

WHITE PAPER

ASSESSING NON-MARKET LOSS AND DAMAGE IN THE CONTEXT OF CLIMATE CHANGE

NOVEMBER 2016



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Non-Market Valuation of Loss and Damage under Climate Change

www.wun.ac.uk/wun/research/view/non-market-valuation-of-loss-and-damage-under-climate-change

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1. ABOUT US

1.1 BRIEF HISTORY OF THE GROUP

We are a group of twenty-four scientists from Australia, New Zealand, Ghana, United Kingdom, United States, and South Africa (Table 1) working together across disciplines to explore how loss and damage (L&D) is understood and experienced by particular groups of people in various geographic settings. We came together for a workshop in Perth, Australia, between 18th and 21st of April 2016 (Figure 1), to share our particular disciplinary insights and explore how these can inform the development of new methods to approach L&D in the context of climate change. Our work pays particular attention to the types of L&D that cannot be easily assessed or quantified (the non-market and intangible losses and damages, or N-M L&Ds) but are equally if not more important in sustaining people's lives and livelihoods.

This preliminary investigation followed a series of motivating questions:

1. What are the domains of L&D under climate change?
2. What is a meaningful baseline for determining loss?
3. What methodologies and approaches exist or need to be amended to best assess harm, in monetary and non-monetary terms?
4. What is the basis for estimating and allocating reparation and compensation?

This white paper, together with a series of conference presentations and journal articles outlined on page 31, presents the findings from our workshop and follow-up conversations. Here, we offer an overview of current N-M L&D assessment methods, followed by our own approach to assess N-M L&D. We propose a new analytical framework based on people's values and the trade-offs they are willing or forced to make when facing current and potential future losses brought upon by events related to climate change.

1.2 RESEARCH OBJECTIVES

- Create a better understanding of the types of losses, both economic and non-economic (also referred to as non-market), that people may experience due to climate change;
- Understand and make visible what people in specific places value most in their daily lives, what they consider worth preserving, and how these aspects are affected by climate change;
- Highlight what people do to prepare for possible losses in order to minimise people's suffering in case these losses become reality;
- Address the urgent need for appropriate methods to assess non-market loss and damage (N-M L&D) in the context of climate change;
- Develop an interdisciplinary approach for assessing N-M L&D that is flexible and reflexive to respond to how people's values and priorities are relational and change over time (in accordance to new understandings of risk, adaptation options, and likely impacts, embedded in a broader context of social and cultural change);
- Make new understandings and approaches to N-M L&D available and accessible to different stakeholders (e.g. policy makers, scientists, local communities) via academic and non-academic outlets (website);
- Integrate N-M L&D assessments into decision-making processes for climate change mitigation and adaptation.

1.3 RESEARCH TEAM

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Figure 1
*Research Team N-M
 L&D Workshop, Perth,
 Australia, 2016*

1.4 FURTHER INFORMATION

For more information about the research group, including additional resources and upcoming events, visit our website: www.lossanddamagecc.wordpress.com



Welcome to Loss and Damage

Loss and damage (L&D) is generally defined as the residual cost to of climate change to societies, after mitigation and adaptation. Some aspects of LD can be given an economic value (e.g. damage to infrastructure), but other aspects are difficult or impossible to value economically (e.g. identity and place), and are termed non-economic or **non-market loss and damage (NMLD)**. Some NMLDs may be the most highly valued by individuals and communities, but their incommensurability means that they are in danger of being ignored or undervalued when considering LD, especially in the context of prioritising adaptation.

We explore possible frameworks for NMLD "valuation" that are consistent with recent thinking about limits to adaptation, tolerable and intolerable losses. Drawing on case studies of climate change impacts from across the developed and developing world, we re-interrogate previous literature to define a typology of NMLD through the lens of what people value, and the potential for loss. We use case studies that represent different livelihoods and climatic stressors, for instance from the Western Australian Wheat Belt, New Orleans, Niue Island in the South Pacific, dryland farming systems in Northern Ghana, and indigenous populations in the United States and Australia.

Instead of starting with current and future impacts from climate change and assessing economic and non-economic losses for all possible loss categories, **we start with what people in specific places value and how these aspects are affected by climate change**. Not every potential loss is valued the same, and some losses might be larger and harder to avoid, than others. "Intolerable" loss might occur when, despite adaptive action, a highly valued private or social norm is threatened. However, what people value might change over time, with new understandings of risk, adaptation options, and likely impacts, and with social and cultural change. Hence, any useful analytical framework for NMLD has to be iterative and reflexive, and it has to have a time dimension.

Some of our main questions for deliberation are:

Some of our main questions for deliberation are:

- What are the domains of L&D under climate change?
- What is a meaningful baseline for determining loss?
- When, where, and for whom are L&D irreversible?
- What methodologies and approaches exist or need to be amended to best assess harm, in monetary and non-monetary terms?
- What is the basis for estimating and allocating reparation and compensation?

Search ...

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UPCOMING EVENTS

No upcoming events

Figure 2

Website: www.lossanddamagecc.wordpress.com

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2. INTRODUCTION

2.1 NON-MARKET LOSS AND DAMAGE IN THE CONTEXT OF CLIMATE CHANGE

Climate change poses a great threat to people's lives and livelihoods, putting at risk the things they value and value most. There is a growing consensus that, despite mitigation and adaptation efforts, loss and damage will still take place as a result of slow-onset and extreme weather events. This means that some people will lose material and non-material possessions, which may range from the loss of their homes to the loss of their sense of place, social cohesion, and identity.¹ Some of these losses, particularly the non-material ones (N-M L&Ds), cannot be easily assessed and quantified, and might therefore be overlooked by standard economic assessment tools in which many adaptation approaches continue to be embedded. Yet, this doesn't mean that these losses are less important. On the contrary, they often represent the very things people consider worth fighting for and are the foundation of relationships that define individual and community's willingness and capacity to adapt to change. Following the decision made by the United Nations Framework Convention on Climate Change (UNFCCC) to address avoidable and inevitable, and economic and non-economic L&D, we seek to understand:

- What do people value highly?
- How do they prioritise their values?
- What do they consider tolerable and intolerable loss?
- What are the trade-offs they are willing or forced to make when facing loss in the context of their everyday lives?

2.2 AIMS

In this paper, we focus on aspects of people's lives that are at risk from climate change but are difficult or impossible to assess following market-based tools (N-M L&D), to:

1. Review the recent literature and the mechanisms currently in place for assessing N-M L&D;
2. Present our preliminary research to better understand the aspects that people value most, and the potential for loss through a series of case studies, in places witnessing different climate stressors, both in the Global North and South;
3. Propose a novel analytical framework to assess N-M L&D in the context of climate change.

2.3 KEY DEFINITIONS

Loss and damage (L&D): is generally defined as the residual cost of climate change to societies, after mitigation and adaptation. The UNFCCC distinguishes two concepts, defining 'loss' as an irreversible impact that cannot be repaired or restored, and 'damage' as an impact that can still be reversed or alleviated. According to Barnett et al. (2016), "loss arises when people are dispossessed of things that they value, and for which there are no commensurable substitutes" (977).

Non-market loss and damage (N-M L&D): while some aspects of L&D can be given an economic/monetary value (e.g. damage to infrastructure), other aspects are difficult to assess or measure

¹ A more comprehensive list of N-M L&D types derived from the literature can be found on page 21.

because they don't have a monetary value or cannot be bought and sold (Morrissey and Oliver-Smith 2013), e.g. identity and sense of belonging. These are termed non-economic or non-market loss and damage (N-M L&D) and are the focus of this study.

Adaptation: attempts to keep climate-related risks to valued objectives at a tolerable level (Dow et al. 2013) so that people can “lead the kinds of lives they value in the places where they belong” (Barnett and Adger 2003, 328). This definition is based on a categorisation of risk as: (a) acceptable: when future efforts in risk reduction/adaptation are not justified/not needed; (b) tolerable: when risk reduction/adaptation is required to keep risks within reasonable limits; and (c) intolerable: when private or social norms or continuity of traditions are threatened (Klinke and Renn 2002, in Dow et al. 2013).²

Adaptation limit: arises when adaptation can no longer keep safe the things that people value (Barnett et al. 2015).

Adaptation frontier: is not a discrete or static threshold, but rather a gradient, a transitional space between safe and unsafe operating spaces, in which “multiple factors threaten to erode a system's sustainability, but adaptation still has the potential to secure management objectives and values ascribed to the system by human actors” (Preston et al. 2013, 1014). The edge of the adaptation frontier equals the limit to adaptation.

Values: are “what is valuable and important in life” (Adger et al. 2009, 338). Values are culturally constructed, and help us make sense of everything around us (Hards 2011, in Barnett et al. 2016). Values don't exist in isolation, “out there in the world”, but rather “insomuch as humans attach value to things” (Morrissey and Oliver-Smith 2013, 7), through action and evaluation, producing and reproducing them in multiple settings and in the spaces of everyday life (Graham et al. 2013).³

2 For further adaptation definitions see Hartzell-Nichols 2011; Adger et al. 2013.

3 Values can also be distinguished based on their intrinsic and instrumental meanings. Fankhauser et al. (2014); Andrei et al. (2015); and Serdeczney et al. (2016) (reviewed in section 4) incorporate this distinction in the context of N-M L&D. In our work, however, we don't consider this distinction advantageous.

3. BACKGROUND

3.1 L&D IN THE UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE (UNFCCC)

The concept of L&D associated with climate change has achieved prominence in international climate change and adaptation discourses over the past two decades, slowly gaining traction in the context of the United Nations Framework Convention on Climate Change (UNFCCC). Since the debate around losses caused by climate change started in 1991, with a pledge made by small island states to be compensated via an international insurance pool for losses resulting from the impacts of sea-level rise, L&D presence in the program of the Conference of the Parties (COPs) has grown significantly. First mentioned at COP13 (Bali, 2007), L&D has since been assigned a UNFCCC work programme, part of the Cancun Adaptation Framework (COP16, Cancun, 2010; refined at COP17, Durban, 2011), and its own policy instrument, the Warsaw International Mechanism (COP19, Warsaw, 2013), explained in more detail below. In 2015, the concept of L&D was formally adopted, albeit in vague terms, as an issue to be approached separately from, but still in relation to, adaptation and mitigation in the UNFCCC Paris Agreement (COP 21, Paris, 2015). This has insured that L&D will continue to be discussed as an important issue under the UNFCCC, and in preparation for inevitable climate-related losses.⁴

3.2 THE WARSAW INTERNATIONAL MECHANISM (WIM)

The Warsaw International Mechanism (WIM) was established in 2013 to examine “approaches for assessing present and future L&D associated with climate change impacts, particularly among vulnerable people in developing countries” (decision 3/CP.18). It focuses on:

1. Enhancing knowledge and understanding of comprehensive risk management approaches to address loss and damage associated with the adverse effects of climate change, including slow onset impacts;⁵
2. Strengthening dialogue, coordination, coherence and synergies among relevant stakeholders;
3. Enhancing action and support, including finance, technology and capacity-building, to address loss and damage associated with the adverse effects of climate change, so as to enable countries to undertake actions pursuant to decision 3/CP.18, paragraph 6.⁶

At the third meeting of its Executive Committee (Excom 3) in Bonn, 2016, the WIM established an expert group to focus solely on furthering knowledge and data collection on the risks posed by climate change on non-economic losses. The relevance of non-economic losses in the UNFCCC L&D framework is further detailed below. The WIM’s “structure, mandate, and effectiveness” (Mechler and Schink 2016, 290) will be reviewed at COP22, Marrakesh, 2016.

4 A detailed chronology of L&D under the UNFCCC can be found in Serdeczney et al. (2016).

5 Our work contributes mainly to item 1.

6 More details about the WIM’s functions can be found at <http://unfccc.int/adaptation/workstreams/loss_and_damage/items/8134.php> accessed on November 6, 2016; and at the “Report of the Conference of the Parties on its eighteenth session, held in Doha from 26 November to 8 December 2012. Addendum. Part two: Action taken by the Conference of the Parties at its eighteenth session”, available at <http://unfccc.int/documentation/documents/advanced_search/items/6911.php?preref=600007316#beg> accessed on November 6, 2016.

3.3 THE ROLE OF N-M L&D IN THE UNFCCC FRAMEWORK

N-M L&D has been recognised as a crucial component of the impact of climate change on people and livelihoods, one that must be understood for the establishment of more thorough and effective adaptation approaches. N-M L&D was first mentioned in the context of the UNFCCC at COP18 (Doha, 2012) when the convention commissioned a technical paper on non-economic losses⁷ and, in the WIM, N-M L&D is now represented in its own domain (Action Area 4). The literature on the topic has also grown, albeit slowly. So far, it offers mainly snapshots, lists of categories, and proposed frameworks for assessing N-M L&D. These provide an important entry point towards understanding L&D through those losses that cannot be easily quantified (e.g. loss of culture, identity, and sense of place), but that are still crucial in sustaining and guiding people's beliefs and behaviour in their everyday lives. Below, we offer an overview of the recent literature on the topic, exploring existing approaches and frameworks for categorising and assessing N-M L&D, and identifying their gaps and limitations.

⁷ A background paper provides information for this technical report. The background paper, Fankhauser et al. 2014, is presented in detail below (page 16).

4. CURRENT ASSESSMENT APPROACHES TO NON-MARKET LOSS AND DAMAGE

In this section, we provide an overview of the available literature on N-M L&D, focusing on the similarities and differences, and on the potentials and limitations of current frameworks for its assessment. The review includes five papers (Turner et al. 2008; Graham et al. 2013; Morrissey and Oliver-Smith 2013; Fankhauser et al. 2014; Serdeczney et al. 2016) and one report (Andrei et al. 2015), all of which: (a) define N-M L&D, (b) describe types of N-M L&D identified in case studies and/or represented in relevant literature; and (c) explore tools/methods for their assessment.

The papers and the report are first presented in accordance to their similarities, from which general lessons are drawn. It is important to note that some papers build upon previous studies to discuss approaches for assessing N-M L&D (Andrei et al. (2015) builds upon Morrissey et al. (2013) and Fankhauser et al. (2014); and the discussion paper by Serdeczney et al. (2016) expands on all three papers aforementioned). Two points raised by these pieces, but not by the other papers reviewed (Turner et al. 2008; Graham et al. 2013) are presented in items 7 and 8 below.

The literature is then reviewed individually to unveil each particular approach proposed for assessing climate-related N-M L&D. At the end of the section, final considerations are outlined, examining the potential and limitations of current assessment methods. We then highlight the need for a more grounded, relational analytical framework to assess N-M L&D.

4.1 LESSONS FROM THE LITERATURE ON N-M L&D

1. The literature examined builds on a growing consensus that **there will be adverse impacts from climate change that cannot be prevented by adaptation and mitigation strategies**, and which will lead to L&D.
2. L&D will result from both **slow-onset and sudden weather events**; impacts will be **direct and indirect**; and losses will be both **economic and non-economic** (or non-market, N-M L&D).
3. N-M L&D (such as sense of belonging, identity, and social cohesion) is **hard to assess and cannot be fully and appropriately valued through mainstream economic-based metrics**. As Andrei et al. (2015) state, “measuring the non-economic is like measuring love: whilst they [non-economic losses and love] are both important in our daily lives, they are impossible to quantify” (32).
4. N-M L&Ds, albeit difficult to assess, are “central in the social construction of climate risks” (Graham et al. 2013) and are, therefore, **fundamental in defining and sustaining a community’s adaptive capacity**. Morrissey and Oliver-Smith (2013) point out that when confronted by adversities, people turn to their common identities and values to organise themselves and enact change. Failing to account for these non-economic values will “lead to inefficient decision-making and perpetuate social injustices” (Morrissey and Oliver-Smith 2013, 4).
5. People are at the centre of N-M L&D (Fankhauser et al. 2014). In order to understand what people consider to be a ‘loss’, there is a need to understand **what they value and what is at risk from climate change**.
6. **Multiple voices must be heard in the assessment of N-M L&D**. A dialogue with people who have experienced and/or will experience harm will allow to: (a) understand the nature of their losses (Turner et al. 2008), (b) identify the range of what counts as a loss (Serdeczney

et al. 2016) and for whom (Turner et al. 2008); and (c) produce more inclusive and equitable adaptation approaches, in tune with local lived values (Graham et al. 2013).

7. N-M L&D occurs in three areas of influence: **individuals, society and the environment**.
8. N-M L&D objects and objectives at risk from climate change can be distinguished based on having **use value** (direct, consumptive values) or **non-use value** (existence values). They often have **intrinsic value** (valuable in themselves) or **instrumental value** (provide means to achieve something), or both.
9. All papers **list types of N-M L&D and provide categories under which these types can be organised**. The types/categories identified in this review are summarised and presented in a table 2 on section 4.8, page 21.

4.2 “FROM INVISIBILITY TO TRANSPARENCY: IDENTIFYING THE IMPLICATIONS,” TURNER ET AL. (2008)

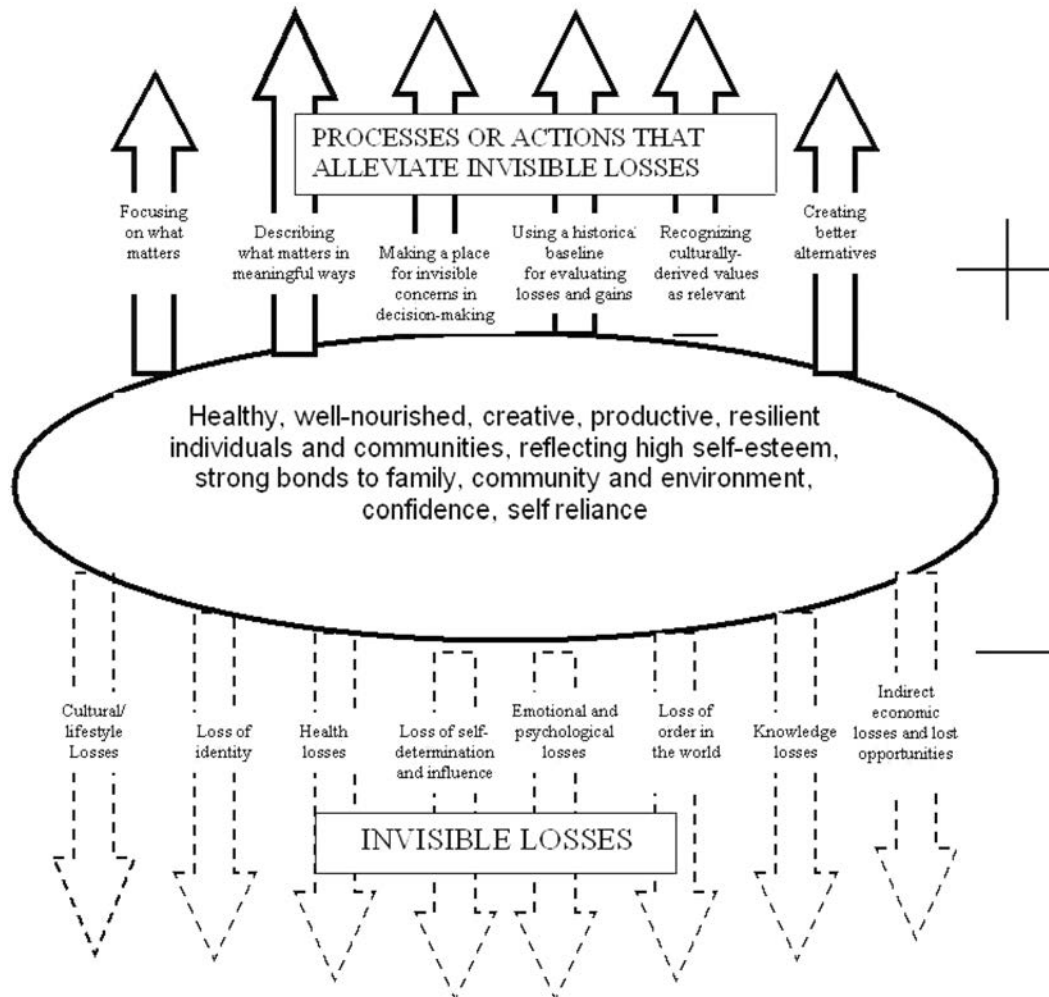
Turner et al. (2008) focus on the struggles of North American First Peoples, who have historically suffered from ‘invisible’ losses stemming from environmental management decisions that don’t take their voices and needs into account. The authors define ‘invisible’ loss as the loss of aspects of a person’s life that are generally unrecognised, unacknowledged, and seen as unimportant by others, and therefore, considered unworthy of compensation or mitigation strategies. This undervaluation happens despite the fact that such ‘invisible’ losses (e.g. identity; traditional knowledges) “may have even more profound impacts on individuals and communities than those [losses] that are more visible and widely acknowledged” (n.p.); such losses have proven to reduce the adaptive capacity of individuals and their communities.

The paper describes eight types of ‘invisible’ losses that result from dramatic changes in resources, affecting the way they have been traditionally used: (1) cultural/lifestyle; (2) identity; (3) health; (4) self-determination and influence; (5) emotional and psychological, (6) order in the world; (7) knowledge; (8) indirect economic losses and lost opportunities. Turner et al. call attention to the fact that these losses don’t work in isolation, but are rather overlapping and cumulative.

In order to address these losses, the authors propose six recommendations that work towards making ‘invisible’ losses ‘visible’ in processes and deliberations for resource management: (1) focusing on what matters to people; (2) describing what matters in meaningful ways; (3) making a place for these concerns in decision making; (4) evaluating future losses and gains from a historical baseline; (5) recognizing culturally derived values as relevant; and (6) creating better alternatives for decision making so that invisible losses will be diminished or eliminated in the future. A schematic diagram, showing how their recommended actions are expected to counteract losses, is provided below (Figure 3). The overall objective here is to instigate policies that sustain “healthy, well-nourished, creative, productive, resilient individuals and communities, reflecting high self-esteem, strong bonds to family, community and environment, confidence, self-reliance” (n.p.).

Published four years before N-M L&D was mentioned for the first time under the UNFCCC (COP18, Doha, 2012), this approach to losses provided by Turner et al. highlights the need for understanding what matters to people and what is at risk from being lost, making the ‘invisible’ things they value ‘visible’ in devising strategies to manage their environments.

Figure 3
Schematic diagram from Turner et al. (2008, n.p.) identified types of 'invisible' losses and countermeasures to reduce their impact on communities.



4.3 “THE SOCIAL VALUES AT RISK FROM SEA-LEVEL RISE,” GRAHAM ET AL. (2013)

Graham et al. (2013) state that, until 2013, studies analysing the impacts of sea-level rise on local communities had focused primarily on conventional measuring metrics (e.g. area of land and number of properties affected), overlooking non-material values that are at risk from sea-level rise (e.g. sense of belonging, culture, community cohesion, identity, self-determination, and attachment to places). The authors attempt to address this oversight by: first, proposing a definition of values, so these can be better assessed; and second, categorizing value-based losses to unveil those impacts that are relevant for particular social groups.

The paper reviews the literature on social values (including social impact assessments, human geography, psychology, decision analysis, and climate change adaptation) to develop a definition that grounds the concept on people’s everyday lives. Based on this assessment, the authors define ‘values’ as “[v]aluations that individuals make, in isolation or as part of a group, about what is important in their lives and the places they live. These valuations may be articulated verbally or expressed through everyday activities” (49).

Graham et al. propose a framework that organises 38 different types of value-based social impacts (found in relevant literature) under five broad categories: (1) physiological; (2) security; (3) belonging; (4) esteem; and (5) self-actualisation (Figure 4). Such categorisation aims at providing a framework for guiding future work on value-based impacts of sea-level rise, while also making such values visible in the development of adaptation approaches. However, the authors also highlight that understanding which of these values are more important to a particular group is also needed, in order to “help to develop adaptation strategies that are sensitive to the lived values of the community and will guide more equitable policy responses to adapt to sea-level rise” (50).

The approach proposed by Graham et al. certainly provides an entry point to a more grounded assessment of non-market aspects at risk from climate change, making an important call for understanding the trade-offs people are willing to make when facing loss.

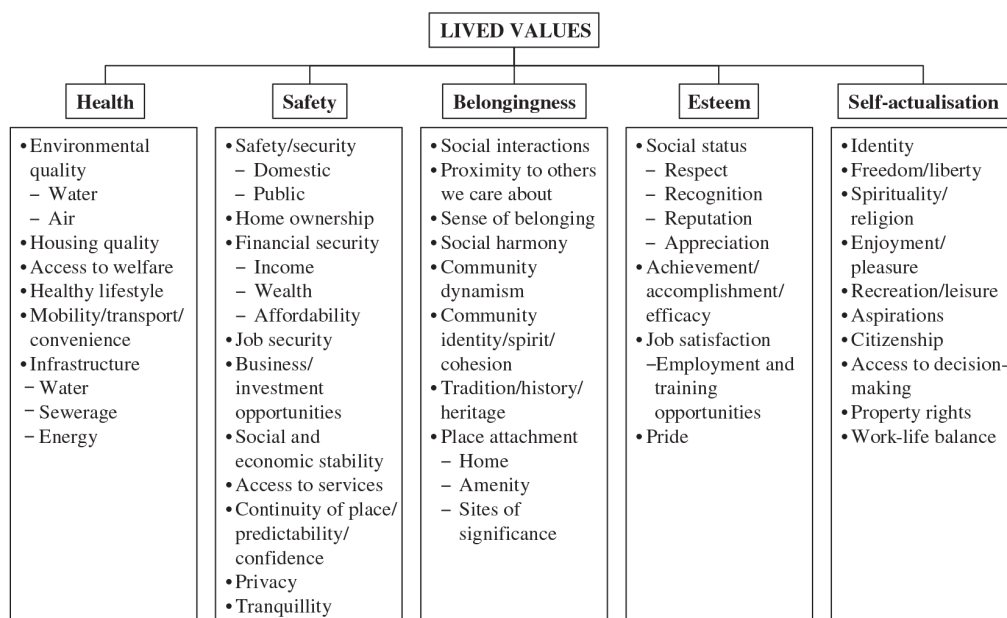


Figure 4
Schematic diagram from Graham et al. (2013, 50) organizing categories of values at risk from sea-level rise.

4.4 “PERSPECTIVES ON NON-ECONOMIC LOSS AND DAMAGE,” MORRISSEY AND OLIVER-SMITH (2013)

Morrissey and Oliver-Smith (2013) approach loss and damage as intrinsically connected to values, highlighting the need to understand the aspects that people value most, which are often non-economic and difficult to measure. The authors use examples to illustrate how people attach values to places and objects that strengthen their social relationships, and how loss disintegrates their social cohesion, leading to detrimental consequences for individuals and communities alike.

Furthermore, the authors explore (1) what people value and how values are represented; (2) what loss and damage is, in its many forms; (3) the challenges in assessing the value of non-economic losses; and

(4) possible means for their assessment. They evaluate and then expose the limitations of mainstream economics-based metrics for valuation and compensation (such as ‘contingent valuation’), stating that some things cannot be measured through market values, and doing so nonetheless may result in these aspects being undervalued. According to the authors, “the best way to address the problems of non-economic losses is to try and understand why and how people value things, rather than simply observing their willingness to trade them, and for what price” (16).

Morrissey and Oliver-Smith conclude that there is a need to explore alternative methods, building upon the participation of those directly affected, to understand the values that people place on objects and objectives at risk from climate change in accounting for L&D. They expand this into a call for a framework that is not only able to analyse how to compensate for L&D but that also aims at reducing the underlying causes of broad ranging vulnerabilities (through transformation), when adaptation action is no longer able to prevent loss.

Morrissey and Oliver-Smith explore how L&D could be categorised using two axes: one for non-economic and economic, and the other for material and non-material harm, within a representational space (Figure 5). Independent on the position of L&D within this space, they reinforce their call to address L&D through the lens of particular aspects that people value most in their daily lives.

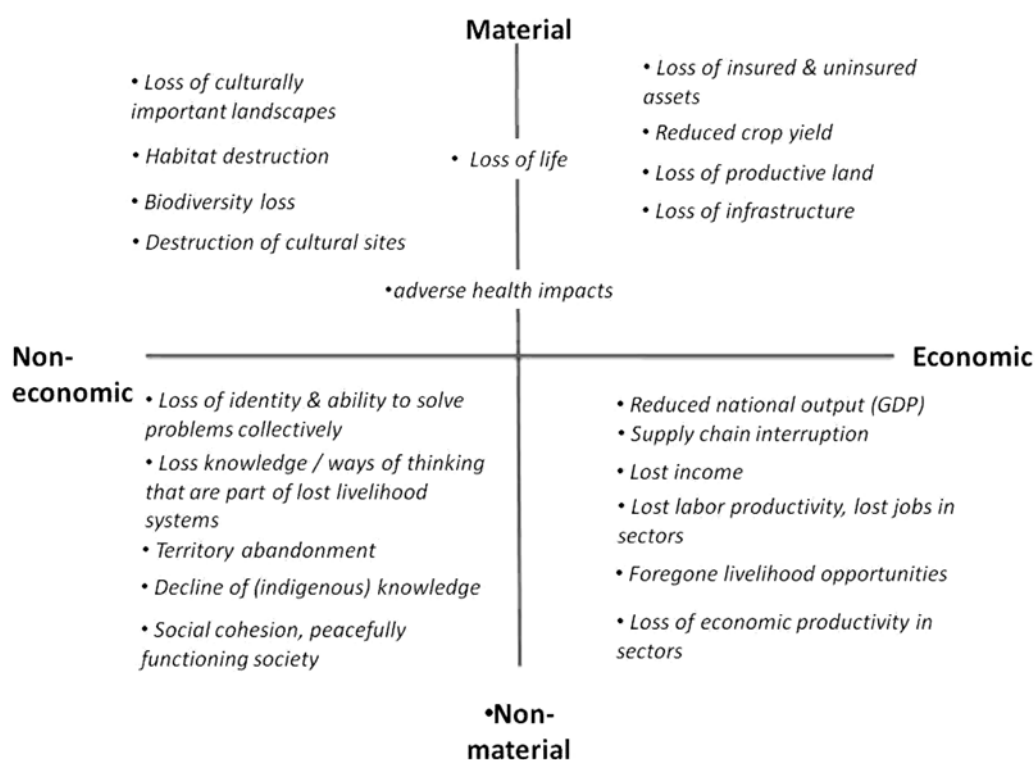


Figure 5
Schematic diagram by Morrissey and Oliver-Smith (2013, 11) organizing L&D in categories

4.5 “NON-ECONOMIC LOSSES IN THE CONTEXT OF THE UNFCCC WORK PROGRAMME ON LOSS AND DAMAGE,” FANKHAUSER ET AL. (2014)

Fankhauser et al. (2014) provide the background information for the UNFCCC Technical Paper requested by the Parties at COP18. This background paper focuses on (1) the different types of N-M L&D associated with climate change; (2) existing methodologies for their assessment; and (3) challenges and gaps

that need to be addressed in order to better assess N-M L&D, to avoid maladaptation, and prioritise present and future needs. In this background paper, loss and damage are treated as synonymous.

The paper outlines eight types of N-M L&D that are at risk from climate change: life; health; human mobility; territory; cultural heritage; indigenous local knowledge and other social capital; biodiversity; and ecosystem services. It also presents methods (predominantly quantitative) currently used for assessing different types of losses, such as: number of deaths; number of years of healthy life lost (measured through Disability Adjusted Life-Years – DALYs); number of people displaced; and number of species lost. The paper then compares four valuation techniques considered to be the “main techniques available to assess non-economic losses” (58, Figure 6) to offer a ‘blueprint’ for the assessment of N-M L&D in decision-making processes:

- a. Economic valuation: expresses non-economic impacts in monetary terms, which then becomes comparable to other economic impacts and costs. Methods include revealed preference (observations of what people do) and stated preference (surveys);
- b. Multi-criteria decision analysis (MCDA): uses formal scoring and weighting;
- c. Composite risk indices: also uses formal scoring and weighting;
- d. Qualitative/semi-quantitative methods: users of the analysis (often policy makers) are responsible for comparing and evaluating policy options.

The authors conclude that an encompassing quantification of N-M L&D will require the selection of the most suitable method(s) among those described above, or a combination thereof, taking into account their respective advantages and disadvantages to properly value losses. Importantly, “[v]aluation is interpreted not solely as assigning monetary values but more broadly as the act of ‘comparing the relative merits of actions or objects’” (58).

Despite acknowledging the importance of N-M L&D to people and livelihoods, Fankhauser and colleagues still focus on universal valuation techniques, whose primary objective is to describe N-M L&D in terms that policy makers may more easily request, which are typically those that are quantifiable. These techniques, however, risk overlooking the nuanced individual and community values that are or will be threatened by climate-change related events.

4.6 “NON-ECONOMIC LOSS AND DAMAGE CAUSED BY CLIMATE STRESSORS IN SELECTED COASTAL DISTRICTS OF BANGLADESH,” ANDREI ET AL. (2015)

Andrei et al. (2015) build upon Morrissey and Oliver-Smith (2013) and Fankhauser et al. (2015) to propose a qualitative approach for assessing N-M L&D stemming from the various environmental stressors that threaten lives and livelihoods in a given community. Rather than attempting to quantify N-M L&D, their report proposes a checklist with open questions for assessment (Figure 7). This checklist is based on the importance of “stories and narratives” (21) and it is designed to be applied in focus groups and interviews with key informants.

Andrei et al.’s proposed checklist was produced and tested as part of a research project encompassing eight case study villages in Bangladesh (Singhortoli; Chunkuri; Dumuria; Chakbara; Katmarchar; Padapukur; Joursing; Patakhali), all of which are at risk from different climate-related stressors: riverbank erosion; cyclone/storm surges; salinity intrusion; erratic rainfall; heavy rainfall; and northwester winds (here referred to as norwester).

The authors unveil various N-M L&D types, which are then categorised and described in detail in accordance with the realm in which they occur: (1) at the individual level: loss of education, loss of physical and psychological wellbeing; (2) at the societal level: loss of tradition/religion/customs, loss of social bonds and relations; (3) at the environmental level: loss of biodiversity/species, loss of

| <i>Method</i> | <i>Advantages</i> | <i>Disadvantages</i> |
|---|--|---|
| Economic valuation | <p>Structured, systematic approach to evaluation of non-economic and economic effects</p> <p>Facilitating economically efficient adaptation via full commensurability of non-economic effects of measures with economic effects and with effects of policy in other domains</p> <p>Salience of economic values with decision makers may promote political prioritisation of adaptation</p> | <p>Unreliability of and uncertainty about monetary values and other aspects of economic appraisal such as discounting</p> <p>Economic efficiency may not be judged to be the appropriate decision criterion</p> <p>Resource-intensive</p> <p>Emphasis on expert input and summary values can leave decision makers disconnected from the process</p> |
| Multicriteria decision analysis /composite risk indices | <p>Structured, systematic approach to evaluation of non-economic and economic elements</p> <p>Full commensurability possible between options evaluated</p> <p>Puts decision makers at the heart of the evaluation process</p> <p>Relatively easy to incorporate non-economic effects</p> | <p>Generally resource-intensive if method is employed to the full</p> <p>Generally lacking robustness in scoring and weighting choices, a problem more acute for non-economic elements where there is less evidence to inform scores and weights assigned</p> <p>Lacking transparency for those not involved</p> <p>Depending on who is involved in the evaluation process it can lack legitimacy</p> |
| Qualitative and semi-quantitative approaches | <p>Avoiding uncertainties inherent in explicit aggregation across effects</p> <p>Generally more transparent than methods involving scoring/weighting/pricing</p> <p>Relatively easy to incorporate non-economic effects</p> <p>Less resource-intensive</p> | <p>Putting onus on decision makers to implicitly perform comparisons, aggregation and make judgements based on reading of analysis. This opens up more risk of inconsistency and bias</p> |

Figure 6
Table by Fankhauser et al. (2014, 53) comparing methods available for the valuation of N-M L&D

ecosystem services. The authors conclude that such a detailed approach is crucial for the development of policy recommendations, which, they posit, require assessments of cases across all three levels.

Distinct from the valuation techniques presented by Fankhauser et al. (2014), the approach proposed by Andrei et al. reveals the nuanced and context-specific ways in which N-M L&D occurs in people’s daily lives.

**4.7 “NON-ECONOMIC LOSS AND DAMAGE IN THE CONTEXT OF CLIMATE CHANGE,”
SERDECZNEY ET AL. (2016)**

Serdeczney et al. (2016) expand on the approaches proposed by Morrissey and Oliver-Smith (2013), Frankhauser et al. (2015), and Andrei et al. (2016), yet attempt to offer a new framework for assessing N-M L&D. Unlike the other approaches, Serdeczney and colleagues provide a distinction between methods to avoid N-M L&D and methods responding to unavoidable N-M L&D. Whilst the former overlaps with climate change adaptation, the later “will likely require different – and perhaps novel – tools and instruments” for assessment (9).

**ADB Loss and Damage Study
KII/FGD Checklist/Questionnaire**

Central Question: How does climate induced hazards lead to non-economic loss and damages among households in selected coastal districts (Khulna and Satkhira) of Bangladesh?

Key Climate Hazards: Variations in temperature and rainfall, cyclone and storm surge, excessive rainfall/tidal surge caused water logging and sea level rise

IMPORTANT: Please be sure to explain to the focus group the purpose of the visit, key expected outcomes of our research and to get consent from members as to whether we can use the photographs and names of people in village in our report and any related materials.

Questions/Checklist

1. What are the climatic hazards that affect your village?
 - a. How has this changed over the years?
 - b. How have these changed your outlook on life?

2. What kinds of livelihoods did you have twenty/ten/five years ago? How did this change? Why?

3. What types of fish/crops are you cultivating this year? Has this changed over the years?
 - a. How is this difficult to adjust
 - b. What proportion of the communities land was cultivated this year (excluding fallow land)?
 - c. Are there any fruits/vegetables/fish species/etc. you used to be able to eat that are no longer available?

4. Are people in the village engaged in migration? Is this seasonal?
 - a. Who is engaged in migration? (men/women, age, status in the village)
 - b. What kind of jobs did they have? Where do they go and what do they do?
 - c. How do you feel because they left?
 - d. Do you want to leave too? Why/why not?

5. What is your fondest memory from your childhood?
 - a. How have things changed? Why?

6. Do climate related hazards cause losses and damages for your household? Please provide examples.
 - a. What kinds of losses and damages are difficult to measure/calculate? Please give examples.
 - b. How have these changed over the past twenty/ten/five years?

Individual

- **Life/Health/Psychological** (death, pain/injuries, fears)
 - How many people died during cyclone Aila? Did cyclone Aila affect your health?
 - What are your current health concerns?
 - What are your fears?
- **Education**(access, services, materials)
 - How has education changed in the past twenty/ten/five years?
 - Are your children able to go to school? If yes, until what age? If no, why?

Society

- **Traditions/Religion/Customs**
 - What traditions did you have twenty/ten/five years ago that you cannot practice now? Why? What do you miss?
 - How are your traditions different from your parents' traditions?
 - What kind of religious practices have changed? Why?
- **Culture/Heritage** (standard of living, social cohesion, relationships, etc.)
 - What in your life do you miss that was different twenty/ten/five years ago?
 - How have the bonds between your family, friends, and neighbours changed? Why?

Environment

- **Biodiversity/Species** (local species and livestock)
 - How has the biodiversity in the area changed in the past twenty/ten/five years?
 - What impact does this have on your livelihood?
 - What do you miss? Why do you miss these?
- **Ecosystems** (land, water bodies/wetlands, forestry)
 - How has the ecosystem in the area changed in the past twenty/ten/five years?
 - How does this make you feel?

Figure 7
Checklist for assessing N-M L&D by
Andrei et al. (2015, Annex 1)

According to the authors, previous attempts at approaching N-M L&D have produced inconsistent accounts - they lack cohesion and, hence, offer an imprecise and inadequate conceptualisation of the issue. Serdeczney et al. conclude that such inconsistency results from the various disciplinary backgrounds that underpin previous N-M L&D approaches, which end up reproducing the different perspectives, and implicit assumptions and limitations, of their respective authors.

Drawing from the N-M L&D typologies described by their predecessors, Serdeczney et al. propose a new framework through which N-M L&D can be categorised. Categories of N-M L&D are organised in relation to their physical attributes (material and non-material) and value (intrinsic and instrumental). They propose ten meta-categories under which different types of N-M L&D can be organised: human life; meaningful places; cultural artefacts; biodiversity; communal sites; intrinsic value; agency; identity; production sites; and ecosystem services (Figure 8). The authors argue that “[b]y grouping items into meta-categories within the framework, the different dimensions and functions of [N-M L&D] items can be better understood and approaches to address them identified” (15).

At the heart of the approach proposed by Serdeczney et al. lies the hope to create a framework that is applicable across different contexts, designed as a catalogue of items that provides a “standard set of rules” (21) for assessing N-M L&D. Yet, its attempted universal applicability, also risks masking the nuanced ways people experience N-M L&D, and how these very ways shape the decisions individuals and groups make in the face of inevitable loss.

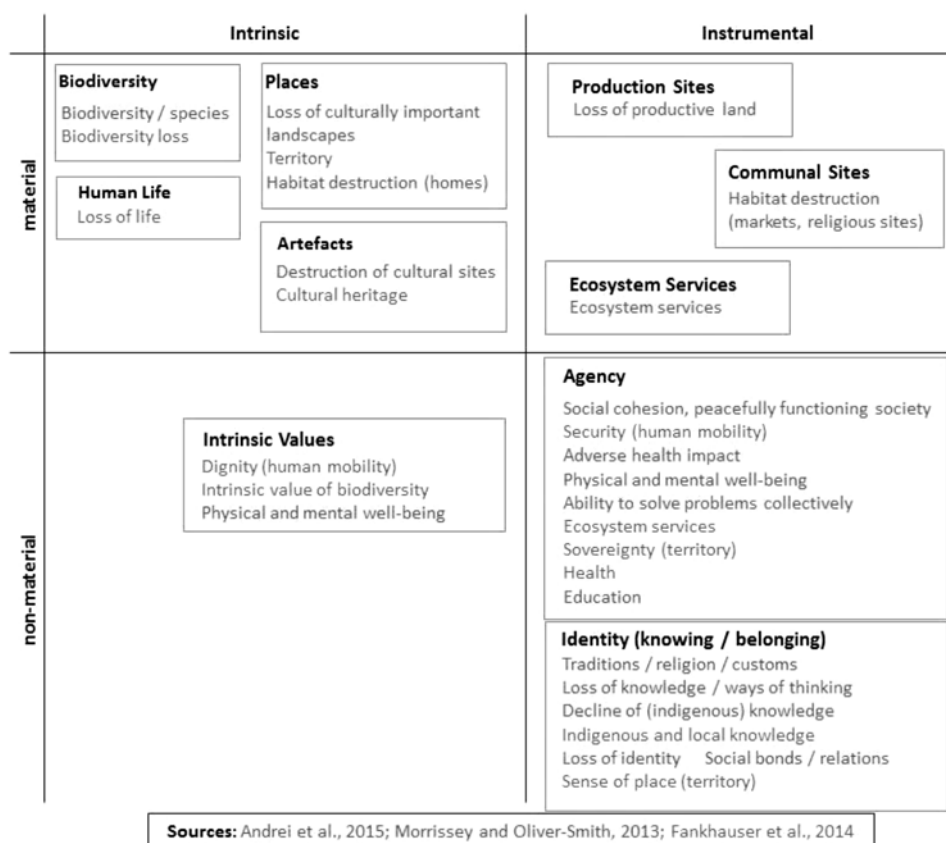


Figure 8
Schematic diagram by Serdeczney et al. (2016, 13) presenting their conceptual framework for assessing N-M L&D

4.8 N-M L&D IN THE LITERATURE

Table 2 Types and categories of N-M L&D identified in the literature reviewed

| Lived values in adaptation (Graham et al. 2013) | Non-economic & invisible losses (Turner et al. 2008*; Serdeczny et al. 2016**) |
|--|--|
| <p><u>Health:</u> Water & air Housing quality Access to welfare Healthy lifestyle Mobility, transport & convenience Infrastructure (water/sewage/energy)</p> <p><u>Safety:</u> Domestic & public Home ownership Financial security (income/wealth/affordability) Job security Business & investment opportunities Social & economic stability Access to services Continuity of place; predictability & confidence Privacy Tranquillity</p> <p><u>Belongingness:</u> Social interactions Proximity to others we care about Sense of belonging Social harmony Community dynamism Community identity; spirit & cohesion Tradition, history & heritage Place attachment (home, amenity, sites of significance)</p> <p><u>Esteem:</u> Social status (respect, recognition, reputation, appreciation) Achievement, accomplishment & efficacy Job satisfaction (employment & training opportunities) Pride</p> <p><u>Self-actualisation:</u> Identity Freedom & liberty Spirituality & religion Enjoyment & pleasure Recreation & leisure Aspirations Citizenship Access to decision-making Property rights Work-life balance</p> | <p><u>Invisible:*</u> Culture & lifestyle Identity Health Self-determination & influence Emotional & psychological losses Order in the world Knowledge Indirect economic losses and lost opportunities</p> <p><u>Intrinsic:**</u> Biodiversity & species Human life Physical & mental well-being Culturally important landscapes and sites Cultural heritage Territory Habitat Human mobility Dignity</p> <p><u>Instrumental:**</u> Productive land Ecosystem services Habitat Social cohesion & peacefully functioning society Health Physical & mental well-being Ability to solve problems collectively Sovereignty Education Traditions; religion & customs Knowledge & ways of thinking Indigenous and local knowledge Identity Social bonds & relations Sense of Place</p> |

4.9 REFLECTIONS REGARDING CURRENT N-M L&D ASSESSMENTS

1. The approaches reviewed above all provide snapshots, lists of typologies, and categories under which different types of N-M L&D can be organised. They highlight the variety of aspects people are likely to value in their lives, which must be taken into account in the development of climate-related policies for mitigation and adaptation, and for minimizing suffering when these are not sufficient to prevent loss.
2. More descriptive accounts, such as those provided by Andrei et al., signal that different types of N-M L&D emerge in the context of specific climatic stressors that then tend to generate rather distinct outcomes. Attempts to universalize categories that may satisfy UNFCCC demands (such as those presented by Serdeczney et al. 2016) risk under-representing the diverse, multifaceted, and nuanced ways in which N-M L&D emerge and are experienced by people in their everyday lives, even when such categorisations mean to be all-encompassing.
3. All approaches reviewed here treat the different types of N-M L&D as single entities, obscuring how people value aspects of their lives in relation to one another, and how these valued aspects may change over time.
4. These limitations suggest the urgent need for a framework for assessing N-M L&D that is grounded in people's values, is relevant to the context in which people live, and is able to unravel the way individuals and groups give preference to certain values over others (trade-offs) when making decisions about ongoing, future, acceptable, and/or inevitable loss.

5. REPRESENTATIVE, GROUNDED NON-MARKET LOSS AND DAMAGE CASE STUDIES

In order to address the limitations of current N-M L&D assessments identified in section 4.9, our research group has focused on a series of guiding questions that aim at providing a more grounded, context-relevant approach:

- What is it that people (or non-human actors) in a specific place/space value most (high value) and least (low value)?
- What particular harm/impacts from climate change are already experienced or are likely to be experienced in the future (or experienced more severely)?
- What is the ability of people in a particular setting to avoid harm?
- Which current impacts are acceptable/tolerable/intolerable and where is prevention happening/possible?
- What is it that people already experience as loss?
- What are the trade-offs they are willing to make to protect the things they value most?
- What expectations of loss may people have for the future; what would be acceptable, tolerable, and not tolerable for them; and what is likely to be reversible and what is not?

To start answering these questions, our group has focused on various case studies from the literature on climate-related impacts (compiled in a table in section 5.1) and on cases individual group members have been personally involved, both directly and indirectly (described in more detail from section 5.2 onwards⁸). We have used the categories of N-M L&D identified in the papers reviewed in section 4 (compiled in Table 2, page 21) to describe the diverse types of N-M L&D identified in the various case studies presented in the relevant literature. These examples serve to illustrate that, even if types of N-M L&D can be described under similar discrete categories, not all of them occur in different places. They are rather contingent on the contexts in which they emerge and the types of climate-related stressors with which they are associated. Moreover, the types of N-M L&D identified rarely occur in isolation, as we illustrate through a series of case studies described below.

5.1 ILLUSTRATIVE EXAMPLES OF N-M L&D

Table 3 Examples of N-M L&D identified in the literature through preliminary research⁹

| Geographical location | Climate-related stressor | Type of N-M L&D |
|-----------------------|-------------------------------|---|
| England (Banbury) | Extreme Rainfall and Flooding | Health Emotional & Psychological Losses Sense of Place Physical and Mental Wellbeing |

⁸ The case studies here described were first presented at the “Adaptation Futures Conference”, see page 31 for full citation.

⁹ These examples have been extracted from: Ajibade and Mcbean (2014); Ajibade et al. (2013); Allison (2015); Anderson (2008); Barnett (2012); Bauer (2013); Brida et al. 2013; Bryant and Garnham (2015); Byg and Salick (2009); Douglas et al. (2008); Fincher et al. (2014); Graham et al. (2014); Haile et al. (2013); Jurt et al. (2015); Karlsson et al. 2015; Kent and Alston (2008); Kirsch (2001); Lazrus (2012); McMillen et al. (2014); Monnereau and Abraham (2013); Mortreux and Barnett (2009); Nielsen and Reenberg (2010); Proudley (2013); Rabbani et al. (2013); Reid and Beilin (2015); Tapsell and Tunstall (2008); Tschakert et al. (2013); UNICEF Pacific (2010); Yaffa (2013).

| Geographical location | Climate-related stressor | Type of N-M L&D |
|----------------------------------|----------------------------------|--|
| Australia | Bushfire | Identity Emotional and Psychological Losses Territory/Habitat Social Bonds and Relations Sense of Place |
| | Drought | Culture & Lifestyle Identity Health Emotional and Psychological Losses Human Mobility Dignity Productive Land Physical and Mental Wellbeing Social Bonds and Relations Sense of Place |
| Australia (Lakes Entrance) | Sea-level rise | Culture & Lifestyle Self-Determination and Influence Emotional & Psychological Losses Habitat Sense of Place |
| Ghana | Drought | Culture & Lifestyle Emotional and Psychological Losses Territory/Habitat Dignity Productive Land Identity Sense of Place |
| Belize (Monkey River Village) | Sea-level rise | Culture & Lifestyle Emotional & Psychological Losses Culturally Important Landscapes and Sites Cultural heritage Dignity Traditions Religions and Customs Sense of Place |
| Nigeria (Lagos) | Extreme Rainfall and Flooding | Health Self-Determination and Influence Emotional and Psychological Losses Indirect Economic Losses and Lost Opportunities Human Life Physical and Mental Wellbeing |
| Pacific Islands | Sea-level rise | Sovereignty Culture and Lifestyle, Identity Self-Determination and Influence Habitat/Territory Health Physical and Mental Wellbeing Social Bonds and Relations |
| Mountain Communities | Glacier Retreat | Culture and Lifestyle Emotional and Psychological Losses Culturally Important Landscapes and Sites Cultural Heritage Traditions Religion and Customs Sense of Place |



Do you have an example of non-market loss and damage from your case study/region?

We are currently working on expanding our pool of case studies on N-M L&D in the context of climate change. Please share with us examples you have and think are relevant to advance the literature on the topic. To get in contact with our group, please see the information on page 2. We appreciate your contributions!

5.2 WHEAT BELT FARMERS, WESTERN AUSTRALIA

The Western Australia wheat belt is a vast agricultural landscape, with approx. 4,900 rain-fed farm enterprises, mostly family owned and operated. A twenty percent reduction in rainfall has undermined farmers' ability to maintain the health and vigour of their farm properties, while also facing worsening economic conditions and other social pressures. In this context, one's identity is closely linked to being a 'good farmer.' Dusty, weed-filled, paddocks signify lack of care, incompetence, and financial distress, impacting self-esteem, psychological health and wellbeing. Farmers are often prepared to suffer extraordinary levels of emotional and financial deprivation to retain their valued connections to their farmland, but when eventually they are forced to close, the psychological loss can be traumatic.

Figure 9
Wheat Belt Farm,
Western Australia

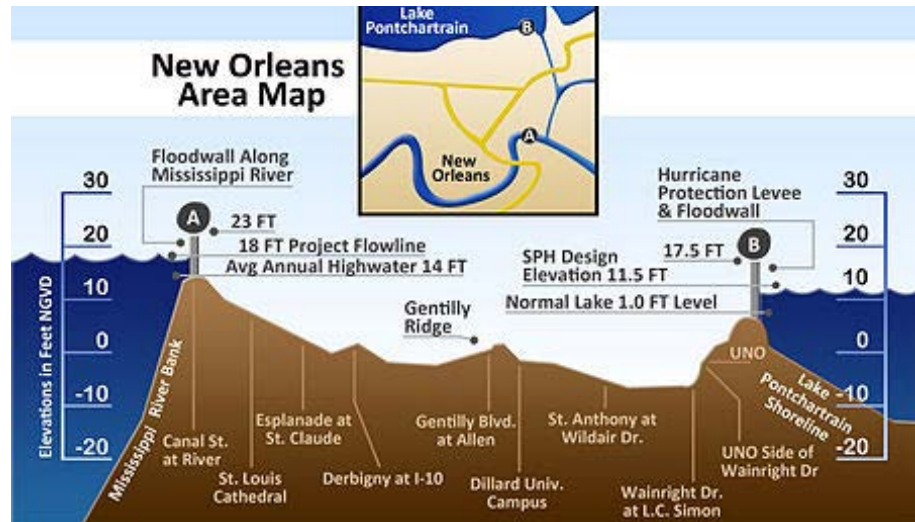


5.3 NEW ORLEANS, LOUISIANA

New Orleans, population 350,000, is situated on the Mississippi delta in the Gulf of Mexico. Roughly half of the city is either at or below sea level. Residents have a unique sense of place, derived via a host of distinctive foods, music and art, such as crawfish boils, second line funeral processions, the

famous New Orleans Jazz Festival, and the city's week-long Mardi Gras. Hurricane Katrina (2005) left eighty percent of the city underwater, killing 1800 people. While devastating for all, impacts were strongly socio-economically stratified, low-income residents suffered near-complete loss, while those with higher income were able to use insurance and other assets to recover. Storm surge models have increased understanding of the economic damages climate change may cause in New Orleans, but non-economic, place-based elements are often ignored or acknowledged as too difficult to parameterise.

Figure 10
City of New Orleans
Ground Elevations



5.4 NIUE, SOUTH PACIFIC

Niue is a small island state in the South Pacific. It is the world's largest elevated atoll and has a population of 1538 people. Over eighty percent of people born in Niue no longer reside there, with most having moved to New Zealand. Niueans place great emphasis on the daily practices of island life as the basis of Niuean culture and identity, as distinct from kin who live abroad. Growing taro, fishing, village life, and enjoying the Taonga (natural treasures) of the island is critical to Niuean culture and identity. Climate change might undermine Niue's Taonga and exacerbate emigration, both of which would be detrimental to Niuean culture and identity. Cyclone Heta (2004) destroyed ten percent of homes, the Huanaki cultural centre and the national museum, many land title deeds, all central to Niuean sense of place.

Figure 11
Niue, South Pacific



5.5 NORTHERN GHANA

Northern Ghana has experienced waves of outmigration toward urban areas and more productive agricultural land to the south, caused by declining soil fertility, irregular rains, and poor yields, as well as floods. Those who remain experience a doubly-denuded sense of place through thinned out homes and shrinking social networks, as well as desiccated landscapes of everyday life. Identity is at the heart of agricultural livelihoods. When under threat, understandings of identity become narrowed into one singular frame, often that of a failing farmer. People also experience having to share the same water source with animals as deeply dehumanizing and hence intolerable. Crossing such a critical threshold may well indicate a limit to adaptation as no longer feeling human triggers a decline in social capital and collective action.

Figure 12
Ghanaian Farmer



6. PROPOSED ANALYTICAL FRAMEWORK

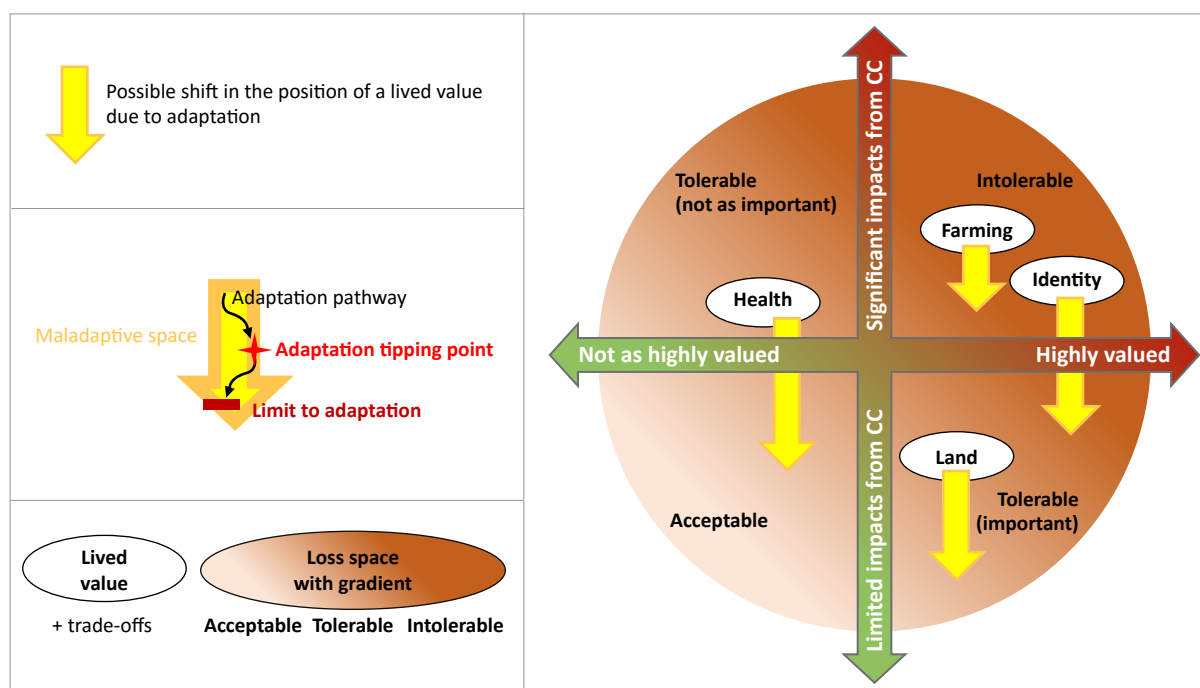
Acknowledging the limitations of current assessment tools/methods in the face of the complexity of N-M L&D, we propose a new analytical framework that takes into account the diverse, multifaceted, and nuanced ways in which N-M L&Ds emerge in specific places, in the context of people’s everyday lives. We start from what people in specific places value and how these aspects are affected by climate change. Not every potential loss is valued the same way, and some losses might be more substantial, and harder to avoid, than others. ‘Intolerable’ loss might occur when, despite adaptive action, a highly valued private or social norm is threatened. However, what people value is likely to change over time, with new understandings of risk, adaptation options, future impacts, and social and cultural change. Our proposed analytical framework for N-M L&D is, therefore, at the same time grounded and context-relevant, iterative and reflexive, and it also incorporates the dimension of time.

Our proposed analytical framework attempts to:

1. Map individual and collective understandings of:
 - What people in particular places/spaces value;
 - What they already experience as loss;
 - What expectations of loss they may have for the future.

2. Conceptualise a framework to locate:
 - What people value (and might prioritise in adaptation approaches);
 - How these aspects are at risk from climate change;
 - Which trade-offs are people willing to make;
 - How people’s values change over time.

Proposed analytical framework:



The aspects that people value (“lived values”) and that are at risk from climate change are depicted in the graph in one of four possible quadrants resulting from two perpendicular axes: (1) a horizontal axis representing how much that aspect is valued [from low-value (left) to high-value (right)]; and (2) a vertical axis representing the severity of the impact of climate change on that aspect [from low-impact (bottom) to high-impact (top)]. The gradient behind the axis represents the ‘loss space’, where acceptable/tolerable/intolerable losses are distributed from acceptable (lower left) to intolerable (upper right). As adaptation measures are adopted, it is expected that the position of lived values represented in the loss spaces will move towards the lower half of this space where climate change impacts are less pronounced.

7. CONCLUDING REMARKS

1. In spite of adaptation and mitigation efforts, some losses will be inevitable and are likely to cause profound impacts on people and their livelihoods.
2. In the 2015 Paris Agreement (COP21), the UNFCCC demonstrates its commitment to continue expanding knowledge and data collection in regards to L&D.
3. In order to more fully understand and validate how people experience L&D, now and in the future, both economic and non-economic aspects must be accounted for.
4. N-M L&D must move beyond attempts to merely categorise, and aims to quantify, what may not be measurable in the multiple dimensions that are at risk from climate change.
5. Bottom-up and context-specific approaches, as complements to universalising frameworks, are needed to make visible the diverse, multifaceted, and nuanced ways people experience N-M L&D in the context of their everyday lives.
6. Across all case studies analysed so far, certain types of N-M L&D are identified to be of high value, particularly place, identity, community and wellbeing.
7. Our analytical framework proposes to assess N-M L&D from the perspective of what people value, where they live and how they encounter climate change in these specific places, and how they make decisions when facing immediate and future looming losses.

8. RESEARCH DISSEMINATION

8.1 PRESENTATIONS

- New, Mark. 2016. “Valuing Non-Market Loss and Damage in the Context of Climate Change.” Poster presented at the Adaptation Futures, Rotterdam, May 10.
- Tschakert, Petra. 2016a. “Non-Economic Losses (NELs): Human Mobility, Territory, and Indigenous Knowledge.” Presented at the UNFCCC WIM ExCom Expert Briefing, Bonn, April 26.
- . 2016b. “Vulnerability, Marginalisation, Anticipatory Learning and Flexible Planning.” Presented at the NCCARF CSIRO Climate Adaptation Conference, Adelaide, Australia, July 5.

8.2 JOURNAL ARTICLES

- Barnett, Jon, Petra Tschakert, Lesley Head, and W. Neil Adger. 2016. “A Science of Loss.” *Nature Climate Change* 6 (11): 976–78.
- Tschakert, Petra, Jon Barnett, Neville Elis, Carmen Lawrence, Nancy Tuana, Mark New, Carmen Elrick-Barr, Ram Pandit, and David Pannel. 2016. “Climate Change and Loss, as if People Mattered: Values, Places, and Experiences.” *Wiley Interdisciplinary Reviews (WIREs): Climate Change*. (Manuscript under review).

8.3 PARTICIPATION IN THE UNFCCC

WIM Expert Group on Non-Economic Loss and Damage

Prof. Petra Tschakert, Member of the Expert Group

First meeting of September 2016, Bonn.

Additional information about the expert group (including the proceedings from their first meeting) are available at http://unfccc.int/adaptation/groups_committees/loss_and_damage_executive_committee/items/9694.php

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