

JusTNOW – *Just Transitions to a Net Zero World*

Conference Report

‘An Interdisciplinary Research Agenda for Safer and Fairer Futures’

International Launching Conference – 3rd & 4th of October 2024
Durham University



The background of the entire page is a high-resolution satellite image of Earth, showing swirling white clouds over a deep blue ocean. A portion of a green and brown landmass is visible on the right side. In the bottom right corner, there is a graphic element consisting of a solid purple square and a light grey quarter-circle shape.

JusTNOW – *Just Transitions to a Net Zero World*

The world is failing to find the just transition pathways to avoid the worst impacts of climate change (IPCC AR6 SYR 2023, UN NDC SYR 2023). Even the Paris Agreement's more ambitious 1.5°C temperature limitation is insufficient to avoid catastrophic sea level rise and increasingly severe extreme weather events. At Durham, we already have world-leading expertise in researching the causes and impacts of climate change. With investment in the Just Transitions to a Net Zero World (JusTNOW) initiative, we aim to develop a world-leading interdisciplinary work programme, to research sustainable and just solutions for accelerated decarbonisation of economies, and to achieve lasting societal well-being for the present and future generations.

The JusTNOW initiative also aligns with the United Nations' Sustainable Development Goals (SDGs) and reaffirms Durham's commitment to global research excellence on sustainability. Durham ranks 19th in the QS Sustainability ranking 2024 and 36th in THE Impact ranking 2025 globally, 9th for SDG 16 (Peace, justice and strong institutions).

The Centre for Sustainable Development Law and Policy (CSDLP) has already brought together research across disciplines and integrated it into global governance frameworks. Expanding on that, the JusTNOW initiative identifies a work programme that uses interdisciplinary research to develop sustainable and just solutions to enhance our collaborative efforts for this cause. By collaborating across disciplines and harnessing our collective expertise, we are confident that JusTNOW will yield ground-breaking solutions to address the climate crisis. The JusTNOW team expresses its gratitude to the University and all those involved in making this essential funding a reality.

JusTNOW - Durham University



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Launching JusTNOW in a Global Context of Just Transitions

The international conference on An Interdisciplinary Research Agenda for Safer and Fairer Futures was held on the 3rd and 4th of October 2024 at Durham Law School. This landmark event marked the official launch of the JusTNOW initiative, a collaborative project spearheaded by the Durham Centre for Sustainable Development Law and Policy (CSDLP). The conference brought together an extraordinary lineup of speakers, including academics, policymakers, legal experts, and international dignitaries, to discuss interdisciplinary approaches for achieving safer and fairer futures in the context of just transitions.

This conference theme was selected also in light of recent international developments within the United Nations Framework Convention on Climate Change. At the 5th meeting of the Parties under the Paris Agreement (CMA5), the first decision on the UAE Just Transition Work Programme was adopted. The objective of the programme is the discussion of pathways to achieving the goals of the Paris Agreement. The work programme centres on elements of justice, equity, energy, socioeconomic, workforce and other dimensions. It is aimed at identifying opportunities challenges and barriers relating to sustainable development and poverty eradication, as part of transitions globally to low emissions and climate resilience. The creation of decent work and quality jobs is critical for these transitions, as are social dialogue and the recognition of labour rights. The CMA5 left no doubt in Dubai that inclusive and participatory approaches are required, that leave no one behind, and that international cooperation is a key enabler.

Our aim is to advance, with our different partners and across academic disciplines, global conversations around solutions to the triple planetary crises. JusTNOW offers a significant opportunity to combine our in-house expertise with the knowledge and insights of our partners, to work on critical elements of just transitions for improving national and regional plans and strategies. It was a great pleasure to welcome our Advisory Board members and academic and government partners in Durham to share expertise, perspectives and plans for a fairer future.

The event had three primary objectives:

1. To establish an interdisciplinary research agenda: This agenda focused on developing sustainable solutions at the intersection of law, science, economics, and computer science, contributing to more effective legal and policy frameworks.
2. To foster global collaboration: The conference emphasized co-creation with international and interdisciplinary partners, enhancing sustainability research and its application beyond academic boundaries.
3. To analyse emerging legal standards: Drawing on recent case law from domestic and international courts, the discussions aimed to support the development of legal frameworks that address climate change and just transitions.

This report has the objective to capture the rich discussions and provide a summary of the key takeaways of the insightful presentations, to capture the momentum and to provide a firm basis for future collaboration. We extend our heartfelt gratitude to everyone who joined us in this endeavour to co-create a roadmap for just transitions to a net-zero world.



Thank You Note from the **JusTNOW** Team

The JusTNOW team would like to express its deepest gratitude to everyone who joined us at the International Launching Conference of the JusTNOW initiative. A very special thanks to our guest speakers for their incredible contributions. The interdisciplinary insights and perspectives added immense value to the conference discussions and were well-received by our audience. These contributions were pivotal in creating memorable and impactful experiences, and we hope this will lead to actionable solutions.

We look forward to the potential of further collaborations and to working together with interdisciplinary and intersectoral stakeholders in future. Many thanks once again for your commitment and dedication to the advancement of an interdisciplinary research agenda for safer and fairer futures and for making this international launching conference a success.

Principal Investigators



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Can Eken



Andrew Russell



Robert Song



Chris Stokes



Jia Wang

Opening of the Conference

It was an honour to have Professor Mike Shipman, Deputy Vice-Chancellor and Provost, Durham University, and H.E. Mr Francois Jackman, Ambassador of Barbados and Permanent Representative to the United Nations, to provide opening remarks for the conference at the Hogan Lovells Lecture Theatre at Durham Law School. They set the scene, speaking about the importance of just transitions in a regional, local, as well as global context.



Mike Shipman



Francois Jackman

The Advisory Opinion of the International Court of Justice (ICJ), 'Obligations of States in Respect of Climate Change', provided an important framing for the discussion. H.E. Francois Jackman, an alumnus of Durham University, spoke about the role of the advisory proceedings from the perspective of the Caribbean Island States. He also shared his views on the Global Pact for the Future, which had just been adopted a short while before the conference. In it, world leaders renewed their pledge of action of peace and sustainable development, with a particular focus on safeguarding the rights of future generations.



Francois Jackman speaking at the opening session of the JusTNOW Conference

Conditions of Climate Justice in Just Transitions – First Panel

Looking at climate justice as a goal of just transition, the first panel brought together dialogues on both climate justice and just transitions, perspectives that are not often discussed together.

Professor Petra Minnerop moderated the first panel, and the following guest speakers shared their views on the topic:

Hon. Justice Syed Mansoor Ali Shah

Justice of the Supreme Court of Pakistan.

Professor Rowena Maguire

Director of the Queensland University of Technology Centre for Justice.

Dr Sven Renner

Manager of the Extractives Global Programmatic Support (EGPS)
Multi-Donor Trust Fund at the World Bank.

Professor José Enrique Alvarez

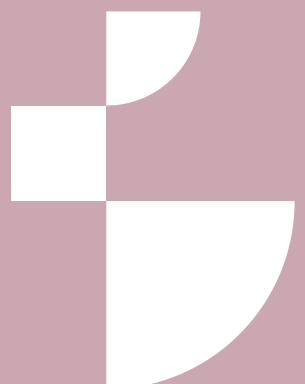
Professor of International Law,
New York University.

Dr Sikander Ahmad Shah

Associate Professor, Shaikh Ahmad Hassan School of Law,
Lahore University of Management Sciences (LUMS), Pakistan.

Professor David Ong Khai Long

Professor of International & Environmental Law,
Liverpool John Moores University.



Honourable Justice Syed Mansoor Ali Shah, Justice of the Supreme Court of Pakistan, started the panel discussions with a speech on the judiciary's role in advancing climate justice, particularly through public interest litigation. Bringing the judicial voices and innovative legal ideas from the Global South to the table, he stressed that it is through the Judiciary and court intervention that we can derive climate Justice and achieve just transitions.



To emphasise the need for a “just transition that should integrate mitigation and adaptation, he pointed to the vulnerabilities of Global South countries, including water scarcity, exposure to extreme weather events, and increasing food insecurity, which disproportionately affected low-income populations, women, and children. He mentioned several landmark climate/environmental cases, such as *Asghar Leghari v Pakistan* and *D G Khan Cement Company v The Government of Punjab*, and indicated the use of environmental soft law principles, such as *dubio pro natura* (i.e., when in doubt, protect nature).

In addition, he emphasised that environmental constitutionalism was deeply rooted in Islamic values, which underpinned the approach taken by Pakistani courts to multidimensional issues in dealing with climate-related cases. He concluded by emphasising the need to protect human dignity through protecting the dignity of nature while addressing climate change's multifaceted impacts.

Professor Rowena Maguire, Director of the Queensland University of Technology Centre for Justice, presented her topic: Conditions of Climate Justice in Just Transitions in the Textile Sector. Having given an overview of the relationship between different parts of the textile sector and global justice, Professor Maguire emphasized that the textile sector is a significant contributor to the triple planetary crisis of climate change, biodiversity loss and pollution. She stressed the need for accountability in addressing these issues through legal frameworks like the Fashion Industry Charter for Climate Action. She pointed out that the textile sector, which employs predominantly female workers, is also known for negatively impacting labour rights in a gendered workforce. The COVID-19 pandemic especially highlighted existing vulnerabilities and risks within the structure of the workforce. As the textile industry moves towards decarbonisation, a just transition requires detailed policy for the sector and to consider how this transition will be financed. Based on the analysis of related research work to-date, she identified a range of supply chain regulation reforms driving towards textile circularity, sustainability and just transitions, and illustrated the need for robust permitting systems, supply



chain transparency and international dialogue on textile policies. In conclusion, Professor Maguire shared insights into her ongoing research projects aimed at understanding the textile sector's environmental regulations and labour practices, advocating for case studies to guide future policies and encourage sustainable practices across the industry.

Dr Sven Renner, Manager of the Extractives Global Programmatic Support (EGPS) Multi-Donor Trust Fund at the World Bank, presented on the topic of Mineral Value Chains in the Context of Geopolitics, the Energy Transition, and Development. He emphasised the impacts of climate change on mineral markets and highlighted the challenges and opportunities for developing countries in participating in global mineral supply chains. He first explained the World Bank's shift from oil and gas to mining as a primary focus, driven by the need to address climate change and the increasing demand for minerals essential for the energy transition. He noted the complexity of mineral markets and how advancement in technology and market diversity complicate supply-demand relationships.



With the explanation of the difference between bulk minerals and niche minerals through cases, Dr Renner emphasised the difficulty of forecasting the exact demand for minerals at various stages in the energy transition. He outlined various barriers that developing countries face in the mineral value chain, such as fundamental infrastructure, investment and environmental concerns, but also highlighted successes, such as the new low-carbon copper mine in the Democratic Republic of Congo (DRC), showcasing the potential for these nations to compete in the global market.

Professor José Enrique Alvarez, Professor of International Law at New York University. Through his presentation, he raised the question: 'Is There a Role of International Investment Agreements in Fulfilling the SDGs?' He noted that nearly 3,000 International Investment Agreements (IIAs) were designed to protect and promote foreign investment based on the belief that free trade and capital flows would lead to global development. However, he argued that these agreements must evolve to align with the 2030 Agenda for Sustainable Development to address the annual \$4 trillion funding gap required for the implementation of the SDGs.



He emphasised the need to transition from traditional IIAs, which protect foreign investors regardless of their environmental impact, to "green IIAs." These agreements should actively support SDG-aligned investments and hold states accountable for regulatory duties reflected in treaties and indicators, including those addressing non-

environmental goals such as gender equality (i.e., SDG 5). He highlighted frameworks like David Boyd's 2022 UN report (The right to a clean, healthy and sustainable environment: non-toxic environment: report of the Special Rapporteur on the Issue of Human Rights Obligations Relating to the Enjoyment of a Safe, Clean, Healthy and Sustainable Environment), and the CEDAW Committee's General Recommendation 37 (on the gender-related dimensions of disaster risk reduction in the context of climate change), emphasising the integration of obligations to empower women and promote equitable, sustainable development.

Responding to criticism that IIAs limit states' regulatory sovereignty, he noted that ongoing reforms focus on restoring regulatory rights by terminating or rebalancing agreements. However, he argued that neither the free market approach of traditional IIAs nor the sovereignty-focused reforms adequately address the SDG funding gap. Instead, IIAs should be reimagined as tools to enforce states' obligations to regulate for sustainability, fostering investments that drive a just transition while advancing environmental and human rights goals.

Dr Sikander Ahmed Shah is a founding member of the Shaikh Ahmad Hassan School of Law (SAHSOL) at the Lahore University of Management Sciences (LUMS). He presented on Navigating Present Pasts in the Context of Climate Justice and Just Transitions. Dr Shah discussed the complexities surrounding climate justice and just transitions, particularly in the context of Pakistan. He critiqued the concepts of climate justice and just transition, questioning the stakeholders involved, the deliverers of justice, and the implications of these concepts in Pakistan's context, especially he highlighted the need for local communities in the Global South.

He demonstrated the impact of IMF and World Bank policies on Pakistan's energy sector, including the imposition of duties on solar panels and the promotion of centralised solar parks and clarified the inadequacy of existing accountability mechanisms for environmental harm and the need for systematic change in developmental policy processes.

Based on the explanation of the negative consequences of large-scale hydropower projects and coal extraction on local communities, focusing on health and environmental degradation, Dr Shah highlighted the importance of incorporating indigenous knowledge and the ethical considerations in the manufacturing of renewable technologies. In conclusion, Dr Shah emphasised that the local community in the Global South should have power to control its energy sources, water management and land use, reversing decades of exploitation and energy environment degradation caused by colonialism and continued through foreign funding projects, policies, and frameworks. He highlighted the need for a transformation to community-led adaptation projects and a transformation for international financial structure regarding significant debt relief for countries like Pakistan, and better resourcing for mechanisms like the loss and damage fund.



Professor David Ong Khai Long is a Professor of International & Environmental Law, Liverpool John Moores University. He offered a critical assessment of the JusTNOW initiative/project & the delivery plan.

He emphasised the need for holistic approaches integrating social and economic benefits, he critiqued the existing frameworks and assessed the three documents that are distributed to the guests and attendees of the JusTNOW initiative — the invitation letter, the JusTNOW executive summary, and the JusTNOW delivery plan. Stressing their relevance in forming a robust evaluative framework for the initiative. Professor Ong advocated for an evaluative framework that includes multi-disciplinary expertise and elaborated on the balancing of economic decarbonisation and social well-being. Focusing on the UK, he discussed the socio-economic impacts of energy transitions highlighted by recent industry changes, indicating that such local issues should be addressed in the JusTNOW initiative. Critiquing the capacity building strand, he called for a clearer direction on how JusTNOW plans to facilitate knowledge transfer that translates research into practical benefits for communities. Finally, he encouraged broad participation and representation in the pursuit of environmental justice.



Discussions during the first panel of the JusTNOW Conference – with JusTNOW delivery plan on the screens

Equitable, Sustainable Solutions I: AI, Digital Twins, and Environmental Strategies – Second Panel

Building on the discussions from the first panel, the second panel addressed how AI, within a setting of interdisciplinary research, can be used to design environmental strategies using a digital twin and an AI-enabled database. These environmental strategies must aim at equitable and sustainable solutions that materialise conditions of climate justice within just transitions. The second panel was moderated by **Dr Nelly Bencomo**. The following guest speakers shared their views on the topic:

Dr Øystein Lund

Counsellor for Research and Education,
Royal Norwegian Embassy.

Professor Gordon Blair

Head of Environmental Digital Strategy, UK Centre for Ecology & Hydrology (UKCEH), Co-director of the Centre of Excellence in Environmental Data Science (CEEDS).

Dr Kelly Widdicks

Software Systems Architect,
UK Centre for Ecology & Hydrology (UKCEH).

Professor Achintha C Vithanage

Professor of Law for Designated Service in Environmental Law, Associate Director of Environmental Law Programs, Elisabeth Haub School of Law, Pace University, USA.

Professor Ibibia Lucky Worika

Director, Centre for Advanced Law Research, Rivers State University, Port Harcourt, Nigeria.

Norma Álvarez G

Senior Associate Energy and ESG, Santamarina Steta, Mexico.



Dr Øystein Lund, Counsellor for Research and Education, Royal Norwegian Embassy, talked about the role of AI, Digital Twins, and Environment Strategies. He started by defining digital twins, explained its purpose in real-time prediction, optimization, monitoring, controlling, and decision-making, and discussed its combination with artificial intelligence for predictive analysis and for enhancing decision-making capabilities.

He introduced two Norwegian projects (GreenShift Project and Man0EUvRE Project) that utilize digital twins and AI to support the green transition, to emphasise how a just transition can be achieved by balancing environmental goals with social fairness and economic equality. GreenShift focuses on advancing collaboration in the North Sea region and Man0EUvRE is aimed at achieving net-zero emissions by 2050 by enhancing the energy systems.

He further underlined the importance of high-quality, real-time data for digital twins and AI, as well as the challenges of transparency, ethical considerations, and responsibility in AI systems. He concluded by emphasizing that achieving a just transition required acknowledging the difficulties and the need for public support.



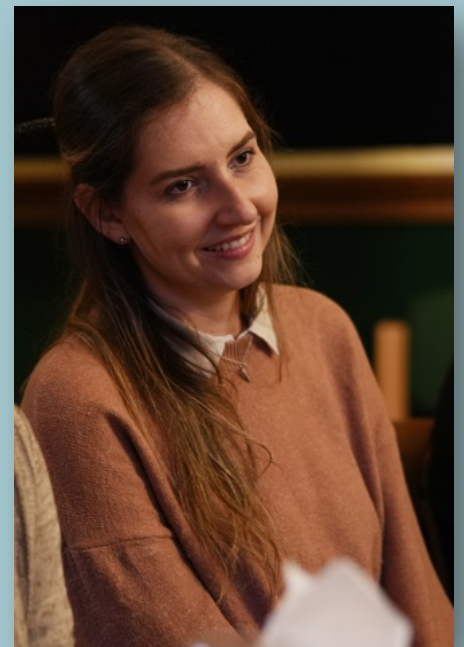
Professor Gordon Blair, Head of Environmental Digital Strategy, UK Centre for Ecology & Hydrology (UKCEH), Co-director of the Centre of Excellence in Environmental Data Science (CEEDS), talked about the intersection of digital technology and environmental science. He explored the transformative intersection of digital technology and environmental science, emphasising the urgent need for multidisciplinary collaboration to address complex global challenges. He critiqued traditional academic silos, advocating for a whole systems approach that integrates fields like computer science, hydrology, and social sciences. This holistic perspective, embraced by the UK Centre for Ecology & Hydrology (UKCEH), is vital for tackling issues like climate change and biodiversity loss.

Professor Blair highlighted the pivotal role of AI in environmental monitoring, particularly in automating species identification through camera technology. However, he stressed that AI's success depends on handling incomplete data and ensuring explainability in its applications. He also discussed the potential of digital twins — virtual models combining process simulations and data collections — for improving environmental predictions, while cautioning against overhyping their capabilities.



A significant portion of his talk focused on the need for robust digital research infrastructure to integrate diverse datasets and support next-generation modelling techniques. He pointed to the socio-technical challenges of data management, such as the importance of co-design, cultural shifts, and adherence to FAIR (Findable, Accessible, Interoperable, and Reusable) data principles. He underscored the need for trust and collaboration among stakeholders to break down disciplinary barriers and achieve a unified approach to environmental science. He concluded by introducing the concept of post normal science, which entails decision-making under uncertainty, and called for transparency, advanced tools, and adaptive methodologies to drive meaningful change in environmental research and policy.

Dr Kelly Widdicks, Software Systems Architect at the UK Centre for Ecology & Hydrology (UKCEH), gave a presentation on Digital Technology and Sustainability. With the evidence of the impacts of the Information and Communication Technologies (ICT) sector, she introduced the environmental impacts of digital technologies, highlighting the life cycle stages from production to disposal, and the indirect costs, such as water demand, and the underlying social injustices associated with these activities. She explained that the ICT sector accounts for an estimated 2.1% to 3.9% of global greenhouse gas emissions and pointed out the issues of incomplete data and truncation error in existing studies. She challenged assumptions about the future environmental impact of digital technology, discussing the rebound effect where efficiency gains lead to increased demand and emissions, the misconception that digital technology reduces emissions in other sectors. Not only that, but she also pointed out digital technology's emissions have been rising alongside global emissions. Focusing on renewable energy, she acknowledged its role in reducing emissions but stressed the limitations and environmental costs of its supply chain. She also explored the ethical considerations of AI in environmental science, emphasizing the importance of transparency, accountability, and sustainability in its application. Examples of collaborative efforts at the UK Centre for Ecology and Hydrology (UKCEH) were shared, showcasing principles such as inclusivity, fairness, and leadership in AI use. She underlined the importance of weighing the environmental costs against the benefits of emerging technologies, including large language models, and the necessity of systems thinking to address these trade-offs. She concluded by calling for continued research into the broader environmental and social impacts of digital technologies. Advocating for co-designed tools with sustainability at their core, she reiterated that not all problems require digital solutions and emphasized the need to deploy AI and technology only when their benefits outweigh their environmental costs.

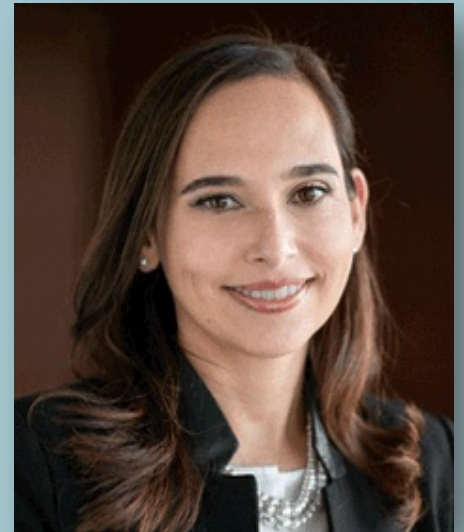


Professor Achintha C Vithanage, Professor of Law for Designated Service in Environmental Law, Associate Director of Environmental Law Programs, Elisabeth Haub School of Law, Pace University, USA, presented on the topic of DT's (digital twins) Potential for Promoting Equitable & Sustainable Solutions, Including in the Evolution of the Legal Profession. She discussed the importance of equitable access to DTs technology, particularly for developing countries and underrepresented groups, to prevent deepening the digital divide. She also highlighted the critical need for transparency and accountability, especially in private sector applications, to ensure adverse impacts are responsibly disclosed and mitigated.



She underscored the legal profession's critical role in fostering climate-conscious practices. Lawyers must adapt to climate change-related risks, advise on sustainability, and shape policies around DTs and other technological innovations. Initiatives like the American Bar Association's resolutions and the World Lawyers' Pledge on Climate Action reflect this shift. She concluded with a call for interdisciplinary collaboration to ensure the just and inclusive deployment of DTs, promoting climate justice and a sustainable future.

Ms Norma Álvarez G, Senior Associate Energy and ESG, Santamarina Steta, Mexico, talked about Clean Energy Certificates (CECs) in Mexico, highlighting the country's renewable energy potential, policy evolution, and associated challenges. She emphasized Mexico's vast solar and wind resources, which remained underutilized until the 2012 reforms that opened the electricity generation sector to private participation, fostering renewable energy integration.



The introduction of CECs aimed to promote renewable energy consumption. These certificates, awarded to energy generators for each megawatt-hour (MWh) of clean energy produced, create compliance obligations for consumers, driving demand for renewable sources. Mexico has set ambitious goals to achieve a share of as much as 40% in power generation from zero or low-emission energy types by 2035 and 50% by 2050. However, meeting these targets has been complicated by inconsistent government support and investment barriers. She expressed optimism for change under Mexico's new female president and new administration team, expecting to foster public-private partnerships and ensuring that renewable energy policies contribute to environmental justice and economic growth. She concluded by stressing the importance of integrated approaches to energy, economic, and environmental policies. She advocated for sustainable practices that balance national interests

with global environmental goals, highlighting the critical role of transparent, corruption-resistant systems like CECs in achieving these objectives.

Professor Ibibia Lucky Worika, Director, Centre for Advanced Law Research, Rivers State University, Port Harcourt, Nigeria, shared his perspective from the Niger Delta with the topic of 'Equitable and Sustainable Solutions for Nigeria's Just Transition: AI, Digital Twins and Environmental Strategies for the Niger Delta'.

The Niger Delta, a floodplain region of immense ecological and economic importance, faces acute vulnerability due to climate change, environmental degradation from oil and gas activities, and persistent energy poverty. These intertwined challenges undermine the region's socio-economic stability and amplify inequalities.

Despite historical government interventions like the Niger Delta Development Commission, the region remains marginalized, with development goals largely unmet due to inefficiency and political interference. Professor Worika underscored Nigeria's COP26 commitments, including reducing greenhouse gas emissions and transitioning to a sustainable energy future. Nigeria's energy transition plan provides a roadmap integrating economic diversification, social inclusion, and environmental justice. Central to his solutions is leveraging emerging technologies like artificial intelligence and digital twins. These tools enable real-time monitoring of the environmental impacts, smart decision-making, and more efficient resource management. By aligning these technologies with local community needs and integrating clean energy solutions, Nigeria can address the Niger Delta's challenges more effectively.

Professor Worika concluded that the sustainable development of the Niger Delta will depend on the efficient allocation and utilization of available resources, as well as the integrity of those entrusted with managing these resources across all tiers of government—federal, state, and local—and the companies operating in the region.



Discussions and Q&A session following the second panel of the JusTNOW Conference.



A group photo of the guest speakers and conference attendees taken in front of the Durham Law School at the first day of the JusTNOW Conference.

Dinner and the Fireside Chat

The first day of the conferences concluded with a dinner at Durham Cathedral's Prior's Hall. The dinner was chaired by **Professor Karen O'Brien**, Vice-Chancellor and Warden of Durham University. Professor O'Brien welcomed all the guest speakers and conveyed her gratitude for their wonderful contributions. She highlighted Durham University's significant investment through the

Strategic Research Fund (SRF), which aims to stimulate significant growth in research income for the University through substantial investments in the research capability, community, and infrastructure.

Durham University has committed to invest around £18 million over four years into four ground-breaking projects on sustainability. This includes the investment of £5 million to the **JusTNOW** initiative. With this initial investment, the projects will enhance research capacity and work towards becoming financially sustainable. The SRF funding offers 40 new vacancies across the University, including 23 new permanent academic staff.



Professor Karen O'Brien,
Vice-Chancellor and
Warden of Durham
University.



A view of the Durham Cathedral's Prior's Hall during the fireside chat at the conference dinner

During the dinner, a Fireside Chat took place on the theme of Economic and Legal Empowerment for Sustainability. The discussion was moderated by **H.E. Mr. Francois Jackman**. Two special guests, **Ms Yasmin Batliwala MBE**, Chief Executive of Advocates for International Development (A4ID), and **Hon Justice Jawad Hassan**, Justice of the High Court Lahore, shared their perspectives on the topic.

Ms Yasmin Batliwala appreciated the interdisciplinary research endeavours of the CSDLP and acknowledged the JusTNOW initiative as world-leading interdisciplinary work programme. She offered an overview of how A4ID operates as a pro bono partner for several law firms and companies internationally to make an outstanding contribution in meeting the needs of the world's poorest citizens.

Talking about legal empowerment,

Justice Jawad Hassan highlighted his two prominent cases, *Asghar Leghari v Federation of Pakistan* and *Sheikh Asim Farooq v Federation of Pakistan*, in which the court summarised a variety of legal requirements under international law to establish the government's obligations to protect the environment. In its final order in *Asghar Leghari* judgment, the court nominated climate justice as the successor to environmental justice. He highlighted how environmental justice revolves around enforcing national laws, with decisions informed by international legal principles. Revealing his ties with Durham University, he shared his grandfather's story as a Durham Alumnus who studied in Durham University in the late 1920s.



Ms Yasmin Batliwala MBE, H.E. Mr. Francois Jackman, and Hon Justice Jawad Hassan.



Principal Investigators of the JusTNOW initiative at the conference dinner

The Conference Dinner concluded with a thank you note from the principal investigators of the JusTNOW initiative – Professor Petra Minnerop, Professor Laura Marsiliani, Dr John Bothwell, and Dr Nelly Bencomo.

Early Bird Session and Opening of the Second Day

Professor Rüdiger Wolfrum, Former Director of the Max Plank Institute for Comparative Public Law and International Law, Former President of the Max Plank Society, Former President of the International Tribunal for the Law of the Sea (ITLOS), and an ad Hoc judge at the International Court of Justice (ICJ) opened the second day of the conference with an Early bird session.

Drawing on his extensive experience as a former President of the ITLOS, he shared his expertise on the recent advisory opinion concerning the obligations of states under the UN Convention on the Law of the Sea (1982) (UNCLOS) in the context of climate change and its effects on the marine environment. He highlighted the critical role of international law in addressing pressing environmental challenges, and began by explaining the procedural elements of the advisory opinion process and the role of science in international law, particularly in the context of climate change and ocean acidification.

He shared a detailed legal analysis of the findings of the ITLOS, and delved into the legal and procedural nuances of the ITLOS jurisdiction to deliver advisory opinions. He particularly underscored the interpretative tools provided by Article 31(2) of the Vienna Convention on the Law of Treaties (1969) and Article 293(1) of the UNCLOS. He explained the importance of integrating



Professor Rüdiger Wolfrum speaking at the JustNOW Conference

scientific expertise into legal processes, citing examples where scientific reports like those from the Intergovernmental Panel on Climate Change (IPCC) influenced legal interpretations. He also noted the need for precise methodologies and robust integration of scientific data into decisions, especially in cases concerning ocean acidification and climate-induced marine pollution.

The discussion extended to the scope and implications of recent ITLOS advisory opinions, including their impact on states' obligations under UNCLOS, the complexities of maritime boundaries amid sea level rise, and the relationship between international treaties with shared environmental objectives. He concluded with reflections on how future advisory opinions and international decisions might contribute to more effective implementation of environmental laws. His presentation underscored the dynamic interplay between law, science, and policy in addressing global environmental challenges.

Following Professor Wolfrum's talk, **Professor Volker Roeben**, Dean of the Law School and **Professor Matthew Johnson**, Head of the Department of Computer Science, shared their views at the opening of the second day.

They emphasised the important interdisciplinary role of the JusTNOW project in working across departmental and faculty boundaries, with a range of colleagues already involved and will be joining in the near future.

They welcomed the expansion of research capacity that the JusTNOW initiative will bring in their respective departments, allowing incoming colleagues to focus on enhancing research and grant capture. Stressing the importance of the Strategic Research Fund, they highlighted the wider aims and the strategic goals of Durham University in the field of sustainability. Their remarks set an inspiring tone for the day, emphasising the shared commitment to driving innovation and fostering impactful solutions across academic and professional domains.

Head of Departments



Professor Volker
Roeben
Dean of the Law
School



Professor Matthew
Johnson, Head of
the Department of
Computer Science



Professor Michael
Naef, Head of the
Department of
Economics



Professor Martin
Cann, Head of the
Department of
Biosciences

Equitable, Sustainable Solutions II: Multiagent Models and Instrument Analysis – Third Panel

The third panel covered current and potential future instruments that provide economically feasible solutions. It builds on the discussion of the first and second panels and uses AI as a tool for modelling, bringing, in addition, economic factors as well as environmental considerations. From our conversation with colleagues working in the world of finance, we understand that the siloed climate consensus must be shared with those who make investment decisions. This requires us to think about solutions that are economically feasible and implement just and fair solutions. The third panel was moderated by **Professor Laura Masrili** and the following guest speakers shared their views on the topic:

Professor Simone Borghesi

Professor of Environmental Economics at the University of Siena and European University Institute.

Professor Marie Stenseke

Professor in human geography at the School of Business, Economics and Law, University of Gothenburg.

Professor Joeri Rogelj

Professor of Climate Science & Policy at the Centre for Environmental Policy, Imperial College London.

Professor Scott Barrett

Professor of Natural Resource Economics at Lenfest-Earth Institute, Columbia University.

Dr Sandra Batten

Senior Economist, Bank of England.

Dr Dato' Mohammad Faiz Azmi

Executive Chairman, Securities Commission Malaysia.



Professor Simone Borghesi, Professor of Environmental Economics at University of Siena and European University Institute, spoke on Carbon Markets: an Effective, Equitable, Sustainable Solution? He explained the fundamental mechanism of carbon credits and cap-and-trade systems, highlighting how they incentivize emissions reductions by assigning financial accountability to polluters. Using the European Emission Trading System (EU ETS) as an example, he showcased its success in reducing emissions by 40% in regulated sectors such as energy and industry.



His talk also highlighted the rapid expansion of carbon markets, now covering 36 jurisdictions, 55% of global GDP, one-third of the global population, and 17% of greenhouse gas emissions.

Prices in these markets have increased substantially, reflecting policy tightening and mechanisms like the Market Stability Reserve (MSR), which stabilizes supply and demand. The EU market saw prices rise from €5 per ton of CO₂ in its early stages to peaks above €100 per ton, despite a temporary dip during the energy crisis. Professor Borghesi also emphasized the expansion of these systems faces challenges, including their regressive socio-economic impacts on lower-income households, competitiveness issues for industries, and the need for structural reforms to adapt to changing economic conditions. In exploring future pathways, he introduced the concept of negative emissions technologies and voluntary carbon markets, highlighting their potential alongside concerns over transparency, scientific integrity, and equity.

In conclusion, he confirmed that carbon markets are not a silver bullet, and he stressed the importance of effective revenue allocation, stakeholder collaboration, and strong leadership to ensure that carbon markets remain a viable tool for achieving net-zero emissions and supporting global climate goals.

Professor Marie Stenseke, Professor of Human Geography at the School of Business, Economics and Law, University of Gothenburg, spoke on the biodiversity crisis and how to make peace with nature. She framed the situation as part of the triple planetary challenge, which includes climate change and pollution, and highlighted the urgent need for transformative changes in policies and practices to safeguard natural ecosystems.



Drawing on the Intergovernmental Panel on Climate Change (IPCC) report, Professor Stenseke revealed that one million species face extinction due to human activities. She identified land-use changes, direct exploitation, climate change, pollution, and invasive species as key drivers of biodiversity loss, with

societal structures and economic systems acting as indirect contributors. Professor Stenseke underscored the disproportionate burden borne by marginalized communities, connecting biodiversity degradation with issues of inequality and social justice.

To combat this, Professor Stenseke advocated for systemic transformation, including capacity-building, cross-sectoral cooperation, pre-emptive action, environmental law designing and implementation, and decision-making in the context of resilience and uncertainty. She emphasized the necessity of internalising environmental costs, adopting alternative quality-of-life metrics, and mainstreaming biodiversity into decision-making processes. Businesses, she suggested, must embrace sustainable practices, invest in environmentally friendly technologies, and adopt circular economy principles to mitigate harm.

Professor Stenseke also discussed interdisciplinary research, such as the BIOPATH Framework program, which integrates biodiversity considerations into finance and business. She stressed the need for holistic solutions, interdisciplinary collaboration, and the valuation of nature beyond economic terms to address interconnected environmental challenges effectively. Concluding, Professor Stenseke called for an interdisciplinary effort to integrate biodiversity conservation into governance, finance, and societal values, aligning with the objectives of the sustainable transition.

Professor Joeri Rogelj, Professor of Climate Science & Policy at the Centre for Environmental Policy, Imperial College London, shared his insights on "Ambitious National Targets: Balancing what is Feasible with what is Fair", focusing on the lessons learned from advising the EU on setting a science-based 2040 emissions reduction target. He emphasized the importance of aligning these targets with the Paris Agreement, European climate law, and sustainable development goals, while addressing the interplay between legal contexts and value judgments.

He outlined a four-pillar framework to guide the EU's 2040 Nationally Determined Contributions (NDCs). This framework integrates the legal context, emission limits, pathways to climate neutrality, and their broader implications. Based on research and modelling, he recommended an ambitious target of a 90-95% emission reduction by 2040 relative to 1990 levels. This target considers environmental risks, technological feasibility, and the EU's commitments to equity principles. Highlighting the critical need for international cooperation and support for emission reductions beyond the EU, he discussed three pathways to achieving the target: (a) prioritising renewable energy, (b) focusing on demand-side strategies, and (c) a mixed approach. He also underscored the necessity of net-negative emissions post-2050 to fulfil global climate commitments.



He further addressed the trade-offs between fairness and feasibility, advocating for rapid, inclusive, and well-managed transitions. He emphasised that decisive policy choices are essential for ensuring alignment with sustainability objectives and mitigating global climate risks. He concluded by highlighting the role of scientific evidence in shaping equitable and actionable climate policies.

Professor Scott Barrett, Professor of Natural Resource Economics at Lenfest-Earth Institute, Columbia University, addressed the question of How to Think About how to Address Climate Change. He critiqued the shortcomings of international climate agreements, particularly the UNFCCC approach, which he argued had failed because it asked countries to play the wrong game. Instead, Professor Barrett proposed that focusing on technology-fuel systems with increasing returns, supported by trade measures or strategic research and development (R&D), could be a more effective path forward.

Professor Barrett explained that climate change is a collective action problem, requiring all nations to reduce emissions despite differing economic contexts and national interests. He described the "tragedy of the commons" as a central challenge, where individual countries benefit more from inaction while the global community bears the cost. He also emphasized that the UNFCCC framework does not adequately address this dynamic. Reflecting on historical climate negotiations, Professor Barrett noted the limited success of agreements like the Kyoto Protocol and Copenhagen Accord, attributing failures to a lack of enforceable commitments and varying national incentives. He contrasted this with the Montreal Protocol's success, which hinged on technological innovation and increasing returns from systemic transitions.

Professor Barrett advocated for leveraging economic tools such as carbon pricing and emphasized the importance of research and development in renewable energy and emissions reduction technologies. He highlighted the role of positive feedback loops—such as those seen in the global shift from leaded to unleaded gasoline—in accelerating large-scale transitions.

He concluded with a call for a paradigm shift, suggesting that effective climate action requires transforming the current "prisoners' dilemma" into a "tipping game." By fostering technological adoption, employing trade measures to incentivize compliance, and rethinking the framework of international cooperation, Professor Barrett believes global efforts can align more effectively to combat the climate crisis.



Dr Sandra Batten, Senior Economist, Bank of England, talked about The Economic Impact of Climate Policies, emphasizing the importance of integrating climate action with economic models, such as Integrated assessment models (IAM). Dr Batten highlighted the need for clear climate targets and the role of various policy instruments, including market-based mechanisms such as taxonomy and subsidies, in achieving these goals.

She summarized the modelling approach and econometric approach to measuring economic impact of a carbon price, and analyzed the microeconomic impacts of climate change,

stressing that economic incentives and resource distribution are crucial to understanding the effects on different sectors, income groups, and regions. Dr Batten also addressed the concept of a "Just Transition," which ensures that climate policy impacts are distributed fairly, mitigating potential socio-economic disparities with various indicators from different dimensions.

She pointed out the challenges of modelling the long-term effects of climate policies, noting that results can vary across different models and that reliable data is essential for making accurate predictions.

She stressed the interconnectedness of economic activity and natural resources, underscoring the need to account for these interactions when developing effective climate policies. In her conclusion, Dr Batten highlighted the importance of quantifying nature's contributions to the economy, such as ecosystem services, and incorporating this understanding into economic models and policies.



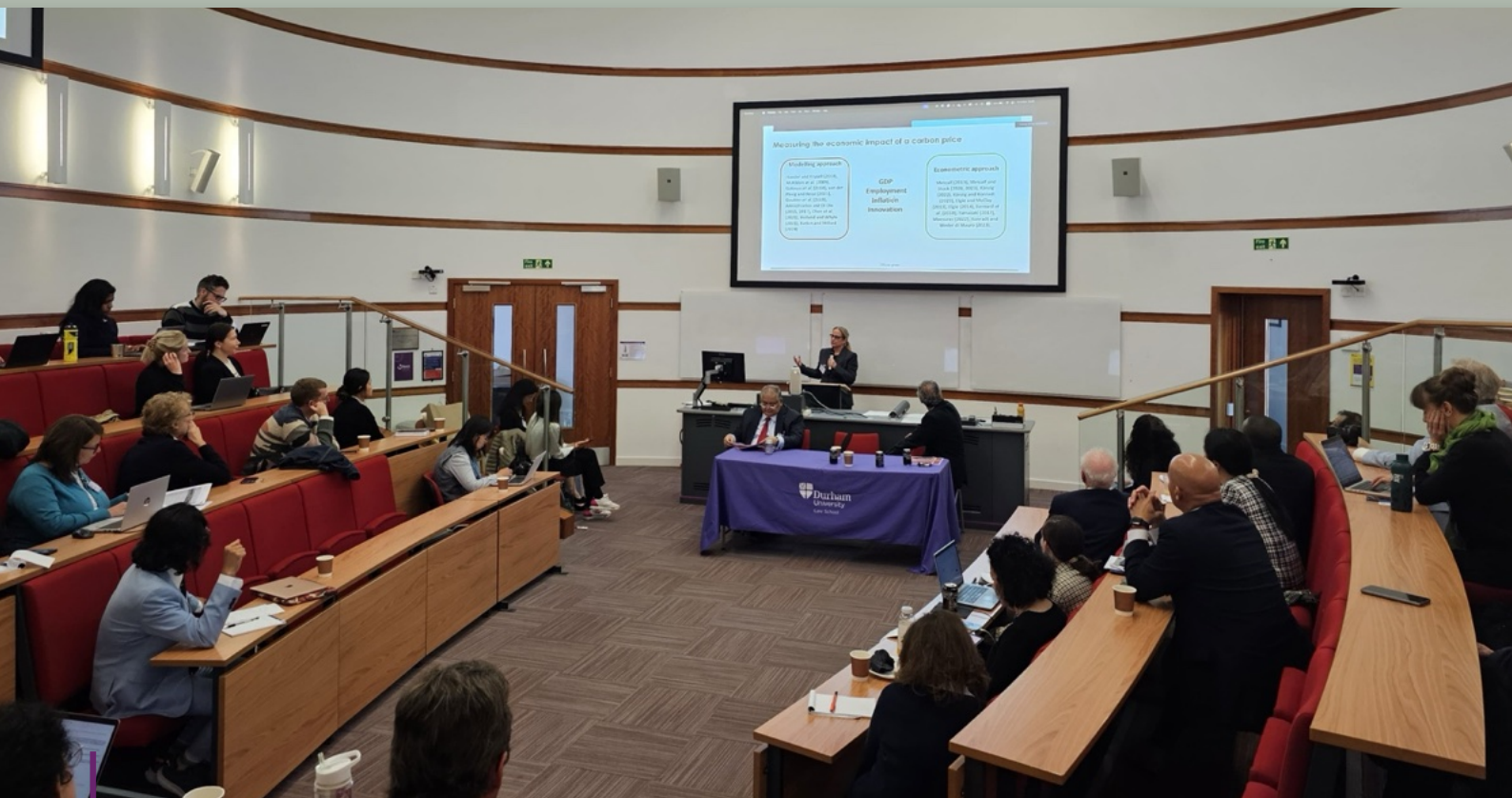
Dr Dato' Mohammad Faiz Azmi, Executive Chairman, Securities Commission Malaysia, highlighted the critical need for collaboration among governments, businesses, regulators, and other stakeholders to achieve sustainable development and transition to a net-zero economy.

He emphasized that Malaysia has established policies like the National Climate Change Policy and National Energy Transition Policy and leverages land use strategies for greenhouse gas removal. However, significant challenges remain, particularly in balancing energy transition with adaptation funding. The Malaysian capital market plays a crucial role in driving sustainability through taxonomy, enhanced reporting standards, and transition planning, including the phased implementation of the National Sustainability Reporting Framework starting in 2025.

Islamic finance also holds substantial potential, guided by principles like *Maqasid-al-Shari'ah*. Beyond financial investments, Dr. Azmi emphasized the need for knowledge transfer, highlighting the role of innovation and technology in building climate resilience.



He also underscored that while climate change is not viewed as an existential threat by regulators, listed companies often fail to adequately anticipate the risks, creating significant vulnerabilities. He concluded by emphasizing that while significant progress has been made in policy development, urgent action is required to close knowledge gaps, enhance adaptation funding, and foster a whole-society approach for a sustainable and just transition to a net-zero future.

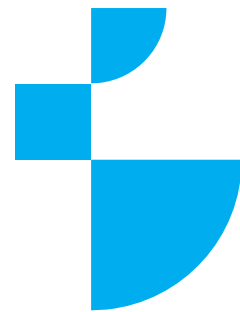


Dr Sandra Batten speaking at the JusTNOW Conference



Workshop

Interdisciplinarity for Climate Justice in a Post-Advisory Opinion World



The fourth segment of the JusTNOW conference was a workshop on 'Interdisciplinarity for Climate Justice in A Post-Advisory Opinion World'. The workshop was further divided into two panel discussions. The discussions in the first panel were around 'Old Principles New Standards: Due Diligence, Precautionary Principle, and CBDR (common but differentiated responsibility)', and in the second panel, the speakers explored 'Attribution Science and Health Policy for Second Generational NDC (Nationally Determined Contribution)'.

The workshop delved deeper into the legal standards as they emerge from adjudication and international law, to inform the International Court of Justice advisory opinion. This analysis of the legal obligations of States in the context of climate change is not only relevant for litigation but also for legislation, and therefore, the outcome of the final workshop was informed by the preceding panels. The new legal yardsticks will equally inform the discourse and the research on climate justice and on just transitions to a net zero world.



Workshop in the form of a roundtable discussion. Photo taken during the speech of Mr Jukka Siukosaari, Ambassador of Finland to the United Kingdom.

Opening Remarks at the Workshop

Professor Colin Bain, Pro-Vice-Chancellor (Research), Durham University introduced the JusTNOW initiative at the JusTNOW International Launching Conference, emphasising Durham University's commitment to the Strategic Research Fund. He described these transitions as "wicked problems" requiring both social and technical solutions, necessitating cross-disciplinary collaboration. To support this, the university has created a Strategic Research Fund, investing in large interdisciplinary projects and establishing several new academic positions. In addition to the JusTNOW project, he highlighted other key initiatives, including the Durham Space Research Center's focus on responsible innovation in Space (SPARC), the Heritage 360 initiative, and the SMART SOILS aimed at restoring soils. He stressed the importance of cultural sensitivity and local empowerment, ensuring that sustainable development also brings tangible benefits to local communities.



Ms Danielle Yeow, Climate Change Law and Policy Lead at Centre for International Law (CIL), and Adjunct Associate Professor MSc in Environmental Management, National University of Singapore, emphasised the importance of an interdisciplinary approach to addressing climate change. She started by reflecting on the role of the CIL's long-standing, and recently renewed, collaboration with the CSDLP. She highlighted several successful collaborations. These include, among others, CSDLP-CIL collaborations at COP27, joint official submission at SB58, and joint efforts for the success of an official UNFCCC side event at COP28. She also introduced the Asian Universities Climate Change Network initiative, aimed at promoting interdisciplinary research and elevating the Asian perspective in climate discourse. She discussed the significance of recent advisory opinions, including the ITLOS ruling, which clarified that greenhouse gas emissions are a form of marine pollution and established more stringent environmental impact assessment requirements. She considered how the advisory opinion emphasised the role of land-based activities in marine conservation and affirmed the CBDR principle, ensuring that developing states are not disproportionately burdened. She stressed the need for a systemic integration of scientific advancements in climate policy and the importance of equity in climate negotiations. She also pointed to the expanding scope of reporting requirements, urging companies to track carbon intensity and hold themselves accountable for their climate impact. Finally, she emphasised the growing role of climate litigation, supported by robust scientific evidence, in achieving climate justice.



Old Principles New Standards: Due Diligence Precautionary Principle, and CBDR – First Panel of the Workshop

Dr Joseph Kobusheshe, of Environment, Health, and Safety, the Petroleum Authority of Uganda, and a long-standing partner of the Durham Centre for Sustainable Development Law and Policy, chaired the first panel of the Workshop.



Professor Jutta Brunnée

Dean, University Professor, and James Marshall Tory Dean's Chair, University of Toronto.

Mr Kishan Khoday

UNDP Resident Representative, The Bahamas, Belize, Bermuda, Cayman Islands, Jamaica, Turks & Caicos.

Mr Zachary A.R. Phillips

Crown Counsel with the Attorney General's Chambers of Antigua and Barbuda.

Professor Christian Tietje

Professor of European Union and International Economic Law at the Martin Luther University Halle-Wittenberg., Germany.

Dr Joseph
Kobusheshe
moderating the
first panel of
the workshop



Professor Jutta Brunnée, Dean, University Professor, and James Marshall Tory Dean's Chair, University of Toronto, gave a presentation on the topic of Due Diligence: An Old Rule for A Changing World? particularly in addressing climate change within the framework of the Paris Agreement. She emphasised the transition of the no harm rule from its origins in international nuisance law to a critical component of modern environmental law, reflecting a shift from focusing on serious injury to significant harm. This evolution underscores the dynamic interplay between scientific advancements and legal standards. She also highlighted the historical significance of due diligence, rooted in early international law, as a principle obligating states to prevent significant transboundary harm.



She referenced key international case law, such as the *Trail Smelter* case, and recent rulings by the International Court of Justice, including *Costa Rica vs Nicaragua*, which reinforced the need for procedural measures like environmental impact assessments. She stressed that due diligence is an adaptable, context-specific standard, shaped by emerging risks, scientific developments, and state capabilities.

In the context of climate change, she emphasised the relevance of due diligence to the 1.5°C temperature goal, noting that recent rulings extend obligations to global commons and areas beyond national jurisdiction. She also discussed ongoing legal challenges, such as those before the International Court of Justice and the Inter-American Court of Human Rights, which explore the intersection of environmental sustainability and extraterritorial human rights obligations. She concluded by expressing confidence in the principle's adaptability to address global environmental challenges, including the urgent threat of climate change.

Mr Kishan Khoday, UNDP Resident Representative of United Nations Development Program the Bahamas, Belize, Bermuda, Cayman Islands, Jamaica, Turks & Caicos emphasised the UNDP's pivotal role in supporting nations to localise global environmental treaties and implement National Climate Plans and Biodiversity Strategies, focusing on governance, regulatory innovations, and capacity-building.

Highlighting the vulnerability of Small Island Developing States (SIDS), particularly in the Caribbean, Mr Khoday described the region as "Ground Zero" for climate change, facing severe economic losses and environmental risks. He stressed the challenges these states encounter in securing adequate adaptation financing due to their classification as upper middle-income nations. He advocated for climate justice, calling for reparations and compensation for



historically induced climate harms, while emphasizing the importance of international cooperation to address systemic financing barriers.

Mr Khoday also underscored UNDP's interdisciplinary approach, linking climate action with poverty reduction, gender equality, and sustainable development. He discussed the need for enhanced local capacities to address loss and damage, develop climate-resilient infrastructure, and empower communities. Looking forward, he highlighted UNDP's role in advancing innovative climate governance through establishing climate agencies, laws, and resilience frameworks, as well as fostering global norms on climate litigation and justice.

He concluded by emphasising the urgency of rethinking international cooperation to better support vulnerable nations and ensuring that historical responsibilities are acknowledged, promoting a fair and equitable global response to climate challenges.

Mr Zachary A.R. Phillips, Crown Counsel with the Attorney General's Chambers of Antigua and Barbuda addressed the unique challenges Small Island Developing States face under international environmental law. He highlighted the principles of Common but Differentiated Responsibilities (CBDR), due diligence, and the precautionary principle, emphasizing their critical role in safeguarding the extensive maritime zones and vulnerable ecosystems of SIDS.

He underscored the disproportionate burdens placed on Small Island Developing States, such as monitoring their large Exclusive Economic Zones (EEZs) despite limited resources. He called for enhanced capacity-building and assistance from more capable nations, in alignment with the CBDR principle.

The role of science was central to Mr Phillips' discussion, as he noted that due diligence now requires states to utilise the best available scientific evidence when fulfilling their international obligations.

This principle, tied closely to the precautionary approach, mandates preemptive action to mitigate potential environmental harm, even in the absence of full scientific certainty.

He also examined the economic threats posed by climate change, particularly the migration of tuna stocks affecting Pacific Small Island Developing States. He questioned the adequacy of international law in addressing such existential challenges, advocating for reevaluating global climate action plans to include broader considerations of equity and collective responsibility.

Concluding his presentation, he stressed the need for international legal frameworks to evolve in ways that meaningfully address the realities of ecosystem and economic loss, particularly in the Small Island Developing States.



Professor Christian Tietje, Professor of European Union and International Economic Law at the Martin Luther University Halle-Wittenberg, Germany, talked about Climate Finance, Common But Differentiated Responsibilities and Respective Capabilities, ITLOS and Others - Challenges for COP29, emphasising the significant financial needs and legal principles underpinning global efforts to combat climate change. He highlighted the historical commitments of developed countries under agreements like the Copenhagen Accord and the Paris Agreement, noting the delayed fulfillment of the \$100 billion annual finance goal, which is now deemed insufficient compared to the estimated \$6 trillion required by 2030.

Professor Tietje outlined seven key challenges in climate finance negotiations, including setting a goal, contributors distribution, time frame, ensuring high-quality support of climate, transparent progresses to track progress, finance, finance flows towards low greenhouse gas emissions, and addressing the relationship between adaptation and mitigation.

He stressed the principle of Common but Differentiated Responsibilities and Respective Capabilities (CBDR-RC) as a cornerstone of climate finance, recognized in international law, and called for nuanced differentiation within developing countries based on their capacities and responsibilities. He also introduced the concept of negative obligations, where nations must avoid measures that hinder climate action, such as subsidies or trade policies that increase mitigation costs.

In conclusion, Professor Tietje underscored the need for equitable and legally grounded climate finance mechanisms that address both shared and distinct responsibilities, enabling effective climate action while balancing global trade and environmental objectives.





Attribution Science and Health Policy for Second Generational NDC – Second Panel of the Workshop

Dr John Bothwell, Associate Professor (Reader in Bioenergy), Durham University, Co-Director of the CSDLP, and one of the Principal Investigators of the JusTNOW initiative chaired the second panel of the Workshop.



H.E. Mr Jukka Siukosaari

Ambassador of Finland to the United Kingdom of Great Britain and Northern Ireland.

Professor Andy Haines

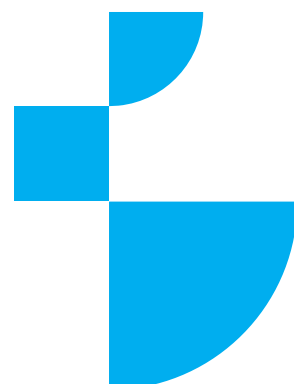
Professor of Environmental Change and Public Health at the London School of Hygiene and Tropical Medicine.

Dr Friederike Otto

Senior Lecturer in Climate Science at the Grantham Institute for Climate Change and the Environment at Imperial College London.

Dr Rupert Stuart Smith

Senior Research Associate in Climate Science and the Law at the Oxford Sustainable Law Programme.



Mr Jukka Siukosaari, Ambassador of Finland to the United Kingdom of Great Britain and Northern Ireland, talked about Finland's progressive climate policies and commitments.

He began by emphasizing Finland's ambitious goals of reducing greenhouse gas emissions by 55% by 2030, achieving carbon neutrality by 2050, and eventually reaching carbon negativity. He noted that the Finnish National Climate Act, enacted in 2015, sets a legal framework for planning and monitoring climate actions, incorporating targets based on scientific recommendations and global equity considerations.

Mr. Siukosaari stressed the importance of inclusivity in climate policymaking, particularly regarding the indigenous Sami people, whose culture and environment are deeply affected by climate change. He outlined Finland's National Climate Change Adaptation Plan, which focuses on health and social welfare, integrates regional perspectives, and adopts a human-rights-based approach. He also discussed Finland's role in the Coalition of Finance Ministers for Climate Action, an initiative involving 84 countries. This coalition seeks to align fiscal policies with climate goals and mobilize private finance to support sustainability efforts. Mr. Siukosaari highlighted Finland's technological advancements, particularly the Lumi supercomputer, which aids climate research through artificial intelligence and sustainable operations.

In conclusion, universities, he remarked, play a central role in combating climate change through research, education, and sustainable practices. He commended Finnish universities and praised Durham University for its commitment to fostering sustainability.



Professor Andy Haines, Professor of Environmental Change and Public Health at the London School of Hygiene and Tropical Medicine, spoke about Climate Change and Health - the Need for Attribution.

He described how climate change affects health through diverse pathways, including extreme weather events, air and water quality, food security, and the spread of infectious diseases. The health impacts are unevenly distributed, disproportionately affecting vulnerable populations due to compounded economic and social factors like poverty and migration.

Professor Haines emphasized the need for robust attribution studies to link specific health outcomes, such as heat-related deaths, to climate change. He also addressed the rising incidence of heat stress, which affects outdoor workers, pregnant women, and populations in extreme climates, with significant health and economic repercussions.



Mental health emerged as another critical area, with rising levels of eco-anxiety and depression—grief over environmental changes—impacting well-being, particularly among young people. He also discussed the increasing prevalence of vector-borne and zoonotic diseases, the impacts on food systems, and the broader consequences for global nutrition and health.

Professor Haines advocated for integrated adaptation and mitigation strategies to address climate resilience while delivering immediate health benefits. He stressed the urgency of improving data collection, funding adaptation measures, and promoting climate-resilient development. Concluding, he urged a focus on the overall benefits of proactive climate action, emphasizing the potential to safeguard millions of lives and improve global health outcomes.

Dr Friederike Otto, Senior Lecturer in Climate Science at the Grantham Institute for Climate Change and the Environment at Imperial College London, shared her views on *Attributing Extreme Events – How is it Relevant in Litigation and Law?* focusing on the analysis of the climate litigation.

She emphasized that attribution science has evolved significantly, providing robust evidence to link extreme weather events directly to climate change. This development has shifted the narrative from uncertainty to accountability, empowering legal actions against inadequate climate policies.

Dr. Otto explored the rise in climate litigation globally, driven by the failure of governments and organizations to act decisively on climate issues. She highlighted successful cases, such as *KlimaSeniorinnenv. Switzerland*, where plaintiffs leveraged human rights frameworks to argue that insufficient climate action violated fundamental rights. These cases demonstrate the potential of legal systems to address the human cost of climate inaction.

Another key theme of Dr. Otto's presentation was the need for stronger collaboration between scientists and legal professionals. She stressed that while scientific evidence is now robust, its integration into legal arguments remains a challenge due to limited understanding among judges and policymakers. Dr. Otto concluded by calling for a shift in societal and political narratives about climate change. She also advocated for the development of a metric to quantify climate impacts and damages, enabling more precise accountability.

Dr Rupert Stuart Smith, Senior Research Associate in Climate Science and the Law at the Oxford Sustainable Law Programme presented about *The Health Impacts of Climate Change: A Clear Incentive for Mitigation*, with a particular focus on achieving the 1.5°C global warming target set by the Paris Agreement.

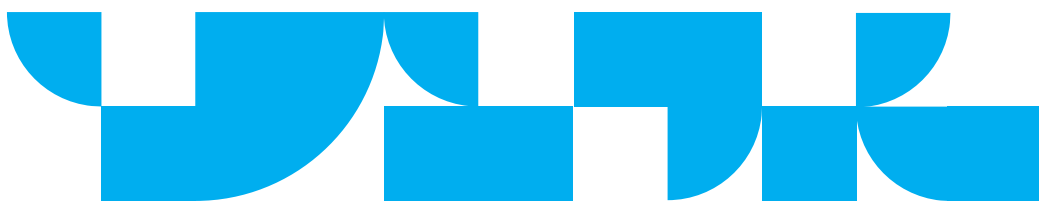


Dr. Smith explained that while technological pathways to limit warming to 1.5°C are feasible in long term, significant policy and legal uncertainties remain. He noted that some pathways allow emissions to remain high until the early 2030s, relying on future carbon dioxide removal (CDR) technologies, while others necessitate immediate and steep reductions in emissions.

Dr. Smith discussed the risks of overshooting the 1.5°C target, emphasizing that such pathways pose severe health and environmental consequences, including irreversible damage to ecosystems and human well-being. He warned that reliance on unproven CDR technologies could lead to extreme human rights violations, which would violate international law and contradict the human rights-based approach needed to meet the Paris Agreement's goals.

Dr. Smith also highlighted the importance of considering the health implications of different mitigation pathways, advocating for the prioritization of low-risk strategies that do not depend on large-scale future carbon removal. Dr. Smith suggested that legal systems, including courts, could play a crucial role in challenging high-risk pathways and ensuring states and corporations adhere to their climate commitments.

Finally, Dr. Smith called for scientifically informed legal research to clarify state obligations under international law, improve financial risk assessments, and guide climate litigation efforts in the interdisciplinary institutions.



Closing of the Conference and the MoU signing ceremony with the Federal Judicial Academy of Pakistan

At the conclusion of the conference, Professor Petra Minnerop delivered the closing remarks. On behalf of the CSDLP and Durham University, she extended heartfelt thanks to all speakers and participants, both in-person and online, for their invaluable contributions to the event.

Additionally, at the conclusion of the conference, a significant milestone was marked with the signing of a Memorandum of Understanding (MoU) with the Federal Judicial Academy (FJA) of Pakistan. FJA is an institution aimed at continued professional development of the judges, magistrates, law officers and court personnel in Pakistan. Mr Hayat Ali Shah, the Director General of the FJA and Hon Justice Jawad Hassan (Judge at the Lahore High Court) were invited to the Conference for signing the MoU between the CSDLP and FJA. Professor Minnerop represented CSDLP and Durham Law School in this signing ceremony.

This MoU symbolises a commitment to fostering an academic and professional partnership aimed at advancing mutual goals in sustainable development and legal education. Under this partnership, the academic team at CSDLP is working to establish a curriculum for continuing professional development in relation to international environmental law for the Judges in Pakistan.



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