

Conference Programme

CONFERENCE ON LOSS AND DAMAGE 2019 | LUCSUS LUND UNIVERSITY



Foreword

Today, the climate crisis puts humanity at a watershed moment: decisions taken now will have a profound impact on vulnerable people around the world, as well as on our children, and our children's children. As researchers, we need to provide the best quality science to underpin policy and support decision makers in navigating transitions towards a sustainable future.

How we conceptualise and engage with Loss and Damage (L&D) from climate-related events is a key part of this. Researchers have a key role to play in helping to define, measure and quantify existing L&D, in predicting future L&D, and in identifying and evaluating strategies and policies to respond to the impacts of climate-related events.

We need to examine which approaches to L&D can best account for both economic as well as non-economic impacts, where increasing evidence suggest the latter can be just as significant to individuals and communities. Equally, we need to evaluate which governance arrangements are most appropriate for different contexts.

In the run up to the Santiago Climate Change Conference, where the UNFCCC mechanism on L&D will be reviewed, it is an opportune moment to bring researchers together to discuss L&D. Moreover, now is the time to meaningfully situate L&D within the broader sustainable development agenda, including the Sustainable Development Goals, as highlighted in Article 8 of the Paris Agreement.

Welcome to our very first international conference on Loss and Damage: a platform to share new research, and to discuss and highlight multiple perspectives on L&D and their implications for science and policy formation. In particular, the conference brings together diverse analytical lenses to explore how climate science, ecological science and sustainability science perspectives might be combined to advance L&D theory and practice.



Photo: Peter Frodin

Our ambition is to share findings from the conference with wider society in order to increase understanding of L&D, and to establish pathways to better respond to climate-related events.

Emily Boyd, Director of
Lund University Centre for Sustainability Studies (LUCSUS)

Wednesday 30 October 2019

08.30 Registration and coffee

Opening Keynote Session

09.30 Opening welcome and short introduction to the conference on L&D
Emily Boyd, LUCSUS

10.00 Where is the international policy focus and what are important research issues relevant to loss and damage?
Koko Warner, UNFCCC

10.30 Efforts to develop L&D research and practice?
Reinhard Mechler, IIASA

11.00 What do we know about the science of attribution?
Friederike Otto, Oxford University

11.30 Inspirational talk
Jonas Åkerman, Lund University

12.00 Lunch

Characterising L&D from a climate change perspective – what do we know?

13.00 Introduction: What kind of science might be needed to support L&D policy and practice?
Rachel James, Oxford University

13.15 Evidence of loss and damage: Lessons from post-disaster assessments in the Caribbean
Adelle Thomas, University of The Bahamas

13.30 Using probabilistic event attribution to estimate economic costs of climate change: results from studies of Hurricane Harvey and droughts and floods in New Zealand
Dave Frame, Victoria University Wellington

13.45 Projected loss of life from heatwaves in US cities under different mitigation scenarios
Eunice Lo, University of Bristol

14.00 Glacier retreat and its challenges for the people of the Cordillera Blanca Peru – an insight into losses and damages
Alina Motschmann, University of Zurich

14.15 Where does science about Loss and Damage fit into the IPCC reports?

Jan Fuglestedt, CICERO

14.30 Discussion

15.00 Coffee and poster session

How does an ecological perspective contribute to L&D – what do we know?

15.30 Introduction: Ecological impacts of climate change through the lens of loss and damage

Richard Walters, Lund University

15.45 Disentangling climate change impacts on biodiversity in tropical forests

David Edwards, Sheffield University

16.05 Consequence of extreme weather variations on food production

Jennie Barron, SLU

16.25 Facilitated dialogue between Murray Scown (Utrecht University/LUCSUS) and Brian Chaffin (University of Montana) exploring ideas about where, when, how and at what scale are climate change impacts occurring? What future L&D framework could support vulnerable ecosystems?

16.40 Audience Q&A

17.00 Summary and keypoints from day 1: Interactive Session

Rachel James, Oxford University

18.00 Welcome reception

Thursday 31 October 2019

Connecting L&D to social and sustainability perspectives – what do we know?

8:30 Introduction: Context of loss and damage and sustainability

Emily Boyd, LUCSUS

8.40 Bringing Sustainable Development Perspectives into the Loss and Damage Debate

Chad Boda, LUCSUS

8.55 When waves of heat and inequality meet: A relational approach to disproportionate exposure to the extreme urban heat in India

Maryam Nastar, LUCSUS

9.10 Climate extremes – a study of vulnerability, loss and damage in relation to the 2018 drought, focusing on Southern Sweden

Tomas Germundsson and Sara Brogaard, Lund University

9.25 Occupy Climate Change: How do social movements address loss and damage from bottom up?

Ethemcan Turhan, KTH

9.40 Discussant: Societal adverse effects of L&D – what the theory tells us about who is affected, where, when, how and why?

Erin Roberts, Kings College

9.50 Discussion

10.00 Coffee and poster session

Defining L&D from gender perspectives and humanities – what do we know?

10.30 Introduction: Why gender and humanities have an important role in the discussion on L&D

Emmanuel Raju, University of Copenhagen

10.40 Stories of Loss and Healing

Sonja Ayeb-Karlsson, Sussex University

10.55 Cyclone Idai Disaster: Loss and Damage Narratives of Women in Chimanimani District, Zimbabwe

Jephias Matunhu, TMMRI

11.10 Accounting for the non-economic dimensions of Loss and Damage in the Arctic: Contributions of the Humanities

Stephen Woroniecki, LUCSUS

11.25 An empirical study on the integration and relevance of gender perspectives in the international consensus of Climate Change Loss and Damage

Nayab Zafar, BTU

11.40 Discussant: Summary of current thought and direction on loss and damage, intersectionality and the humanities

Petra Tschakert, University of Western Australia

11.50 Discussion

12.00 Lunch

L&D from a policy and litigation perspective – what do we know?

13.00 Introduction: So why law?

Kristian Lauter, Copenhagen University

13.10 Defining loss and damage: identifying normative content of definitional criteria

Linnéa Nordlander, Copenhagen University

13.25 Climate Change Litigation and Loss and Damage: A Separation of Powers?

Patrick Toussaint, University of Eastern Finland

- 13.40 National Governance of Climate Change-related Loss and Damage: A Case Study of Antigua and Barbuda**
Lisa Vanhala, UCL
- 13.55 Need assessment on the Policy and Institutional Approaches to deal with Loss and Damage at the national level: Context of Bangladesh**
Hafijul Islam Khan, CCJ-B
- 14.10 Climate change in the cryosphere: calculating attributable damages in the case of Lliuya v RWE**
Rupert Stuart-Smith, Oxford University
- 14.25 Summary:** Kristian Lauta, Copenhagen University
- 14.30 Discussion**
- 15.00 Coffee**

Economy of L&D

- 15.30 Introduction: Why economy is at the heart of L&D**
Chad Boda, LUCSUS
- 15.40 Finance for Loss & Damage: Towards a principled approach**
Teresa M. Deubelli, IIASA
- 15.55 An assessment of needs, finance, and institutional arrangements for addressing loss and damage in African countries: taking stock and looking forward**
Doreen Stabinsky, College of the Atlantic
- 16.10 What would an effective financing arrangement look like for the poorest flood prone communities in Western Nepal?**
Colin McQuistan, Practical Action
- 16.25 Disaster risk and adaptation finance in the context of Loss and Damage: An investigations of national-level implications for the case of India**
Architsh Panda, LSE
- 16.40 Summary**
Chad Boda, LUCSUS
- 16.50 Discussion**
- 17.30 Interactive session summary**
- 18.00 Carbon Ruins Exhibition at Lund City Library**
- 19.30 Conference Dinner in Kulturen**

Friday 1 November 2019

Insurance and L&D

- 8.30 Introduction: Why insurance matters?**
Friederike Otto, Oxford University
- 8.40 The Prospect of Weather Index-based Insurance in Addressing Climate Change Induced Loss & Damage**
Sonia Akter, National University of Singapore
- 8.55 Developing a funding mechanism for loss and damage: What is needed in small island developing states?**
Melanie Pill, Australian National University
- 9.10 Risk or Resilience? The Contradictory Role of Insurance in Addressing Loss and Damage from Climate Change**
Witchuda Srang-iam, National Institute of Development Administration
- 9.25 Summary:** Friederike Otto, Oxford University
- 9.30 Coffee & poster session**

Governance of L&D – how do we do it? (I)

- 10.00 Introduction: Setting the scene with the recent Amazon fires**
Patricia Pinho, University of Sao Paulo
- 10.10 Clouding Skies: Exploring digital approaches to 'Loss and Damage', and the algorithmization of injustice in a warming world**
Giovanni Bettini, Lancaster University
- 10.25 Identifying the Risk and Policy Space for Loss and Damage: A Role for Transformational Risk Management?**
Thomas Schinko, IIASA
- 10.40 Climate risk analysis for dealing with critical risks beyond adaptation- Operationalizing the Loss and Damage options space for Bangladesh**
Reinhard Mechler, IIASA
- 10.55 Timescales of improving adaptive capacity and implications for a global L&D regime**
Carl-Friedrich Schleussner, Climate Analytics
- 11.10 Discussant:** Olivia Serdeczny, Climate Analytics
- 11.20 Discussion**
- 12.00 Lunch**

Governance – how do we do it? (II)

- 13.00 **Intro: Why science is cautious about L&D?**
Richard Jones, Met Office
- 13.10 **Bringing the 'Politics' back in the Loss and Damage debate: a diagnosis of contentious issues**
Elisa Calliari, UCL
- 13.25 **More than climate extremes: Strengthening L&D governance to address slow onset events**
Mariya Aleksandrova, DIE
- 13.40 **Climate Resilience or Properly Compensating for Climate Loss and Damage**
Ivo Wallimann-Helmer, University of Fribourg
- 13.55 **Q&A**
- 14.00 **Next steps discussion: How can we improve availability of knowledge and governance strategies to address L&D?**
- 14.05 **Introduction: Supporting L&D policy – what does L&D mean and what type of evidence might be required?**
Richard Jones, Met Office
Breakout discussions
- 15.30 **Coffee and farewell to participants**



Photo: Chad Boda, LUCSUS, Lund University

Posters for the Conference on Loss and Damage 2019

Extreme Heat Hotspots under Global Warming

Presenting: Laura Suarez Gutierrez
Max Planck Institute for Meteorology

Measuring Coastal Erosion in Ängelholm Municipality

Presenting: Anna Hamilton
Ängelholms kommun

Climate Risk Management in the Context of Coastal Zones and Fisheries

Presenting: Nicola Hanke
Global Programme | Risk Assessment and Management for Adaptation to Climate Change
(Loss & Damage)

From policy to practice: Towards a comprehensive climate risk assessment framework (case of India)

Presenting: Kyca Luisa Maria
Global Programme | Risk Assessment and Management for Adaptation to Climate Change
(Loss & Damage)

The costs and additional costs of saving a species

Presenting: Joshi Dipesh
Climate Resilience, WWF Nepal

Social justice in the context of urban pluvial flooding: a case study of cloudbursts in Malmö, Sweden

Presenting: Shifteh Mobini
Lunds Tekniska Högskola

Impact of Climate Change on Health of Urban Community: A Case Study on Mirpur Area of Dhaka City

Presenting: Kamrun Nahar Tanni, Tuly Roy and Md. Mostafizur Rahman
Bangladesh University of Professionals

What does loss and damage mean to youth in informal settlements of Cape Town, South Africa?

Presenting: Thuli Montana
Durham University

UNHCR and IOM: Mandates and cooperation in relation to environmental displacement

Presenting: Silvana Lakeman
Bremen International Graduate School of Social Sciences

Local Resilience Practices to Minimize Loss and Damage resulted from Climate Change: A Study on a Flood Vulnerable Community of Bangladesh

Presenting: Ashik Sarder
International Federation of Red Cross and Red Crescent Societies

Projected changes in spatially concurrent heatwaves depending on the level of adaptation

Presenting: Martha-Marie Vogel
Institute for Atmospheric and Climate Science, ETH Zürich

A note from the scientific committee

The potential for climate change to cause loss and damage has been highlighted for almost three decades, and since 2013 there has been a formal mechanism on Loss and Damage (L&D) under the United Framework Convention on Climate Change (UNFCCC). L&D policy is designed to address the negative impacts of climate change, including harm to people and ecosystems caused by both sudden and slow-onset events, such as floods, hurricanes, sea level rise and desertification, in developed and developing countries alike. Many have highlighted the potential for L&D to occur in cases where mitigation and adaptation strategies are not enough to prevent adverse effects.

L&D discussions have often been characterised in the media as a controversial debate between vulnerable countries, seeking compensation for climate change impacts, and emitting countries, wishing to avoid liability. However, the reality is much more complex. Finance is by no means the only issue under debate, and many have highlighted fundamental questions about what people can do to deal with L&D, and to survive and thrive in a changing climate: in cases where no precedent exists, where there are no known adaptation strategies, and where no support mechanisms are available.

Whilst multiple perspectives about L&D and L&D policy have been identified, parties have jointly recognized the importance of

“averting, minimizing and addressing” L&D, and have highlighted the need to enhance understanding. The Executive Committee to the Warsaw International Mechanism on L&D have issued several calls to researchers and practitioners for evidence. At the Katowice Climate Change Conference in 2018, the need to regularly report on climate-related losses, and to assess information about L&D, was recognized. However, there has been limited scientific assessment of “Loss and Damage” to date. Many scientists working on related issues have limited awareness of the policy process or that their research could be highly relevant and useful. Moreover, L&D policy raises new questions which have not previously been addressed in climate change research.

This conference brings together researchers from diverse disciplines, to share new research findings, set the future research agenda, and explore the potential of interdisciplinary science in defining, measuring, and providing tools to govern the losses and damages that will result from climate change. With the Intergovernmental Panel on Climate Change (IPCC) Sixth Assessment Report well underway, and the review of the Warsaw International Mechanism due to take place at the Santiago Climate Change Conference in December, there is an urgent need and an opportune moment to jointly examine how research can better support L&D policy.

An introduction to the conference themes

CHARACTERISING L&D FROM A CLIMATE CHANGE PERSPECTIVE

Heatwaves, floods, droughts, and hurricanes were causing losses and damages long before human influence on the climate system was detected. Disaster experts have long been discussing and assessing loss and damage from extreme weather. Now, it is clear that anthropogenic climate change is altering the frequency and magnitude of extreme weather events, causing sea level rise and ocean acidification, and contributing to other “slow onset” processes. These changes have already been associated with negative impacts for people, and will inevitably lead to more. However, climate change interacts with natural climate variability, and the extent of loss and damage experienced by people is influenced by a range of factors besides anthropogenic climate change: including risk governance, other drivers of environmental change such as deforestation, and any other factor which influences people’s exposure and vulnerability. Therefore, measuring and predicting L&D from climate change is far from straightforward.

Some have suggested that it would be better to avoid the challenge of distinguishing L&D that can be attributed to climate change. Rather, they suggest it would be

HOW DOES AN ECOLOGICAL PERSPECTIVE CONTRIBUTE TO L&D

Climate change impacts on ecosystems are already around us. Consider the devastating images of coral bleaching, which can happen with only 1°C of ocean warming; or fish skeletons in dried riverbeds because of extreme drought, made worse by human

more productive if L&D policy were to take an integrated approach, tackling all climate-related losses and damages, regardless of whether they are related to climate change or the result of natural variability or some other driver. Perhaps: this may be a pragmatic policy approach. However, it does not negate the importance of understanding the interactions between climate change and loss and damage. If decision makers are to appropriately respond to a drought or hurricane, an understanding the factors which led to loss and damage is fundamental. If we are to anticipate and prepare for future loss and damage, predicting how climate change will interact with other drivers of risk is essential.

During day 1 of the conference we have arranged a dedicated session to explore the interactions between climate change and L&D: to identify existing methods and novel approaches for examining how climate change is contributing to L&D, and will contribute to L&D in future. The session will also include a discussion of knowledge gaps, where there is a need for new research to help measure and predict L&D from climate change.

conflict over scarce water. Ecologists have studied these impacts for some time but needed now is a discussion on how the L&D framework applies to ecosystems. What do extreme events mean for ecosystems? Who speaks for nature? How do we compensate



the loss of invaluable ecosystems and the services they provide? What can the L&D framework offer ecology? While economic concerns can often dominate discussions of L&D, exploring ecological perspectives may be just as fruitful, and certain connections exist between the two. From an economic perspective, ecosystems can be viewed as public goods, meaning that loss or damage to ecosystems could translate into losses (economic or not) for all members of society. The concept of ecosystem services (related somewhat to an economic perspective) is also relevant for L&D – consider the capacity of a well-managed watershed to provide clean drinking water to cities; this ecosystem service can be damaged by climate extre-

CONNECTING L&D TO SOCIAL AND SUSTAINABILITY PERSPECTIVES

How we define sustainability is closely linked with how we define and engage with L&D. In a simple sense sustainability can be understood as the tradeoffs between economic

mes, such as storms, which cause severe erosion and increasingly turbid water. Who is now responsible for filtering this water? Loss of ecosystems (e.g. coral reefs) because of climate change could also lead to non-economic L&D, such as loss of identity for fisher communities. But ecosystems are invaluable and ecological L&D cannot be fully captured by purely economic or social perspectives, so ecologist and biologists can make a valuable contribution to this largely missing piece of the L&D research. Similarly, the L&D framework is likely to prove relevant for ecological research in the future, particularly given the increasing emphasis on societally relevant research.

development and environment. It is a way of solving the inevitable tensions between, on the one way, the push for growth, and on the other, the need to preserve nature, bio-

diversity and ecosystems. But what should be sustained and for whom? These fundamental questions link sustainability to L&D from climate-related events. In other words, sustainability can be seen as a set of social values: as a way of to guide what should be sustained and how. There is significant scope to examine linkages between sustainability and L&D. Agenda 2030 for sustainable development also pledges to leave no one behind. L&D from climate-related events impact mostly on marginalised and vulnerable groups disproportionately. We

L&D FROM GENDER PERSPECTIVES AND HUMANITIES

Non-economic loss and damage provides us with insights on non-material losses that are not easily measured in economic terms, while the impacts on people are significant and cut across intersectional dimensions of gender, class, ethnicity and race, age and religion. These include a wide range of losses associated with human life, displacements and migration from climate change impacts of extreme flooding, droughts and/or hurricanes and cyclones leading sense of identity loss and place, and mental and emotional distress. These losses are intersectional and hardly measured. Loss and damage (L&D) research can learn from studies of disasters, which reveal inequalities in society. It is extremely crucial to bring evidence on the fact that vulnerabilities (of different forms- social, political, economic) are key factors of disasters. There are only natural hazards and no natural disasters. Therefore, assessing vulnerabilities and risks is very important to substantially reduce loss and damage from disasters. In order to do so, technocratic, engineering and economic approaches of risk analysis have their limi-

therefore need more knowledge on where, how, when and at what scale people are affected by L&D, how losses and damages impact local livelihoods, and how vulnerable actors mobilise and form social movements to change their situation. Mobilisation can become an important pathway for marginalised groups to make a policy impact on L&D. In this session we will examine the question: can a sustainability lens on L&D be the way forward to create a more just and fair way to address climate change, and does social mobilisation play a role?

tations. In general, there is need for deeper grounded analysis of the disaggregation of root causes and power dynamics of vulnerability to the effects of disasters. To be able to reduce disaster impacts, a critical analysis of the central underlying aspects and narratives, cultural beliefs, norms and values that influence vulnerabilities is a must from a social science perspective. This process must increasingly take into account the need for local level engagement to resist disaster risk creation along with increasing efforts for disaster risk reduction and adaptation to climate change. Here the arts and humanities can offer insights into historical context and reframing of L&D as experienced by broad and diverse society with inclusion of a range of voices on what are non-economic losses and damages, and how should they be conceptualised into existing frameworks? Do we need new frameworks to address and deal with non-economic L&D?

L&D FROM POLICY AND LITIGATION PERSPECTIVES

Saúl Lliuya (luya) is a local mountain guide in the Peruvian Andes living with his family in the small village Huaraz. Huaraz is situated in a beautiful, but yet risky area. From a local perspective, due to melting of a local glacier, the surface of Lake Palcacocha has increased eightfold in less than 40 years, while its volume has grown 30-fold. Accordingly, Saul, his family and community are increasingly faced with risks of glacial lake outburst flood. With the UNFCCC COP's decision to establish the Warsaw International Mechanism on L&D, some initial framing of the Paris Agreement's contradictory introduction of Loss and Damage in relation to climate change took place. Though the Paris Agreement uses terms that seems to reflect a clear legal content, the link between the legal concepts and the actual losses suffered as a consequence of climate change remains vague. Climate change is undoubtedly a complex process – but one with very tangible and concrete effects for communities and property owners across the world. Accordingly, legal responsibility is increasingly an avenue for climate justice. Loss and Damage is the suggested by some as the political and legal avenue to address

this. Others may debate these claims given the Paris Agreement decision text clause which excludes liability.

Legal responsibility is not just a matter of who pays, or for that matter making someone pay or in other words penal or restorative, but more importantly legal responsibility is about who, from an institutional perspective, is recognized as owners of future damages and risks, and thereby for initiating climate action. That is, discussions on legal responsibility are not only punitive, but also behavioral and distributive. As a reflection thereof, in November 2015, Saul, who up until this point in time had never left Peru, travelled to Germany to launch a legal action against RWE, the biggest energy producer in Germany, backed by German environmental NGO. RWE is responsible for 0,48 % of all greenhouse gasses ever emitted – so 0,48 % of expenses of building the necessary infrastructures to protect his home and livelihood from a glacial lake outburst flood from Lake Palcacocha. These issues will be examined in this session on policy and litigation perspectives in this conference.

INSURANCE, ECONOMY AND L&D

Since the establishment of the Warsaw International Mechanism on L&D, various branches of economics have taken a keen interest in the question of L&D. Well-developed theoretical insights (e.g. the role of capital in production processes) and readily-available practical tools (e.g. Integrative Assessment Models) have positioned economics as a promising approach to tackle complex questions around what L&D

is, how it is best measured and what this implies for good governance. Today, a focus on the economic and insurance dimensions of L&D is a cornerstone of L&D discussions. This is reflected in dominant suggestions for policy approaches and management tools, for example the development of (inter-)national compensation funds and risk-sharing insurance schemes. While important assets are not always adequately captured

by the market, economists have developed many sophisticated techniques for pricing non-market goods and services to better account for them in the measurement of L&D and in cost-benefit calculations for guiding investment. The reasons for the heightened focus on economic L&D is not arbitrary, but directly related to underlying ambitions to maximise social welfare by directing adaptation (or L&D recovery) investments to their most efficient and effective use. A focus on economics also implies that, when L&D occurs, the lost or damaged productive capital can be substituted through mechanisms of compensation, and these funds can be used to invest in

reconstruction of old, or development of new productive activities that meet social needs. Economics thus potentially offers a comprehensive and coherent approach to L&D that can be applied in practically any context and at any scale. While one should recognize the many important contributions made by an economics approach to L&D, it is becoming increasingly clear that a purely economic-oriented approach to L&D is not without its challenges, with some recent scholarship calling into question the adequacy of a purely monetary view on the impacts of climate change, which assumes we can quantify climate change impacts.

GOVERNANCE OF L&D

It is timely to examine climate governance perspectives to L&D to help explain the role of the state, other governance structures, and science, and the interconnections between science and policy. It is relevant to explore the scope for elaborating climate ethics and L&D within climate governance, to understand how L&D governance relates to other governance instruments and to discuss how the science can support L&D policy?

While L&D is increasingly recognised as a potential route towards comprehensive risk management, aspects of justice and existential questions of compensation are still out of bounds with some governments. For example, the US is opposed to compensation for L&D and is also simultaneously dismantling its own environmental protection laws. Bangladesh, in contrast, has made internal policy changes on L&D and earmarked funds for specific extreme climate events. This demonstrates something new in terms

of who are the emerging climate change leaders. This session critically evaluates L&D governance mechanisms and approaches, and whether existing legal frameworks or forms of adaptation/adaptive governance are sufficient in the case of extreme climate events and slow onset change, how digitalisation of loss and damage data may lead to new inequalities or opportunities. The conference examines overlooked influences and possible contradictions between governance, politics and L&D, and continued modes of governance, and is organised around core questions: What are the connections between L&D and risk governance perspectives? What role does science play in informing existing loss and damage governance? How effective and equitable are L&D governance mechanisms, and can they be scaled up?



Photo: Kristian Lauta Cederwall, Copenhagen University

Research insights

The Conference on Loss and Damage 2019 was motivated following research collaboration between members of the scientific committee on attribution and L&D, and perspectives of L&D.

ATTRIBUTION OF L&D

Science underpins much of the development of policy on climate change and one area relevant to Loss and Damage (L&D) is that of attribution, the process of evaluating the contributions of multiple causal factors to a change or event. Whilst L&D does not have a formal definition within the UNFCCC, it is the subject of an article of the Paris Agreement (which “recognizes the importance of averting, minimizing and addressing loss and damage”) and groups working on different aspects of the issue have a clear perspectives on its meaning (Boyd et al., 2017). With attribution science

enabling causality to be established for global warming and some of its implications, it was proposed by some that it could be used as evidence for L&D compensation for small island nations, focusing primarily on sea level rise. As a result, in the context of climate negotiations, stakeholders and policy makers now often link attribution science and L&D to blame, liability, and compensation. As such, in negotiations (for example), developed countries may play up the uncertainty in attributing anthropogenic climate change to extreme weather events, whilst developing countries may do the

opposite in an attempt prompt action from emitting countries. As L&D can be a highly contentious political issue, this can make it difficult to discuss attribution science in a political setting and thus apply it in policy and planning despite its relevance to understanding the causes of, and thus actions to minimise and avoid, L&D.

Attribution of slow onset events or extreme weather events to anthropogenic climate change involves a comparison between the influence of human impacts (such as greenhouse gases and aerosols), and other potential drivers such as solar variability, volcanic aerosols, and the El Nino Southern Oscillation. When determining L&D it is also important to consider factors such as land use changes, as well a community's exposure, vulnerability and adaptive capacity. There may also be complex factors such as loss of life and psychological damage to consider, and so it is often not possible to account for every aspect of L&D even when the attribution of the event is clear. Nevertheless, attribution science is a rapidly advancing field; and as the fingerprints of anthropogenic climate change become more pronounced over time and models

improve, it will become applicable in a wider range of situations. For example, whilst attribution science originally focused on slow onset events, in the last 10 years the new field of event attribution has demonstrated when and how much anthropogenic climate change has affected the magnitude and likelihood of extreme weather events.

However, it is important to emphasise that in attribution science, the strength of evidence is not homogenous across different regions or different types of extreme weather event. There are far fewer attribution studies for developing countries than developed ones. This is significant when considering using attribution to understand and address L&D, because the developing countries that often suffer the most severe consequences from anthropogenic climate change have access to the least relevant information. There is a particular lack of work at the subnational scale, and though there is currently a push to run more attribution studies in developing countries their lack of data is an additional barrier. Thus attribution science will not be able to provide a comprehensive assessment of the causes of L&D but it could be used to determine how to best to avert, minimise and address L&D in certain situations.

James, R., Jones, R., Boyd, E., Young, H., Otto, F., Huggel, C., Fuglestedt, J. S. (2018) Attribution: How is it relevant for Loss and Damage Policy and Practice? In: Mechler R., et al. (eds) Loss and Damage from Climate Change, Springer
https://doi.org/10.1007/978-3-319-72026-5_5

A TYPOLOGY OF PERSPECTIVES ON L&D

It is important to understand what people working on climate policy, negotiations and adaptation/resilience mean when they use the phrase "loss and damage". Identifying any differences in their perspectives on loss and damage could help accelerate progress of loss and damage policy development. With this in mind, a range of stakeholders across science, practice and policy (such as UNFCCC negotiators, climate scientists and

economists) were interviewed about their viewpoint on loss and damage. An analysis of these interviews was reported by Boyd et al. (2017) from which emerged a spectrum of four perspectives on loss and damage that represent consistent viewpoints about what loss and damage means and how to address it, including implications for policy, research and finance. These four perspectives are:

1. The Adaptation and Mitigation perspective – Where stakeholders highlight all human climate change impacts as potential loss and damage and have the opinion that current UNFCCC mechanisms for adaptation and mitigation are sufficient to address loss and damage.
2. The Risk Management perspective – Where stakeholders view discussions around loss and damage as an opportunity to work towards comprehensive risk management by building on existing efforts under disaster risk reduction, climate change adaptation and humanitarian work.
3. The Limits to Adaptation perspective – This viewpoint is centred around the limits to adaptation and residual loss and damage beyond mitigation and adaptation. Stakeholders also view that loss and damage applies to impacts of any climate-related event, rather than just those that can be attributed to climate change.
4. The Existential perspective – The viewpoint where loss and damage represents a means to highlight the importance of addressing the inevitable harm which climate change will impose on vulnerable countries, populations, cultures and ecosystems. There is also discussion of compensation, whether monetary or non-monetary.

This analysis helps to clarify areas of agreement within the different perspectives, how they relate to actions being considered to address loss and damage and how they relate to initiatives and agreements under

the UNFCCC. It provides an objective and evidenced-based assessment of the range of perspectives to facilitate informed discussion about, and help focus research and action relevant to, addressing loss and damage.

Boyd, E., James, R., Jones, R., Parker, H., Otto, F. (2017) A typology of loss and damage perspectives. *Nature Climate Change*, 7: 723-729

Boyd, E., James, R., Jones, R. (2016) Policy Brief: A spectrum of views on Loss and Damage. Available at: <http://www.eci.ox.ac.uk/publications/161101.pdf>



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