…) the definition so that it actually fits the interests they want to achieve. It is… an absurd discussion that is taking place.*

This point of view is more or less implicitly or explicitly shared by other developed countries' negotiators (interviewees 2 and 4). It is largely rooted in an attempt to be "practical (…) and see what

works on the ground" (interviewee 3), which in turn reveals difficulties in conceptually distinguishing L&D from DRR, adaptation and humanitarian work (interviewee 2). On the part of developing countries, the separation between L&D and adaptation is instead assumed (interviewee 11) and taken as the starting point for negotiations. The result is a dialogue of the deaf, where developed countries do not really understand what developing countries want exactly (interviewee 4) – or make assumptions about this -, and the latter feel their requests for tools and support in addressing L&D are being "push[ed] back" (interviewee 10).

It could be argued that developed countries' invoking of technical and conceptual difficulties might only be functional to obstruct progress in negotiations, and that the separate treatment of L&D from adaptation agreed by Parties in the PA is implicit recognition of the scale and legitimacy of the problem. Yet, respondents from both developed and developing countries stressed the necessity of distinguishing discussions at the political level from discussion on substance. As provocatively commented by a developed country negotiator, art 8 is a "*political compromise*" and one should not "*make the mistake to think that what is being negotiated makes scientific sense*" (interviewee 1). Along these lines, the article on L&D constitutes a political signal that the issue is important, without implying any sort of common ground at the technical level.

This is consistent with recent research showing the lack of Parties' "ownership" of L&D as a new concept or discourse in climate negotiations (Calliari, 2016a). Discourses may come into an institution without being really owned by subjects, that is without implying that subjects will act, think, talk and see themselves in terms of the new discourses (Fairclough, 2001). Instead, subjects might "learn the lingo" of new discourses to be able to deploy them rhetorically and use them for certain purposes while consciously keeping them at a distance (Fairclough, 2003). Developing countries managed to introduce L&D as a new concept ("beyond adaptation") within the UNFCCC, as shown by the reference in Decision 2/19 CP to L&D as including "and in some cases involve[ing] more than, that which can be reduced by adaptation" (UNFCCC, 2014a). However, the interviews reveal, developed countries may have appropriated the L&D discourse as a way of mitigating an escalating conflict rather than fully acknowledging and legitimizing the L&D problem.

A TALE OF TWO STORIES

At the core of the indeterminacy of problem formulation is the existence of two discussions operating at different levels but constantly mixing: the technical and the political. A number of respondents hold the political sphere accountable for the sluggish pace of L&D action. For instance, a small island negotiator traces lagging progress on permanent losses to the fact that the "*WIM is still at a political level*" and lacks "*real experts*" (interviewee 9). A developed country negotiator reports of having been shocked when joining L&D negotiations in realizing that, together with colleagues, they "*were never working at a technical level*" (interviewee 4). At the same time, both sides seem to agree that the technical and political dimensions cannot be divorced and need to be concurrently addressed (interviewees 2 and 11). As a developed country negotiator points out (interviewee 1):

> *"some people don't realise that if you address only one side of it you will not get a solution" (…) "So some parties then come in and say "okay let's have technical solutions to the thing." (…) "and then they're very surprised when on the other side people are saying "well no, this is not solving the issue." Because they're not addressing the concern of the other side which is a much more political high-level one".*

Advances on L&D might thus be obtained by reconciling what is "*technically and politically feasible*" (interviewee 2). Yet, the connection of the politics of L&D with other disputes within and beyond the UNFCCC makes political compromise particularly challenging to reach.

L&D AS A SYMPTOM OF OTHER PROBLEMS

With different degrees of explicitness, respondents connect controversies in the L&D discussion to wider existing disputes within the UNFCCC and beyond.

The most evident, recognized by both developed and developing countries, is the lack of ambition in mitigation, adaptation and support. While the link with mitigation is mostly cited by developed countries ("*if the progress on mitigation is considered sufficient then I suppose the loss and damage issue will not be such a problem anymore",* interviewee 1), the issues of support are understandably raised by their counterparts. In particular, finance is felt to have always been "*a problem in the whole Convention*" (interviewee 7), with developed countries also acknowledging the point (interviewees 2 and 3). Yet, controversies over support seems to epitomize a more generally felt weakness in the

way North-South assistance is deployed. While developed countries suggest increased cooperation with the DRR, humanitarian and development communities as a complementary way to systematize and gather funding, the proposal provoke a general disappointment with humanitarian aid which is especially felt by small islands states (interviewee 11):

> *the bulk of that money tends to go back to those very same countries because they're using their own people and resources to do… whatever they need to do on the ground. (…) We'll get… technical support coming in but that does not build technical capacity within countries. (…) Monies are being spent, and (…) it's very difficult to quantify... quantify and qualify the support that we've actually received on the ground.*

With specific reference to the UNFCCC, the topic of support is strictly connected to a wider disagreement on how equity and the Common but Differentiated Responsibilities and Respective Capabilities (CBDR-RC) principle are to be operationalized. The implementation of these principles, extensively discussed in terms of mitigation (Rajamani, 2016) and at least to some extent in regards to adaptation funding (Winkler & Rajamani, 2014), pose unique challenges for L&D-related action. Interviews reveal tension around how the interplay between international cooperation and the agency of national governments should be articulated. In other words: how much of a role should national governments and the international community each play in addressing disaster impacts? How should the development choices of national governments be factored in to decisions about the balance of responsibility? The point about "*accountability*" (interviewee 3) and "responsibility" (interviewee 4) of countries in exacerbating the impact of disasters is a leitmotif in developed countries' framing and to a certain extent is recognized by their counterparts. Nevertheless, developing countries tend to emphasize the "*added constraint*" imposed by climate change which is "*making what was a bad situation worse"* (interviewee 11).

Finally, the issue of responsibility and how it should be interpreted in light of evolving national circumstances is also changing equilibria within the G77 group and causing tensions among members. The bulk of the problem is represented by the role of China and other major emitting economies, which officially support L&D as G77 members but at the same time are critically regarded by small island states as big polluters (interviewee 8). This potentially weakens the ability of the G77 to put up a consistent common front against developed countries. Recent examples of difficulties in finding common ground include the review of the WIM at COP22 (Calliari, 2016b) and disa-

greements between China and AOSIS on the need (supported by the former) to erase the reference to "particularly" vulnerable developing countries in defining potential beneficiaries of L&D support[13].

THE ROLE OF EMOTIONS IN THE DISCUSSION

Some country negotiators describe L&D discussions as emotionally charged and express the need to be "*practical*" (interviewee 3), "*objective*" and "*to put emotion aside*" if solutions are to be found (interviewee 1). Yet, on one level, it is this very distancing of emotions that may be a significant problem blocking progress.

Three different spheres where emotions play a role are discernible. The first one is the individual experience of negotiators, with a minority of them reporting dissatisfaction about relationships with their counterparts or a lack of trust (interviewees 8 and 10). This sphere is very much connected to inter-personal dynamics rather than to substantive or political issues.

The second sphere relates to anger and blame, or perceptions of anger and blame, in the negotiations. Developed country respondents report "*a lot of resentment in the discussion*" (interviewee 1) and "*blame games*" being played (interviewees 2 and 3). This is linked to the predominant frames of historical responsibility and compensatory justice which have characterized developing countries' positions since the early 1990s. It is likely that the blame frame has raised defensiveness among developed countries which has resulted in attempts to throw culpability back to the other side:

> *There is no (…) natural disaster: it's just always the combination of a natural accident and it's quite a big social economic component. That doesn't mean that we should not help (…) but then you are speaking about development…(…) there is a lot of responsibility and accountability from the country itself (…) it's not just about blaming the others.*

Yet, blaming narratives were not touched upon by developing countries respondents, with one exception. One interviewee expressed displeasure with developed countries' "*unfair*" behavior, just

[13] Personal observations at COP 22

"*put[ting]the burden*" on developing countries and not recognizing their national efforts (interviewee 5).

Finally, a third sphere where emotions play a role is in the wider discussion linking the negotiations and the activities and positions of NGOs and academic actors. A developed country negotiator, referring to COP 18 (Doha), attributed the fact that "*the discussion became very emotional,(…) did not do any good to the general trust between parties around those issues*" to a push by NGOs. The same was noted in referring to the Warsaw negotiations by both a developed and developing country negotiator (interviewees 3 and 8).

DISCUSSION: BUILDING ON "MESSINESS" AS A WAY FORWARD?

L&D has been defined as one of the most ambiguous (Vanhala & Hestbaek, 2016), challenging (Mace & Verheyen, 2016a), contested (Vulturius & Davis, 2016) and contentious (Calliari, 2016a), issues to be dealt with in recent climate negotiations. Yet, the full breadth of reasons for why L&D has been and continues to be intractable have been under-studied. There is now a scholarly consensus that the liability-compensation dispute and the positioning of L&D policy vis-à-vis adaptation policy are important in explaining the slow pace of progress. What this paper highlights is that they may simply be the most visible stumbling blocks in the process. We suggest that it is equally important to consider other levels and dimensions operating in the conflict, if this is to be effectively addressed.

Interviews with key negotiators allowed for unveiling this complexity. Rather than a monolithic dispute, L&D seems to be the collection of different yet intertwined contentious discussions going on at the same time. These can be grouped into two macro-categories: i) disputes on the merit; and ii) disputes on the relational and emotional dimension. The first relates to the very framing of the problem ("What is L&D?"). Contention in this case goes as far as questioning the very existence of L&D and implicitly the legitimacy of the conversation. It is complicated by the interplay of different registers, a technical and political one, both hinting at competing needs and incompatible formulations of proposed solutions. A second discussion pertains to the relational and emotional dimension of L&D. In a way, L&D catalyses existing unresolved disputes within and beyond the UNFCCC. These include the equitable distribution of responsibility for climate action (mitigation,

adaptation and support) as it should be embedded in the CBDR-RC principle especially in terms of development and humanitarian aid. On the emotional side, L&D unveils disagreement of what is considered to be fair and thus about the ethical premises of cooperation between the Parties.

Now that this complexity is revealed, what to do with it? On the relational side, there is value in acknowledging the connection of L&D with wider controversies. This could allow for concentrating discussion on those aspects that are specific to the L&D debate and for moving the treatment of other controversies to the fora to which they belong. As for emotions, their consideration could arguably contribute to more constructive negotiations among Parties. Emerging from the interviews is the desire to shunt emotions aside and finally "deal with the issue". However, this neglects the fact that the distancing of emotions is in itself part of the problem: the very term "loss" can refer to the feeling of grief after losing someone or something of value and demands acknowledgment (Stone, Patton, & Heen, 2000). This does not require the assuming of responsibility for the way others feel. Rather it is about recognizing that those emotions are most probably associated with hurt and with the desire to protect fundamental interests, like security, economic wellbeing, sense of belonging, recognition, control over one's fate (Fisher, Ury, & Patton, 1991). This is the case for both developed and developing countries.

In terms of the "merit" dimension, pointing a direction for travel is far more complicated. L&D is fundamentally an ill-structured issue: there is little consensus on what the problem is, and thus no agreement on how to deal with it. Moreover, its intractability is also the result of the dynamics of and interaction between other issues running deeper, meaning that there is no definable single, static solution. This class of complex issues - ill-defined, dynamic, ambiguous and associated with strong moral and political stances – have been defined as "messes" (Ackoff, 1997) or "wicked problems" (Rittel & Webber, 1973). As such, these problems are not approachable through linear thinking and traditional methods of problem solving (e.g. specify the problem, gather and analyse data, formulate a solution, implement solution) cannot be fully applied (Conklin & Weil, 1997). Nevertheless, recognizing this "messiness" might paradoxically be useful for delineating a tentative way forward for L&D-related action. The fact that the WIM ExCom is proposing solutions for an issue that has not been properly defined is not necessarily a problem. Instead, every solution that is put on the table and agreed by Parties is contributing to (re)define at least some aspects of the problem (Termeer, Dewulf, & Breeman, 2013) and thus concurring to delimit common ground. Moreover,

as solutions will inevitably be a compromise among Parties, an opportunity is there to frame collaboration in less confrontational or polarised terms.

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CHAPTER IV

A NETWORK APPROACH FOR MOVING FROM PLANNING TO IMPLEMENTATION IN CLIMATE CHANGE ADAPTATION: EVIDENCE FROM SOUTHERN MEXICO

INTRODUCTION

In the past decade the scientific, policy and practice communities have increasingly looked at adaptation as a fundamental and unavoidable strategy to respond to the risks posed by climate change. At the international level, the Paris Agreement (PA) (UNFCCC, 2015c) placed adaptation on pair with mitigation, sanctioning the long awaited "political parity" under the Convention of these two synergetic pillars of climate action. On the operational side, Article 7 of the PA calls all Parties to "engage in adaptation planning processes and the implementation of actions, including the development or enhancement of relevant plans, policies and/or contributions". Although slowly, adaptation is currently progressing from a phase of awareness to the predisposition of actual responses (Mimura et al., 2014). A number of actions are being undertaken in both developed and developing countries in climate sensitive sectors like agriculture, water management, coastal defense, public health, and disaster risk management. Progress has also been registered in the development of adaptation strategies and plans at the national, local and community levels as well as in the private sector.

Yet, moving from planning to implementation remains a challenge. This is due to a number of wider practical, socioeconomic and institutional factors that can actually constrain the realization of desirable adaptation actions (Chambwera et al., 2014) and thus lead to an adaptation gap (UNEP, 2014). The IPCC refers to these factors or processes as *implementation constraints*. Common

barriers in social systems comprise the lack of resources (finance, technology and knowledge) and institutional characteristics hampering action (Klein et al., 2014). Institutional constraints are indeed the most frequently reported in the literature (Biesbroek, Klostermann, Termeer, & Kabat, 2013) and include: i) failure in elevating adaptation as a political priority; ii) consideration of adaptation as an isolated task of a sector/governance unit (the so called "silo problem"); iii) lack of vertical and horizontal coordination between different administrative levels and between formal agencies and private stakeholders (Mimura et al., 2014).

Constraints make it harder to adapt, but can in principle be circumvented, lowered or removed (Moser & Ekstrom, 2010). They thus conceptually differ from adaptation limits, as the latter imply that no adaptive options exist to secure actors or systems' objectives (Dow et al., 2013). This distinction, however, is more difficult to be kept when adopting a dynamic perspective as, with time, constraints can either turn into or drive a system to an adaptation limit (J. Barnett et al., 2015). It is therefore essential to tackle implementation constraints if the full potential of adaptation measures is to be exploited. Yet, how to do it has been little investigated so far. The growing literature on the constraints to adaptation has been largely descriptive and few analysis lead to the identification of entry points and strategies for intervention (Eisenack et al., 2014).

The paper address this research need by focusing on *collaboration barriers* as a particularly frequent constraint to adaptation (Oberlack, 2017) and by applying a network approach to diagnose them and propose solutions. Collaborative governance has been long-advocated for dealing with complex problems –like climate adaptation. It draws attentions not only to the individual characteristics and capacity of actors, but also to the way they are connected to one other and how they collaborate towards the attainment of a common objective. Yet, these governance processes are often difficult to achieve in practice. Moreover, collaboration *per se* cannot guarantee that the intended outcomes will be delivered. It is thus important to give concurrent consideration to three elements to understand if and in which direction adaptation will unfold: i) who the actors are; ii) the networks through which they collaborate; and iii) how the structure of the "collaborative network" relates to their abilities to address the problems (Bodin, 2017).

We employ Social Network Analysis (SNA) for disentangling these aspects and for moving from adaptation planning to implementation. The benefits of employing SNA are multiple. As a map-

ping tool, SNA provides an x-ray of social interactions and is thus able to depict the actual governance structure supporting adaptation in the system of interest. Yet SNA has also a powerful diagnostic potential, as it allows for i) identifying the nodes (individuals, groups, organisations) that play a central role in implementing adaptation together with those that are instead isolated or missing, and for ii) assessing the nature of ties linking or excluding them. This way it is possible to spot were the problematic ties are as well as to identify those nodes that can act as enablers for change. With the aim of fostering multi-level institutional collaboration and the agency of local community in implementing adaptation, strategies for fixing or enhancing the institutional network can thus be designed.

We test the diagnostic potential of SNA on the governance arrangements supporting adaptation and disaster risk reduction interventions in a fragile coastal socio-ecological systems in the northwest coast of the Mexican State of Tabasco. The Carmen-Pajonal-Machona (C-P-M) lagoon system is chosen for the complex interplay of physical, environmental and socio-economic factors which make it particularly vulnerable to the impacts of climate change. On top of the current and expected climatic stressors, the site is undergoing serious erosion, flooding, contamination and salinization problems that are leading to irreversible losses in terms of land, freshwater resources and biodiversity and threatening the traditional livelihood base of local farmers and fishermen's communities. As adaptation measures have only recently started to be carried out on the ground, investigating the collaborative governance system that can support and sustain them becomes particularly relevant. This means understanding what the actual connections among institutional and community stakeholders are, and how these network can be enhanced to realise adaptation potential and minimise the risk of irreversible losses.

The paper first discusses the importance of social networks for collaborative governance in climate change adaptation. It then introduces the case study and the methodology employed for assessing the nature and strength of connection among formal organizations dealing with climate change adaptation/disaster risk reduction (CCA/DRR) in the site. A mixed-method approach is employed for assessing i) the ties connecting formal organisations (quantitative SNA) and ii) the connection between formal organizations and local coastal communities potentially targeted with adaptation interventions (qualitative SNA). By doing so, the paper offers a novel contribution to the application of SNA to the study of local adaptation, as it overcomes the usual separation between formal

institutions and local communities' networks as objects of research. It concludes with a discussion on the applicability of SNA in the detection of collaboration constraints to adaptation and elaboration of strategies to overcome them.

THEORETICAL FRAMEWORK: INSTITUTIONAL NETWORKS FOR CLIMATE CHANGE ADAPTATION

Institutions, as systems of established and prevalent social rules that structure social interactions (Hodgson, 2006), have been long acknowledged as crucial determinant of adaptive capacity (Engle, 2011; Smit & Pilifosova, 2001). A distinction is usually made between formal institutions, comprising tangible procedures, laws and regulations, and tacit informal institutions, including values, norms, traditions, codes, and conducts (Ostrom, 1990). Much of the adaptation discourse so far has focused on formal public institutions (Klein et al 2014), although increasing evidence has been provided of their informal counterpart playing a role in driving adaptation processes. In particular, social capital, social networks, values, perceptions, interests, customs, and traditions have been recognised as important elements affecting the capacity of communities to adapt (W.N. Adger et al., 2007).

Less agreement is there on the institutional attributes that actually matter for adaptation (Oberlack, 2017). Attempts were made in identifying some general characteristics institutions should have to stimulate the capacity of societies to adapt. For instance, Gupta (2010) cites variety, i.e. the attitude to involve different perspectives, actors and solutions; learning capacity; room for autonomous change; leadership; resources; and fair governance. Grothmann et al. (2013) add the psychological dimension to list by including "adaptation motivation" and the "adaptation beliefs". Other commonly mentioned institutional traits encompass inclusiveness, flexibility, risk tolerance, legitimacy, accountability, creativity, transparency, and autonomy (Koontz, Gupta, Mudliar, & Ranjan, 2015). With a similar normative standpoint, Dixit, Mcgray, Gonzales, & Desmond (2012) identify a set of functions -assessment, prioritization, coordination, information management, and climate risk management- formal institutions should perform and that are critical for adaptation.

Institution provide the "rules of the game" (North, 1990) but how the latter will be played (and what will be achieved) eventually depends on the actors involved and their relational patterns.

Organisations are primary actors in enacting societal responses to climate change (Berkhout, 2012). They represent a special type of institutions characterised by i) boundaries which distinguish members by non-members, ii) principles designing who is in charge, and iii) chains of command assigning responsibilities within the organisation (Hodgson, 2006). Examples of organisations include households, firms, civil societies organisations (CSOs), public sector agencies and local governments.

Beyond attributes and capacity, collaboration among them is essential for pooling together the different competences and scales needed for adaptation in complex socio-ecological systems and for avoiding silos approaches eventually leading to partial or even maladaptive outcomes. Calls for multi-actor collaboration have been extensively made in discussing governance approaches for complex, wicked problems. For instance, the concepts of polycentric (Ostrom, 2010), multi-level (Corfee-Morlot et al., 2009) and network governance (Luthe, Wyss, & Schuckert, 2012) stress the importance of a diversified set of actors in solving collective action problems. On a similar vein, adaptive co-management combines the attention to learning processes which is proper to adaptive management with the focus, derived from the co-management tradition, on collaboration among different stakeholders operating at different levels through social networks (Folke, Hahn, Olsson, & Norberg, 2005).

Social network have been found to facilitate collaboration among different stakeholders by supporting the generation and diffusion of knowledge, information and resources across the system; fostering engagement and commitment to common rules; and smoothen the resolution of conflicts (Bodin & Crona, 2009). Yet, collaboration itself cannot guarantee that societal objectives will be reached (Bodin et al., 2016). Collaborative arrangements might miss out important actors having a special interest or ability to address the problem at hand. At the same time, the structure of the network through which they collaborate might enable or restrict their behaviour (Wasserman & Faust, 1994) and thus affect intended outcomes.

It is therefore imperative to investigate who the actors are and how they are tied together. Actors can be linked to one another in different ways. A classical distinction has been made between horizontal networks that "bring together agents of equivalent status and power" and vertical networks implying an "asymmetric relations of hierarchy and dependence" (Putnam, 1993). More recently,

the terms bonding and bridging ties have been employed to designate social networks between homogenous and heterogeneous groups respectively (Putnam, 2000). A sub-category of bridging ties is constituted by linking ties (Woolcock, 2001), as connections which vertically transcend group boundaries and imply relative differences in power. Examples of linking ties include connections between social classes, or between local communities and formal institutions. With specific reference to adaptation, bonding ties based on family and kinship can be an important asset to cope with the impacts of extremes (N. Adger, 2003), as extensively shown by DRR literature (Hawkins & Maurer, 2010). At the same time, they can also be detrimental in the long run as they atomise society in small closed groups, undercut social interaction and trust and thus undermine collective action (Pelling, 1998). Bridging ties have proved to play an important role for innovation and promoting transformative adaptation actions (Dowd et al., 2014) as they allow for accessing resources and opportunities in a different group. Linking ties can facilitate the transfer of resources along the social hierarchy but they are typically shaped as top-down relations and thus challenging the maintenance of social trust and cooperation (Pelling & High, 2005). It is thus important to maintain a dynamic interplay of bonding, bridging and linking ties to both support resilience building and the diversity which is needed to adapt (Newman & Dale, 2005).

All these aspects (i.e. actors, network nature and structure) can be usefully investigated through SNA. SNA has been widely used in social sciences, from psychology to economics (Borgatti, Mehra, Brass, & Labianca, 2009), and has proved to be suitable for think about institutional connections in a strategic way (Holland, 2007). It has increasingly been employed to examine the role of societal relationships in a disaster contexts (see for instance Jones & Faas (2017) for a recent examples) and natural resource management (Prell, Hubacek, & Reed, 2009) and promising application has started to emerge in the study of local climate change adaptation. It was used to identify how adaptation related information is shared at the community level (Cunningham et al., 2016; Rotberg, 2013); to retrospectively assess the interactions between organizations elaborating (Ingold, Balsiger, & Hirschi, 2010) or implementing adaptation measures (Jaja, Dawson, & Gaudet, 2016); to identify key actors in adaptation decision making at the national (Bowen, Alexander, Miller, & Dany, 2014) and local scales (Varela-Ortega et al., 2016); to explore collaboration patterns of formal entities working on agriculture and rural development (Schmitt, Comoé, & Barjolle, 2013) and water management (Azhoni, Holman, & Jude, 2017). Yet, this studies have mostly fo-

cused on homogenous groups -either local communities or groups of formal institutions- and have largely neglected the investigation of vertical, hierarchical ties between the two. Exploring the full scope of ties in social systems, i.e. bonding, bridging and linking, can instead importantly shed light on the direction and speed at which adaptation unfolds (Pelling & High, 2005).

CASE STUDY

The C-P-M lagoon system is a low-depth (0.9 m on average) coastal wetland of about 190 km^2, which is separated from the ocean by a fragile and highly vulnerable sand bar (Figure 4). It communicates with the sea through two inlets: Boca Santana on the west of natural origin and currently affected by erosion and Boca Panteones on the east, artificially created in 1975 and currently under sedimentation. The CPM lagoon system consists of two lagoons (Carmen on the west and Machona on the east) which are connected by the Pajonal narrower water body. The whole C-P-M lagoon system has a high biological and ecological relevance. The area around the lagoons hosts important mangrove habitats, that have been highly impacted in the last decades, due to land-use changes (mainly into agriculture land and grassland for animal breeding), illegal cut for wood consumption, and erosion of the mangrove banks (Buenfil Friedman, 2009). The area around the lagoon system belongs to the municipalities of Cárdenas, Comalcalco and Paraíso and hosts medium to small human communities, strongly relying on the C-P-M lagoon system services for their subsistence. The main productive activities are agriculture, livestock and, in areas closer to the lagoons, fisheries (in particular of oysters) and aquaculture. Oil extraction and distribution through the state-owned company PEMEX is another activity characterising the whole area. While the oil sector is the most important contributor to Tabasco Gross Domestic Product (GDP), its revenues have not benefitted the society as a whole and important pockets of poverty persists. For instance, in the municipality of Cardenas 20,38% and 44,91% of the population respectively lives in situations of extreme and moderated poverty respectively (CONEVAL, 2010)

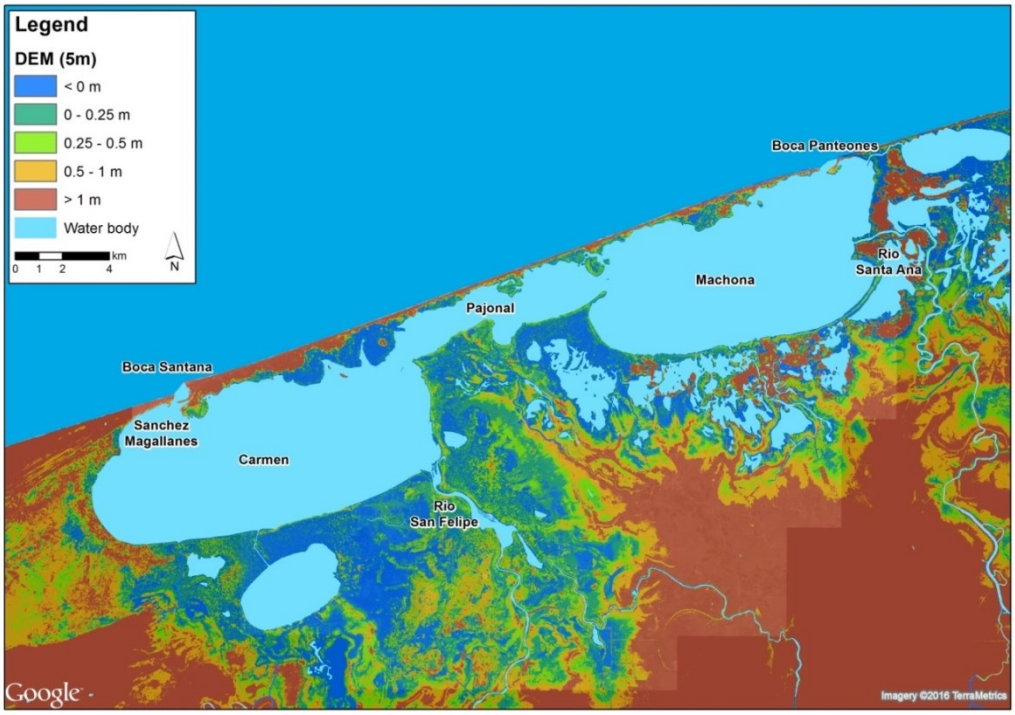

Figure 4: The Carmen-Pajonal-Machona lagoon system. The map shows the land elevation of the area around CPM lagoon system (source of DEM data: LIDAR 5 m INEGI 2012).

A comprehensive studied recently undertake in the C-P-M site highlighted a number of current (Ramieri et al., 2015) and expected (Ramieri et. al, 2015) challenges for the socio-ecosystem. The main current problems affecting the lagoon system are: erosion and high vulnerability to extreme sea storms of the littoral bar, high social and physical vulnerability of the areas around the lagoon to flooding, lack of wastewater treatment and bacteria contamination of the lagoon, loss of mangrove habitats, saltwater intrusion in freshwater systems, salinization of soils and consequent impacts on agriculture, lack of facilities for proper collection and management of waste, and high vulnerability of local communities in general and to climate variability in particular. Climate change is expected to exacerbate some of the currently occurring impacts and induce new ones. Vulnerability of the littoral bar is expected to increase due to increased erosion of beach and dune systems caused by sea level rise and extreme wind events. The destabilisation of such systems will increase flooding risk in the bar due to storm surges; also the risk of rupture of the littoral will be higher on the long term (2100) with particular concern for the eastern portion of the C-P-M system. Frequency and intensity of flooding events will increase due to sea level rise and change in precipitation patterns with consequent extension of the area prone to flooding. Sea level rise and change in precipitation patters will also cause an extension of saltwater intrusion and areas impacted by

soil salinization. Part of the mangrove system might be able to cope with sea level rise by vertical accretion, if needed amount of sediments will be available, and inland migration, depending on availability of suitable habitats and absence of anthropic obstacles. In any case mangroves will be affected by increased erosion of the lagoon borders causing destabilisation of plants colonising the banks and by change in inter-specific distribution of the three mangroves species. Moreover, mangrove loss due to land use change (not depending on climate change) is expected continuing if proper protection measures will not be fully implemented, further increasing the fragility and vulnerability of these habitats. Some of these impacts will likely be irreversible in the long term (2100) as in the case of deep erosion of the bar and its possible rupture or the exacerbation of flooding events to unmanageable levels. Other potential climate change impacts include: diffusion of vector-borne diseases due to new conditions (e.g. higher temperature) and favourable habitats (small water bodies created by mangrove erosion/loss), introduction of new alien species in the lagoon system, direct (e.g. due to increased temperature, increased water and soil salinization, loss of land due to submersion and flooding) and indirect (increased incidence of pests and reduction of resistance of local crop variety) impacts to agriculture, salinization of small domestic wells, increase risk of damage to the road network and other infrastructures. All these impacts will result in higher vulnerability of already highly vulnerable and marginalised local communities.

Despite these criticalities, also recognised by the *Climate Change Action Programme of the State of Tabasco* (Tabasco, 2011), adaptation projects and wider initiatives in the lagoon system have traditionally been scant. A possible reason for that, among others, is the conflicting relationship between local institutions and coastal communities, where the former think that communities are "difficult" to work with and the latter have the sense to be forgotten by the local institutions[14]. More recently, community-based adaptation (CBA) interventions have started to be planned and implemented in the site with the external support of the federal government and backed by international donors. The C-P-M lagoon featured as a pilot site in the World Bank funded project "Adaptation of coastal wetlands in the Gulf of Mexico (2011-2015)" implemented by the National Institute of Ecology and Climate Change (INECC) and Instituto Mexicano de Tecnología del Agua

[14] Personal communication with the authors during a field visit in June 2015.

(IMTA)[15] and comprising activities such as reforestation, capacity development with communities, and establishment of early warning systems, among others.

METHODS AND MATERIALS

The study adopted a mixed-method approach, combining both a quantitative and a qualitative SNA to assess the strength and nature of links among i) formal organizations engaged in DRR/CCA in the site; ii) community members; and iii) formal organization and community members. Building on Agrawal (2010) we refer to these aspects as *institutional articulation*, *community articulation* and *institutional access* respectively. The mixed-method approach was designed to account for the high illiteracy rates characterising the case study area and which would make it difficult to fully engage communities in the intensive data collection process required for a quantitative SNA.

ASSESSING INSTITUTIONAL ARTICULATION

Data collection strategies

As a first step, the boundaries of the system of interest were set by identifying institutional actors (potentially) engaged in CCA/DRR and NRM activities in the case study area. Attention was drawn to three types of organisations (Bhagavan & Virgin, 2004): i) *government entities,* like ministerial departments, policy-making and regulatory authorities, regulatory authorities, and specialised agencies; ii) *knowledge-generating institutions*, including universities and research institutes; and iii) *civil society organisations* working on environmental issues.

Governmental entities were determined through an extensive review of national and local legislative and planning instruments supporting adaptation, disaster risk reduction and natural resource management in Tabasco so to identify those mandated to operate in the lagoon system.

[15] The present research is part of the "Design of adaptation measures to reduce vulnerability of the pilot site Carmen-Pajonal-Machona Lagoon System, Tabasco, to the impacts from climate change and anthropogenic activities" run by Thetis, CMCC and Coastal Environment and part of the mentioned "Adaptation of coastal wetlands in the Gulf of Mexico" project.

Knowledge-generating institutions and civil society organisations were identified through online searching and interviews with local experts. As Table 3 shows, the mapping process brought to the identification of 35 institutions that were invited to a workshop in Villahermosa in June 2015 (for information on the workshop design see Giannini et al.(2017)). Among them, 20 took part in the workshop and were surveyed through a dedicated questionnaire.

Table 3: List of institutions mapped and surveyed

Sector	Scale	Institution	Acronym	N surveyed
Government entities	Local	Municipality of Cárdenas		
		State Forestry Commission	COMESFOR	
		Secretariat of Energy, Natural Resources and Environmental protection	SERNAPAM	1
		Secretariat of Agriculture, Livestock and fisheries development	SEDAFOP	
		Secretariat of Economic development and tourism	SDET	
		Coordinación General de Desarrollo Regional y Proyectos Estratégico	CGDRPE	1
		Civil Protection		1
		Secretariat of Health	Ssalud	1
		Port Authority of Dos bocas	API dos bocas	1
		Secretariat of Public Education	SEP	1
	Federal	National Water Commission (water quality)	CONAGUA	1
		National Water Commission (water planning)	CONAGUA	1
		National Water Commission (wetlands)	CONAGUA	1
		National Forestry Commission	CONAFOR	1
		National Commission for the knowledge and use of biodiversity	CONABIO	1
		National Commission for Aquaculture and fisheries	CONAPESCA	1
		National Commission for Protected Areas	CONANP	
		Secretariat of Environment and Natural Resources	SEMARNAT	1
		Secretariat of Agriculture,	SAGARPA	

		Livestock, Rural Development, Fisheries and Food		
		Naval Secretariat	SEMAR	1
		Secretariat of Social Development	SEDESOL	
		Nacional Financiera	Nafinsa	1
International organization	International	United Nations Development Programme	PNUD	
		United Nations Environment Programme	PNUMA	
Knowledge-generating institutions	Local	Universidad Popular de la Chontalpa	UPCH	
		Universidad Politécnica del Golfo de México	UPGM	
		Universidad Autónoma Juárez de Tabasco	UJAT	1
		Instituto Tecnológico Superior de los rios	ITSR	
		Instituto Tecnológico Superior de Comacalco	ITSC	
		Colegio de Postgraduados (Campus Tabasco)	COLPOS	
		Colegio de la frontera Sur	ECOSUR	
		Centro del cambio global y la sustentabilidad en el sureste	CCGSS	1
	Federal	National Institute of Ecology and Climate Change	INECC	1
NGOs	Federal	Ducks Unlimited de México A.C.	DUMAC	1
		Red Nacional de Promotoras y asesoras rurales		1
Total surveyed				20

The questionnaire comprised two parts. The first part, made of 6 questions, aimed at collecting information on the organisation and the work undertaken in the C-P-M lagoon systems (human resources available, thematic focus and activities carried out). Respondents were also asked to indicate the main thematic focus of their work, choosing among CCA, DRR, NRM and socio-economic local development. The second part of the questionnaire assessed the nature and strength of inter-organizational links through a matrix. As *recognition* methods are generally better than *recall* methods when capturing social ties (Marsden, 1990), a pre-compiled list of organisations was presented to respondents. At the same time, respondents were encouraged to add actors to the list, in case some which they deemed important had been left out. This allowed for double check the com-

pleteness of the list and to submit the questionnaire to missing actors. Through the matrix respondents evaluated the nature of their connection with other organizations (if existent) in terms of: i) *information exchange*; ii) *coordination*; iii) *collaboration*. In this context, collaboration was defined as the implementation of joint projects or initiatives. These three categories of ties are understood as implying increasing degrees of strength in the relation between actors. When no connection with the listed institutions was there, respondents could specify possible reasons (eg. lack of knowledge about the actor's work or interest; failed attempts to communicate with the actor; lack of resources for collaboration; no apparent reasons for collaboration). Finally, respondents were asked to provide additional information about the CSOs they worked with. This follow-up question was included as CSOs are scant in Tabasco and have limited organizational capacity, making their *ex ante* identification challenging.

Data Analysis

Data was analysed and visualised through the *igraph* package in R (Csardi & Nepusz, 2006). Two networks and related statistics were produced, accordingly with the indication made by surveyed organizations of the dominant thematic focus of their work (DRR/CCA or NRM).

Following Bodin and Crona (2009), we considered and computed a set of network structural characteristic that relates to governance processes and outcomes: network density, cohesion and centralization as well as two measures of actor centrality (degree and betweeness). *Network density* is calculated as the number of existing ties divided by the number of possible ties. In general, the higher the network density the higher the potential for collective action (Marwell, Oliver, & Prahl, 1988). However, too high density can also be detrimental as it can lead to homogenisation in terms of information and knowledge shared in the network and thus reduce its adaptive capacity (Bodin & Norberg, 2005). *Network cohesion* refers to the presence of distinguishable subgroups or communities. Their presence can pose challenges to collective action if subgroups work in isolation. At the same time, these subgroups can embed information or knowledge which is important for dealing with the complexity of the problem at hand. We identify subgroups through the Girvan – Newman algorithm (Girvan & Newman, 2002). We then check for boundary spanning behaviours among groups considering the *between centrality (BC)* of nodes, which measures the extent to which a vertex lies on paths between other vertices. Nodes with high betweeness centrality can be considered

as "bridges" connecting subgroups (Jaja et al., 2016). They are thus in the position for initiating or supporting collaboration, as they can coordinate the activities of subgroups towards a common goal (Bodin & Crona, 2009). Beyond betweeness centrality, we also compute nodes' *degree centrality* (DC) to assess the influence of single actors in the network and thus spot possible enablers for change. Finally, *network centralization (NC)* provides a sense of how much influence is concentrated or spread across the network. It is based on calculating the variability in centralities among the network members (Wasserman & Faust, 1994)

Assessing Community articulation and Institutional access

The analysis on community bonding (community articulation) and linking (institutional access) ties was based on the data on social capital collected by Michetti, Vidal, & De Nat (2015) through face-to-face structured interviews (n=90) in the communities of Cor. Andrés Sánchez Magallanes, Ejido Alacran and Colonia Agraria Las Flores in Cardenas (March 2015). We focused on Cardenas as the biggest municipality, in terms of population, of the C-P-M lagoon system (INEGI, 2015). Sampled communities were chosen for their proximity to the coast; patterns of socio-economic vulnerability; and exposure to climatic and anthropic pressures. Demographic representativeness was considered, although giving priority to communities relying on productive activities potentially impacted by changes in water quality and soil fertility (i.e. fisheries, livestock and agriculture).

We analysed answers to following questions as measures of social network support (Scrivens & Smith, 2013): 1) "In case of economic problems, who do you ask for help?"; 2) "In case of economic problems, who would you help?" Responses included: i) family; ii) friends; iii) members of the Co-operatives/Unions; iv) other people; v) nobody. We also analysed answers on trust in neighbours ("How much do you trust neighbours?") to get a sense of community cohesiveness. For linking ties, we focused on the question "How much do you trust: i) Political Parties; ii) Unions; iii) Cooperatives; iv) Governments; v) the Church". On the basis of the preliminary results on trust, follow up interviews were carried out with community members in the context of a second workshop with local stakeholders in June 2015 (Giannini et al., 2017).

RESULTS

INSTITUTIONAL ARTICULATION

Figure 5 provides a first overview of the links among organizations that work or have an interest in CCA/DRR activities in Tabasco[16]. Colours are used to represent either their main scope of activity (economic, environmental, social, planning, civil protection, academic) or the particular nature of the actor. Indeed, actors such as the municipality and communities of Cardenas are somehow "hybrid", as they could both be deliverers or recipients of adaptation actions depending on the governance setting (top- down or co-management). Links among actors are represented by undirected lines of different width, so to express increasing strengths in the relationship (information exchange; coordination; collaboration). Finally, the dimension of nodes indicates the different values of degree centrality scored by each actor.

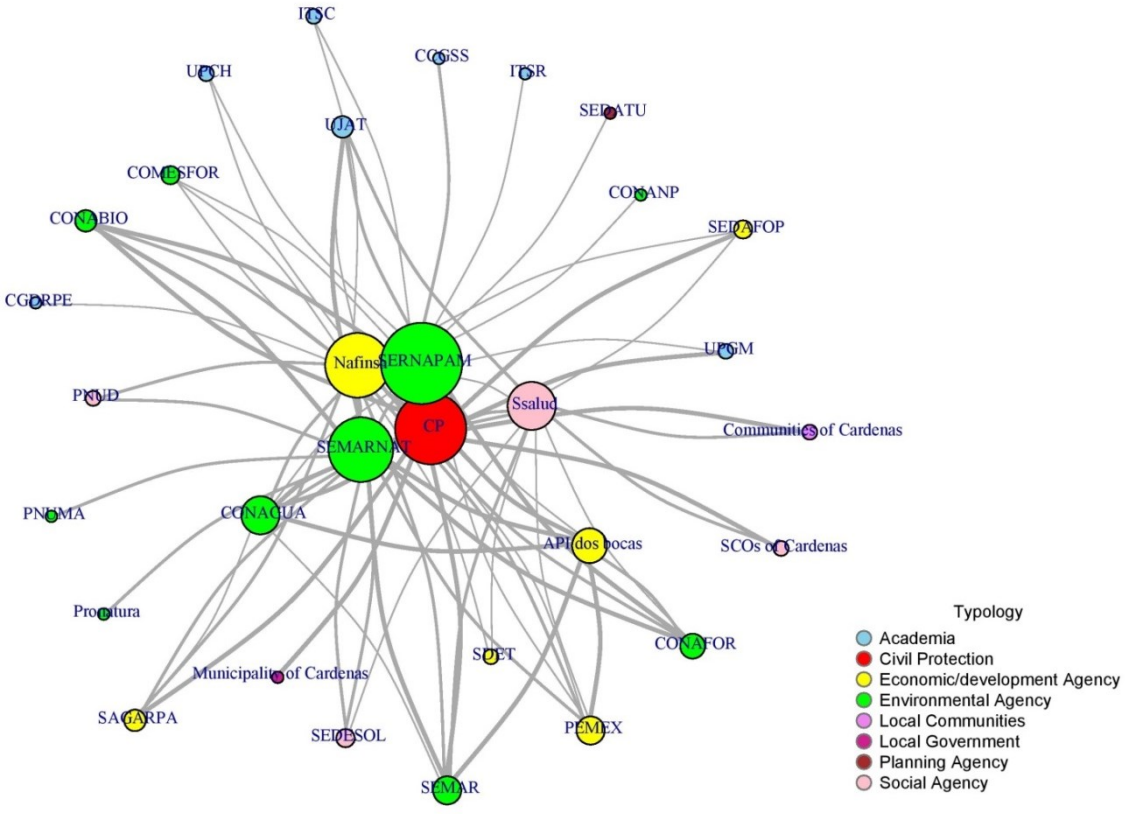

Figure 5: Network of organizations working or interested in DRR/CCA in Tabasco

[16] The graph produced for the NRM network is not shown here as not featuring particularly distinct patterns.

SERNAPAM shows the highest degree centrality, followed by CP, Nafinsa, and SEMARNAT (see also Table 4 in Annex 1). The influential role of SERNAPAM is not surprising as the Agency is explicitly mandated by the *Environmental Protection Law of the state of Tabasco* (TABASCO, 2013) of planning and implementation functions in the field of environmental protection, including climate change adaptation. At a higher administrative level, this is also the case for SEMARNAT, i.e. the Ministry of Environment, and the CP, in terms of disaster response. The centrality of Nafinsa is to be read through different lenses, as the Agency is in charge of disbursing the funds by the Federal Government and International Organizations (WB, FMI, IDB) to different projects, including adaptation. The concentration of influence in this small number of actors is also indicated by the high centralization score of the network (NC= 0,57)

In Figure 6, the clustering algorithm is applied to detect the existence of subgroups. Interestingly, a quite compartmentalised network structure is revealed and three subgroups become evident (red, yellow and green areas). The biggest one (red) tends to group Agencies with an environmental mandate and pertaining to the Federal level (SEMARNAT, CONAGUA, SEMAR, CONABIO, CONAFOR). The group is quite tightly linked and mostly connected by collaboration-type ties. Moreover, these institutions have fewer boundary spanning ties (in red) which makes the group relatively closed. SERNAPAM acts as a bridge between the red and the yellow clusters, as also shown by its degree of betweeness centrality (Table 4). The yellow subgroup is characterised by a core-periphery structure, where academic entities –the most represented actors in the subgroup – are individually linked to SERNAPAM. This hints to the capacity of SERNAPAM to engage in knowledge and information exchange with local Universities, but also the lack of interchange among the latter. Finally, the third cluster groups the communities and SCOs of Cardenas and State entities devoted to local development around the Secretary of Health (SSalud) of Tabasco.

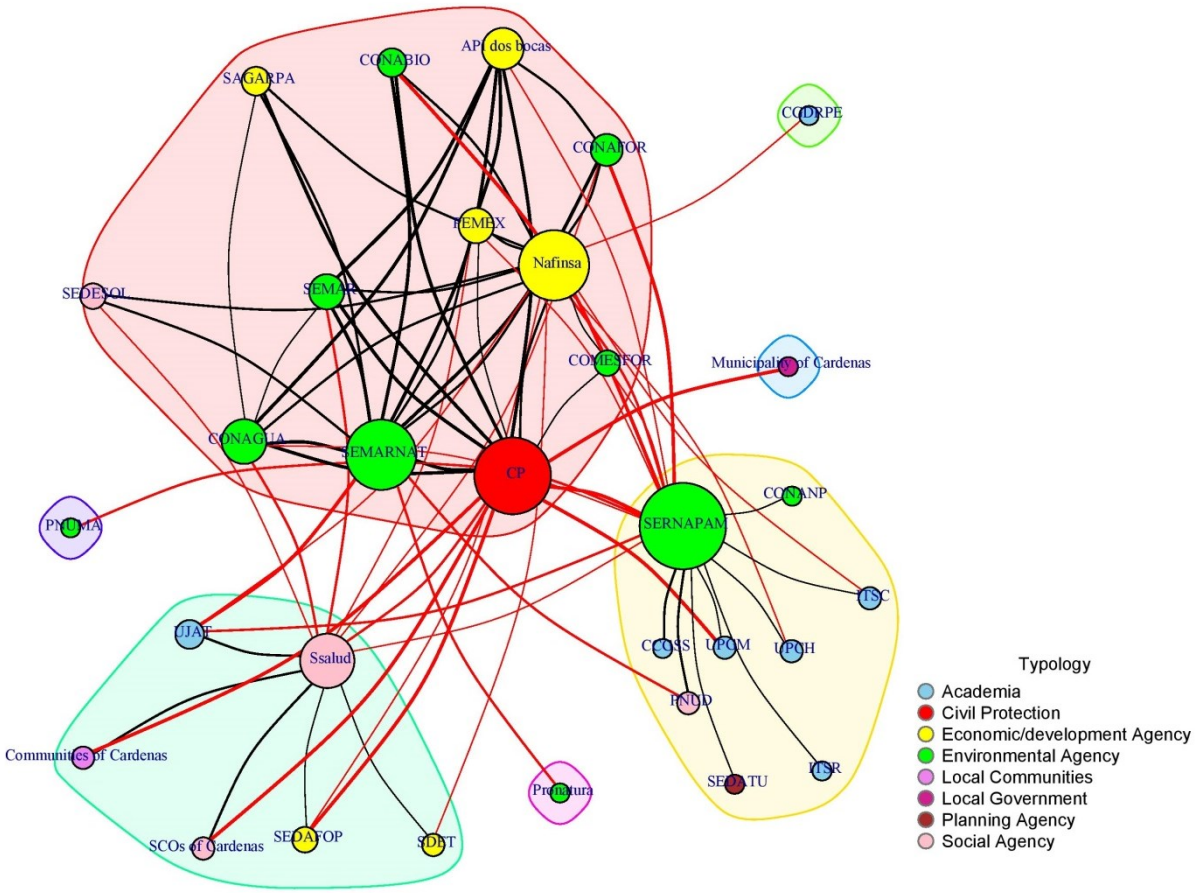

Figure 6: Fragmentation of the DRR/CCA network in subgroups

A number of considerations can be made by looking at both the network structure and associated statistics. To start with, the clusters tend to group homogeneous actors: federal agencies operating on environmental issues in the red one; local Universities providing technical knowledge to a local environmental entity (SERNAPAM) in the yellow; and organisations dealing with socio-economic issues with local communities in the green one. The existence of these subgroups points to the existence of diverse and complementary knowledge that can be usefully employed for the resolution of the problem at hand (here DRR/CCA). Yet, their relative contribution is unbalanced as DRR/CCA issues seems to be predominantly dealt with from an environmental perspective, i.e. trough collaboration among environmental entities (as for the red cluster) and resorting to the knowledge provided by local technical University (such as UPGM, ITSR, ITSC).

In order to enhance resilience, different dimensions of vulnerability - social, economic, cultural and institutional- need to be addressed on top of physical and environmental ones (J Birkmann et al., 2013; Schneiderbauer, Calliari, Eidsvig, & Hagenlocher, 2017). Socio-economic considerations are

of particular relevance in the C-P-M site, where poverty, marginalisation and the low human development of communities are among the main drivers behind the overexploitation of local ecosystems. Attention to socio-economic aspects in the governance system could be increased by exploiting the bridging role of SSalud (BC= 0,26), which is charge of public health responses when a disaster strikes. Together with CP, SSalud is indeed the only entity to have ties with local communities and that could therefore act as a mediator between them and federal agencies such as CONAGUA, CONAFOR, and SEMAR. The same role could be envisaged for enhancing inter-sectoral cooperation across levels of governments and connect federal environmental entities with state organization having economic priorities like SEDAFOP and SDET.

Figure 6 also shows that efforts should be directed in increasing horizontal cooperation, i.e. among actors at the same level of government. While degree centrality makes SERNAPAM the most influential actor in the network, a closer look reveals that its connections with other specialised state agencies are at best scant. The only tie reported is that with COMESFOR, i.e. the State forestry agency. This casts doubts on the effectiveness of the *Inter-Secretarial Commission on Climate Change of the state of Tabasco*, mandated by the Environmental Protection Law (TABASCO, 2013) with fostering an inter-sectoral approach in planning and executing climate policies in the state. Chaired by SERNAPAM, the Commission has met episodically and has taken no substantive actions so far (Carlon, 2016). The fact importantly highlights that, when underlining social networks are missing, formal laws or regulations mandating cooperation are no guarantee that it will actually take place.

Finally, the centrality of actors like SSalud and CP tells something about the type of collective action currently taking place in Tabasco with respect to DRR/CCA. As both the organizations largely rely on a reactive approach, actions seems to be oriented towards emergency response instead of prevention.

COMMUNITY ARTICULATION

Results on community articulation show the existence of strong bonding ties at the family level. When answering questions about providing/asking for help in case of economic problems, respondents largely indicated their family as the actor they would support or be supported by (75% and 85,9%). Interestingly, 7% of them would prefer not to ask for anybody's help rather than refer-

ring to the listed entities (Figure 7). When asked about the degree of trust they had in neighbours, 24.4 % respondents said they had none and 40% little.

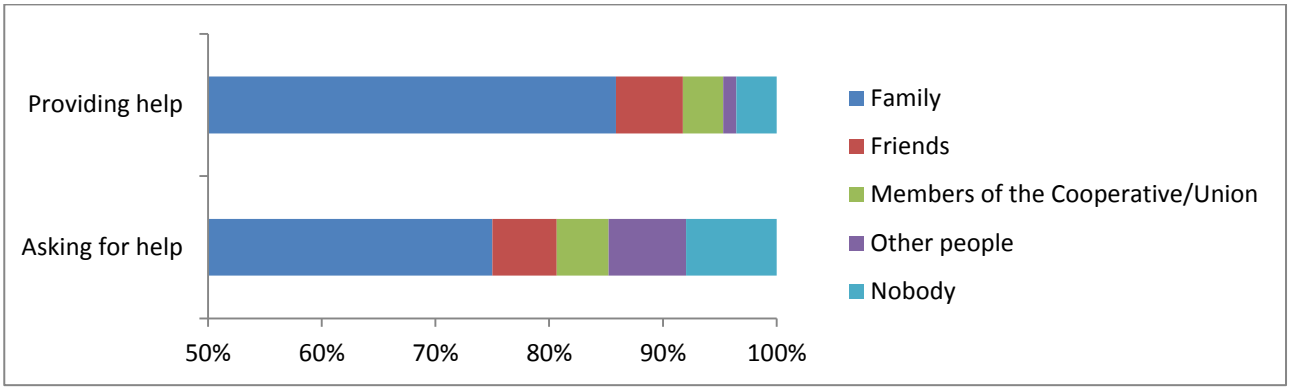

Figure 7: Social networks in case of economic problems

Taken together, these results depict an atomised society. Interviews with local experts attributed the disruption of social fabric to the rapid changes in environmental conditions brought about by the salinization of the lagoon system due to the artificial widening of the Panteón harbour mouth (see Figure 1). According to experts, salinization would have led to the loss of traditional livelihoods, based in particular on ranching and coconut farming, and to a severe worsening of living conditions that eventually undermined solidarity at the community level.

While bonding ties can be useful for survival or recovery from natural disasters (Pelling, 2003), densely nucleated networks have also proved to be unable to deal with vast changes (Newman & Dale, 2005). They have the effect of closing up society in small units and make interactions and flows of information difficult (Pelling & High, 2005). They can also inhibit innovation (Dowd et al., 2014): for instance, women involved in a community-based adaptation project in Cardenas reported they were regarded with suspicion by other community members and had an hard time in convincing them to join[17]. Bridging ties are therefore needed to mobilise the community towards forward-looking adaptation objectives and to foster proactive behaviours. There is no one-fits-all solution for restoring or recreating them as interventions necessarily need to build upon the consideration of very specific communities' internal dynamics (Krishna & Shrader, 2000). However, research has shown that local level organizations –as operating strictly within a community – can

[17] Personal communication with the authors during the workshop with community members in June 2015.

play an important role in that and so can carefully designed outside intervention (Grootaert & Van Bastelaer, 2002).

INSTITUTIONAL ACCESS

Local communities express particularly high level of distrust in governmental authorities and in intermediate governance levels like labour unions, political parties and cooperatives (Figure 8). The only notable exception is represented by the Churches and other religious institutions, gaining the trust of 95.65% of the people interviewed.

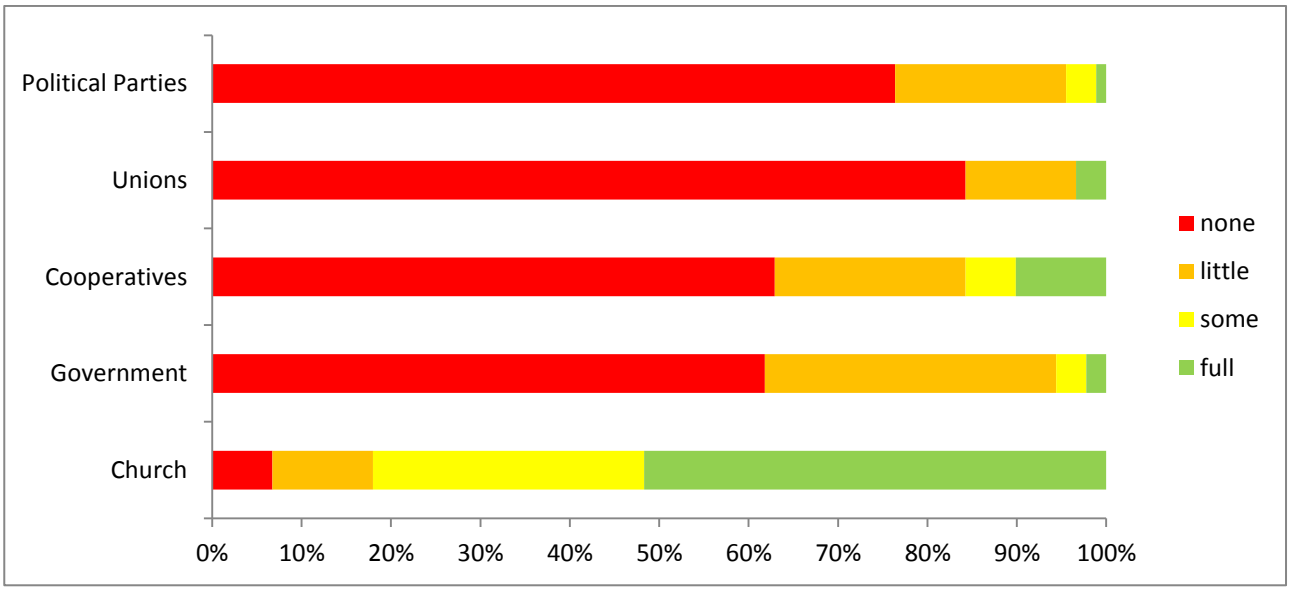

Figure 8 : Trust of the communities of Cardenas in formal institutions

These results are very important in highlighting the lack of legitimacy any intervention by public authorities needs to cope with in the study area. With a specific focus on DRR/CCA, responses gained through follow-up interviews spotted top three institutions attracting distrust and including the municipality of Cardenas, PEMEX and COMESFOR. In the case of COMESFOR, this was justified by the "*lack of participation in the social sector*" as put by one of the interviewed (Respondents n. 16). On the contrary, institutions communities trust the most are SEDESOL, SEMARNAT and SAGARPA, which deal with social development, environmental issues and rural development respectively.

These results suggest important entry points for intervention. Firstly, they call for a greater engagement of organisations with social and economic mandates as they seem to have the legitimacy needed in dealing with and mobilising communities. The relevance of socio-economic issues for community members also suggests an enhanced integration of these concerns in climate adaptation interventions as a way to possibly enhance their effectiveness. Secondly, the high trust communities have in religious entities could be exploited as a catalyst for behavioural change and mobilisation at the community level. For instance, Churches proved to be successful in conveying information and virtuous behaviours related to DRR/CCA in Guatemala and other Central American countries (Alianza ACT, 2011).

DISCUSSION AND CONCLUSIONS

A main factor determining the ability of societies to adapt is the ability to act collectively (N. Adger, 2003). Adaptation requires multiple actors to come together and jointly contribute towards a socially desired outcome. Yet, multi-actor collaboration is no guarantee that effective adaptation will unfold: malcoordination across different level of governments and stakeholders, loose or non-existent ties across organizations and conflicting interests and objectives can significantly inhibit adaptation outcomes.

Not surprisingly, collaboration barriers have been reported among the most frequent constraints to adaptation. However, the growing literature on the topic has largely been descriptive and limited attention has been placed on how to transform barriers into enablers for action. While barriers may arise in all phases of the adaptation process (Moser & Ekstrom, 2010), the paper considered those implied in moving from the planning to the implementation phase. Barriers may arise from the same way adaptation plans have been designed. An evaluation of first generation adaptation plans in developed nations showed how only a small minority of them had designed clear implementation pathways (Preston, Westaway, & Yuen, 2010). More recently, Woodruff and Stults (2016) found that local adaptation plans in the United States (US) lacked clear mechanisms and prioritization for translating objectives into on-the-ground projects. Yet, formal public institutions, like procedures, laws and regulations, are only part of the story. No matter how carefully the latter are de-

signed, final adaptation outcomes will eventually be shaped by tacit informal norms, codes and conducts. This is evident when taking the *Inter-Secretarial Commission on Climate Change of the state of Tabasco* as an example: although mandated by the law, the model of collaboration it embeds is not borne out on the ground, probably because of a lack of ownership or interest of local actors in this institution.

The paper applied a social network analytical approach to reveal the actual web of connections tying stakeholders, identify shortcomings in the structure and propose ways to tackle them so that the full potential of adaptation can be exploited. Following recent research on collaborative environmental governance (Bodin, 2017), concurrent consideration was given to: i) who the actors working or interested in DRR/CCA are; ii) what are the networks through which they collaborate; and iii) how the structure of the "collaborative network" relates to their abilities to address the problems.

The approach proved to be fruitful for the identification of implementation constraints and the elaborations of strategies to overcome them, and yields potential for replication. In particular, the application to the case study showed how solutions can be elaborated based on the descriptive and diagnostic potential of SNA. As *a descriptive tool*, SNA maps the relational architecture of the system of interest. It makes it possible to reveal network characteristics that are important for collective action including: network fragmentation in subgroups; density of relations; centralization around a few actors. In the case study the distinction among i) information exchange; ii) coordination; iii) collaboration ties, also allowed for appreciating the different nature and strength of relations. In terms of actors, SNA spots those that are isolated and those that are well connected and thus more influential in the network. As a *diagnostic tool*, the actual topology of the network can be compared with what is required for achieving desired adaptation outcomes. It thus allows for answering important questions including: Is multi-level integration achieved? What is the extent of collaboration among different types of actors? Are relevant actors or connections missing? Vertical (linking ties) and horizontal (bonding ties) connection among actors can thus be explored both visually and algorithmically. Should integration be limited, measures like betweeness centrality can identify boundary spanning actors to be used for enhancing network cohesion. In case of missing actors or links, ad-hoc strategies for building inter-institutional relations can also be designed.

The use of SNA in the case study importantly highlighted some aspects worth considering when applying it on the ground. A first one, actually common to almost all application of SNA, relates to the possibility of missing some important actors of the network. This can be due to limitations of the preparatory institutional mapping or to the unavailability of specific institutions to be surveyed. To circumvent this issue in our case study, a specific data collection activity was designed as part of a wider workshop discussing adaptation options in the area of interest. Although this cannot assure that the whole network will be captured, it makes sure that at least a sample of representative actors is surveyed as their participation to the workshop signals involvement or at least interest in adaptation activities in the case study area. It should also be noted that the workshop *per se* can be a mean for building or strengthening the governance network, as participants have the opportunity to get to know each other's work better and to create personal links if participatory activities are designed. Another common limitation of quantitative SNA is its tendency to focus on methodological and technical issues which, coupled with weaknesses in the sampling process, can lead to an over-interpretation of findings (Bharwani et al., 2013). A way to addressed this aspect can be to complement the analysis with face to face interviews with local experts, so that results can be better contextualised.

A final consideration can be made with respect to the way local communities are integrated in the analysis. In our case study, it was possible to carry out a quantitative SNA among formal organizations only. In principle, community leaders can also be involved in the exercise, yet we had to face two main issues: i) the low literacy rate of coastal communities that made it hard to engage them in intensive data collection processes and; 2) the paucity of adaptation interventions in the case study area, hampering the possibility to detect actual connections in the DRR/CCA context. The concept of trust proved to be particularly useful to overcome these limitations and to capture the *potential* for collaboration. While reflecting the predisposition to engage in more tight relationships, the concept of trust also allowed for identifying entry points for intervention. As an example, the legitimation certain organizations have in the eyes of local communities can be exploited to mobilise the latter towards DRR/CCA objectives. This mixed-method approach –combining a quantitative and qualitative SNA – has allowed for better accounting of the complexity of the specific situation and of the socio-institutional interplay which drives local adaptation outcomes. The paper thus

demonstrates the applicability of a social network analytical approach to a variety of contexts with the aim of supporting effective collaborative arrangements in adaptation governance.

ANNEX 1

Table 4: Normalised values of degree and betweeness centrality for organisations in the DRR/CCA network

Names	Degree (Norm.)	Names	Betweeness (Norm.)
SERNAPAM	0,733	**SERNAPAM**	0,541
CP	0,633	**Ssalud**	0,259
Nafinsa	0,567	**Nafinsa**	0,178
SEMARNAT	0,567	**SEMARNAT**	0,137
Ssalud	0,400	**CP**	0,082
CONAGUA	0,300	**CONAGUA**	0,081
API dos bocas	0,267	**COMESFOR**	0,030
PEMEX	0,200	**PEMEX**	0,019
SEMAR	0,200	**ITSC**	0,009
CONAFOR	0,167	**UPCH**	0,009
CONABIO	0,133	**SDET**	0,009
SAGARPA	0,133	**SEDAFOP**	0,009
UJAT	0,133	**API dos bocas**	0,000
COMESFOR	0,100	**CCGSS**	0,000
SEDAFOP	0,100	**CGDRPE**	0,000
SEDESOL	0,100	**Communities of Cardenas**	0,000
Communities of Cardenas	0,067	**CONABIO**	0,000
ITSC	0,067	**CONAFOR**	0,000
PNUD	0,067	**CONANP**	0,000
SCOs of Cardenas	0,067	**ITSR**	0,000
SDET	0,067	**Municipality of Cardenas**	0,000
UPCH	0,067	**PNUD**	0,000
UPGM	0,067	**PNUMA**	0,000
CCGSS	0,033	**Pronatura**	0,000
CGDRPE	0,033	**SAGARPA**	0,000
CONANP	0,033	**SCOs of Cardenas**	0,000
ITSR	0,033	**SEDATU**	0,000
Municipality of Cardenas	0,033	**SEDESOL**	0,000
PNUMA	0,033	**SEMAR**	0,000
Pronatura	0,033	**UJAT**	0,000
SEDATU	0,033	**UPGM**	0,000

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