



## **Conference Report**

Just Transitions to a Net Zero World
Second Annual International Conference







## 1. Executive Summary

On the 9 & 10 October 2025, Durham University's Centre for Sustainable Development Law and Policy (CSDLP), in collaboration with the European Center of Just Transition Research and Impact-Driven Transfer (JTC) at Martin Luther University Halle-Wittenberg, hosted the Second Annual International Conference on "Just Transitions to a Net Zero World" at the historic Redhills Durham Miners Hall.

The two-day event brought together leading academics, policymakers, and practitioners to explore the legal, economic, technological, and ethical dimensions of achieving just transitions to a net zero world.

Building on the growing significance of just transitions within the UNFCCC, the Paris Agreement, and the evolving Just Transition Work Programme, the event provided a timely forum for advancing academic, regulatory, and policy discourse. Participants considered how climate science, digital infrastructures, legal frameworks, financial tools and community-level insights can shape pathways toward a net-zero transition away from fossil fuels "in a just, orderly and equitable manner... by 2050." (1/CMA.5 para. 28 d).



"During this conference, we deepened our knowledge on how interdisciplinary research can make a transformative change through just transitions to a net zero world."

Professor Petra Minnerop, Director of the CSDLP and one of the Principal Investigators of the JusTN0W initiative

Across a series of keynote sessions, presentations and interdisciplinary panels, participants engaged in highly valuable discussions, leading to the following key insights:

- States have legal obligations to mitigate and to adapt to climate change, and stringent standards of due diligence are applicable.
- Nationally Determined Contributions (NDCs) are legally binding instruments.
- Bridging the gap between scientific research, law and real-world policymaking will accelerate pathways to net zero and this requires a continuous effort.
- Artificial intelligence can play a supportive role in decision-making, though its costs, benefits, and environmental impacts, require careful evaluation.
- Economic tools, policies and models exist to guide the green transition, and these flow from ethical imperatives and are central to human rights.
- Fossil fuels have failed to address global energy poverty, whereas renewable energy is more widely available, cheaper and can provide community-based access to energy.
- Above all, international cooperation and multilateralism remain essential to delivering sustainable and just outcomes.

Conference discussions and findings informed the UNFCCC COP30 negotiations and, going forward, will inform our submissions to the UNFCCC Just Transition mechanisms.



## 2. Conference Purpose and Rationale

### 2.1 Why Just Transitions?

The arrival of the concept of just transitions at the level of the international climate change regime under the United Nations Framework Convention on Climate Change (UNFCCC) and the Paris Agreement provides a new opportunity to fundamentally shape the Paris Agreement's preambular imperative of a just transition. Just transitions entail the transformation of societies towards sustainable ways of life. At the international level, the global stocktake decision of 2023 reaffirmed that "the global transition to low emissions and climate-resilient development provides opportunities and challenges for sustainable development and poverty eradication". Yet one year later, at the 29th Conference of the Parties in 2024, Baku, no consensus between countries could be forged for a substantial decision on the Just Transition Work Programme (JTWP), not even on the identification of elements for dialogue. At COP30, a new Just Transition Mechanism was agreed. Filling this with substance is the next step, and understanding the needs of different countries will be formative for the required changes. It has become clear that the transition away from fossil fuels is the future and it is exciting to be part of it.



"The conference created geographically and culturally diverse speaker panels, and it was drawing together these different perspectives, that really made the conference so thought-provoking and enriching for me."

### 2.2 Conference Objectives

- Assess progress on the interdisciplinary research agenda of JusTN0W and the JTC in respect of international, regional, and national environmental legislation.
- Analyse the potential of emerging digital technologies, including AI, to manage interdisciplinary decision-making under uncertainty and investigating the potential of Digital Twins as a supporting technology.
- Understand how stakeholders are recalibrating just transitions in the changing political world order.
- Compare developments in international law as they emerge from the ICJ, the ITLOS, and IACtHR advisory opinions.
- Map the science-policy interface with a view to the scientific production and policy uptake of climate science evidence.



### 3.1 Day One

### Morning keynote Prof Elisa Morgera

UN Special Rapporteur on Climate Change and Human Rights; Professor of International Law and Sustainability at Durham University; and part-time Professor at the University of Eastern Finland

Presentation - A Turning Point in the Protection of the Climate System and Human Rights: How Does Legal Clarity Support Transformation?

- Key legal clarifications from the three Advisory Opinions on State obligations on climate change.
- How do these clarifications respond to the documented human rights impacts of climate change and of certain climate change measures?
- Priorities and innovative methodologies for the interpretations and applications of international law to support transformative change towards a safer climate for all.

Theme 1 - Interdisciplinary Research for Conceptualisations of Just Transitions Chaired by Prof Petra Minnerop, Professor of International Law, Director of the CSDLP, Principal Investigator of the JusTN0W Initiative, Durham University

### Prof Rüdiger Wolfrum

Max Planck Institute for Comparative Public Law and International Law, Heidelberg, Max Planck Foundation for International Peace and the Rule of Law, Heidelberg Presentation - The Juridical Protection of Issues in the Interest of the International Community: Is the Shift to National Courts an Adequate Solution? Outline

The two advisory opinions of ITLOS and respectively of the I.C.J. have established that States are under an obligation to take certain actions against climate change (including sea level rise). However, international courts and tribunals have neither been mandated nor developed the necessary procedural mechanisms to force the States to live up to their environmental commitments, the Montreal Protocol being an efficient example, though, for a small spectrum of environmental protection. There seems to exist the view that human rights, in particular the rights to life, health etc. could be used as means to enforce environmental commitments as in the form of human rights standards before national courts. Some such cases have meanwhile been decided by national courts or by regional human rights courts. Prof Wolfrum shed some light on the complex problems of this approach.



"The recent Advisory Opinions on State Obligations on climate change provides legal clarity but this legal clarity will only go so far in helping us to change people's minds. We need meaningful social dialogue about the difficult aspects of the 'just' transition."

Prof Elisa Morgera



"Human rights tell us how we go about making a just transition... Pathways we can forge once we understand the lived experiences of those who have been most affected. And yet, they're often the ones who are left completely out of our decision-making process"

Prof Elisa Morgera

### 3.1 Day One

### Dr Kevin Grecksch

Associate Professor, School of Geography and the Environment, University of Oxford

## Presentation - Shaping (Just) Transformation: Historic Narratives and Property Rights

- Decision-making is not just shaped by rational considerations, but also influenced by how communities define themselves, by historic or fictional narratives and collective memories.
- (Western) property rights shape our discussion about natural resources.
- Examples from Germany's North Sea coast and Wales will demonstrate the usefulness of property narratives, a concept looking beyond legislation, policies and cost-benefit analyses. Instead, property narratives are the stories people tell about property and natural resources and how this for example influences attitudes and identities.
- Regional identities and perceptions can influence the ability to transform positively, if values and collective identities of people are taken into account, or negatively, if people see their values and collective identities not taken into consideration or even threatened.

## Key highlight of our conference was the Poster Exhibition Sessions

Facilitated by **Prof Laura Marsiliani**, Professor in Economics, Faculty of Business Associate Dean for Ethics, Responsibility and Sustainability (ERS), Principal Investigator of the JusTN0W Initiative, Durham University

### **Prof Gleider Hernández**

Professor of Public International Law, KU Leuven
Presentation - And now the Hard Part: Taking Stock
of the ICJ Advisory Opinion

### **Dr Katalin Sulvok**

Associate Professor in International Law and Sustainability, Durham University

### Presentation - Conceptualizing the Desirable Future: Locating and Defining "Just Transition" in International Law

### **Outline**

The talk overviewed the various normative definitions of 'just transition' under various fields of law and explored the potentials and challenges of this concept to guide the necessary policy and economic transformation. By highlighting the interdisciplinary nature of the concept, it explored preconditions of conceptualizing just transition in a way that is not only analytically robust but is also able to deliver practical changes.



"Climate change is not a specialised technical problem dealt with only by the Paris Agreement or the UNFCCC but rather, it is understood, nourished and interpreted through a range of other legal and normative regimes – such as human rights, peremptory norms of international law, and broader areas of environmental protection such as the Law of the Sea."

Prof Gleider Hernández



"Just Transition is an underdefined and evolving concept, a powerful but ambiguous idea: not a legal rule, but a guiding vision for ensuring fairness and human rights in the shift to netzero. Its value lies not in precise legal definition but in its ability to help societies imagine and design fairer pathways to decarbonisation."

Dr Katalin Sulyok

### 3.1 Day One

### Felix Schiedlowski

Centre for Interdisciplinary Regional Studies (ZIRS), Martin Luther University Halle-Wittenberg, Germany

### Dr Amy Walker

Researcher, Institute of Geosciences and Geography and European Center of Just Transition Research and Impact-Driven Transfer (JTC), Martin Luther University Halle-Wittenberg, Germany

### Presentation - Ethnographic Reflections on the Limits of Just Transition Interventions in the Central German Coal Mining Just Transition Territory

- In this presentation, we explored how communities in Central Germany experience and engage with the transition away from coal.
- We examined how long-standing histories of extraction and economic change shape contemporary responses to policy narratives of a "just transition".
- We investigated how these narratives are reinterpreted, critically negotiated, or resisted as they are put into practice locally.
- We highlighted the value of ethnographic methods in uncovering overlooked everyday realities and emphasised the importance of historical and emotional dimensions often missing from dominant transition discourses.

## Theme 2 - Digital and Technical Infrastructures for Just Transitions

Chaired by **Danielle Yeow**, Adjunct Senior Research Fellow and Lead, Climate Change Law and Policy, Centre for International Law, National University of Singapore

### **Dr Nelly Bencomo**

Associate Professor, Department of Computer Science, Principal Investigator of the JusTN0W Initiative, Durham University



"We may not be able to monitor every corner of nature, but with digital twins, we can observe some parts and intelligently infer what is happening everywhere else."

Prof Einar Broch Johnsen



### **Prof Einar Broch Johnsen**

Professor, Department of Informatics, University of Oslo

## Presentation - Digital Twins and the Natural Environment

This talk was concerned with digital twins for natural environments. We started by discussing digital twins in general. Digital twin applications use digital artefacts to construct virtual replicas of real systems. The purpose was to continuously mirror the structure and behavior of the twinned system, such that stakeholders can analyse the real system by means of the digital twin for, e.g., decision support, scenario exploration, model-based control, systematic reconfiguration, etc.

In this talk, we discussed the basic concepts of a digital twin, and how digital twins differ from models and control systems. We showed how digital twins can be realized in a framework that integrates models at runtime, semantic technology and simulation models, in order to leverage domain knowledge in model-based analysis driven by live data. We further discussed how a digital twin can systematically evolve over time to mirror a changing physical system. The talk was illustrated by concrete easy-to-understand examples of digital twins, including our on-going work on digital twins for natural systems such as the Oslo fjord. Our work on a digital twin of the Oslo fjord suggests how physical simulators and domain knowledge can combine into a more general architecture for environmental digital twins.

### 3.1 Day One

### **Prof Adrian Friday**

Professor of Computing and Sustainability, Lancaster University

### Presentation - Information and Communications Technology (ICT): Benefit or Threat to a Just Net-Zero Transition?

Digital technology unquestionably transforms our understanding of the world and helps society reconfigure itself to do new things from better health care, climate science, self-driving cars and smart cities, and more. Digital technologies such as AI, and more generally, are often framed as important actors toward net zero and decarbonisation, seemingly justifying any impacts due to the technology itself. In this talk, I discussed the less visible impacts of digital technology: its dependencies on energy, materials and water, and indirect impacts emerging as ICT is deployed ever faster at global scale. My goal was and is to seed discussion on the new risks and implications for social justice, law and regulation to move to computing within planetary limits.

### **Prof Gordon Blair**

Head of Environmental Digital Strategy, UKCEH Presentation – A Multi-Dimensional Approach to the Future of Digital Research Infrastructure for Systemic Environmental Science: One Year On Outline

In this talk Gordon reiterated the complexity of contemporary environmental science and its role in supporting decision-making and policy formulation. He highlighted the important role of Digital Research Infrastructure and how it must be carefully designed to meet the needs of decision making and policy formulation. He considered how good Digital Research Infrastructure is essential to support the development of digital twins.



"Al-powered digital twins are powerful tools, but their true value lies in principled, responsible use that respects sufficiency, sustainability, and societal limits."

Prof Gordon Blair



"Al datacentres are expanding at breakneck speed, straining energy, water, and material systems - precisely when we must reduce demand. Strong governance can't wait."

**Prof Adrian Friday** 



### **Dr Thomas Hoffmann**

Associate Professor, Tallinn University of Technology

## Presentation - e-Estonia in Just Transition Outline

In the decade after regaining independence, Estonia managed to grow into a prototype of a digital society through digitalisation of mainly its public services. While Estonia also managed to market this success worldwide (making it a prototype of successful nation branding as well), less is known about the entanglement of this digitalisation with the transition of the East-Estonian oil shale mining industry, whose economic decline added to the impetus for the national search and development of novel branches triggering economic growth, out of which IT developed to be the dominating one. The digitalisation of public services as such added to render this transition "just", but only as far as digital infrastructures are by design more transparent, accountable and secure than analogue systems – the element of social justice can hardly be reflected by digital means only. As the Estonian case elucidates, digital infrastructure is thus only a necessary, but not a sufficient means to successful just transition.



## **Durham Cathedral**

**Conference Speakers' Dinner** 

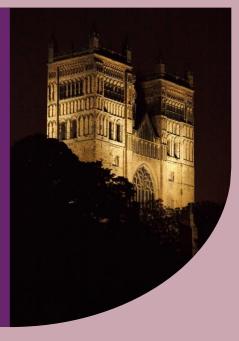
### Thursday 9 October 2025

As a thank you to all our speakers, who invested their time so generously, we organised a speakers' dinner in Durham Cathedral Prior's Hall on the evening of the first day of the conference.

The dinner was chaired by Prof Volker Roeben, Dean of Durham Law School.

A Fireside Chat followed the first course, with Judge Ida Caracciolo, International Tribunal for the Law of the Sea.

The image below shows Judge Ida Caracciolo and Prof Volker in conversation.







### Morning keynote Prof Ralf Martin

Principal Economist (Climate, Natural Resources & Sustainability) & Professor of Economics (Imperial College Business School, London) Economics and Private Sector Development IFC International Finance Corporation, World Bank Group

# Presentation - Green innovation and technology - an opportunity for low and medium income countries? Outline

This talk focused on the intersection of green innovation, sustainable development, and economic growth in developing countries. The historical perception of a trade-off between economic growth and environmental sustainability, where policymakers in low-income countries often prioritized growth over climate concerns, was highlighted. However, this tradeoff is becoming less relevant, with renewable technologies, particularly solar power, increasingly the cheapest option for electricity generation. Prof Martin discussed the growth of green markets, including electric vehicles, solar panels, and other sustainable products, and emphasized that innovation and technology can be leveraged for economic development. He also highlighted innovations in energy systems, grid responsiveness, and Al deployment to reduce environmental impacts, stressing that developing countries can adopt and adapt green technologies for sustainable growth while creating economic opportunities.

# 3. Key Insights from Speakers

3.2 Day Two

Theme 3 - Science for Just Transitions
Chaired by Prof Christian Tietje, Chair for
Public Law, European Law and International
Economic Law, Director of Institute of Economic
Law, Law School, European Center of Just
Transition Research and Impact-Driven Transfer,
Martin Luther University, Germany

### **Prof Friederike Otto**

Professor in Climate Science, Centre for Environmental Policy, Imperial College Presentation - From World Weather Attribution to Losses and Damages Outline

In recent years, major progress has been made in attributing extreme weather events to human-induced climate change including through World Weather Attribution. However, less effort has been dedicated to understanding how these weather events translate into real-world impacts, including economic losses and damages to life and livelihoods. Using recent examples, Prof Otto highlighted some advancements and current limitations, outlining open questions that need to be addressed to better connect physical climate change to losses and damages.

### 3.2 Day Two

### **Prof Uwe Schlink**

Senior Researcher, Helmholtz Centre for Environmental Research – UFZ, Dept. Urban and Environmental Sociology

## Presentation - Empowering People with Knowledge about their Exposure to Air Pollution

### **Outline**

People's exposure to heat and air quality in cities is unevenly distributed among city dwellers resulting in intersectional inequities and it is expected to worsen as a result of climate change. CO2 and air pollutant emissions are concentrated in cities, and so are the effects of climate change. Every individual (a) contributes to emissions through her/his behaviour and (b) suffers from exposure to heat and pollutants with adverse health consequences. As individuals play a key role in this scenario, it is important to assess their exposure and individual burden. We discussed smart techniques for measuring personal exposure and simulating urban environmental conditions with high spatial resolution that can be incorporated into a digital twin. We showed how this approach can be used to understand, visualise and adapt personal behaviour towards a net-zero world and to bridge the gap between urban research and environmental justice.





"Transition research must particularly involve people who are exposed to increased environmental pollution in order to raise awareness, empower them to participate in change processes, and strengthen their ability to protect themselves from harmful health effects."

Prof Uwe Schlink

### **Dr John Bothwell**

Associate Professor (Reader in Bioenergy), Principal Investigator of the JusTN0W Initiative, Durham University

### **Prof Maurizio Zollo**

Professor of Strategy & Sustainability, Imperial College Business School and Scientific Director, Leonardo Centre on Business for Society Presentation - The Evolution of Corporate Sustainability Behaviour and its Systemic Consequences

### Dr Stefan Knauß

Senior Researcher, European Center of Just Transition Research and Impact-Driven Transfer, Martin Luther University

## Presentation - Transforming Justice: The Rights and Values of Nature Outline

This presentation explored how a pluralistic form of holism - bringing together the rights of nature, animal sentience, and human well-being - offers a more comprehensive framework for environmental justice by moving beyond narrow, single-focused perspectives. By examining the "Rights of Nature" approaches in countries such as Ecuador, New Zealand, and India, we demonstrate how these legal developments recognise relational and intrinsic values of nature and challenge traditional anthropocentric models. The research emphasises the role of transformative experiences and new educational practices, including multispecies engagement, in reshaping human—nature relationships.

### 3.2 Day Two

### Theme 4 - Financing Just Transitions

Chaired by **Prof Laura Marsiliani**, Professor in Economics, Faculty of Business Associate Dean for Ethics, Responsibility and Sustainability (ERS), Principal Investigator of the JusTN0W Initiative, Durham University

### H.E. Mr Francois Jackman

Ambassador and Permanent Representative of Barbados to the United Nations (Barbados)

Presentation - Financing Just Transitions: a

Diplomatic Perspective

### **Prof Petra Minnerop**

Professor of International Law, Director of the CSDLP, Principal Investigator of the JusTN0W Initiative, Durham University

Presentation - The Global Compliance Carbon Market: Illusion or Solution?

### PD Dr Katrin Seidel

Senior Researcher, European Center of Just Transition Research and Impact-Driven Transfer, Martin Luther University, Germany

### Presentation - The Justice Gap in Just Energy Transition Partnerships: Bridging Rhetoric and Reality in Climate Finance Outline

This presentation examined the financialisation dynamics and governance structures of Just Energy Transition Partnerships (JETPs), analysing their potential to foster equitable and sustainable energy transitions. Taking a comparative socio-legal approach, the study explores how JETPs — blending grants, loans, and private finance - navigate power imbalances, debt burdens, and conditionalities in Global South contexts. It reveals tensions between JETP's "just" rhetoric and their operational practices. It underscores the risk of donor-driven frameworks and imposed finance models prioritising private interests, marginalising agency, and reproducing North-South hierarchies and a coloniality of climate finance. By emphasising legal pluralism and power dynamics, the research proposes transparent, contextsensitive mechanisms that adhere to the Paris Agreement's principles.





"For small island states, the just transition is not an abstract concept; it is an existential threat. These countries have contributed the least to global emissions yet face the gravest and most immediate climate impacts. Recent international legal developments, including the ICJ advisory opinion and decisions from the Inter-American Court, are helping to clarify state obligations and strengthen the case for climate justice.

But as Prof Morgera made clear at the start of day one, legal progress is not enough. The international financial system must be reformed to recognise vulnerability, responsibility, and fairness. Small island states and least developed countries need fiscal and financial buffers that allow them to withstand climate shocks and extreme events while still pursuing sustainable growth. A truly just transition must safeguard their right to develop and ensure that viable development pathways remain open to those most at risk."

H.E. Mr François Jackman

### 3.2 Day Two

### Dr Joseph Kobusheshe

Director Environment, Health and Safety, Petroleum

Authority of Uganda

## Presentation - Equity in Just Transitions Outline

Climate change is a global problem. But as global citizens, we have not all contributed to this problem equally. The impacts of climate change are not equal on all of us. Our needs to adapt or mitigate climate change are not equal. Equity is a critical factor that should form the basis for just transitions. The Global South exhibits significant opportunities and challenges which directly affect its ability to mitigate or adapt to climate change. The presentation examined just transition principles for the Global South.

### **Dr Sandra Batten**

Senior Economist, Bank of England

### **Ingmar Juergens**

CEO & Founder, Climate and Company
Presentation - The Role of the Financial
Sector in the Just Transition [Toward a
Nature Positive and Climate Neutral Future]
Outline

Ingmar Juergens outlined the different takes on "just transition", transition finance and the social dimension of sustainable finance in the financial sector. He then elaborated on: How to get "the just" into the transition finance discussion; and How to finance the just transition with a focus not on the EU/G7 but on the value chains of the investee companies of EU/G7-based financial institutions. He provided transition-critical sector examples to illustrate his points.

**Theme 4** is supported by the Centre for Environmental and Energy Economics



Business School Centre for Environmental and Energy Economics



"Transitioning requires large amounts of finance for technology, for infrastructure, for capacity building. Without concessional or accessible finance, a just transition is extremely difficult."

Dr Joseph Kobusheshe





"...The transition to critical minerals for clean technologies has also created injustices - human-rights abuses, water contamination, ecological destruction - which we have not wanted to confront openly because of fear of undermining the broader energy transition. But we must confront them."

**Ingmar Juergens** 



## 4. Cross-Cutting Insights

## Across sessions, several themes consistently emerged:

- Justice must be operationalised, not assumed. Justice requires concrete mechanisms (legal, financial, digital, participatory).
- Advisory opinions are reshaping international obligations. ICJ, ITLOS, and IACtHR opinions provide a new legal clarity and foundation for accountability.
- Digital tools offer opportunities but also systemic risks. Al, digital twins, and ICT must be aligned with social and environmental justice goals.
- Local experiences matter. Historic injustices matter. Ethnographic insights revealed gaps between national transition plans and community realities.
- Finance remains the largest barrier. Equitable financial flows, de-risking, and governance reforms are essential for just transitions.

## 5. Implications for Policy, Practice and Research

## Based on discussions, the following implications emerged:

- Need for coherent global principles for just transitions under the UNFCCC.
- Integration of scientific evidence into policymaking and financial decision-making.
- Development of transdisciplinary methodologies, including digital tools.
- Increased involvement and attention to rightsbased frameworks, especially for those most impacted by climate change and vulnerable groups.
- Every country needs a conversation now about how to move away from fossil fuels.
- Recognition of the limits of market mechanisms without strong governance.
- Greater focus on local narratives and identities in transition planning.



# 6. Next Steps for the JusTN0W Initiative and JTC

- Prepare UNFCCC submission content based on insights from legal and scientific sessions.
- Expand interdisciplinary research, especially on digital twins, financial architectures, and rights-based just transitions.
- Produce policy briefs for upcoming COPs and work with our partners to support their just transition planning at a regional, national and international level.
- Deepen collaboration between Durham University and Martin Luther University Halle-Wittenberg by signing a Memorandum of Understanding.
- Develop training modules and launch an MSc to help societies prepare for Sustainable Transformations.
- Continue the annual conference series, incorporating lessons learned.
- Continue to attend future COPs with Durham University Observer Status.

## 7. Acknowledgements

We thank all speakers, chairs, participants, and partners from Durham University and Martin Luther University Halle-Wittenberg for contributing to our Second Annual International Conference.



"At the recent COP30/CMA7, Parties to the Paris Agreement decided to 'develop a just transition mechanism, the purpose of which will be to enhance international cooperation, technical assistance, capacity-building and knowledge-sharing, and enable equitable, inclusive just transitions [...]'. Our teams in Durham and in Halle are excited to make a contribution, with all our partners, in the spirit of mutirão to this new mechanism."

Prof Petra Minnerop, Head of Durham COP30 Delegation



