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Proceedings of the World Forum on Climate Justice

19th-21st June 2019

Hosted by the **Centre for Climate Justice** in partnership with **Elsevier**



Foreword

The inaugural Elsevier World Forum on Climate Justice made a landmark contribution to the important and much-needed discussion around the inequality of climate change and its impacts.

The World Meteorological Organization (WMO) highlights that the rapidly increasing atmospheric levels of CO₂ and other greenhouse gases have the potential to initiate unprecedented changes in climate systems, leading to “severe ecological and economic disruptions”. The evidence unequivocally points to the anthropogenic nature of climate change and, therefore, the need to address what by many is seen as humanity’s greatest challenge in the 21st century. Climate change has already started to impact all aspects of social life. The IPCC Special Report on Global Warming of 1.5°C has a clear message, climate-related risks to health, livelihoods, food security, water supply, human security and economic growth are projected to increase with global warming of 1.5°C and increase further with 2°C. At COP24 in Poland, the naturalist Sir David Attenborough said “Right now, we are facing a man-made disaster of global scale. Our greatest threat in thousands of years. Climate Change.”

The observed and lived experiences of those already affected by climate impacts, as well as ever-more-detailed climate models of future impacts, have shown there is a need for fundamental change in the

most affected nations and the least affected. Yet, despite such warnings, a slow transition from a “business-as-usual” scenario threatens to entrench, or further deepen, these inequalities and exacerbate environmental damage. Ultimately, those who are materially and politically disadvantaged will bear the brunt of climate impacts, while the privileged few may climate-proof their future.

This Forum represented a powerful opportunity to influence the narrative of climate change discourse and bring to the fore the climate inequality and the associated deep poverty and social, economic, health and political marginalisation that ensue for many. As Jay Naidoo, a former minister of the post-apartheid cabinet, posits, “poverty is driven by inequality and overcoming poverty is an act of justice”. Unpacking and understanding layers of injustices is critical to changing the narrative of climate change in the context of worsening poverty and inequality, particularly in the Global South, and comes at a time where there is strong demand from many corners to transition to clean sources of energy and reduce our carbon footprint.

To address these issues requires emphasis on real commitments to tackling the injustices caused by a changing climate, embracing issues such as inclusivity, voice and empowerment, political equality, gender sensitivity, human rights and dignity, compassion and justice. I would like to sincerely thank Elsevier, all the delegates from around the world and our keynote speakers for driving momentum for real change in the narrative on climate change – and I hope this forum acts as a catalyst to continue these discussions across the globe and into the future.

Professor Tahseen Jafry
Director, The Centre for Climate Justice



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Keynote Speakers



Mary Robinson

Mary Robinson Foundation - Climate Justice, Republic of Ireland

Mary Robinson served as President of Ireland from 1990-1997 and UN High Commissioner for Human Rights from 1997-2002. She is Chair of the Elders and a member of the Club of Madrid and the recipient of numerous honours and awards including the Presidential Medal of Freedom from the President of the United States Barack Obama. She sits on the advisory board of Sustainable Energy for All (SE4All) and is also a member of the Lead Group of the Scaling Up Nutrition (SUN) Movement. Between 2013 and 2016 Mary served as the UN Secretary General's Special Envoy in three roles; first for the Great Lakes region of Africa, then on Climate Change and

most recently as his Special Envoy on El Niño and Climate.

A former President of the International Commission of Jurists and former chair of the Council of Women World Leaders she was President and founder of Realizing Rights: The Ethical Globalization Initiative from 2002-2010 and served as Honorary President of Oxfam International from 2002-2012. Mary Robinson serves as Patron of the Board of the Institute of Human Rights and Business, is an Ambassador for The B Team, in addition to being a board member of several organisations including the Mo Ibrahim Foundation and the European Climate Foundation. She serves as Chancellor of the University of Dublin since 1998. Mary's memoir, *Everybody Matters*, was published in September 2012.

Opening Address **Climate Justice: *The way to accelerate ambition for a safe world***

The frameworks negotiated by member states of the UN in 2015 – the 2030 Agenda with its seventeen sustainable development goals, and the Paris Climate Agreement – were voluntary or weak in enforceability. However, the report of the IPCC last October on global warming at 1.5°C has altered our understanding of the situation we are in. The report made it clear that staying at or below 1.5°C warming above pre-industrial standards was the only safe level for the whole world, and that further warming up to 2°C would cause considerable risk to the planet.

As a consequence, we can no longer afford to regard the 2030 Agenda and the Paris Climate Agreement as voluntary, and a matter for each member state to decide on its own. Instead, the full implementation of both has become imperative in order to secure a liveable world for our children and grandchildren. This requires a change of mind-set at the global political level. The IPCC has called for a 45% reduction in carbon emissions by 2030, and said that this is doable if there is the political will.

How do we get that political will and sense of global solidarity? I believe it is through the emerging movement for climate justice, putting pressure on governments and on business, particularly the fossil fuel industry. It is heartening to see women leaders stepping forward, school children striking and young people making their voices heard. Some, such as Extinction Rebellion, have taken to peaceful protest, and there is increasing business and investment leadership calling for more ambition from governments. The importance of this growing climate justice movement is that it will call for a just transition to a world powered by clean energy, and climate actions that fully respect human rights. Workers in coal, oil and gas will not be left out, and priority will also be given to reaching the 1 billion people who still lack electricity, and the 2.3 billion who cook with charcoal, wood, peat or animal dung and ingest indoor air pollution that kills millions each year. We have the off grid lights, mini-systems and clean cook stoves that can transform the lives of a significant portion of our world, and enable them to take themselves out of deep poverty.

Rising to the challenge of addressing the threat of climate change can be truly transformative, and achieve the commitment in the 2030 Agenda to 'leave no one behind'.



Rt Hon Nicola Sturgeon MSP

First Minister of Scotland

Nicola Sturgeon is Scotland's First Minister. Born in Irvine in 1970 and educated at Greenwood Academy, she studied law at the University of Glasgow where she graduated with LLB (Hons) and Diploma in Legal Practice. Before entering the Scottish Parliament as a regional MSP for Glasgow in 1999 she worked as a solicitor in the Drumchapel Law and Money Advice Centre in Glasgow. She is currently MSP for Glasgow Southside having been, before boundary changes, MSP for Govan between 2007 and 2011. In government she served as Cabinet Secretary for Health and Wellbeing between May 2007 and September 2012 and then Cabinet Secretary for Infrastructure, Investment and Cities with responsibility for government strategy and the constitution until November 2014. Throughout this period, she also served as Deputy First Minister of Scotland.

She became SNP Leader on November 14, 2014 and was sworn in as First Minister on November 20, 2014. She was formally nominated for a second term on May 17, 2016. She lives in Glasgow with her husband Peter Murrell. Nicola Sturgeon is the first female First Minister and the first female leader of any of the devolved UK administrations.

Address to the world forum

The First Minister highlighted to delegates it is impossible to tackle the climate crisis without recognising the need for climate justice, and used the occasion to launch a Big Climate Conversation across Scotland. Speaking to an audience drawn to the campus from 35 countries, including the United States, China, India and several African nations, the First Minister outlined the Scottish Government's commitment to making the transition from a carbon economy in a fair and just way. She highlighted Scotland's tough targets to achieve net zero emissions by 2045, and the appointment of a Just Transition Commission to deliver the change in a way which brings benefits for all.

She said: "We need to start with the recognition this needs effort and it needs to be deliberate. There are huge costs attached and governments and businesses need to share the burden. We need to create benefits for communities and leave no one behind. This summer I want to engage people in our Big Climate Conversation so we don't get overwhelmed by the scale of the problem and we can see the opportunities as well as the challenges."

She said those who have done the least to contribute to climate change often bear the biggest burden and it is important the richest countries lead the way in tackling it with fairness at the heart of their approach. She described how Scotland created the world's first Climate Justice Fund in 2012 to support projects in Malawi, Rwanda and Zambia. She admitted the contribution was small given the scale of the challenge, but the fund has already provided access to clean water and renewable energy for tens of thousands of people. She said: "We are helping to empower communities in adapting to the crisis. And we are sending a signal to other countries around the world that climate justice matters."

You can read the First Minister's full speech on the Scottish Government's website by searching for "First Minister Nicola Sturgeon's speech at World Forum on Climate Justice in Glasgow on 19 June 2019".



Kerry Kennedy

President, Robert F. Kennedy Human Rights, USA

Kerry Kennedy is the president of Robert F. Kennedy Human Rights. For more than thirty years, Dr Kennedy has devoted herself to the pursuit of equal justice, the promotion and protection of basic rights, and the preservation of the rule of law. She has worked on a range of issues, including children's rights, child labour, disappearances, indigenous land rights, judicial independence, freedom of expression, ethnic violence, impunity, and the environment. Under Dr Kennedy's leadership, Robert F. Kennedy Human Rights partners with the bravest people on Earth to create lasting change. Robert F. Kennedy Human Rights supports defenders in the field with advocacy, litigation, and training; brings human rights to students in the classroom with its innovative Speak Truth to Power curriculum; and engages the financial community about sustainable investing and the intersection between business and human rights.

She is the author of *Speak Truth to Power: Human Rights Defenders Who Are Changing Our World*, which features interviews with human rights activists including Marian Wright Edelman, the Dalai Lama, and Archbishop Desmond Tutu. She appears regularly on USA and international TV networks in countries around the world, and her commentaries and articles have been published widely across print media and academic journals. Dr Kennedy served as Chair of the Amnesty International USA Leadership Council for over a decade. Nominated by President Bush and confirmed by the Senate, she serves on the board of directors of the United States Institute of Peace, Human Rights First, Nizami Ganjavi International Center (NGIC), Health eVillages and Inter-Press Service (Rome, Italy). She is a patron of the Bloody Sunday Trust (Northern Ireland) and serves on the Editorial Board of Advisors of the Buffalo Human Rights Law Review. She is on the Advisory Committee for the association of American Indian Affairs; International Campaign for Tibet, the Global Youth Action Network, and several other organizations. Dr Kennedy has served in numerous political campaigns, and she is a member of the Massachusetts and District of Columbia bars. She is a graduate of Brown University and Boston College Law School, and she holds honorary doctorates of law from Le Moyne College, University of San Francisco Law School, and University of New Caledonia, and honorary doctorates of Humane Letters from Bay Path College and the Albany College of Pharmacy.

Address to the world forum

Dr Kennedy informed delegates it was important that each individual person recognises they can make a difference on climate change. She said: "Each of us has the power to create change in our community, in our countries and globally on these critical issues.

"So often I think in European countries and in the United States we don't see the connection between human rights and environmental activism. But in so many places around the world the environmental activists face imprisonment, torture and death for basic rights most of us take for granted. We need to partner with them and see this as a holistic issue, impacting women, impacting communities of colour, impacting poor communities, indigenous communities and impacting all of our lives."

Dr Kennedy also highlighted the significance of climate action by human rights activists and defenders. She said: "Today front-line climate justice defenders are women and men who stand up to Government oppression, risk imprisonment and torture for basic rights. These are today's heroes.

"There is no difference between human rights work and environmental activism, they are in essence the same thing.

"Humans rights law is founded on the principle that there are certain inalienable rights belonging to every person as a member of the human family.

"There is a direct correlation between democracy, respect for human rights and respect for the environment."



Patrick Bond

Professor of Political Economy, University of the Witwatersrand, South Africa

Patrick Bond's work is presently focused on geopolitics, local and global political ecology, and South African, Zimbabwean, African and global uneven development. Since moving permanently to South Africa in 1990.

He has written books about global governance, national public policy, urban problems and environmental stresses, especially climate change. In service to the new South African government from 1994-2002, Patrick authored/edited more than a dozen policy papers, including the Reconstruction and Development Programme and the RDP

White Paper.

He is also regularly featured on South African television and radio news shows and writes columns for the main newspapers at least once a month. His dozen authored, co-authored and edited books are amongst the most cited on South Africa's democratisation process, including *Elite Transition* (2000, 2005, 2014 eds), and his two books on Zimbabwe (1998, 2003) have a similar status. His *Politics of Climate Justice* (2012) was named amongst the three leading books in the genre by *The Guardian*.

Patrick earned his doctorate in economic geography under the supervision of David Harvey at Johns Hopkins University (1985-92), and has an undergraduate economics degree from Swarthmore College (Philadelphia, 1979-83), including a semester studying classical guitar at the Peabody Conservatory (Baltimore, 1982).

Keynote / Climate justice and its contested discourse

The failure to make substantive progress on vital climate indicators within both the United Nations Framework on Climate Change and UN member states' national and local settings requires introspection by activists. Dating to the early days of 'Climate Justice' (CJ) advocacy in the late 1990s, their inability to achieve the required results contrasts with other global governance successes, such as the 1987 Montreal Protocol banning the CFCs that expand the ozone hole, and the early 2000s campaign to ensure AIDS medicines were available on a generic not branded basis with sufficient UN and donor funds to ensure widespread access. The disappointments for CJ include the Paris Climate Agreement's lack of ambition, the nonbinding character of emissions cuts, the banning of climate-debt ('polluter pays') liability claims, the reintroduction of market mechanisms, the failure to keep fossil fuels underground, and the inability to lock down three important sectors for emissions cuts: military, maritime transport and air transport.

There is a growing need to explore not just the general context of adverse power relations, but also intra-movement conflicts (some conceptual, others practical). At the level of movement-building, the organising and campaigning efforts of Climate Justice Now! were uneven across space and scale. But in the wake of the UNFCCC setbacks, the rising popularity of the phrase 'climate justice' suggests dissatisfaction with principles, analyses, strategies, tactics and alliances adopted by mainstream environmentalism. This will necessarily generate both heightened conflicts and resolutions within activism as well as intellectual work dedicated to climate justice, even if policy change remains elusive.



Kevin Bales

Professor of Contemporary Slavery, University of Nottingham, UK

Kevin Bales, CMG, FRSA is Professor of Contemporary Slavery and Research Director of the Rights Lab, University of Nottingham. He co-founded the NGO Free the Slaves. His 1999 book *Disposable People: New Slavery in the Global Economy* has been published in twelve languages. Desmond Tutu called it “a well-researched, scholarly and deeply disturbing expose of modern slavery.”

The film based on *Disposable People*, which he co-wrote, won the Peabody Award and two Emmys. The Association of British Universities named his work one of “100 World-Changing Discoveries.”

In 2007 he published *Ending Slavery: How We Free Today’s Slaves*, (Grawemeyer Award). In 2009, with Ron Soodalter, he published *The Slave Next Door: Modern Slavery in the United States*. In 2016 his research institute was awarded the Queens Anniversary Prize, and he published *Blood and Earth: Modern Slavery, Ecocide, and the Secret to Saving the World*. Check out his TEDTalk.

Keynote / Climate Justice, Slavery and Environmental Destruction

Contemporary forms of slavery and environmental destruction are locked in a powerful nexus. Criminal activities using enslaved labour generate large scale environmental destruction including producing a significant proportion of global human-generated CO2 emissions. The impact of environmentally destruction Anthropropic activities pushes vulnerable populations toward precarity and enslavement. The enslaved, once under the control of criminal slaveholders, are forced to carry out illegal mining, deforestation, fishing, wildlife capture, and damaging forms of agriculture that create extensive ecosystem loss, much of it irreversible.

This talk explores this cyclical relationship in the larger context of the Anthropocene. Their key assertion underlying the concept that we are living now in a new geomorphological era termed the Anthropocene is that the defining characteristics of the Holocene, the current official geological epoch which began about 11,700 years ago at the end of the Pleistocene, are being supplanted by a new set of global geological and environmental characteristics primarily of human origin. The further and linked assertion is that those defining characteristics are of such distinctive and widespread impact that it was possible and appropriate to demarcate a new geological epoch – the Anthropocene.

While the International Geologic Congress (the body that names epochs) has not officially declared that we are living now in the ‘Anthropocene’, the useful and descriptive concept has now achieved an almost universal support that it is commonly and regularly used, defined, and taught. Much of what has been written about the Anthropocene concerns the direction and impact of human activities, but a key point of this paper concerns the cyclical and reinforcing impacts of, for example, climate change and human rights violations. It is important to understand these cumulative and reinforcing patterns of environmental change and human outcomes – especially if we wish to reverse these destructive cycles.

To that end I use the widely accepted list of nine anthropogenic processes described as ‘planetary boundaries’. These are not geographical boundaries, but limits in wide ecological systems that, when crossed, have a detrimental effect on human (and other) activities. A ‘planetary boundary’ is crossed when environmental and morphological change reaches a point beyond which human activities will be disrupted and beyond which a number of large-scale natural systems (such as the water cycle) may also suffer disruption or fail. These planetary boundaries are used to explore their impacts and influences on contemporary slavery and in some cases vice versa. By searching at the intersection of current forms and levels of enslavement, and the current forms and levels of anthropomorphically generated change within the environment, I then posit projected outcomes.



Penelope Endersby
Chief Executive, Met Office, UK

It is my privilege to lead this successful and highly respected organisation, working at the forefront of weather and climate science, technology and operations. We constantly strive to harness the Met Office's world class capabilities for greater societal benefit.

I gained my first experience of scientific research as a sixth form WISE Scholar at GEC before completing a degree in Natural Sciences at Newnham College Cambridge.

For the majority of my career I have delivered science and technology on behalf of the Ministry of Defence. Prior to joining the Met Office in December 2018, I was Acting Chief Technical Officer (CTO) and Head of the Cyber and Information Systems Division of the Defence Science and Technology Laboratory (Dstl). The division had many areas in common with our work at the Met Office including web and data science, space systems and weather, radar and other sensor systems. As CTO I oversaw Dstl's entire £650m portfolio of research, and trebled our pipeline of innovation and new intellectual property, a strong interest of mine.

I began my career as an armour researcher, developing novel armour systems to protect military vehicles, then led several groups in Dstl's Physical Sciences Department before taking over as the department manager in 2009. During this time, I was appointed Fellow of the Institute of Physics and served as a member of their governing council. I have been a visiting professor in Electronics and Computer Science at the University of Southampton since 2012.

At Dstl, I was the executive sponsor of our Gender Equality Network and an active straight ally for our LGBT network. As a site incident manager for Porton Down I was also a trained County Silver Commander for major incident response. A lifelong lover of the natural environment I was trustee and honorary treasurer of Wiltshire Wildlife Trust until my move to Exeter.

Keynote / Contributing to Climate Justice through accurate predictions and in-country capacity development

The Met Office is the UK's national meteorological service and home to the Met Office Hadley Centre for Climate Prediction and Services. We provide a vital role in supporting resilience in the UK and contribute significantly to wider international science-based support of resilience, from decision making at a policy level to action locally.

We take a people-centred and partnership approach to include perspectives and expertise of those taking decisions and of other relevant disciplines to understand the context, risk appetite and challenges from policy makers to those in the field. Working on behalf of UK Government departments, such as Department for International Development (DFID), and with international agencies we generate knowledge relevant to a wide range of natural disaster and climate change impacts and deliver transformational services to those who need it most. For example, we are helping to build climate resilience in Yemen through providing operational support to short-term humanitarian operations preventing cholera outbreaks.

On longer times-scales we are playing a leading role in DFID's flagship Future Climate for Africa climate research programme. This is generating and applying new scientific understanding of African climate to reduce climate-related disruption and losses experienced by the most vulnerable and to safeguard economic development and poverty eradication efforts on the continent.



Benjamin K. Sovacool
Professor of Energy Policy, University of Sussex, UK

Dr. Benjamin K. Sovacool is Professor of Energy Policy at the Science Policy Research Unit (SPRU) at the School of Business, Management, and Economics, part of the University of Sussex in the United Kingdom.

There he serves as Director of the Sussex Energy Group and Director of the Centre on Innovation and Energy Demand which involves the University of Oxford and the University of Manchester. Professor Sovacool works as a researcher and consultant on issues pertaining to energy policy, energy security, climate change mitigation, and climate change adaptation. More specifically, his research focuses on renewable energy and energy efficiency, the politics of large-scale energy infrastructure, designing public policy to improve energy security and access to electricity, and building adaptive capacity to the consequences of climate change

Keynote / Climate Justice and Low Carbon Transitions

Low carbon transitions are often assumed as normative goods, because they supposedly reduce carbon emissions, yet without vigilance there is evidence that they can in fact create new injustices and vulnerabilities, while also failing to address pre-existing structural drivers of injustice in energy markets and the wider socio-economy. With this in mind, we examine four European low-carbon transitions from an unusual normative perspective: that of energy justice. Because a multitude of studies looks at the co-benefits renewable energy, low-carbon mobility, or climate change mitigation, we instead ask in this paper: what are the types of injustices associated with low-carbon transitions? Relatedly, in what ways do low-carbon transitions worsen social risks or vulnerabilities? Lastly, what policies might be deployed to make these transitions more just? We answer these questions by first elaborating an “energy justice” framework consisting of four distinct dimensions—distributive justice (costs and benefits), procedural justice (due process), cosmopolitan justice (global externalities), and recognition justice (vulnerable groups). We then examine four European low-carbon transitions—nuclear power in France, smart meters in Great Britain, electric vehicles in Norway, and solar energy in Germany—through this critical justice lens.

In doing so, we draw from original data collected from 64 semi-structured interviews with expert participants as well as five public focus groups and the monitoring of twelve internet forums. We document 120 distinct energy injustices across these four transitions. We aim to show how when low-carbon transitions unfold, deeper injustices related to equity, distribution, and fairness invariably arise. The distributive energy injustices revealed by our interview data do not just relate to traditional centralized sources of supply such as nuclear power.

We also see legitimate criticisms of community solar, smart meters and electric vehicles. The procedural injustices identified serve as a stark reminder that, though different technologies may be more distributed and decentralized, they may nonetheless still be governed or managed in essentially undemocratic ways. The prevalence of cosmopolitan injustices underscored the multiscale dimensions of energy injustice. Starkly, in all our cases there were cosmopolitan injustices related to materials and waste and the impacts their manufacture may be having across whole supply chains. In the Norwegian, German, and British cases, injustices such as poor working conditions and child labor linked to cobalt mining or rare earth minerals extraction were connected to the batteries and materials needed for EVs, solar PV, and smart meters. French nuclear power also has close links with the socio-environmental hazards of uranium mining and milling. For these reasons, although low-carbon transitions are known to be disruptive and contested, our analysis shows that this disruptive nature can have profound impacts on certain groups of people, especially the poor.



Kristie L Ebi

Professor of Global Health, University of Washington, USA

Kristie L. Ebi is director of the Center for Health and the Global Environment (CHanGE), and Rohm and Haas Endowed Professor in Public Health Sciences at the University of Washington.

She has been conducting research and practice on the health risks of climate variability and change for more than twenty years, including on extreme events, thermal stress, foodborne safety and security, and vector-borne diseases. She focuses on understanding sources of vulnerability, estimating current and future health risks of climate change, and designing adaptation policies and measures to reduce the risks of climate change in multi-stressor environments. She has supported multiple countries in Central America, Europe, Africa, Asia, and the Pacific in assessing their vulnerability and implementing adaptation measures.

Keynote / climate injustice and Health

The current impacts and future risks of climate change on people's health and wellbeing are of concern for local communities and decision-makers around the globe. According to the Intergovernmental Panel on Climate Change Special Report on Warming of 1.5°C, climate change is already causing injuries, illnesses, and deaths, and the burden of climate-sensitive health outcomes is projected to increase with each additional unit of warming.

According to the World Health Organization (WHO), air pollution and climate change are among the top ten threats to global health in 2019, and between 2030 and 2050, climate change is projected to cause 250,000 additional deaths annually due to malnutrition, heat stress, and other climate-related causes. Although everyone is affected by climate change, most of the impacts fall on the poor and marginalized, which makes climate change an injustice issue.

Climate change, including changes in the frequency and intensity of extreme weather and climate events, is expected to have significant negative effects on mental health and well-being. These effects that will be felt most by vulnerable populations and those with pre-existing serious mental illness. Localized and/or immediate consequences, such as injury or stress resulting from more extreme weather events or degraded landscapes, may be perceived as direct, personal impacts of climate change (Kolbert, 2006). Studies show that extreme climate events can result in post-traumatic stress disorder, anxiety, depression, grief, survivor guilt, suicide, and recovery fatigue. This paper will explore climate injustice and health, addressing how the health risks of climate change could exacerbate social and environmental injustices, including populations and regions that are particularly vulnerable, in the context of other global change such as demographic change and urbanization.



Professor Sir Andrew Haines

London School of Hygiene and Tropical Medicine, UK

I am Professor of Environmental Change and Public Health with a joint appointment in the Dept of Public Health, Environments and Society and in the Dept of Population Health. I was previously Director (originally Dean) of LSHTM for nearly 10 years up to October 2010, having previously been Professor of Primary Health Care at UCL between 1987-2000. I worked part-time as a general practitioner in North London for many years.

Between 1993-6 I was on secondment as Director of Research & Development at the NHS Executive, North Thames and I was consultant epidemiologist at the MRC Epidemiology and Medical Care Unit between 1980-7. I have also worked internationally in Nepal, Jamaica, Canada and the USA.

I have been a member of a number of major international and national committees including the MRC Global Health Group (chair) and the MRC Strategy Group. I was formerly chair of the Universities UK Health and Social Care Policy Committee and a member of the WHO Advisory Committee on Health Research. In recent years my research focus has been on the effects of environmental change on health and the impact of policies to adapt to or mitigate these changes. I was a member of Working Group 2 of the UN Intergovernmental Panel on Climate Change for the second and third assessment reports and review editor of the health chapter in the fifth assessment report. I chaired the Scientific Advisory Panel for the 2013 WHO World Health Report on Research for Universal Health Coverage. In 2014/2015 I chaired the Rockefeller Foundation/Lancet Commission on Planetary Health and I co-chaired the development group for the Health Knowledge Action Network of Future Earth. I sit on a number of other national and international committees.



Gerard Howe

Head of the Inclusive Societies, Department for International Development, UK

Gerard had been head of the Inclusive Societies Department in the policy division of the Department for International Development (DFID) from 2014 to 2019, and served 22 years with DFID. The department is responsible for civil society, gender equality, violence against women and girls, youth, faith, disability and diaspora, and the Leave No One Behind pledge to ensure people are not excluded as citizens in their society.

Oral Presentation Abstracts

*=Attending author

Climate Justice & Gender

“No climate justice without gender justice” Explorations of the intersections between gender and climate injustices in climate adaptation actions in the Philippines

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University of Auckland, New Zealand

This paper draws on critical climate adaptation, feminist political ecology and intersectionality approaches to examine efforts to address the intersections of climate and gender injustices in the Philippines. This research adopted a case study approach to investigate the gendered dimensions of climate change at a local level. The case study focuses on the City of San Fernando (CSF), located in the La Union Province of the Ilocos Region of the Philippines. The lead author conducted fieldwork for the case study over a two-month period in 2016. The empirical data comprises 25 semi-structured interviews, participant observation and content analysis of key government policy documents.

Existing scholarship often depicts women in the Global South as the most vulnerable to climate change due to social norms and greater poverty, however this feminisation of vulnerability, we demonstrate does little to enable intersectional approaches that address the gender inequalities, patterns of socio-economic marginalisation, and power relations. Instead, we highlight through our examination of Filipino women’s involvement in climate adaptation strategies, the importance of adopting a more nuanced understanding of vulnerability to facilitate sustainable climate adaptation. Although the Filipino government and development agencies have adopted measures designed to enhance gender equality and reduce the impacts of climate change, our study highlights that such policies and initiatives are not translated into observable effects on the ground. In particular, efforts focused on the inclusion of women in market-based activities, and the failure to consider how gender roles in Filipino society result in women and men being exposed to and perceiving climate-related risks differently, which mean that adaptation strategies hold the potential to compound existing or create new injustices.

Keywords: global south, gender, vulnerability, adaptation strategies

Climate justice, women of color and state-corporate crime in gulf coast Louisiana

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Environmental and climate justice scholars call for inquiry into the role(s) of Indigenous communities, women and people of color in resisting premature death and precarity that logically result from statist necropolitics and state-corporate crime. Feminist climate researchers likewise expose the under-theorization of gender in environmental justice studies and highlight the links between gendered vulnerability to climate change and the androcentricity of extractive economies. Despite these intellectual advancements, women of color (WOC) in the USA continue to be vastly underrepresented in national and international climate policy debates and decolonial imaginings of the Anthropocene. My research thus aims to identify barriers and opportunities for WOC in Louisiana river and bayou parishes to shape climate policy, strategize for climate adaptation/resilience, and promote climate justice. I methodologically employ Black feminist utoethnography, participant observation, conversational interviews, feminist media analysis and multi-sited ethnography to investigate how Gulf Coast WOC navigate complex, even contradictory, relationships with energy and petrochemical industries and resist environmental racism via the politics of disposability and promote climate justice via the politics of indispensability. Preliminary results indicate that WOC organize for climate justice through youth engagement, teaching as activism, and social media for climate communication and targeted coalition building. Preliminary results also indicate that WOC and organizations led by WOC strategically leverage, challenge and (re)frame relationships with energy and petrochemical industries and articulate a spiritual ethic of critical cooperation and accountability to children to resist the devaluation of life in forgotten places and sacrifice zones. My research thus critiques literature that discusses women of color solely as victims as opposed to problem solvers, decenters Whiteness in women’s environmentalism and contributes to innovations in feminist mixed methods. It also complicates pervasive gender-neutral imaginings of post-apocalyptic coastal landscapes and highlights the contradictions in women’s everyday lives that speak to contradictions in the larger environmental movement.

Keywords: women of color, scholar-activism, climate justice, Louisiana

Gender and climate justice in Canada

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Climate change has gendered effects across Canada. Extreme weather events, warming cities, melting sea ice and permafrost, ice storms, floods, droughts, and fires related to climate change are directly and indirectly causing widespread economic and social impacts. Fossil fuel extraction, transport, and processing affect many people in Canada. Women and men have different experiences and views regarding climate change, and are affected differently as a function of their gendered social and economic positions. They also have different access to redress and to policy processes shaping public responses. Indigenous women, in particular, are on the front lines of climate injustice and are leading inspiring resistance movements.

This paper examines climate justice issues across Canada through a gender lens, using a literature review and interviews with researchers and activists to identify the major themes and knowledge gaps. The paper also summarizes preliminary results of grassroots research into how individuals, community-based organizations, women's groups and indigenous activists across Canada experience and articulate the gendered impacts of climate change, what their priorities are for action, and how they are organizing -- for example, by incorporating climate change education, outreach, networking, activism, and policy development into their work.

The paper summarizes climate change's gendered impacts from sea to sea to sea across Canada. In forestry, mining, farming, fisheries, industry, homes, cities, rural areas, the Arctic, and everywhere in Canada, women are affected differently from men as a function of their gendered social and economic positions, their different access to supports and political processes, and their differing responsibilities. These factors may act intersectionally with race, class, family status, and other social categories to heighten the effects of gender. Women's political voice and climate leadership -- especially that of Indigenous women -- are also important to understand climate politics in Canada.

Keywords: gendered impacts of climate change, women and climate politics, indigenous climate leadership, women's climate organizing

Integrating Gender Justice into Mitigation Policy: Examples from India

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Gender in climate change literature is predominantly discussed in the context of vulnerability and adaptation. Large scale climate policies, such as economy wide mitigation targets, are rarely seen also as an instrument of enhancing gender justice.

In this paper we focus on the need for integrating gender concerns effectively into mitigation policy landscape in India through an analysis of three cases: i) the National REDD+ Strategy, ii) the Pradhan Mantri Ujjwala Yojna (PMUY), and iii) the International Solar Training Programme (Solar Mamas). Building on the theoretical frameworks of Amartya Sen and Nancy Fraser the paper propositions a two-step approach to identify avenues for mainstreaming gender justice into climate policies. The paper argues that while the National REDD+ Strategy misses out on its potential to enhance gender justice by ignoring gendered distribution of 'capabilities' to effectively participate, the PMUY's success itself is limited by such ignorance. The International Solar Training Programme, on the other hand recognizes and address various social, economic and cultural forms of exclusions for women, and hence offers an exemplary example of comprehensive policy framing and implementation for better integration of climate justice into mitigation policies and programs.

Our findings reiterate that mitigation policies in India are anchored in the implicit economic notions of productive and reproductive labour, as a result of which there is an undervaluing of women's economic contribution. However, it is possible to at least nudge the social drivers of gender injustice by identifying and addressing the androcentric foundations of exclusion and marginalization of women. When women's situated experience, and expertise, diversity and gendered roles in production and reproduction are incorporated into decision making frameworks strategies to combat climate change at global, national and sub-national levels will ensure gender justice and fairness and equity in its outcomes.

Keywords: gender justice, mitigation, capability, participation

Climate Justice & Rights

From soft law to enforceable rights: Exploring the potential of inter-state human rights claims for climate justice

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The impacts of climate change upon the enjoyment of human rights are widely acknowledged in international law and policy discourse. Rights in this context however remain largely consigned to non-binding clauses of soft law or policy guidelines in the international climate change regime. The acknowledgement of human rights in the preamble of the Paris Agreement illustrates the stark dichotomy between the call for rights protections to secure just responses to climate change on the one hand, and the lack of political will to accord legally binding status or enforceability to these rights on the other.

The potential of human rights as mechanisms for holding governments to account for their climate policy commitments is increasingly evident in climate litigation being brought before the domestic and regional courts. The potential of inter-state claims before international courts, tribunals, and UN treaty bodies as avenues of recourse to climate justice is, however, comparatively underexplored. This paper will present an analysis of the benefits and challenges of three key avenues for inter-state human rights claims in response to climate change, namely, contentious proceedings before the International Court of Justice, arbitration proceedings before the Permanent Court of Arbitration, and inter-state complaints procedures before the UN human rights treaty bodies. A procedural climate justice lens is applied to analyse the relative strengths and weaknesses of these three avenues in providing redress to climate-vulnerable states for ongoing breaches of international obligations derived from human rights treaties, the rules of state responsibility, and customary international law. Finally, a number of reform proposals to strengthen recourse to climate justice via inter-state claims procedures will be presented.

Keywords: human rights, climate justice, inter-state claims, state responsibility

Climate justice for small island developing states

S. Adelman*

University of Warwick, UK

Climate change poses unique and unprecedented legal problems. Poor and vulnerable communities least responsible for climatic harms are suffering first and worst. These include small island developing states (SIDS) threatened by inundation from rising sea levels. There is a legal lacuna because there no provision in international law, international refugee law, human rights law, or the climate regime to relocate and resettle the inhabitants of SIDS. This presentation examines the options available to protect the rights of SIDS citizens from a legal, ethical and political perspectives. As a consequence, the enforced migration of SIDS may be managed on an ad hoc basis as a humanitarian problem. Solutions such as the Nansen initiative are considered.

Keywords: SIDS, relocation and resettlement, climate justice, self-determination

Accessing justice in Brazil's urban Amazon: A climate justice approach to floods and the right to housing

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In the past decade, 85% of the world's deltas faced severe floods, impacting over half a billion people. Aggravated by climate change, this situation will likely worsen. Belém, for instance, is the largest urban center in the Amazon River Delta, where more than half a million people have been the first to endure social-ecological adversities when facing recurrent flooding events. However, academics concerned with climate change in Brazil's Amazon have mostly focused on deforestation. Few have reflected on the rights of the population living in Brazil's urban Amazon, which has grown by 300 percent over the last four decades. In this study, I aim to bring insights into the climate justice debate by shedding light on rights-seeking behaviour among, and the provision of legal assistance for, the immediate victims of climate change. In Brazil, housing and legal aid are constitutional rights of the urban poor who lost their houses and belongings from floods. Thus, I address two questions: How do these impoverished individuals decide to seek legal remedy when their constitutional right to housing has been violated? What is the role of lawyers in facilitating or hampering access to justice for these aggrieved citizens? To examine this situation thoroughly, I use interviews and observations with legal aid lawyers and individuals who use and could use legal services. The data reveal that the needy lack cultural and financial resources as well as connections to search for and interact with lawyers. Consequently, even when poor claimants exercise agency and find an attorney, they struggle to find legal relief. As a result of looking at both legal and non-legal actors, this inquiry contributes to the field of climate justice by assessing whether the urban poor recognize social-ecological adversities as a matter of rights and lawyers' roles in pursuing rights enforcement to mitigate climate hazards.

Keywords: access to justice, flooding, housing, urban amazon

Legal action against climate change policies giving traction to counter-hegemony

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Climate change is the grand challenge of our time. The need to reduce greenhouse gas emissions is stated in various international political and business forums. However, the results of climate change policies have been very modest thus far raising increasing public concern. This paper explores present and emerging legal action contributing towards contestation of current climate change policies and the underlying power relations and asks the question: How can legal action contribute to building a counter-hegemony through contestation? This study brings the largely omitted ontological question of the private property right to pollute to the forefront. It conceptualizes the legal action as part of contestation of this right to cause public harm. Moreover, legal action is seen as defending the precautionary principle and intergenerational justice, both of which are currently neglected central questions of climate change policies.

Legal action against governments and corporations is one form of contestation and several lawsuits from divergent actors seeking intergenerational and distributive justice have been filed recently. This study focuses on lawsuits in Europe and US that have a potentially precedence setting nature.

The grounds these cases are argued on show how the public opinion is starting to see the policies to mitigate climate change as inadequate, and therefore calling for regulatory change. The lawsuits question the priority of economics over climate, and the right of companies to make private profits from fossil fuels when the consequences are environmentally detrimental, and the costs are borne by the public. They further contest the policies that jeopardize intergenerational justice and are in dire conflict with the precautionary principle. Notwithstanding the increasing number of these lawsuits, they still remain in margin and are argued largely in isolation of each other. However, uniting these struggles could help building a resilient counter-hegemony capable of challenging the contemporary governance.

Keywords: climate policies, legal action, contestation

Climate Justice & Mitigation

Wind energy as an instrument to self-sufficient and sustainable development in Crimea

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Following political and economic changes in Crimea in 2014, the way of life there also changed. One of the most problematic economic sectors in Crimea is energy supply for growing economy. Solar and wind energy use may help to solve this problem. Geographical and ecological assessment results based on field research and relevant statistical and published data processing are presented. We tried to reveal potential of Crimean wind energy use to meet sustainable development goals in local economic and social spheres. We discuss local population response to present situation in wind energy use and reveal the existing gaps. Key factors for future wind energy use development in the region are discussed as well.

Keywords: wind energy, environmental impact, self-sufficiency, Crimea

Understanding policy change to increase uptake of small-scale renewable energy for low income households

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There is a potential opportunity for policy change to increase the uptake of small-scale renewable energy for low income households, alleviating the dual disadvantages of energy poverty and climate change impacts. However, this would involve Governments around the world making changes to current policy settings, which are currently inadequate to deliver the potential benefits of small-scale renewable energy. Some of the benefits include reduced household energy bills and residential greenhouse gas emissions. Policies that support uptake of small-scale renewables for low income households would involve technological and social change which are polarised along the lines of different values, beliefs and interests. This paper seeks to understand the influence of values, beliefs and interests on policymaking that can move Governments away from the status quo, and introduce new policy that supports uptake of small-scale renewable energy for low income households. The Advocacy Coalition Framework is used as the theoretical lens to understand policy change and how the status quo can be changed with polarised interest, beliefs and values. A historical case study approach will be used to review renewable energy policy in Australia, and can be divided into four case studies of Australian Federal Government political eras. The first political case study is a Howard era, the second a Rudd and Gillard era, the third an Abbot and Turnbull era and the final a Turnbull and Morrison era. This paper will find that there are policy options for increasing the uptake of small-scale renewable energy for low income households, however, political barriers from vested interests of business-as-usual are blocking the potential opportunity to alleviate energy poverty, and climate change impacts. While this case study is done with an Australian context, this research has wider social equity and climate change policy implications for Governments around the world.

Keywords: policy change, renewable energy, energy poverty, climate change

Exploring the barriers and opportunities of RE transition in urban low-income housing in developing countries

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Current research on renewable energy (RE) transition was focused on identifying the challenge of shifting modern societies towards using RE technologies to overcome environmental challenges. However, another energy crisis linked to energy deprivation in low-income households that adversely influences the fulfilment of households' energy needs, wellbeing and health, has recently prompted an academic interest in the field. This is because low-income households are the most affected by the influence of the climate change as well as paying a greater proportion of their income on electricity and heat. In this view, shifting to the use of (RE) in low-income housing is needed to address both the environmental challenges and energy injustices.

There is a growing body of literature has been carried out on integrating RE in low-income households; however, the majority of the previous literature was focused on developed countries and on rural areas in developing countries. The extent to which energy deprivation in urban low-income households has been considered is limited, while developing countries have the highest rate of urbanisation. Therefore, the aim of this research is to investigate the barriers and opportunities of RE transition within urban low-income housing in developing countries by taking Egypt as a case study. In this view, Egypt provides a good context to explore these issues as like other developing countries, it has vast renewable resources; however, it also suffers from several energy challenges. In addition to that there is a current large-scale social house programme in place, which will add to the energy demand and put loads on the national grid leading to increase energy insecurity. Furthermore, urban low-income households are the most vulnerable to energy poverty especially after the government recently removed energy subsidies. Therefore, the research will contribute to debates on RE transitions within the Egyptian social housing units.

Keywords: RE transitions, energy injustice, developing countries, Egypt

Equity and Effectiveness of REDD+ Programs in the Amazon Forest: An In-Depth Evaluation

R. Juliá*
New York University, USA

REDD+ (Reducing Emissions from Deforestation and Forest Degradation in Developing Countries) is an international system of governance that supports initiatives aimed at reducing greenhouse gas emissions from deforestation. Developing countries that meet REDD+ requirements receive results-based payments as a reward (UN-REDD, 2016). REDD+ programs face many challenges and critiques. In terms of their efficacy, the possibility of leakages, the issue of permanence and additionally are commonly cited (Agrawal et al., 2011). Also, REDD+ focus on rewarding reductions in current deforestation rates might encourage perverse behavior with forests being cut down and replanted instead of being preserved (Stern, 2007). The equity implications of REDD+ relates to the effect of REDD+ in forest-dependent communities, in particular indigenous communities. REDD+ incentives could arguably lead governments to use indigenous land and displace them. REDD+ incentives could also become "green grab" acquisitions with severe social and political consequences (Borras et al., 2016). Critiques of market-based mechanisms such as REDD+ argue that negotiating peoples' relationship with the environment by monetizing environmental services results in unequal benefits with little to no attention to local livelihoods and biodiversity loss (Bayrak et al., 2014). This study presents an in-depth review of the performance of REDD+ programs in the Amazon forest nations in terms of their effectiveness and equity up to date. Implementing policies that enhance the sink capacity of the Amazon is of critical importance at the present time (Brienen et al., 2015). Indigenous Amazonian populations represent a significant percentage of the forested area, and many perceive mitigation policies such as REDD+ as a threat to their livelihoods (Van Dam, 2011). This paper contributes to the conflict by reporting on past experiences and helps further the development of policies that improve the Amazon's sink capacity while protecting the livelihoods of the communities that depend upon them as well.

Present day overview of Southeast Asia and the changing impact of urbanization on building energy

P. Pawar*, W. Lang

Technical University of Munich, Germany

The rapid increase in urban population of the tropics has had a detrimental impact on its ecology and energy resource. The economic growth in the tropics has outperformed the rest of the world by almost 20% in the past three decades. It is estimated, by 2050, more than half of the world's people will live in the region. Exponential use of energy associated with the development of urbanisation has contributed immensely towards the emission of anthropological greenhouse gases.

The commercial building sector, on one hand, is one of the main performance indicators of the national economic development and on the other hand is the largest consumer of energy. It is, therefore, imperative to address the urban development of tropical nations with a sensibility for sustainability to mitigate challenges of the energy crisis and climate change faced by the world today.

This study is comprehensive yet concise review of the current state of the Tropics undertaken through an extensive literature review. The study of this paper is limited to the geographical region of Southeast Asia for two reasons. The climatic conditions of the region demand a year round cooling energy in the buildings and its urban economy and population is the highest amongst all Tropical nations. The commercial building sector of the Southeast Asian countries has the potential to effectively address the problems concerning the depletion of energy resources, and degradation of the environment. It was concluded that the commercial building sector has the potential to contribute significantly towards energy efficiency and consequently towards national, international and regional sustainability goals. The study defines the relationship between the rapidly increasing urban economy, energy usage in the commercial building sector necessary to support the economic activities and the impact of the growing urbanisation on the ecology of Southeast Asia.

Keywords: southeast Asia, sustainable development, building energy, urbanisation

Climate Justice & Indigenous Peoples

Making room and moving over: From local knowledge co-production to Indigenous knowledge sovereignty in addressing global environmental change

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University of Toronto, Canada

The latest Intergovernmental Panel on Climate Change report is stark in its message: policy-makers have 12 years to take action to mitigate global environmental change to avoid catastrophic impacts. This report shores up efforts by the global environmental change research community to reorient global environmental knowledge assessments away from problem framing to generating solutions and to focus on knowledge coproduction with local knowledge holders who have direct knowledge of the severity, frequency, and scope of global environmental change impacts. A recent review of this body of scholarship has shown that researchers and global environmental knowledge assessments that engage with local knowledge holders and Indigenous peoples practice engagement in an extractive way: knowledge is treated as data that can be aggregated and understood in abstract form. This extractive practice not only does violence to knowledge systems that are place/land-based, it assumes that knowledge and governance are separate realms. This gives knowledge co-production the appearance of legitimacy, credibility and relevance, because it has engaged with 'local knowledge holders' whose knowledge is valued in a very circumscribed way, without considering how knowledge and power to make decisions are co-constitutive. Conflating Indigenous perspectives with local knowledge pertaining to global environmental change perceptions and impacts implies that Indigenous peoples are stakeholders as opposed to rights holders or, more to the point, stewards of indigenous legal orders. In other words, there is no room for Indigenous peoples to make decisions over their own lands when their land-based knowledge is treated as data used for collective decision-making. This paper brings together insights from literatures on local and Indigenous knowledge to explain how Indigenous knowledge and Indigenous legal systems and governance practices are inseparable and why co-production must move away from seeking to better integrate Indigenous knowledge into science to make jurisdictional space for Indigenous peoples to make the decisions about their lands.

Keywords: local knowledge, knowledge integration, indigenous knowledge sovereignty, indigenous politics

Steps towards climate justice decolonization: Notes on indigenous partnerships at UUSC

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Unitarian Universalist Service Committee, USA

In the United States, a growing conversation is challenging the persistence of colonial structures in philanthropic institutions, calling for meaningful transformations for the entire sector. Such conversation is happening against the background of the climate crisis and its imperative for action. Climate justice poses fundamental ethical challenges to philanthropic institutions ranging from the sourcing of their endowments, their grant making management practices and even the allegiance of their own members to environmentally destructive lifestyles. The dimension of these challenges is amplified when working with indigenous organizations as beneficiaries of climate justice grants, because the system that has traditionally sustained philanthropy has been as much of a threat to the existence of indigenous peoples as it is climate change today. The Unitarian Universalist Service Committee, a human rights grant making and advocacy organization, is developing a program to support indigenous led climate justice initiatives and decided to take this initiative as an opportunity to address some of the paradoxes of contemporary climate justice philanthropy, while beginning a process of institutional transformation, including decolonization practices. This presentation introduces UUSC's strategic initiative to support indigenous-led solutions to climate-forced displacement as well as the practical steps that we are adopting to transform our organization. In particular, we will be discussing our work in the areas of strategic planning, partnership, knowledge exchange and institutional protocols for the acknowledgement of indigenous heritage at our headquarters in Cambridge, Massachusetts.

Keywords: indigenous peoples, decolonizing, philanthropy, institutional transformation

Climate change, equity, and Alaska native traditional knowledge in fisheries management

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Given the rapid pace of environmental change and research constraints of conventional science, traditional knowledge (TK) is increasingly sought as a source of rich, place-based information, especially for marine ecosystems. How TK is valued and represented within fisheries management intersects with questions of equity and representation: whose knowledge is selected as representative of a group and whose knowledge may be obscured is an important consideration. Alaska Natives are profoundly connected to their land and seascapes and have gathered knowledge reflecting generations of environmental observation and engagement. Significant work documents Alaskan Natives TK in relation to marine mammals, sea ice, and increasingly, climate change. However, translating TK into fisheries policy remains challenging.

The aim of this research is twofold. An analysis of existing literature identifies ways TK is (or is not) linked to fisheries management in Alaska. Using process analysis, examination of two recent projects led by the Alaska Fisheries Science Center (AFSC), NOAA, will provide context for existing challenges and offer lessons learned.

A growing body of literature reveals increased interest and ongoing effort to collect TK; however, there remain difficulties to incorporating TK into management processes, including epistemological differences, communication of various knowledge, and equity issues. There is growing awareness that TK of certain sub-groups, such as women, are underrepresented within documented TK. Preliminary analysis of two ongoing AFSC projects (the Federal Bering Sea Fisheries Management Plan and The Oral Histories of Alaska Native fisherwomen in Bristol Bay) explores possible barriers for incorporating TK into fisheries management and highlights the need for additional research on issues of equity. As this analyses shows, there continues to be interest in improving the presence of TK in fisheries management. As these two examples illustrate, there is significant forward momentum for meaningful engagement with TK.

Keywords: traditional knowledge, fisheries management, Alaska, equity

Climate Justice, Behavioural Change & Communication

Facing up to the climate emergency: Public and political willingness to support emergency climate mobilisation

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This research in progress focuses on the attitudes of the public and of politicians towards proposals for an emergency society-wide mobilisation to tackle climate change. It begins by presenting evidence that devastating impacts from climate change are likely to occur much sooner than predicted by the IPCC, leading to a high risk of near-term socio-economic collapse. In order to avoid or minimise this, proposals have emerged for an emergency climate mobilisation in order to transition to a zero and then a negative carbon economy within 5-10 years. Therefore, this research investigates the current level of support among the public and among politicians for such an emergency climate mobilisation using a survey of Glasgow residents and semi-structured interviews with local politicians in Glasgow and London. In contrast to the current consensus on climate change communication, this research hypothesises that a high-threat, high-efficacy approach is the most effective means of communicating the urgency and severity of the climate emergency.

Keywords: climate change, emergency mobilisation, Extinction Rebellion

Climate justice and advocacy journalism: Analysis of influences behind low editorial coverage of environment-related issues in Pakistan

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This study reveals the mainstream Pakistani advocacy journalism response to the changing climate situation in the country. Such response is worthy to explore because despite being among the global top ten most disaster-affected countries, the authorities are set to establish around one dozen coal-fired power plants while overlooking environmentalists' cautions. Moreover, contrary to India's 23 percent forest cover, rapid deforestation in Pakistan has left 2 percent due to the governmental negligence. Additionally, despite having an established link between rapid population growth, poverty and environmental degradation, the government lacks fresh ideas to tackle these issues. Amid this grim situation, the role of media advocacy via newspapers editorials looks inevitable to generate debate among general masses by educating them to influence government public policy making process. The present study examines the amount of advocacy journalism coverage of environment, poverty and population growth related issues versus other issues via editorial contents of mainstream Pakistani newspapers and investigates the factors behind inadequate space given to former issues. The study further explores the association between editorial and readers' priority agenda on environment-related issues. The quantitative content analysis method is used to measure and compare the frequency of sample content in five operationalized categories coupled with qualitative in-depth interviews with veteran journalists/academicians to explain the factors that influence the editorial content. At the cost of consuming precious editorial space to advocate inter-linkages between population, poverty and environment to the stakeholders, editorial contents are dominated by the discourse produced by the mighty communication bureaucracies of powerful national and international establishments. For instance, non-human development issues' based policies of the state and political actors; and conflicts with India and Afghanistan with warmongering spirit are given considerably larger coverage. Additionally, readers' reaction to editorial content through Facebook Likes indicates a clear difference between editorial priority and readers' priority agenda.

Keywords: advocacy journalism, environmental degradation, population explosion, poverty

Understanding the psychology of denial towards reducing high-carbon behaviours

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This paper assesses the scope for changing high-carbon behaviors in the light of basic human rights being violated through the impacts of climate change. Inadequate political action such as the overly protracted implementation of the Paris Agreement has accelerated the urgency of an investigation of possibilities to establish individuals as the first movers of the essential transformational process. This study is based on a representative online survey of 1032 German citizens that assessed climate change, its causes, responsibilities, and probabilities of mitigation measures.

The results show that the majority of respondents know and care about climate change, its harmful effects and agree on the necessity to act against climate change, emphasizing that “not enough is being done up to now”. They regard multiple actors are responsible for action, including themselves. The capitalistic economic system was identified as a surprisingly unequivocal and major barrier for lacking climate action because of its problematic strong interlacement with politics. Furthermore, mechanisms of moral disengagement are at the center of maladapted behavior such as the diffusion and displacement of responsibility. Highlighting the harm that highly self-interested behavior would cause decreased the likelihood that individuals would morally disengage. It is necessary to help people visualize the consequences of their prolonged misplaced actions and distant outcomes on vulnerable societies and ecosystems. When aware of the suffering they cause, indirectly awakened distress and self-censure start to function and serve as self-restraining influences.

The synthesis of the findings reinforces the contention that more attention needs to be given to individuals’ multiple motivations and the pursuant strategies, such as motivating and diffusing new social norms that could shape the necessary moral and behavioural transformations.

Keywords: behavior change, moral disengagement, lifestyles, responsibility

An integrated approach for ecological conservation and community livelihood development for Ashtamudi wetland

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Wetlands are ecosystems that have socio-economic and ecological importance. Ashtamudi wetland in Kerala is one of the important wetlands identified by Ramsar convention. The community around the wetland directly or indirectly depends on it for their livelihood activities like fisheries and agricultural. It facilitates tourism and a variety of cultural activities which were evolved out of its presence from the time immemorial. The rapid urbanisation in the recent decades had led to unsustainable exploitation of the wetland ecosystem. The effects of climate change are affecting the communities. The wetlands can provide resilience to climate change by regulating storm water, storing water, and climate regulation through carbon sequestration. An integrated approach addressing the ecological conservation aspect and community livelihood development helps in adapting to climate change and supporting the nearby population.

Various goods and services provided by the Ashtamudi wetland for the sustenance of the community are established and the capacity is quantified. The demand for such goods and services required in the future is found by projection techniques. Gaps are identified between the demand and supply of resources. Strategies are developed to bridge the gap and thereby ensure trade-off between livelihood and ecological gains. Often the community is not well aware of the implication of the connection between the wetland and their own sustenance. If awareness is cultivated, the community will take ownership and responsibility to conserve and protect the ecosystem which will in turn helps the resilience to climate change. The vulnerability of the ambient population is dealt based on a vision focusing on livelihood development. Broad level proposals in a holistic manner are worked out and site level spatial proposals are demonstrated in identified areas. Hence implementation of integrated wetland development and management policies would expand the opportunity for sustainable livelihoods around wetlands and fight climate change.

Keywords: wetland, livelihood, climate change, resilience

Climate Justice & Just Transition

“Nothing can be changed until it is faced”: Trade unions working for a just transition

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This paper will draw on my ongoing PhD research which explores how UK trade unions are working to achieve a Just Transition to low carbon, and how the wider climate movement can collaborate with this. Through a case study of unions organising in the energy-intensive industries in Yorkshire and the Humber, I will present interim findings drawing on a literature review, documentary analysis and an embedded position as action researcher within the TUC Region.

The literature on Labour Environmentalism has analysed ways forward from what has been termed the ‘Jobs vs. Environment dilemma’ (Raethzel & Uzzell 2011). Responses from trade unions range from a belief in techno-fixes, to innovating solutions as a creative social movement. Thinking about the depth, breadth and agency displayed in such responses (Stevis 2018) can show the meanings implicit in jobs, and how environmental concern may be hitched to more traditional interests such as working hours. Is any proposed way forward a ‘tide that lifts all boats’, or does it add to global socio-economic inequalities?

Regional history is deeply embedded with high-carbon industries. For the trade unions, these industries are key membership sites, but also a deeper part of their psyche. There is an understandable fear for the skills and pride that go to the heart of places so dependent on one high-carbon employer. Trade unions are braced for losses like those in coal, steel and manufacturing. This paper examines emerging evidence of movement beyond this ‘jobs vs environment’ trap, as trade unions seek opportunities in the transition to zero carbon. Initial signs show hope yet work points to a battle between resistance and engagement, where resistance mainly takes the form of looking away. This highlights the need to examine the pathways, capabilities and capacities for trade unions to play their role in climate justice.

Keywords: unions, industry, just, transition

Locating polish resistance to lignite mining in global climate justice movement: case of climate march during COP 24 in Katowice

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Civic society response to COP 15 in Copenhagen was called by Brand et. al (2009) “coming out” party of global climate justice movement. Events and protests in Copenhagen gained a lot of attention in the academic literature (Fisher 2010, Bond 2012, Reitan & Gibson 2012, Chatterton et al 2013) and climate justice movement surge since then in terms of people involved, as well as in variety of tactics and strategies. COP 24 has been already a third UN climate conference organised in Poland, in spite of the fact that coal (both hard coal and lignite) is a dominant fuel for domestic energy production as well as it plays important role for national imaginary (Kuchler & Bridge 2018). Coal and especially lignite mining has been an object of contestation. Several local communities are resisting lignite mining extension or opening of the new lignite mines in recent years.

Based on participant observation and engaged research during the climate march the paper examines the role of local resistances against lignite mining in emerging demand for broader societal transformation towards low carbon future during protests addressed to COP 24 in Katowice.

Resistance to lignite mining in Poland is an environmental justice struggle which discourse is expanding from particular local struggle to broader, global problems (Schlosberg & Collins 2014). Addressing climate justice enable to transgress from local context in which environmental justice movements are operating (Brulle & Sicotte 2017, Escobar 2006). As for example Blockadia map shows, there are many local conflicts which are pressing on the critical nodes of global fossil infrastructure. (Roy & Alier 2017). Similarly, to the case of natural gas fracking (Lis 2018), lignite mining resistance and protests create publics which are exceeding NIMBY attitude.

Keywords: lignite mining, climate justice, Poland

The 'discretionary principle': Understanding the implications of government policy for developing unconventional gas and oil in Australia and the UK

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The anti-fracking movements in Australia and the United Kingdom (UK) are social and grassroots movements, and are part of a broader, global anti-fracking movement and anti-fracking discourse. The movement, at a global scale, is unified in its message against unconventional gas development. At the local, grass-roots scale, the discourses become specific and focused on what matters to the local community. It is within this context that this paper presents a finding from a critical discourse analysis in which anti-fracking discourses in Australia and the UK consistently dispute discretions governments use to advance the unconventional gas industry over and above any existing mechanisms to protect public health, the environment, local economies, and national and international climate change agreements. Instead, the anti-frackers, believe that the 'precautionary principle' should be applied by governments, which would shift the burden of proof regarding uncertainty onto government and industry to establish that such development would not be harmful. In contradistinction, this paper proposes that governments use a 'discretionary principle', justified by ideological and political tenets, and which exemplifies a broader discourse, positioning the unconventional gas and oil industry as powerful, and outside legislated, regulated and democratic processes. This paper argues that the use of the discretionary principle acts as an obstacle to the identification of problems, and the resolution of tensions related to the industry.

Keywords: fracking, natural resources, social movements, policy

Redefining GDP and "wealthy" for a just, low-carbon economy in Canada

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GDP and man-made capital cannot infinitely expand in a finite world. Policy makers must understand the economy-in-environment model and move away from a purely reductionist way of thinking to recognize that ecological limits inhibit unlimited economic growth. Surpassing the optimal scale of the ecosystem creates uneconomic growth where marginal costs exceed marginal benefits. I illustrate this with the case of ocean acidification and coral reef bleaching, which is the most prominent example of human-induced climate change. GDP must be limited or redefined; I argue it is inherently tied to the extraction and consumption of fossil fuels which emit greenhouse gases into the atmosphere, causing ocean acidification and thus coral death, and it is connected to every part of the economy, including our food systems. GDP growth, as I additionally argue, will exacerbate ocean buffering systems and coral reef viability, and if this continues without redefining GDP or "wealthy" nations, coral ecosystems will collapse by 2030 leading to global ecosystem collapse. An extensive literature review was undertaken of geological data on past global warming events that have followed mass coral bleaching events which is used to conclude the same trajectory happening over the past 50 years. Canada, wanting to be a climate leader, should trail blaze transitioning to a just, low-carbon economy in which human capital investments are made rather than growing man-made capital that continue our path along this trajectory. Investments in education, childcare, healthcare to name a few should be prioritized which, according to de-growth literature, should aid in moving away from a system of maximization based on fossil fuel consumption, while also supporting low-income and marginalized groups the most in climate mitigation policy. I conclude with realistic recommendations for Canada based on the science of ocean acidification, coral bleaching, and ecological economic theory of just societies.

Keywords: economy-in-environment, ocean acidification, low-carbon economy, human capital

Linking just transition and climate justice: the transformation we want?

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Justice and the question of how to distribute responsibilities, benefits and costs of tackling climate change is the core challenge of climate policies and a stumbling block for accelerating climate action. The concept of just transition has stimulated a discussion among many different stakeholders, including trade unions, businesses, policy makers and international organizations that resulted in a number of policy responses and approaches aiming to craft equitable transitions away from fossil fuels. These interventions vary in terms of both their ambition or depth of change they seek to achieve and their inclusiveness or breadth of stakeholders that are considered. Some attempts at just transition perpetuate and reproduce existing power asymmetries and inequalities by protecting the jobs of some rather than addressing climate justice more broadly.

This contributed session proposes to bring together researchers, civil society activists and local government representatives in order to explore the potential of linking just transition and climate justice for a transformation towards sustainability and equity. Building on recent work by the Just Transition Research Collaborative and ongoing case study research, the session will first introduce the conceptual framing of transformative just transition and give a few case study examples. In the second part, a fish bowl discussion with the panellists will be facilitated in order to discuss challenges of implementing transformative just transition in practice and highlight the tensions that arise between different stakeholders. Interaction with the audience will enrich the discussion and aim at identifying pressure points that need to be tackled to foster climate justice.

Our work has illustrated the importance of stakeholder interaction and debate in crafting more transformative and ambitious solutions to climate change. This session seeks to both present findings from our research report and function as an illustration of such debate.

Keywords: just transition, transformation, civil society, stakeholder engagement

Power struggles: towards a “just” energy transition in Taiwan

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Taiwan began its energy transition since 2016 by setting priority to phase-out nuclear energy and to increase the share of electricity supply of renewable energy to 20% by 2025. This research critically assessed the policy development of energy transition in Taiwan since 2016 in the perspective of energy justice. Our research is based mainly on data collected from interviews-based fieldwork in the summer of 2018. Interviewees included government officials, environmental groups, electricity providers, journalists and academics. These interviews also made us to identify the informal interactions and behaviours of various actors in the process of energy transition which that can be highly critical to the policy-making.

The main argument of this paper is that the current energy transition in Taiwan would reduce the environmental injustices for local host communities of nuclear facilities. However, it has also created other injustices such as shortage of electricity, electricity rate increase and extending the operation permit and building coal-fired power plant. Our findings concluded that the current policy of energy transition in Taiwan has focused less on climate justice. It reflected the political power struggles by politicians, the trade union and environmental nongovernmental organisations (ENGOS). The injustices occurring are resulted from the interest structures which not only set obstacles in achieving a green shift but also preventing a just energy transition.

The overall purpose of this study is to inform how power struggles play a huge role in determining the extent of energy transition that could lead to justice dilemma in Taiwan. Our research contributes to the wider debate on urgent policy issue of the dynamics of energy transition to low-carbon energy and helps members of local communities, government officials and politicians to develop a greater awareness of socio-technical issue and challenges of energy transition in Taiwan.

Keywords: just transition, energy justice, energy transition in Taiwan, power struggles

How is the “pan-Canadian framework on clean growth and climate change” inclusive of climate justice concerns?

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The 2016 Pan-Canadian Framework on Clean Growth and Climate Change (PCF) is an extensive document that has been developed by the Canadian federal government in collaboration with the provinces and territories. It lays out a mitigation strategy, a pathway towards a clean economy, and actions to advance climate change adaptation including fostering resilience to climate impacts across the country. The design of the PCF was informed by consultations with the public, Indigenous People, businesses and civil society. In this paper, I will examine to what extent climate justice concerns are represented in the PCF and how the consultations contributed to this result.

This case study is based on the normative analysis of policy documents and of public and academic commentaries. The main findings are: (1) While the PCF does not include the term “justice”, it does contain explicit references to human rights, the goal of a more equitable distribution of resources, and fairness in decision making processes; (2) The PCF emphasizes the climate concerns of Indigenous People but draws less attentions to other vulnerable groups, such as the people living in poverty, future generations, or the non-human world; (3) Largescale consultations are not sufficient to ensure that emerging climate change policies and practices represent an inclusive interpretation of “climate justice”. Considering the aspiration of the PCF to be truly National and far-reaching, the lack of inclusivity emerges as a key issue. A more inclusive approach would satisfy a number of climate justice concerns in policy-making and implementation. This paper, thus, makes two contributions: It provides an analysis of a national climate change intervention framework and more importantly, it provides a case on which I develop the complex concept of ‘inclusivity’ in the climate justice context.

Keywords: climate justice, inclusivity, pan-Canadian framework, climate change policy

Brokering the transformation? Comparing just transition commissions in Canada and Germany

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Reaching the goals of the Paris Agreement requires a rapid phasing-out of coal and other fossil fuels. Such a transformation has profound implications for workers, communities and entire regions. Therefore, the debate on just transitions has recently gained momentum both on the international level as well as on the ground. Scholars and activists intensively discuss its impacts on global climate justice discourses. In light of the urgency of the climate crisis, countries like Canada or Germany have established stakeholder-driven commissions to develop proposals for just transition pathways. This contribution provides a comparative analysis of the Commission on Growth, Structural Change, and Employment (Germany) and the Just Transition Task Force (Canada). Expectations are high, but so are the stakes in the affected regions. Creation, design and decisions of the respective commissions have important implications on different, interdependent levels of governance. This paper starts off by comparing mandate, legitimization, composition and key outcomes of the commissions. It further includes an analysis of the processes envisaged to implement just transition pathways. The main interest then is to understand the implications for superordinate and subordinate governance levels. Regarding the former, we analyse references to international (Paris Agreement, SDGs) and regional (e.g. EU) policies. Regarding the latter, the role of federal states, provinces as well as local actors requires closer examination. We identify conflicts and opportunities related to the multi-level nature of decision-making in the transformation. The paper draws on content analysis based on the final reports of the respective commissions. Expert interviews with commission members, decision-makers, trade unions and NGOs complement the empirical part of the study. The findings add to a better understanding of multilevel and polycentric governance processes in structural transformations. On a practical level, they inform the work of similar commissions that are currently underway, such as in Scotland or Quebec.

Keywords: just transition, transformation, multi-level governance, coal phase-out

Climate justice in the UK: Social impacts and just transitions

K. Knox*

Katharine Knox Consulting, UK

This session will examine the climate justice issues arising in a developed country, drawing on the findings of the Joseph Rowntree Foundation's research programme on climate justice in the UK which ran from 2009-2017. It links to the conference themes on social vulnerability/just transition. The programme involved over 20 research projects examining climate justice in the UK, ranging from the differential social vulnerability of communities across the country to flooding and heat impacts, to the equity of policy and practice responses to climate change. The session will draw out the learning from this rich and varied research programme to highlight differential social justice issues in the UK in relation to climate change covering three themes:

Causes – highlighting the differential contribution to carbon emissions across the UK linked to households' income distribution

Consequences – considering the differential social impacts of climate change, including both the distributional differences in relation to socio-spatial vulnerability in the UK to the direct impacts of flooding and heat, as well as the indirect impacts of climate change on the costs of living in the UK, and its implications for low income households

Responses – with reference to equity issues arising in emerging mitigation and adaptation responses.

It will draw on a chapter written by Katharine Knox, who led JRF's policy and research programme, for the newly published Routledge Handbook of Climate Justice (ed. Tahseen Jafry). The presentation will offer insights into climate justice concerns in the UK, highlighting how, even in developed countries, climate change will have differential social impacts, raising ethical questions for policymakers and practitioners, which need to be considered in any transition to a low carbon and climate resilient society to ensure that inequality is not exacerbated by climate change and responses to it.

Keywords: vulnerability, equity, transition

Climate Justice Theory & Discourse

Common but differentiated responsibilities: agency and domain in climate justice

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Ethical challenges concerning climate change most often involve two issues that are tightly connected. The first is considerations about the just distribution of entitlements and burdens, and the second concerns the fair differentiation of responsibilities. The distribution of entitlements and burdens can be assessed by relying on one or combinations of principles of climate justice. Although the fairness of any differentiation of responsibilities must rely on these principles of justice, the applicability of these principles and the demands they make strongly depend on the agents bearing the responsibility and what policy domains are at issue. Not all agents can be ascribed the same responsibilities, and not all measures for climate action can or should be realized by the same differentiation of responsibilities. This paper examines how the principle of common but differentiated responsibilities depends on the domain and level of climate policy. It is not only the subjects of responsibility that may change, depending on whether mitigation, adaptation, loss and damage, or geoengineering policy is at issue. The different policy domains also determine different objects of responsibility. Since the responsibility bearers are embedded in complex nets of responsibilities, the level of climate policy defines different institutions and principles of accountability. Common but differentiated responsibilities is not only the starting-point of climate justice but also shapes what combinations of principles of justice are most appropriate, depending on the domain and level of climate policy at scrutiny.

Keywords: responsibility, justice, principle, ethics

Political feasibility, climate justice, global climate change

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Scientists tell us that we are nearing a climate tipping point, after which will be committed to a certain degree of global warming and all its dangerous consequences. Historically, though, the global community has done little to mitigate this phenomenon, despite years of negotiations. This failure is only amplified when one considers the great deal of progress that the scholarly work on this issue has made; indeed, there is a robust and comprehensive literature detailing exactly what justice demands in the face of global climate change (GCC). And yet, in the real world, these theories are seldom debated, let alone reflected in the agreements aimed at addressing GCC. This chasm between the actuality of decision-makers and the ideal world of scholars represents, at least in part, a failure of philosophers to really consider the real world and all its messiness in their theorizing. Political and moral philosophy, more than pointing out our actual moral failures, must also say something directive and substantive about how and to what extent our political and moral ideals are shaped, changed, and/or pursued by the realities of the polis.

Towards bridging this gap, the goal of this essay is to compare the political feasibility (PF) of a few prominent theories of justice in the context of GCC. Political feasibility is concerned with the actual and practical viability of a proposal or theory (Gilbert and Lawford-Smith 2012); PF assessments, therefore, can help philosophers think more tangibly about their work, hopefully making it more relevant to policymakers. I will limit my analysis to only a few possible proposals that seek to articulate what the most damaging historical emitters are obligated to do going forward (of course, this is only one piece of a comprehensive feasibility assessment). I will conclude by rank ordering the theories in terms of their PF. And, while the scope of this paper is limited to thinking about the feasibility of various iterations of climate justice, it is my hope that I will show, more broadly, that feasibility assessments should be a concern of political and moral philosophers in at least some of their theorizing.

Keywords: political feasibility, justice

Analysis of climate justice under the capability approach and climate actions

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The idea of climate justice can reach more definite contours when analysed under the capability approach, elaborated by the economist Amartya Sen, in conjunction with the climatic actions of adaptation (to make people to adjust to the adverse effects caused by extreme climatic events) and mitigation (to limit greenhouse gas emissions). Many studies analyse how extreme climatic events undermines the individual's freedoms, but little has been studied about how their role of agent can contribute to occurrence of adaptation and mitigation actions. The objective of this paper, therefore, is to analyse theoretically the cyclical relation between individual freedoms and climatic actions, understanding how the results of climate actions can improve human development and how the agent's role of someone can result in climate actions. In order to reach this objective, a theoretical framework is proposed, based on the five types of freedom proposed by Sen: political freedoms, economic facilities, protective security, social opportunities and guarantees of transparency. From this framework, shown in Figure 1, we analyse: how these freedoms can be the trigger for fairer climate actions in a low carbon economy and how extreme weather events caused by climate change can reduce each of these five freedoms.

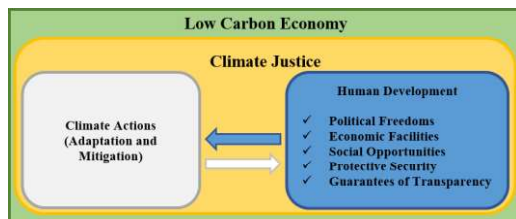


Figure 1: Theoretical framework

Based on the performance of the countries in these two relations, a cycle can be generated both virtuous and vicious, which will make it more or less prominent in promoting climate justice. It is worth noting that in addition to the theoretical contribution of the framework, this work has the practical implication that national governments can use it to elaborate and modify sustainable development programs and policies, incorporating in their strategies two of the most important challenges of twenty-first century: global warming and human development.

Keywords: capability approach, human development, climate actions, freedom

Contractualism and climate change

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This paper articulates a just response to the challenges arising from climate change from the perspective of John Rawls' contractualism. The leading political philosopher of the late-20th century, with *A Theory of Justice* (1971) Rawls rehabilitated the contractualist tradition of Rousseau and Kant, offering a compelling alternative to the dominant utilitarianism of that period. How would agents who do not know their place in space or time articulate responsibility for climate change? Like any legitimate ethical theory, contractualism insists that people take responsibility for their actions. Distinctively, it takes it that this responsibility should be understood in terms of fairness. Carbon pollution imposes harms, and the physical and institutional momentum of climate change guarantees these harms will increase, probably more than current science predicts. The central challenge is to establish international institutions that can allocate costs in proportion to responsibility: for transitioning to renewable energy, adapting to climate change, supporting victims, and mediating conflicts. This is impeded by today's anarchic international system and resistance from interests that benefit from carbon pollution. Treating victims fairly involves resettling perhaps hundreds of millions of refugees and confronting recalcitrant governments, but this will inspire more resistance.

Institutions that can allocate responsibility fairly will override many established norms, but delay only increases costs. Contractualism highlights obligations of those responsible for carbon pollution to climate victims, the magnitude and urgency of the institution-building imperative, how this threatens established normative orders, and, given the structure of incentives, how overcoming the expected resistance requires moral heroes.

Keywords: climate justice, contractualism, fairness, responsibility

Ethics and aesthetics of climate justice: Do we need to discuss the idea of 'beauty'?

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More than 70 years ago, conservation biologist Aldo Leopold formulated the Land Ethic in which he specified "A thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community." The importance of beauty is also explicit within indigenous thought. Scott Momaday, for example, stated when writing for a broad audience in *National Geographic* "You say that I use the land, and I reply, yes, it is true; but it is not the first truth. The first truth is that I love the land; I see that it is beautiful; I delight in it; I am alive in it." Furthermore, the link between ethics and aesthetics is also explicit in Western philosophy ranging from Plato to Wittgenstein. Finally, it is common to find the ideas of beauty, love and motive interlinked in common speech, even among business leaders. Steve Jobs, for example, stated on the topic of priorities: "The only way to do great work is to love what you do."

In this philosophical analysis, I will argue that there are good reasons for the pervasive interlink between beauty, justice, love, and motive. I will further argue and that we can harness these connections when we devise education and communication strategies on climate stability and justice and that a debate on the aesthetics of climate stability and justice provides a useful heuristic tool. The fact, that beauty may be in the eye of the beholder, serves both analysis and dialogue. In this talk, I will therefore explore the question: Can we reasonably expect that the idea of 'beauty' will support our debates and our collective motivation, resolve, and performance in the context of climate stability and justice?

Keywords: ethics, aesthetics, philosophy, climate justice

The language of climate change normalization

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Climate change began as an avoidable risk but now, 30 years after the creation of the IPCC and the UNFCCC, climate change has become an unavoidable threat. The evolution from risk to threat is due to the lack of action, particularly from those most responsible for historic and present GHG emissions. Current pledges are far from what is required to stay below 2 degrees leading likely to catastrophic scenarios. Even worse, the window of opportunity to avoid the most serious impacts is closing. With this, we are unwillingly entering a new climate change era.

With increasing environmental degradation comes a new discourse for this new era, designed to normalize what could have been prevented and to shift the attention from the most responsible for the current situation to an intended ambiguous buffer zone of generalization of responsibility and forced burden sharing between those most and least responsible. The discourse of this climate change era does not speak of historical emissions or ecological debt, but of the Anthropocene, about humanity being responsible for environmental impact at the geological level on planet Earth. This generalization is intended to disappear the issue of responsibility or liability for the current state of the planet. If everyone is responsible, then no one is.

On the other hand, the normalization of climate change is done through the discourse of "Resilience", with the intention of also reducing responsibility for mitigation and adaptation from the top-down scheme to a bottom-up approach. The burden of adaptation shifts from governments to those most vulnerable. It is then, their responsibility to secure resources and adapt to climate change impacts.

In this presentation, we propose a critical discourse analysis of these and other buzzwords that are being designed and deployed with the intention to normalize climate change, to diffuse responsibility and to sell an unfair future as an opportunity for those least responsible, consummating the ultimate climate change injustice.

Keywords: climate change, discourse, Foucault, climate justice

Towards a new, more useful, narrative on institutional reform for climate justice

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The conference theme highlights the need to “change the narrative” if new, more effective, climate justice (CJ) pathways are to be created. Narrative change in many fields is needed. This exploratory paper links two research and practice “worlds” to help understand and explain what this task might involve in the particular field of CJ-related institutional reform. The first world is that of legal practice and research. This (jurisprudence) field is already rich but it faces practical frustrations, struggling to account for failures and successes in CJ institutional reform efforts.

The second “world” is that of sustainability (or sociotechnical) transitions (ST). ST research is interdisciplinary and has extensive theoretical foundations including in complex systems, sociology, history, innovation and institutional studies. It is exclusively focused on understanding the intricacies of what is involved in the steering of complex societal systems to more sustainable trajectories in the face of resistance (path dependency).

At one level the paper is conceptual, providing for an interaction between research fields. The paper links findings from: (1) jurisprudence, in regard to structures, policies and processes for CJ, and (2) ST, in regard to the sociotechnical variables involved in reframing of this kind. ST’s “multi-level perspective” (MLP) and “strategic niche management” heuristics are used to provide an outline conceptualisation which bridges the two fields – in effect a new, more explicit, narrative on the institutional reform challenge. On another level the paper is practice based, involving interviews with international jurisprudence innovators, unravelling the extent real world casework of interviewees might confirm or challenge the conceptualisation.

The conceptualisation was seen as useful as a new narrative on the institutional reform puzzle, but findings also challenged some of the ST concepts. An example evidences judge-made law’s powers to directly open new narratives and institutional change (“regime” breakthrough) seemingly outside the MLP constructs.

Keywords: institutions, transitions, practice, innovation

Changing conceptions of justice in EU climate policy: from normative to just power Europe?

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Climate change constitutes one of the most pressing problems of global justice. However, despite the recent success of the international negotiations embodied in the Paris Agreement, most scientists and activists agree that the adopted measures are not adequate or ‘just’ considering the magnitude of the problem. To make matters worse, the announced withdrawal of the US from the agreement threatens to further erode the path towards a sustainable and fair future. On the contrary, the European Union for most of the time has presented itself as a strong advocate for progressive climate action and has been called a climate vanguard or ‘green normative power’. The aim of this paper is to critically assess the EU’s role concerning climate change from a perspective of global political justice. Building on a tripartite theoretical conception of justice, consisting of ‘non-domination’, ‘impartiality’ and ‘mutual recognition’, it inquires whether the EU’s climate strategy and approach to the international negotiations indeed can be considered just and which conceptions of justice have been central. The paper finds that after the failed negotiations in Copenhagen in 2009, the EU has increasingly shifted from mainly relying on strategies linked to an impartial understanding of justice towards those that resemble mutual recognition and non-domination. While this shift was in parts necessary to move forward the international regime, it eventually could become detrimental concerning the quest for global climate justice.

Keywords: EU, global justice, climate change, negotiations

Climate Justice, Economics & Finance

Potential factors likely to influence green climate funding flow

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The Green Climate Fund (GCF) is a multi-lateral financing entity which responds to the objectives of the United Nations Framework Convention on Climate Change (UNFCCC), by mobilising and dispersing climate finance to support developing countries to respond to climate change. In Malawi, however, accessing this fund has been challenging. As such, CISONECC, a key partner in the Scottish Government funded Climate Challenge Programme Malawi (CCPM), conducted a study to identify key factors that are likely to accelerate or constrain flow of GCF to Malawi.

Conducted in 2018, this study drew findings from desk-based research and key informant interviews with government and civil society stakeholders, using a range of methods including Qualitative Document Analysis (QDA). The key finding of the study was that weak communication between the Malawian GCF National Designated Authority (NDA) and civil society organisations (CSOs) was a major factor in constraining GCF flows to Malawi. Likewise, lack of capacity within institutions to develop GCF compliant projects, NDA requirements to invest in staffing to improve management and lack of support for CSO engagement also constrained access to GCF. This paper therefore highlights the need for strengthened collaboration between national, regional and international bodies to support CSOs to access climate finance, and specifically recommends investment in GCF communication and engagement strategies to ensure that finance is accessed and embedded in the priorities of CSOs and the communities they serve.

The study findings have been used to inform advocacy activities within the CCPM, which aims to support Malawian Government environmental policy through implementation of community-led climate change adaptation projects. Specifically, these findings are being used to identify the structural constraints on access to climate finance, and propose solutions which will foster an improved landscape for community-led climate adaptation in Malawi.

Keywords: climate finance, green climate fund, National Designated Authority, climate change

Coordination between carbon tax policies and SDG's: a CGE approach

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Since 2014 Mexico implemented the carbon tax as a policy tool to decrease greenhouse gas (GHG) emissions and ultimately move towards the goal of cutting them by half by 2050. Nevertheless, the tax revenue has fallen behind the expected collection and its effects have been negative for poor household's welfare according to Chapa & Ortega (ERL 2017). Some hypotheses suggest that the lack of coordination between environmental and social development goals is one of the reasons of the poor performance of this policy, but conventional analyses usually focus on either one instead of on both type of goals. This paper contributes to correcting this fault of conventional analysis by developing a Computable General Equilibrium (CGE) model, which considers environmental fiscal and social policies, to investigate whether some of the Sustainable Development Goals can be achieved in Mexico under this carbon tax policy tool, in particular those on poverty, education, maternal and child mortality. The proposed model is based on MAMs (Lofgren et al, Handbook of CGE Modeling 2013); which allows to estimate the financial costs of achieving the goals using different sources of financing, one at the time (taxes, internal debt and foreign debt). We adjust the 2008-SAM database (Chapa and Ortega (2017, Economia) to account for the driving factors of SDGs achievement. Results suggest that taxes are less distortionary than foreign and internal debt, but the amount of taxes that would be necessary to achieve goals all together depends on a higher GDP level than the feasible level, given that current carbon tax accounts only for less than 1% of GDP. In addition, the more difficult goal to achieve will be the reduction of maternal mortality rate.

Keywords: carbon tax, SDGs, CGE, poverty

Fostering green financing scenarios to strengthen Indonesia green economy

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Climate change has been a global concern due to its impacts to human beings. As a developing country, Indonesia is facing a challenge to finance environment activities because has limited fiscal space. Indonesia needs to fund its 'green' projects and programs, such as renewable energy development, low carbon transport and forestry projects. Effective policies and additional financing is critically needed to achieve these goals. Green Bonds could play a bigger role in this case as a new source of green financing. Green Bonds have been used to raise funds earmarked to mitigation, adaptation, and other environmental friendly projects. Over the past 10 years, a range of projects has been developed around the world using bonds to channel capital market to investments, importantly projects that address environmental challenges such as climate change. Green Bonds issuance in Indonesia will be a potentially successful.

The purpose of this study is to fostering a green financing model that can give policy recommendation to determine appropriate projects that create positive economic impacts and to show the impact of a change in an activity within the existing economy to other sectors. These projects will be specific to climate-mitigation and adaptation projects, and other environmentally beneficial activities that stated in The National Action Plan for Greenhouse Gas Emission Reduction, which are Agriculture, Forestry and Peatland, Energy and Transportation, Industry, Waste Management.

The methodology used was Social Accounting Matrix multiplier that can provide the impact of increasing in one activity to other activities inside or between economy agents. There will be several scenario of environment-friendly project financing by Green Financing Scheme. The results of this research is expected to provide recommendation to help policy makers in the field of fiscal policy to determine most environment-friendly projects to be financed by the Green Financing Scheme.

Keywords: green financing, green economy, low carbon, fiscal policy

Recognition as justice in the green climate fund

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In research on international climate finance, justice is usually considered to have both 'distributive' and 'procedural' aspects. The existing literature suggests that international climate finance is neither procedurally nor distributively just. However, there is increasing cognizance of the role of 'recognition' as a third critical aspect of justice. Recognition is concerned with addressing the underlying drivers of maldistribution and leads therefore to examination of the prevailing social status of individuals and groups.

The importance of this additional facet of justice is well-documented in environmental justice (see Schlosberg 2004, Schlosberg 2007 & 2013) and gender justice (see Fraser 2009 & 2011). While authors such as Harriet Bulkeley (Bulkeley, Edwards, & Fuller 2014) have begun to incorporate recognition into their models of climate justice, there is limited scholarship applying this concept to climate finance more broadly or to the Green Climate Fund (GCF) in particular.

This paper discusses the results of a systematic review of the existing climate finance literature to demonstrate the advantage of adopting a model of justice which incorporates recognition. It then applies the concept of recognition to explore the contemporary challenges the GCF has in achieving climate justice. Preliminary analysis suggests that the GCF's struggles to give due recognition to developing countries, as well as to other actors such as indigenous groups, civil society, children and youth may contribute to the lack of distributive justice achieved to date.

Keywords: climate finance, Green Climate Fund, climate justice

Rethinking the discipline of political economy for climate justice

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Achieving Climate Justice requires a major rethink of the theories of economic value embedded in competing liberal, nationalist, socialist and ecological accounts of political economy. These accounts commence with Adam Smith who identified use value, labour value and exchange value as the three major forms. Unfortunately, Smith's rich conception of economic value was progressively narrowed by the emerging school of neoclassical economists such that today economic value is conceptualised almost exclusively in exchange-value terms.

However, other conceptions remain important. Economic nationalism, as theorised by Friedrich List in *The National System of Political Economy*, treats economic value as 'use value'—the usefulness of things in contributing to a community's 'power and plenty' (e.g. the state). Likewise, Karl Marx set out a fully-fledged socialist theory of economic value as labour value, the essential insight being that things are valuable because they embody human labour.

As a discipline, political economy failed to reckon with a fourth environmental understanding of economic value, viewing nature as the unchanging stage upon which the drama of production and consumption unfolded. Yet in the works of Henry David Thoreau and later environmentalists the idea of 'function value' can be deduced. Function value recognises that a thing can be valuable for the function it performs for the ecosystem of which it is a part.

This theoretical paper highlights the central role competing conceptions of value play in political economic theory and argues that climate justice will only be realised from within a new political economic approach founded on the idea of 'sustainability value'. The paper explains what sustainability value is, examines what the concept implies for the structure and operation of state, business and civil society institutions, and outlines the implications for the climate justice movement in terms of its political economic demands for such issues as trade, investment and taxation.

Keywords: political economy, value theory, sustainability, trade policy

Time for a Keynes revival? Financial freedom vs. a Green New Deal

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Proposals for a "green New Deal" that recognize the inseparability of social justice and climate stability have galvanized activists and attracted support in the US Congress. In calling for massive public investments in renewable energy and efficiency, jobs for all, and a suite of measures that will enhance the well-being and resilience of the most vulnerable communities, the GND represents a turn from the private and individual to the public and collective, and is thus an emphatic repudiation of neoliberalism. But footloose global finance poses a threat to any just and democratically determined social order, as economist JM Keynes argued in the 1930s: Owners of capital would flee, he said, "taking fright because they think the degree of leftism in one country looks likely to be greater than somewhere else." Keynes' understanding of the destructive effects of mobile capital has been fully vindicated since the international and domestic deregulation of finance beginning in the 1970s, and is highly relevant to the present moment. I explain the threat that capital mobility poses to Green New Deal programs, both in the US and elsewhere; developing countries must endure capital flight even as they wait, largely in vain, for the financial mitigation and adaptation assistance promised them in Copenhagen.

Keynes argued for a set of international monetary, financial and trade arrangements that would, by "euthanizing the rentier," enable governments to respond to the public good. His vision was only partly realized in the Bretton Woods agreements (1945-73), which were fatally weakened from the beginning by the resistance of Wall Street. The success of a Green New Deal may well depend on confronting this unfinished business.

Keywords: capital mobility, green new deal, Keynes, finance

Weak responses to climate change, William Nordhaus and the social cost of carbon

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The Social Cost of Carbon (SCC) represents the cost government should be prepared to impose, perhaps through a carbon tax, to reduce carbon pollution, and it provides a measure of the burden of obligation on carbon polluters towards victims of climate change. In 2018 the Nobel prize committee awarded its prize in Economics to William Nordhaus, author of the Integrated Assessment Model (IAM) used to calculate an SCC, in order to emphasize the need for international cooperation. In fact, however, Nordhaus has consistently argued that international treaties impose costs that are far too high.

Nordhaus (2018) proposes an SCC of \$49 per ton of carbon dioxide for 2030, with an optimal pathway leading to 3.5°C warming by 2100, while the Intergovernmental Panel on Climate Change (2018) argues that a carbon tax between \$135 and \$5500 in 2030 would be needed for the global community to achieve the Paris Agreement target, limiting global warming to 1.5°C.

This paper examines the methodologies and assumptions in Nordhaus (2018). While his \$49 SCC is based on 27 studies of economic damages from 1994 – 2017, given the geological record and methodological weaknesses in the underlying studies, damage estimates in these 27 studies are, predictably, unreasonably low. Many of the studies unreasonably value lives and ecosystems lost in terms of regional incomes, and permanent losses to humanity in terms of the local population's willingness to pay. Newer studies indicate much greater sea level rise, acidification, and economic losses from heat, and a greater likelihood of large scale discontinuities.

While ambiguities remain, this paper proposes and justifies an SCC rising to \$400 by 2030. This would facilitate a much faster transition to clean energy and provide critical resources for mitigating greenhouse gasses, adapting to effects of climate change, and supporting climate refugees in low-income countries.

Keywords: social cost of carbon, William Nordhaus, economic theory, methodology

UN Sustainable Development Goals and Climate Risk Exposures - Proposing a Risk Financing Model for Bangladesh

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In this article we proposed a conceptual risk financing model for climate risk exposure in Bangladesh in the light of the key proposals of UN Sustainable Development Goals. In the raise of concerns for policy failure combating climate change, it is time to re-design the conventional risk transfer instruments that suits country need and context. In answering recent discussions of synergies between macro and micro level risk transfer approaches in achieving the greater policy success, this paper suggests a proper product. The paper has proposed a securitisation model for Catastrophe Bond that incorporates public-private partnership concept and MFIs in distribution channel. It has thus aligned the common beneficiaries, the climate victims, in the same model and for synergy of the risk transfer approaches. Further studies based on this paper have been recommended.

Keywords: climate risk, UN sustainable development goals, disaster risk financing, public-private partnership

Climate Justice Methodologies & Modelling

Fairness for flood risk households: Integrating human behaviour into simulated policy Testing

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This paper shows how agent-based models might be used to improve the efficiency and equity of flood risk management solutions. Though principles of environmental and social justice underpin much of UK Flood Risk Management strategy, the methods of identifying and then supporting the poor through policy instruments are often simplistic, reducing both the efficiency and equity of solutions. Here we develop three agent-based models designed to demonstrate the difference in uptake of insurance and property level protection across three scenarios. The first model projects the likely affordability of a variety of individual flood risk management options when subsidies are applied with the aim of answering the question, 'Can the agent (as the resident of an at-risk property) uptake these options?'. The next model integrates expected monetary value to ask, 'Should the agent uptake these options?'. The final model incorporates behaviours identified in Kahneman and Tversky's Prospect Theory and field studies to answer the question 'Will agents uptake these options?'. In this final model run the agent is able to update itself in line with experiences and revised perceptions of reality. As a development upon traditional policy testing environments displayed in the first and second agent-based model, through the integration of human behaviour the third agent-based model allows decision-makers to probe an array of likely responses to policy instruments across a varied population. This has particular significance as a new tool to support decision-makers who wish to identify the relative gains across a population from the implementation of policy instruments and, in turn, to adjust policy instruments to deliver climate justice. Targeting policy to the individual is controversial, and so finally we discuss alternate options of how to include individual behaviour in similar models to improve fairness, while presenting options to protect individual privacy.

Keywords: agent-based models, flood risk, simulated policy testing, prospect theory

Impacts of climate change on water availability, Arundel Creek Catchment, Victoria, Australia

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Arguably, climate change is one of the greatest challenges confronting Australia, it could have significantly adverse effects on water resources and hence the environment and economy. There is a strong demand from decision makers for predictions about the potential impacts of climate change involving the duration and magnitude of precipitation, which has ramifications on sustaining and managing water resources appropriately to meet water scarcity that has become pronounced. So far, water issues related to climate change have not been well addressed within climate change analyses and climate policy construction. Therefore, the main objective of this research is to identify water availability in the context of impacts of climate change on Arundel Creek Catchment which is a major water source for Tullamarine Airport, Melbourne Airport Golf Club and quarrying. Soil Water Assessment Tool (SWAT) model has been used to capture these impacts for near future (2046-2064) and far future (2080-2100). The capability of the model to simulate the catchment was first assessed, and then, outputs from six General Circulation Models (GCMs) in the fifth phase of the Coupled Model Intercomparison Project (CMIP5) were combined to evaluate the impacts of climate change on water resources under three representative concentrations: RCP8.5, RCP 4.5 and RCP 2.6. The results showed worsening water resources regime.

Keywords: climate change, water resources, GCMs, CMIP5

Modelling potential impact of climate change/variability on future malaria prevalence to guide policy on equitable distribution of climate finance in Kenya

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Introduction: The revised National Malaria Control Strategy (2007-2018) under the Ministry of Health in Kenya has indicated some achievements towards malaria vector control. However, despite the reported achievements and challenges, there was no attempt to incorporate the potential impact of climate change/variability. Therefore, this projection study aimed to prepare for the future dynamics that might disrupt the social-economic livelihoods of the people through exposure of unsuspecting populations to the risk of spreading malaria epidemics.

Methods: A current study employed Ecological Niche Modelling to quantify climate change as a contributory factor to the spread of suitable malaria vectors' ecological niches in Kenya. Climate Envelope Models predictions used malaria vectors' presence data and global climate data from HadCM3, CCCMA and SCIRO models of IPCC projected future climate under the A2a scenario by the years 2020, 2050 and 2080.

Results: Spatial-temporal analysis demonstrated significant correlation between climate change/variability and possible emergence of new malaria hotspots. The results of possible new dynamics of malaria prevalence with new hotspots were integrated into decision support systems to plan intervention strategies towards malaria free Kenya. Spatial models were generated for delineating all the Counties with populations at risk in Kenya.

Discussion: The National Malaria Control Programme should consider incorporation of climate envelope models results and spatial-temporal analysis to generate evidence-based budgetary allocations for climate finance. Counties at risk can significantly safeguard the health of indigenous communities in Kenya who have continued to be subjected to the deteriorating physical conditions of their particular ecological habitats and the natural catastrophes' emanating from climate change/variability over decades.

In conclusion, there is great importance of ecological niche modelling to safeguard the population by creating awareness for preparedness and financial allocations to ensure early risk management in the current non-endemic zones that have the potential of becoming future malaria vectors' habitats.

Keywords: ecological niche modelling, climate envelope models, malaria prevalence, malaria hotspots

Impacts of climate change on stream flow of five major tributaries of Tigris River

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Northern Iraq Region, a semi-arid, mainly a pastureland, is sustained by five tributaries namely Khabour, Greater Zab, Lesser Zab, AlAdhiam and Daylia which are the major tributaries of Tigris River. The discharge in the tributaries, in recent times, have been suffering increasing variability contributing to more severe droughts and floods apparently due to climate change. For an appropriate appreciation, Soil Water Assessment Tool (SWAT) model was used to evaluate the impact of climate change on their discharge for a half-centennial lead time to 2046-2064 and a centennial lead time to 2080-2100. The suitability of the model was first evaluated, and then, outputs from six GCMs were incorporated to evaluate the impacts of climate change on water resources under three emission scenarios: A1B, A2 and B1. The results showed worsening water resources regime.

Keywords: Tigris river, streamflow, SWAT, climate change

Linking Brazilian environmental policy criteria, deforested area and ecosystem services

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In Brazil, environmental licensing acts as a regulatory mechanism for potentially polluting activities. Since the criteria for licensing are defined by state environmental agencies, members of the National Environmental System, they are subject to variations across the country. Thus, the objective of this study was to explore any correlation between the adoption of more or less strict criteria for agriculture, livestock and silvicultural activities and the deforestation rate in the south-eastern states, in order to generate a discussion about current policies and future perspectives for environment conservation. After consultation of legislation and official documents, a bibliographic study of previously elaborated materials was carried out, from which a table was drawn up, containing the minimum area for non-requirement of environmental licensing and environmental impact study. The states of Minas Gerais and São Paulo have established less strict criteria when compared to Rio de Janeiro and Espírito Santo. Despite that, São Paulo had the highest percentage of Atlantic Forest fragments in the country in 2016 (22.9%). That occurred due to a strong vigilance and inspection of the commercialization of timber, associated with the State Environmental Payment Policy, which has generated a panoply of effective conservation measures in a notoriously industrial state. On the other hand, an inadequate vigilance and lack of state incentives have generated an increasing deforestation rate in Espírito Santo, correlated to the expansion of farming land and pasture area, even as the state legislated more rigorous requirements. In recent years, the fluctuation in deforestation rate is likely to be due to economic factors. Hence, adopting and enforcing public policies is crucial in order to avoid loss of vegetation, maintaining the ecosystem service provided by forests like Atlantic Forest, such as water conservation, carbon sequestration, biodiversity protection, climate regulation, cultural enrichment and social benefits.

Keywords: Brazil, environmental licensing, deforestation rate, public policies

An alternative approach to vulnerability assessment of micro social-ecosystem to ensure climate and environmental justice - with case example from Nepali Himalaya

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Introduction- Climate justice worsen when its impacts coupled with undermined politico-institutional, techno-economic, and socio-cultural factors while policy response for justice is deliberately misinterpreted in the favour of powerful individuals. A social-ecological system is a complex web of human-environmental interactions, the households victimized by policy manipulation and have limited ability of securing benefits from human-environmental system grieve from inequality, adversity and injustice. Therefore, policy response in reference to social-ecological vulnerability index is obvious to control policy-manipulation and ensure justice.

Method- Prevailing methods of vulnerability assessment deal with larger spatial units and ignore internal inequalities. This research considers households as a smallest unit of production having its own social-ecological system. Therefore, a household is taken as the unit of analysis. This research used system approach (Driver-Pressure-Stage of Change Impacts-Response) to bring endogenous and exogenous factors in a comprehensive model of analysis. A wide range of data on endogenous and exogenous factors were collected from 360 households covering three ecological zones of Nepali Himalaya. The variables have been sub-grouped into three components: exposure, sensitivity, and adaptive capacity and respective sub-indices at first, and Multidimensional Vulnerability Index later, were calculated to support justice delivery process. Result- Endogenous and exogenous forces implicate micro-social-ecological systems, yet, variably because of distinct ability of households to obtain benefit from the interaction. Many households of study area benefited a little from local social-ecosystem but are suffered from climatic and environmental change. Consequently, a majority of households are vulnerability who require immediate response from state mechanism. Discussion- Multidimensional Vulnerability Index is obvious to respond disadvantaged households. The critical knowledge obtained from vulnerability assessment helps controlling policy manipulation and facilitates justice champions by prioritizing disadvantaged households using vulnerability index. The method is important for resource poor developing countries like Nepal to enhance social, environmental or disaster related justice.

Keywords: climate justice, social-ecological vulnerability, Himalaya, Nepal

Support for climate justice compensation among mainstream U.S. climate change Protestors

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Little is known of the level of support for climate justice among individual participants within the U.S. climate change movement. Using original survey data from the two largest nationally mobilized climate change protests in the U.S. – the People’s Climate March in New York City in 2014 (n=725) and the March for Jobs, Justice, and the Climate in Washington, D.C. in 2017 (n=915) – this paper examines the overall level of support, as well as the individual-level predictors of support for the U.S. providing millions of dollars to developing countries to help them adapt to climate change. Overall, a majority of participants in each march agreed that the U.S. should provide such compensation – 70% in 2014, 64% in 2017. The results of ordered logistical regression indicate that, in both marches, as political ideology moves closer to the extremely liberal end of the spectrum the higher the levels of support for climate justice compensation. In New York City in 2014, men were also more likely to support compensation compared to women, but not in DC in 2017. In 2017, income was a significant predictor of higher levels of support, with those with lower incomes reporting greater support. However, income was not a significant predictor in the 2015 sample. Surprisingly, even though non-whites reported higher levels of strong agreement, race failed to gain statistical significance in either sample of protest participants. Prior to this analysis, there was little to no systematic record of the levels of support for a key aspect of climate justice among mainstream U.S. climate change movement participants. We see high but not overwhelming support. Additionally, the outcomes show that political ideology is the only consistently significant predictor of higher levels of support for climate justice compensation among U.S. climate change protestors, more than demographic characteristics such as race, class, or gender.

Keywords: social movement, compensatory justice, protest, United States

Deciding in the dark: Public information gaps and the limits to the application of the nexus approach in semiarid Brazil

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In spite of the abundant literature on the relevance of Water-Food-Energy integration for effective climate change governance – mainly generated in the Northern Hemisphere-, our research in the most socially and climatically vulnerable region of Brazil – the Semiarid Northeast – confirms previous studies about the limitations of the mainstream definition of Nexus as an analytical tool. This Nexus approach seems to take for granted the existence of: i) accessible, transparent, and updated information on public and private actions seeking water, food and energy security, and ii) a bureaucratic culture allowing the exchange of information vital for the analysis, regardless of politics and politicians. Our research, conducted by the Federal Brazilian Research Network on Global Climate Change (Rede CLIMA) included two phases: i) the mapping of around 600 climate-change adaptation policies and projects devoted to water, food and energy security in the Middle and Lower Sao Francisco river basin (national, subnational and municipal levels), and ii) the application of around 100 semi-structured interviews in an intentional sample of actors from Juazeiro (Bahia State) and Petrolina (Pernambuco State). With just a bridge separating each city other across the Sao Francisco basin, the cities’ urban and peri-urban areas suffer the exponential impact of a dramatic 7-year drought - the worst in 50 years- endangering the survival of the most vulnerable populations in the region, including rural women, smallholder producers from rain-fed, community-owned lands, indigenous groups and maroon communities. While the policy mapping confirmed the endemic lack of information transparency, the interviews with local actors showcased the many political and cultural barriers to effective adaptation to climate change, including misinformation. We propose a “NEXUS+” approach, which combines previous analysis with a social-ecological security approach, bringing a fourth essential component to address social-ecological systems sustainability into the context of developing nations.

Keywords: climate change, vulnerability, governance, Nexus+

The literature landscape on climate change, peace and security

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Introduction: With the increasing trends of climate change, there is a pressing need to deal with the potential implications of climate change for peace and security. Recognizing this, there has been a surge of interest over the past years in doing research at the interface of climate change and peace and security. Consequently, a relatively vast body of research has been published. Nevertheless, there is still a lack of a systematic overview of the existing research. This is a gap that this study aims to fill through a comprehensive bibliometric and scientometric analysis, followed by content analysis of the highly impactful research.

Methods: A sophisticated search query is designed to provide a complete coverage of literature on peace and climate change. It includes terms such as climate change, impacts, drought, flood, sea level rise, peace, security, migration, resources, justice, and disaster. Using the Web of Science, literature for the period between 1980 (when climate change emerged) and 2019 is retrieved. The VOSviewer software is used for scientometric analysis and for visualization purpose. The highly impactful literature highlighted during this stage is meticulously analysed to better understand the dynamic interlinkages between climate change and peace/security.

Results: Existing research is mainly focused on the implications of climate change for resource security (food, water, and energy). There is also an increasing focus on climate-induced migration and climate-induced conflicts. The content analysis shows that there is a bi-directional causal relationship between climate change and peace.

Discussion: This study highlights some major interlinkages that should be considered by policy makers. It also identifies important overlooked areas that need to be further explored. Furthermore, results will be used to develop the science plan for the newly established Network for Education and Research on Peace and Sustainability of Hiroshima University.

Keywords: climate change, peace, security, scientometrics

Impacts of the multiple dimensions of gender inequality on the countries' environmental performance: A global quantitative analysis

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Climate justice and female empowerment are recognized as important allies in the battle against global warming, but we still live in a world where gender inequality is a reality, reflected in unequal political, social and economic opportunities. In spite of the recognized importance of gender equality in environmental protection, empirical research with a deeper understanding of this relation has been rare. In this context, this research uses the capabilities approach to analyse the influence of multiple dimensions of gender inequality on countries' environmental performance.

A quantitative analysis from 122 countries was conducted using multiple regression based on Weighted Least Squares method. As a dependent variable, the Environmental Performance Index was used, which includes 24 indicators across ten dimensions of environmental health and ecosystem vitality. As independent variables, the difference between the male and female indicators of Gender Inequality Index and Gender Development Index was used, which covers life expectancy, schooling, income, health, political participation and labour market. As control, several variables of previous research were included: GDP, urbanization, industrialization, militarization, world-system position, age dependency ratio, democracy, income inequality and population.

The model was able to explain more than 97% of the variation in environmental performance. Their results indicate that inequality in schooling, political participation and labour market together with maternal mortality has a significant negative impact on environmental performance. It is interesting to note that income inequality has not shown to be significant, demonstrating the importance of going beyond and expanding social and political freedoms so women personal agency is strengthened.

This study contributes to filling a theoretical gap that links Ecofeminism to the Capabilities Approach. The empirical evidence supports the ecofeminist theory, since a negative impact of several inequalities on the environmental performance was verified.

Keywords: capability approach, gender inequality, ecofeminism, women empowerment

Climate Justice & Migration

Migration and climate resilience: An articulation of a 'just' policy and practice paradigm

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Increasingly, migration is being viewed as an adaptive strategy to the direct and indirect impacts of climate change. However, low-income migrant groups continue to face multiple challenges after moving from rural to urban areas wherein their vulnerability may be replicated or even be exacerbated, challenging upward social and economic mobility. Policy responses need to accommodate and reflect the dynamics of climatic and non-climatic risks in its relatedness to the lives of migrant population. The practice of 'resilience' building has been one such policy response, but critical policy gaps still exist.

We use the dimensions of the nexus between resilience-migration-climate change and attempt to understand the evolving, on-ground, risk configurations. We use 'livelihoods' as an entry point— which is aligned with the 'justice' dimensions of resilience thinking (Tanner, et al., 2015) and conceptually builds on the foundational principles of 'justice'. Using Coimbatore, a medium sized city in South India as a case, the following methodology is employed to unpack the multiple complexities of the nexus: (1) extensive literature review to understand developmental dynamics of the city, vulnerability of different urban systems and migration trends; (2) key informant interviews with key stakeholders, and (3) a primary household survey of self-identified migrants.

Our study attempts to interrogate what 'justice' means in climate resilience practice. While our overt focus is on interrogating the 'opportunity' space for livelihoods as the primary 'justice' category, we attempt to simplify and articulate avenues of policy intervention. Our findings indicate that there are certain critical avenues that allow for managing the nexus of resilience migration-climate change favourably. We argue that it is essential to focus on these identified critical avenues as the lack of it concatenate impact and by extension, are 'unjust'.

Keywords: migration, livelihoods, climate resilience, justice

Rethinking legal and policy options for climate change-induced migration and conflict

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Nigeria has witnessed dramatic climate change impacts in recent years resulting in droughts and desertification in several northern states with fast receding grassland vegetation. This has induced migration especially by pastoral farmers from the semi-arid agro-ecological zones down south towards the Benue trough in search of lush green vegetation for their herds. The result is frequent strife and conflict between these nomadic groups and the sedentary farming communities in the rich Benue River Basin trough, resulting in loss of lives and properties. This crisis in recent years has assumed diverse political, religious and socio-cultural dimensions. Successive governments had set out policies, programmes and laws targeted at resolving the crises. The purpose of this study is to appraise the policy and regulatory measures already in place in Nigeria juxtaposing it with the existing programmes of climate change mitigation and adaptation measures in Nigeria.

Major point of settlement of Nomadic herdsmen in search for green pastures has been along the River Benue in the North Central geo-political zone made up of 6 states (Plateau, Nassarawa, Kwara, Kogi, Benue and Taraba). Benue state is selected as the study area being most fertile and major area of conflict between herdsmen and farmers in recent year. We found that major causes of conflicts revolve around land ownership for settlement, grazing and farming. That the conflict has assumed ethno-religious colorations with great impact on the socio-economic wellbeing of the inhabitants and migrants.

Realizing that migration is a form of local level adaptation measure and conflict a directional reaction to these adaptation manifestations which need to be addressed holistically with a view to finding a lasting solution, this study proposes for a comprehensive, all-engaging approach to dealing with this problem by recognizing the cause and effect of this migration and conflict which is climate change.

Keywords: climate change, migration, conflict, law

A framework for resettlement capacity assessment in the context of climate change induced displacement

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Growing evidence suggests that resettlement capacity assessments to identify potential destinations for climate migrants are crucial to guide climate change resettlement programs in choosing appropriate host places and improving resettlement outcomes. However, there is paucity of operational conceptual frameworks that could guide resettlement capacity assessments in the context of climate induced displacements. This paper, therefore, develops a framework that can form the basis for undertaking empirical resettlement capacity assessments of potential destination places. We acknowledge that the heuristic objective of climate change resettlement programs is to reconstruct and improve the livelihood of displaced people and communities and there are risks that associate with resettlement as well as migration. Hence, we use a resettlement outcome concept that considers both livelihood reconstruction and improvement of resettled communities and people. We undertake a review of both theoretical and empirical literature related to resettlement, migration and livelihood to integrate perspectives on climate change resettlement capacity. The paper identifies the attributes and indicators of climate change resettlement capacity in four dimensions, namely, assets and resources, enabling conditions, potential livelihood activities, and potential livelihood outcomes. The paper will discuss the potentials and limitations of the framework and its components by drawing on empirical examples from host places for climate displaced communities in developing countries. The framework will help (i) researchers to undertake theoretical and empirical studies on climate change induced resettlement, (ii) planners and policy makers in choosing best places in resettling communities in the face of actual or anticipated displacements and to control for new human resettlement in unsuitable areas, and (iii) migrants to move to places with higher potential for livelihood improvement.

Keywords: climate change, resettlement, displacement, livelihoods

Migration, drought and climate justice in Brazilian semiarid region: a case study in Submédio São Francisco

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In order to understand future possible human consequences of climate change, literature argues it is useful to analyse past interactions between a given population and climate phenomena, to establish a historical analogy. In Brazilian semiarid region, successive years of drought are recurrent and migration to other regions are historically associated with these episodes. Rain-fed small agriculture was – and still is – an important activity for the region. In this sense, rain scarcity may drive living conditions precarious or even impracticable, thus migration can be a strategy to improve life or survive. Drought link to migration is, though, broader than water availability – it is also a matter of climate justice. In past, public measures to cope with semiarid climate were uneven distributed among social groups and were a mean of reiterate an economic and political local elite. A case study of a semiarid sub-region – Submédio São Francisco – based on statistic secondary data from 1980s to 2016 and qualitative interviews done in 2017 provides a glance on how those dynamics evolved, specially from mid-20th century to now. The case of Submédio São Francisco presents public approach toward the region began to change after 1960s, aiming the overall development as a mean to prevent drought effects. Although the shift, social scenario was still marked by inequality, and new policies fostered a fragmentation of territory through development poles, as the irrigated agricultural perimeter in São Francisco bank. This path is related to the recent migration patterns in which movements within semiarid are more relevant. The case illustrates the link between drought and migration extends beyond the lack of water to drink and produce in the origin location. As public policies in the region were linked to its climate, it promoted or reinforced inequalities and fragmentations that shaped symbolic and practical dimensions of migration flows.

Keywords: migration, drought, semiarid, Brazilian northeast

Climate change and people on the move: The scope of (In)justice

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That the effects of climate change impact upon human migration and displacement cannot really be disputed. Also indisputable is that this entails certain injustices. Those frequently noted revolve around: a) people moving in response to the impacts of anthropogenic climate change where this is not wanted; b) people wanting to move in response to the impacts of anthropogenic climate change but getting trapped instead; c) some areas being disproportionately affected with people movement related to climate change (either as area of origin or host) more so than others. This talk relies on justice theory to order these scenarios around distinct justice theorems, foremost corrective and distributive justice. Justice theory is then also relied upon to evaluate the relative strengths and weaknesses of developments in law and policy concerning human migration and displacement in the climate change context.

Keywords: migration, justice theory, corrective justice, distributive justice

Climate Justice & Disasters

'Kerala Deluge of 18': A geo-climatological analyses from India

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Kerala, one of the southern states of India, is categorised as a multi hazard prone state because of many, continuous and unexpected natural disasters like flood, landslides, droughts, sea level rise, coastal erosion and earthquakes. The severity of such disasters can increase due to various natural and anthropogenic interventions in the topography of the state and with the influence of climate change. In Kerala, climate change research remains a low priority issue, which garners little political attention or research funding. Consequently, there is a widening gap between the capacity building to perform climate research and analysis, and in turn, to contribute to the mitigation of geo-environmental hazards. In August 2018, the state of Kerala witnessed a huge deluge, which affected millions of people and caused 480 or more deaths. A combination of extreme rainfall events in the state, unprecedented rainfall in the catchment of reservoirs/dams and high tide in the Lakshadweep sea made such flooding unavoidable. This paper examines whether this great deluge is great geo-climatological warning to the state of Kerala. Kerala, with a population of over 3.3 crore, is among the top five Indian states in terms of per capita state domestic product and among the top four in terms of growth in per capita income. Many other human development indicators for Kerala are at par with those of developed countries. However, this state is highly vulnerable to many disasters and the changing climatic dynamics affects greatly the coastal zone and the slopes of the Western Ghats. The impact of climate change is very much evident in Kerala now. The chain of events, loss of life and property during the deluge points to the lack of a clear appreciation of the implications of the Kerala's hazard exposure, the vulnerabilities of its people, infrastructure and institutions.

Keywords: deluge, climate change, disaster, rebuild

Building Resilience to Natural Disaster: Savings from Ex-Ante Interventions

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Natural disasters cause significant damages and disrupt growth, particularly for small island countries. The frequency and intensity of large disasters are expected to increase with climate change. We use a dynamic general equilibrium model to explore the benefits of ex-ante intervention to build resilience to natural disasters. We calibrate our model to six small countries that are highly vulnerable to natural disasters. We show that policy makers can save in net present value terms by investing in ex-ante resilience and avoiding large recovery costs. There is additional savings from avoiding output disruptions following a disaster. Our finding underscores the important of mobilizing more resources to building resilience against natural disaster and climate change.

Keywords: infrastructure resilience, natural disasters, economic growth, climate change

Against the wind: Cost effective mitigation from the impact of wind storms

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Introduction:

The Fourth National Climate Assessment for the USA finds climate change will have a profound negative effect on the US economy by the end of the century. One driver of economic loss is increased frequency and severity of wind storms. Since 1980, wind storms in the US have cost almost \$1 trillion with 85% of that amount since 2000.

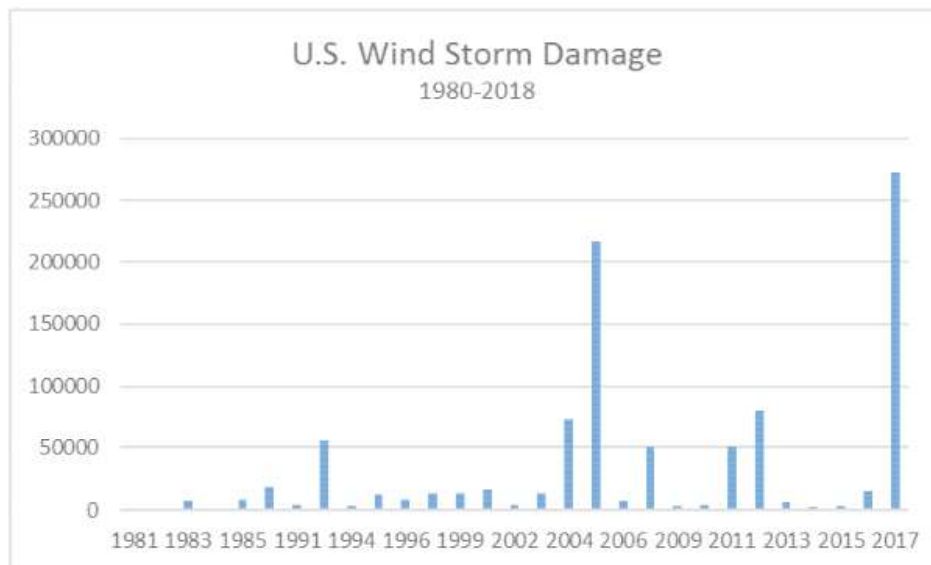
Data from NOAA archive of Billion Dollar Weather and Climate Disasters Beyond the economic cost, the human impact of wind storms is also devastating. Warning systems have reduced casualties with improved modelling of hurricane landfall and increased lead time for tornadoes. But those innovations are reaching a point of diminishing returns. Further improvements to reduce casualties is found by engineering structures to provide better protection. Survivors are also negatively impacted as damaged homes require families to temporarily relocate disrupting communities. Large storms such as Hurricanes Katrina in Louisiana (2005) and Maria (2017) in Puerto Rico created two of the largest US migrations in modern times, a potential sign of things to come.

Methods/Results:

This paper conducts a benefit/cost analysis of a public policy to reduce impacts of wind storms; building codes based on wind engineering principles. First adopted on a state-wide basis by Florida (USA), these codes provide a benefit to cost ratio of \$6 in reduced damage for every \$1 in increased cost. Enhanced construction standards in the city of Moore, Oklahoma (USA) finds similar results. Further, other states are identified that also show cost effective benefits from better construction. Finally, survey results show public support for such a policy.

Discussion:

As risks from climate change increase, it is necessary to pursue policies that mitigate Adverse effects. This research verifies that cost effective measures are available and should be Adopted reducing both economic and human impacts.



Data from NOAA archive of Billion Dollar Weather and Climate Disasters

Keywords: mitigation, benefit/cost, building codes, public policy

Linking green infrastructure and human health for post-disaster adaptation

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Introduction: Natural disasters impact human health. How well people and their community adapt to natural disasters is a crucial issue. Especially, people in coastal counties including Japan, where historically prone to be the natural disaster, face vulnerability of human health risk. However, in such vulnerable rural areas in Japan, little strategies are linked with human and natural health hazards. To suggest adaptable strategies for post-disaster impacts, this study focuses on the effect of green infrastructure (GI) on human health in the vulnerable rural area in Japan.

Methods: This study applied an ecological study to four disaster-affected areas for comparing the effect of GI management with the change of human health status (stress, self-reported health: SRH) during the pre-post disaster event.

Results: Among social activities, green management activities marked the highest ratio, where incorporating GI after the disaster. This studies also found service of GI worked effectively for SRH; the index of the SRH of residents living in more green spaces marked higher than in lower ones. Also, in the area where green or nature-hybrid seawall was built, the ratio of respondents feeling living worth increased.

Discussion: Residents' health status in GI implemented areas was higher than those in not GI implemented. This study suggests, by incorporating GI into post-disaster recovery, how local communities could adapt human health hazards and enhance their health status. In conclusion, GI management will effective to improve human health in the post-disaster reconstruction.

Keywords: green infrastructure, human health, climate change, environmental management

Climate Justice & Civic Action

Climate justice and extinction rebellion

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As global temperatures rise and the need for mitigative action becomes increasingly urgent, the world's governments continue to prevaricate and procrastinate. While most people either maintain an attitude of naïve optimism or fall into a hopeless pessimism or fatalism, others grow increasingly impatient. Driven by rage against the social system that has brought us to this state, and by grief for both the human and non-human life that has already been lost and will be lost, a rich variety of forms of collective action has arisen and is beginning to make a difference across the planet. This paper makes a modest attempt to document some of these forms of action and to assess their potential for future growth. In particular, it focuses on Extinction Rebellion (XR), because of the latter's emphasis on a new kind of politics, involving forms of non-violent direct action and civil disobedience. It will place XR within a tradition of 'non-violent revolt' (Engler and Engler 2016) and show how XR is a concrete example of a politics that 'leads toward the Earth and not toward the global or the national' (Latour 2017).

Keywords: rebellion, terrestrial, rage, grief

Climate diagnosis: Framing congruence among climate justice organisations

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Introduction: Organizations working to address climate justice are concerned in various ways with how the issue of climate change caused by increased greenhouse gas emissions are impacting countries in the Global South. While they share this common interest, it is not always the case that organizations concerned with climate justice publicly identify the same problem(s) and the same cause(s) of climate injustice. The ways in which actors discuss the problems they seek to address are known as diagnostic frames (Benford and Snow 2000).

Methods: To test the level of congruity of diagnostic framing across 10 climate justice organizations in the Global North engaging in solidarity campaigns, data was collected via 43 publicly displayed online sources that serve as public communication tools for these organizations.

Results: The results, following an analysis of 649 individual instances of coding, demonstrate a wide range of diagnoses across organizations with some shared emphasis on targeting business interests and market solutions for the mitigation of and adaptation to climate change.

Keywords: climate justice organisations, framing, social movements, solidarity

Climate justice: discourse and social movement

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Climate Justice is both a discourse and social movement that emphasizes the ethical dimensions of climate change. It recognizes that climate change must be addressed not only as a biophysical problem, but as a political and social justice issue. In this review, we track the trajectory of the term and the ways in which it has been mobilized by activists, policymakers and academics to address various forms of inequity across multiple scales. Key discourses of the field include: historical responsibility of industrialized countries and therefore the need for those countries to reduce emissions first; per-capita equity, a proposal for an equal share in greenhouse emissions and emissions allowance; the development rights framework (rights based approach), which allows a basic level of development for all people, charging countries that develop beyond that level; adaptation and the protection of vulnerable communities – recognizing the right to live with minimal climate impacts; respect and protection of human rights and Indigenous rights; and safe mitigation strategies that don't place additional burdens on already vulnerable communities. More recently the term has been associated with demands to keep fossil fuels underground and proposals for a just transition from fossil fuels toward renewable energy based economies, with varying levels of community control. Climate justice is also a contemporary social movement, drawing together a diverse group of actors and organizations (environmental organizations, social justice, youth, Indigenous Peoples, labor, academics and others), in strategies and with implications distinct from collaborations mobilized around other environmental issues. Our systematic analysis of climate justice as a discourse draws on an extensive database of scholarly articles. We juxtapose our narrative of development and change in climate justice discourse with the evolving set of social movement stakeholders and strategies, by combining the scholarly database with key grey literature (reports and documents) produced by climate justice organizations.

Keywords: discourse, social movement, review

Coal mining, climate justice and environmental law in South Africa with specific reference to the Somkhele coal mining case in Zululand, KwaZulu-Natal

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This paper tells a true David versus Goliath tale with law and community activism at its core. Tendele Coal Mining (Pty) Ltd (Tendele) has been operating since 2007 on the border of the famous Hluhluwe-iMfolozi Park, a premiere tourism destination and sanctuary for the threatened White Rhino. It is also an area rich in tradition and heritage for the Zulu people, where King Shaka lived as a boy and grew into the formidable warrior that forged the Zulu nation. It is home to thousands of people who have been forced to relocate or are living on the edge of the mine, struggling without water or land. The Mfolozi Community Environmental Justice Organisation (MCEJO) is a community organisation in the area that formed in response to the ever increasing hardships of living next to an open cast coal mine. MCEJO has over 4000 community members, with more joining every day as Tendele attempts to claim more land for its open cast mining operations. Kirsten Youens of Youens Attorneys has been acting pro bono for this community in bringing Tendele and the South African government to book. With two cases before the High Court already and more to come, this paper will describe the process, the difficulties and the incredible community mobilisation over the last two years as Youens and her clients defend climate, environment and human rights against big industry.

Climate Justice & Food Security

Socio-cultural dynamics in climate change adaptation: A review of climate smart agriculture among small-scale farmers in sub-Saharan Africa

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Climate-smart agriculture (CSA) is widely gaining acceptance as a promising approach in tackling the challenge of food insecurity threatening the ever-growing world population under a changing climate. However, it is a usual experience for many developing countries to discover over time that concepts which have been recommended as solutions to existing problems are not suitable in their context. This study carried out a systematic review of CSA in small-scale agriculture in Africa; looking at the need for CSA, factors influencing its adoption among small-scale farmers and the challenges involved in understanding and scaling up CSA among small-scale farmers in Africa. There is evidence from the literature showing a high level of vulnerability of farmers in Africa, especially small-scale farmers, to climate change due to their level of dependence on weather and climate sensitive resources. The need to cope with highly variable and unpredictable climatic conditions has necessitated the adoption of innovations such as CSA for improved productivity and mitigation of climate-related risks. Findings reveal that farmers enjoy a variety of benefits from CSA by adopting some climate-smart practices as multiple strategies, while factors such as age, farm size, nature of farming and access to extension services influence CSA adoption. Findings further show that many investments in climate adaptation projects have met with little success because of the sole focus on technology oriented approach, thereby resulting in the transference of innovations to farmers with limited understanding of the local context under which the farmers operate. CSA is faced with the challenge of lack of conceptual understanding and limited enabling policy and financing. This study argues that the prospects of CSA in small-scale agriculture rests on the capacities of farming households for adoption and implementation. Transfer of innovations should be done with adequate understanding and consideration of the local context of farmers.

Keywords: adoption, Africa, climate-smart agriculture, small-scale

Agriculture adapting to a changing climate in the south-eastern USA

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Under predicted climate change scenarios Tennessee and the south-eastern USA will experience more floods and more droughts. Researchers and extension personnel at the University of Tennessee Institute of Agriculture in collaboration with Tennessee Technological University, University of Memphis, Middle Tennessee State University and the University of Tennessee at Martin are working closely with landowners, farmers and other stakeholders across the state to provide practical and cost-effective strategies for both crop and livestock producers to manage their agricultural operations during times of rainfall deficient and droughts. The goal of this integrated research, extension and education project is to increase the resilience of agricultural production in the Tennessee by promoting the adaptation of agricultural production to climate-related changes in water availability and growing conditions, while reducing the extent of water resource degradation associated with agricultural production. We are modelling changes in surface water hydrology and flood frequency under different climate change scenarios, and changes in ground water resources with the anticipated increase in future irrigation needs. Surveys have been conducted to measure the willingness of agricultural producers to change production practices and patterns in light of changes in water availability and the effects of such adoption on water availability and estimated the economic impacts of changes in water availability. A programme of on-farm demonstration and farmer education events has been initiated to identify and evaluate the agricultural practices such as the use of no-till systems, cover crops and irrigation to increase soil resilience in row-crop systems, use of biochar to rehabilitate sandy deposits left after floods and the adoption of native warm season grasses for pasture based livestock systems for Tennessee agriculture to adapt to climate related changes in water availability.

Keywords: agriculture, droughts, floods, soil

Resolving Climate Injustice in the Middle East

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In the Middle East, the rapidly changing climate exhibits reduced rainfall, increased temperature and frequent extreme heat events as well as the rise in sea the Mediterranean Sea water level. The extreme weather ranks at the top of the regional risks, affecting the ecosystems; the biodiversity, the seas, river and the food chain. Inland lakes and reservoirs are especially showing a significant decline in the available quality and quantity of water, affecting human health, the economy and the regional security. The climate change is exacerbated by political turmoil and deficient governance, missing sound legal, political and administrative structures for effective management of the scarce resources, preventing a positive response to the basic needs of the population. The failure to address issues of public health, food shortage and rising prices have led to conflicts, social instability and the “Arab Spring” uprising which incited armed conflicts and humanitarian crisis, followed by mass migration of “environmental migrants” to Europe.

Against this background, the capacity of the region to safeguard a good access to resources which seems to be beyond reach and of a great challenge will be presented, highlighting the region ability to probe and abate the risks, facing issues and dangers that will shape the regional agenda in the years to come. In line with the UN SDGs, seeking a mitigation to the climate change and remediation of the eroded socioeconomic issues, advanced and sustainable management of water and energy resources will be demonstrated, lifting barriers to building climate resilience and rippling multiple benefits related to health, food security and the socio-economy. The essential interstate and regional cooperation and the international support to create a platform for tolerance and means to diffuse conflicts and confrontations will also be examined.

Keywords: middle east, social impacts, natural resources, regional cooperation

A comparative analysis of sustainable coffee farming for environmental sustainability and socioeconomic justice in Vietnam

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Vietnam is the world’s second-largest producer of coffee and the Central Highlands of Vietnam is one of the main regions for coffee production. However, climate change, particularly rising temperatures and irregular rain patterns, is beginning to impact the sustainability of farms across the region. This study attempts to examine the history of coffee farming in Vietnam, particularly in Lam Dong Province, followed by an analysis of the current social, economic, and environmental sustainability of coffee production in three areas – Da Lat city, Di Linh and Lac Duong districts, a representative of the varying geography of the province. The study also presents the current state of sustainable coffee production in three regions of Lam Dong Province with respect to the projected climate change and its impact on coffee production. The study reveals that sustainability of farming in the Central Highlands appears to increase with elevation. The higher elevation regions of Lac Duong and Da Lat, where conditions are suitable for high quality Arabica coffee production, yielded the highest average sustainability scores and had less dependency on pesticides or high-volume of Robusta production in lower elevation regions.

The findings suggest that despite Arabica coffee’s higher susceptibility to changes in temperature and precipitation patterns, if grown on a biodiverse farm, it is more sustainable than that of Robusta production. The farmers in the higher elevations of Lac Duong and Da Lat who were producing Arabica coffee, were less dependent on fertilizers or mass volume production that was characteristic of farmers in Di Linh, and reported higher means of economic, social, and environmental sustainability.

Keywords: coffee production, environmental sustainability, socioeconomic justice, Vietnam

Climate Justice & Health

A Critical Analysis of Climate Change and Mental Health Literature: Recommendations and Lessons Learnt for addressing Climate Induced Disasters

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Worldwide, there has been a significant increase in climate induced disasters. Given the rise, resilience and adaptation concepts have gained extensive use in scholarship and practice, yet definitions, measures and uses of climate resilience in the context of mental health remain complex and multifaceted. One concept receiving little attention is mental health within the climate change debate. Given the complexities of climate induced disasters and the intersection of climate resilience, it is imperative that scholars and practitioners are at the forefront of critical discourse about mental health within a climate change context. The purpose of this paper is to present findings from a systematic literature review that seeks to identify how communities affected by and/or vulnerable to climate induced disaster can increase mental health resilience to future climate induced disaster events. NVivo was used to organize and analyse the literature. The exploratory search was guided by questions focused on measures exploring climate change and mental health within the context of climate related disaster events. Of the 6,250 documents collected and screened, 65 documents were coded and analysed at Tulane University's Disaster Resilience Leadership Academy. Several unique themes were identified. The presentation emphasizes the importance of the concept of trauma as a link between mental and medical health. It is noted that the lasting impact of climate induced disasters can affect the overall functioning of individuals, families and communities, creating secondary effects that could hamper mental health recovery. Much of the presentation focuses on human trauma resilience and the psychosocial recovery needs that also bolsters climate resilience for the recovery and beyond. The presentation argues for a more systemic approach to promoting long-term climate resilience among individual, family and the community. These findings presented is unique by contributing new knowledge on disaster resilience to the understudied field of climate change and mental health.

Keywords: climate change, mental health, resilience, disasters

Living with change: Water, emotion and wellbeing among Afar pastoralists

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In regions such as the Afar, Ethiopia, recent political, economic and climate trends have stressed the resilient capacity of pastoralist communities leading to acute water insecurity. This paper investigates the wellbeing and mental health consequences of living under this state of environmental change. It presents a novel way of understanding these issues through the development of a locally-derived 'lexicon of emotions', which is used to assess the emotional consequences of acute water insecurity. Emotion theory suggests the frequency and intensity of emotions such as joy, anxiety, sadness and anger can make life's experience either positive or negative, and repeated emotional states are associated with mental health problems such as anxiety and depression. Through a multi-staged qualitative study involving 48 focus groups and interviews, the research highlights that worry, fatigue and hopelessness are the most commonly given emotions that pastoralists use to describe their water security situation. The research discusses the potential causes and consequences of this situation, and also considers how emotions may shape specific secondary dangers in the region, such as the violence and conflict over water resources that can occur in the pastoralist regions.

Keywords: emotion, water, pastoralists, afar

Indigenous health and wellbeing: A new approach to climate change adaptation?

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Introduction: this paper argues for a new approach to climate change adaptation that is focussed on indigenous health and wellbeing. This approach highlights how issues of injustice are woven into indigenous experiences of climate change, and how adaptation might afford opportunities for advancing justice, health and wellbeing. Methods: political ecology and postcolonial theory is used to analyse international climate change adaptation case studies as a means to develop a new conceptual framework "Climate Adaptation for Indigenous Wellbeing". This framework advances Indigenous peoples' aspirations for actions to address the ongoing socio-economic, political, cultural, and environmental injustices they face in the context of changing climate conditions.

Results: the paper outlines the merits of a focus on indigenous health and wellbeing in climate change adaptation. First, it draws attention to the consequences of climate change on indigenous communities, highlighting how losses to health and wellbeing will be experienced, and how these losses compound existing injustices. Second, it makes visible the social and political construction of climate change vulnerability, whereby the marginalization, trauma, deprivation, exclusion and decreased wellbeing that indigenous communities experience renders them more vulnerable to harm from climate change. Third, it opens up new possibilities for adaptation as a site of justice, health, wellbeing, even healing.

Discussion: this approach to adaptation is novel. Dominant scholarly approaches to adaptation are scientifically driven, and often overlook the social, cultural and ethical dimensions of climate change. And while a growing pool of social science scholarship examines transformational adaptation, adaptive capacity building and representation, consideration of health and wellbeing is under-developed. Strengthening indigenous health and wellbeing through adaptation may help ameliorate the socio-political causes and consequences of climate change vulnerability, reframing disaster to opportunity.

Keywords: adaptation, indigenous, wellbeing, political ecology

Public Health and Community Organizing in Response to Climate Disaster

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Public health principles such as health equity and community organizing are an integral part of the solution to addressing natural disasters that are occurring at an increased rate and complexity due to climate change. This presentation will provide a concrete example of partnership between local government and community-led coalitions for inclusive, participatory emergency planning. Discussion will highlight lessons learned from Superstorm Sandy in New York City, as well as opportunities to build community resilience in neighborhoods disproportionately bearing the burden of climate change.

Justice at the intersection of climate change and anti-microbial resistance

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This paper examines the intersection between the growing global threats of antimicrobial resistance (AMR) and climate change through a justice lens, considering to what extent the two issues have been or should be integrated in policy and research, through an exploration and analysis of peer-reviewed literature and public sector reports. Climate change has been described as a "threat multiplier" for infectious diseases (WHO, 2017), through multiple factors including spread of disease vectors, sharing of scarce water resources, increased exposure through flooding, and climate migration issues. Treatments are becoming less effective as pathogens develop resistance to antimicrobial drugs. Over-use of antimicrobials in human and veterinary care, drives AMR in people, in their food chains, and in the environment, in particular in countries which lack regulatory oversight and controls on antimicrobial prescribing and poor sanitation, which are often also those most at risk from climate change. The highest environmental concentrations of common antibiotics are A global study detected residues of common antibiotics in 65% of investigated environments, with the highest concentrations found in Bangladesh, Kenya, Ghana, Pakistan and Nigeria (Wilkinson et al., in press). Drug manufacturing plants contribute too, particularly in countries where environmental regulation is lax (Larsson et al., 2014). Vulnerable people, in particular those in developing countries who lack access to primary and secondary healthcare, are likely to be most at risk from combined impacts. Comparisons of scale and urgency between both global challenges have been made (e.g. Woolhouse et al., 2015), but their interconnectedness, which is woven into a complex web of anthropogenic environmental change, has received little attention to date and it is unclear whether impact projections have taken due account of compounding effects. A global governance framework for AMR, still in its infancy, takes cognisance of SDGs but does not frame AMR as a justice issue.

Palm oil companies, forest fires, health and labor market: Evidence from Indonesia

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Palm-oil is one important commodity in Indonesia and nowadays Indonesian is the largest palm-oil producers in the world, however, it may also cause a negative impact for the environmental and the society since palm-oil industries require extensive land clearing which often expropriation of land, cutting or burning of extensive forest areas. We examine the impact of the existence of palm oil companies on forest fires, health and labor outcomes in Indonesia. We employ matching estimator and we use representative survey data from The National Socioeconomic Survey (SUSENAS), administrative data hospitalization for universal public insurance (BPJS), and forest fire from Ministry of Forestry and Environment Statistics for the year 2014. We find that palm-oil-company significantly increase forest-fire land area, increase the probability of asthma, increase the probability of inpatient and significantly decrease decision to work. Larger negative health impact for children and elderly, more vulnerable group to forest-fire pollution. Forest-fire does not only increase inpatient for the asthmatic individual but also all another individual who experience general respiratory symptoms. While palm-oil companies are important industries in Indonesia, our finding suggests urgent government policy that can reduce forest fire in Indonesia. A policy that combines taxes to address externality problem and subsidy to support research and development of green technology to reduce forest combustion may be the critical approach.

Keywords: health, labor, welfare, environmental

How diverse senses of place shape adaptation to social and environmental change

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Coastal areas are sites of significant social and environmental change, exposed to changing demographic patterns and increasingly extreme weather events. They offer the opportunity to study planning and adaptation in rapidly changing social ecological systems. Here we present the findings from an international project MAGIC (Multi Scale Adaptation to Global change in Coastal areas) from data generated by a survey (n700) in sites in England, South Africa and France. We examined how diverse place attachments to local towns and properties shape risk perception and risk management preferences. We investigated how variations in place attachment and meanings amongst communities are related to variations in perceptions of risk. We compare the importance of attachment and meaning in environmental and social risk perception. Our findings demonstrate that place meaning and place attachments have varying influence on risk perception. Our work has implications for managing change in communities with diverse relationships with place, with particular relevance for risk managers and adaptation planning going forward.

Keywords: place attachment, planning, risk perception

The four horsemen of the Apocalypse - the nexus of justice, water, food and energy

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Climate justice is a new issue in terms of its aim to resolve an emerging and very complex set of problems, including woman empowerment, health and economic development, food and poverty, security and conflict. In addition, the added stressor of climate change is exacerbating deficiencies, particularly in the developing world. One of the key components to ensuring climate justice is the provision of safe and reliable water and sanitation services which, as agreed for the first time by the UN Congress in 2010, is a basic human right and forms part of SDG6.

This qualitative, ethnographic study explores water justice and the ethical issues that contribute to increasing water insecurity, exacerbated by climate change impacts and seeks to identify barriers to water and sanitation access and different approaches to water management, based on work carried out in Nigeria. It was identified that increasing economic water scarcity, globally and in Nigeria, is due to poor water management and resource insufficiency that has resulted from neo-liberalist policies that left governments in the developing world unable to provide water for all. Increasing populations, rapid urbanisation, industrialisation and deforestation, in addition to the effects of climate change have stalled efforts to modernise economies and achieve the infrastructure, technology and educational developments required to underpin climate and water justice, reduce conflict and ensure water security.

Radical self-care: the dire need for a sustainable, life-enhancing pace in the global climate crisis

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Introduction: There is a dire need for radical self-care for those who seek to promote climate justice. Around the world, individuals and communities are being affected by gradual environmental degradation and more extreme climate change events. Increasingly, vicarious trauma is experienced by those working with people who are immediately impacted by climate injustices. They are also further at risk as they may be personally impacted and/or experiencing their own eco-grief about the negative impacts the climate crisis is having on the planet and the people and places about which we care so deeply. Radical self-care may include ecotherapeutic practices, as well as staying connected to resources and networks which support one in actively working to address the issues that create the distress in the first place. As those who seek to stay informed and active in addressing climate justice issues through advocacy, research, education and practice, it is also critical to attend to one's own self-care in a radical way.

Methods: This presentation highlights a robust literature review and the best practices from the authors' professional teaching experiences (over 30 years combined) using an array of ecotherapeutic strategies and a novel model of a 'sustainable, life-enhancing pace'. Specifically, these strategies aim to improve the health and mental health impacts of the compounding factors of the climate crisis, modern technology, and the current political context.

Results: The application of radical self-care strategies have shown positive results in the lives of practitioners and students. These strategies are found to be essential for recognizing, legitimizing, and addressing the need for radical self-care practices in the global climate crisis.

Discussion: An in-depth discussion on radical self-care strategies offers the audience tools to apply in their own lives, as well as to share with others.

Keywords: radical self-care, eco-therapeutic practices, sustainable life-enhancing pace

Does mental health matter in the face of our climate emergency?

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Climate change affects physical well-being in a number of well-understood ways. This is reflected in the fact that most "climate-proofing" adaptation efforts focus on protecting our physical health. The impact that climate change has on mental health is far less understood, but the emerging field of climate psychology aims to shed light on this relationship. From the limited studies available at present, the evidence suggests that the impacts which climate change has on mental health can be devastating; depression, anxiety, post-traumatic stress disorder and suicide are commonly cited mental health outcomes. The notion of a link between mental and physical health was first advanced hundreds of years ago, and modern evidence from the fields of neuropsychology and medicine have demonstrated that mental health impacts physical health in numerous ways, to the extent that severe mental illness can reduce life expectancy by decades. Climate change is a global issue, as are the mental health impacts associated with it: thus, mental health issues as a result of climate change may represent a worldwide public health time-bomb. This presentation concludes by identifying the most pressing knowledge gaps, suggestions for how to start closing these gaps, and possible paths to recovery.

Climate Justice in Cities

Urban foreshore as an economic resource: building resiliency amidst the potential impacts of climate change

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The Philippines possesses one of the longest coastlines in the world equivalent to 36,289 kilometers. In 2000, more than 64.7 million or 60 percent of the country's population reside along the coast. There are 64 (out of 79) coastal provinces, 822 (out of 1,502) coastal municipalities, and 25 major coastal cities (Philippine Statistics Authority, 2000). The Philippine foreshore provides the coastal habitat with ecosystem services such as regulating, provisioning, supporting and cultural. However, it is beset with resource use issues, challenges and conflicts to include jurisdictional and ownership conflicts as well as institutional overlaps; illegal occupancy and construction of structures; and weak enforcement of foreshore laws and policies.

This paper characterizes the foreshore of the five coastal cities of the National Capital Region (Metro Manila) by unlocking the opportunities and constraints to urban foreshore utilization and management; defines the *raison d'être* of managing the urban foreshore; and develops a spatial planning model of building urban foreshore resiliency through foreshore land zoning and co-management arrangements. The study revealed that the coastal hazard risks posed by climate change are emerging and urgent constraints to safety and security of coastal habitat and viability of coastal resources and need to be mainstreamed in urban foreshore planning, development and management. The susceptibility assessment disclosed that the coastal cities are generally susceptible to flooding, typhoon, storm surge, ground shaking and liquefaction. As a response mechanism, two foreshore development and management zones for the coastal cities are identified such as the Conservation and Protection Management Zone and the Leisure, Recreation and Tourism Management Zone. The urban foreshore management guidelines established for these zones are envisioned to sustain the character and value of the urban foreshore as an economic resource as well as build the resiliency of the coastal cities of Metro Manila.

Keywords: urban foreshore, coastal hazards, spatial planning, resiliency

The current redevelopment of New York City's urban waterfronts: Resilient or paradoxical?

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Introduction: New York City is one of many cities worldwide that is suffering under the consequences of climate change. In recent years, a general awareness for the dangers of climate change and its potential impact on the built environment of the coastline has grown. Yet we see a simultaneous growth of large development projects on the vulnerable coastline of New York City, not considering the future threat of floods and storms, social diversity or residential affordability. How are these developments resilient and are there more favourable alternatives?

Methods: This paper will show the spatial analysis of New York's industrial waterfronts and will use the complex area of the Coney Island Creek in the south of Brooklyn as an exemplary case of needed transformation and adaptation to answer to imminent environmental and economic changes. The research will analyse the building block as a functional entity and the waterfront as a linear element, deriving from following parameters:

- Spatial analysis at the intermediate scale (geometry of the grid, configuration of the street wall, building typology)
- Analysis of external parameters that impact the built environment (economic activity, climate change and local stakeholders)

Results: This method of analysis will identify the qualities of built environment adjacent to water, compared to more inland spatial configurations. The research on external parameters will unveil the necessity of social diversity, affordable housing and employment opportunities for low-educated workers. Discussion: What would be an improved alternative to tackle the redevelopment of vulnerable industrial waterfronts? Can spatial redevelopment derive from an area's existing qualities and strengths, countering the current trend of mere demolition and rebuilding from scratch? What can we learn from the current situation and how can we use this knowledge as architects and urban planners to design more resiliently, responding to the imminent threats for specific coastal locations?

Keywords: collective spaces, spatial transformation, vulnerable waterfronts, climate justice

Increased exposure of the value chain of peri-urban wetlands' ecosystem to climatic events and the wellbeing of urban poor in coastal Bangladesh

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The value chain of peri-urban wetlands is now well integrated with the urban marketplaces. As most part of the value chain is linked with the urban system more urban poor than rural poor get benefit. However, hardly these have been studied in Khulna- the coastal metropolis in Bangladesh. Therefore, this research is aimed to address, first to identify the linkages between the wetland governance system and the value chain of wetland products where urban poor fit themselves; second to examine the process where the urban poor are disproportionately affected by the value chain of peri-urban wetlands' ecosystem services impacted recurrently by climatic events. The study is conducted taking Khulna metropolitan region as a case. The earth system governance framework (in part) is used as the basic methodological framework to examine the coastal socio-ecological systems where the peri-urban wetlands' value chain operates. The effects of the impacted value chain of wetland ecosystem services on the wellbeing of urban poor are assessed mainly through the use of participatory tools. Initial result shows that in an open access system of peri-urban wetland where mostly the poor and marginalized resource extractors engage, the produced are locally consumed and their value chains are too short. For collectively managed peri-urban wetlands, a significant portion of the produced ultimately find their ways in the urban marketplaces which benefits both the urban and rural poor. Finally, privately governed peri-urban wetlands especially the large one having competitive advantage of producing high value produces are linked with the urban markets both locally and internationally. Although all wetlands are heavily exposed to climatic (extreme) events the impacts of degradation of value chain of peri-urban wetlands are mainly felt by the urban poor. Addressing this requires a separate set of policy intervention which this study has explored in some details.

Keywords: extreme events, value-chain, urban poor, wetland

Equilibration: Pathways to a more inclusive city in the midst of climate change

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Introduction: Striking a balance between inclusivity of decisions and policies vis-à-vis rights of the poor to the city is a task governments continue to struggle with. With the enactment of the Climate Change Act of 2009, climate change is integrated into various levels of planning, making plans more climate-resilient. Local level plans emphasize addressing adverse effects of climate change to planning.

Methods: The research seeks to assess the legal framework for climate change and disaster risk reduction, determining whether the framework promotes climate justice. The research assesses whether government interventions provide an enabling environment for the marginalized to enjoy their right to the city. As a qualitative inductive study, this research follows the case study approach. The research, aimed at exploring the implications of climate change intervention, focused on the City of Manila as case study.

Results: Manila City suffers the problem of relocating informal settlers from danger zones around the city to resettlement sites in various locations within and outside of the city. Resettlement is recognized as an adaptive strategy that greatly reduces the vulnerability of informal communities. The Urban Development and Housing Act of 1992 ensures the proper and humane relocation of displaced communities; however, lack of land for the development of socialized housing has led to the practice of resettling to neighbouring cities.

Discussion: Part of climate change integration is ensuring the safety of communities to climate change. These include identifying risks and hazards of a locale, entry points for integration, and institutionalizing them into programs and projects. Integration also puts into perspective rights of the marginalized poor, which hinges on the idea that no one is left behind in all aspects. A seemingly just intervention of being geographically relocated from one's economic activities and social network now serves as catalyst in the aggravation of social inequality.

Keywords: right to the city, neighbourhood, inclusive city, climate justice

Institutional drivers of disaster risk reduction and adaptation at the local scale

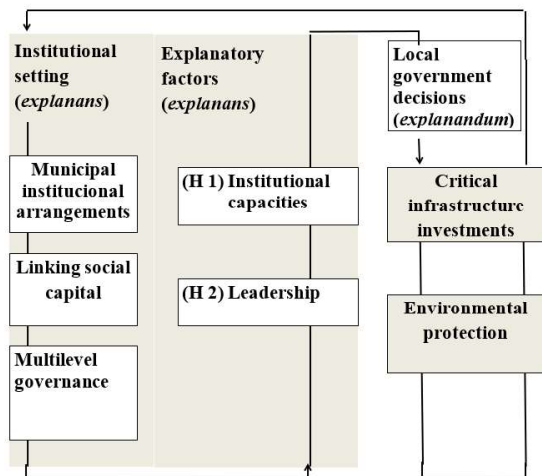
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The local scale is important for disaster risk reduction and adaptation because most human experiences and decisions related to sustainable development happen at the local level. At this scale, human security and quality of life depend partly on how local governments provide public goods and services. Local governments can avoid catastrophes through their participation in efforts to build critical infrastructure, such as flood-proof roads or resilient water systems, and other relevant conditions for sustainable development.

The focus of my work is to find institutional settings and factors that foster proactive local governments' interventions in critical infrastructure investments and environmental protection. I propose hypotheses around the effects of institutional capacities and policy leadership under beneficial conditions of key institutional settings (e.g. transparency, organization, linking social capital, and multilevel governance relationships), figure 1.

Figure 1: Figure: Conceptual framework



My research examines these ideas using mixed methods (qualitative and quantitative), and unique over-time observations in almost all Chilean municipalities (346) with data for the period 2009–2016.

The evidence helps to reach a deeper understanding of the complex institutional dynamics that shape decisions. Explanatory institutional factors identified by previous research as linear effects on local government decisions actually operate in a more complex way as components of interconnected institutional settings that induce decisions. A deeper understanding of local government decisions can emerge only when dimensions and factors are considered in a dynamics multi-level perspective.

The findings of my work can be used to inform future studies and interventions by providing theoretical and empirical justifications for selecting variables to include in the analysis. Government and Non-Governmental actors, who are contemplating interventions, can use the methodologies and findings to design their own diagnostic analysis of the existing local institutional factors that may help or hinder specific interventions.

Keywords: institutional drivers, disaster risk reduction, adaptation, local scale

Urban climate responsibility in the Asia Pacific

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It is widely acknowledged that responding to climate change is an ethical responsibility as a means to develop socially and politically just climate outcomes. From one perspective, cities are framed as causally responsible for climate change in terms of generating significant carbon emissions while an alternative perspective highlights how they are also vulnerable to climate impacts such as flooding or heatwaves. It is therefore important to analyse how cities are responding to climate change, how the concept of climate responsibility is acknowledged and mobilised in city-based climate initiatives and the implications for equity and justice. This paper draws on a systematic literature review and a review of urban climate policies in cities across the Asia Pacific – a region characterised by high rates of economic growth and rapid urbanisation alongside widespread exposure to the effects of climate change. To date there has been a lack of comprehensive research and analysis in relation to the question of urban climate responsibility and virtually none in the Asia-Pacific. In interrogating the political and ethical issues associated with urban climate responsibility, the paper therefore considers the geographies of responsibility across the Asia Pacific region and provides insights into the regional dynamics of urban climate justice.

Keywords: responsibility, cities, asia-pacific

Addressing climate disadvantage in the post-industrial city - lessons from Glasgow and Pittsburgh

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The Industrial Revolution not only contributed greatly to global climate change but also redefined the social and environmental urban fabric of industrial cities. These cities experienced substantial loss of industry and employment from the mid-20th century, causing unemployment and depopulation as well as excessive vacant and derelict land, environmental degradation and the creation of areas of concentrated poverty. Disparity and inequality appear embedded in the former post-industrial redevelopment model. However now there is an opportunity and an acknowledgement that climate justice considerations must be at the core of future development to ensure the well-being of citizens and the viability of these urban areas. Whilst in the height of industrialisation, pollution meant prosperity; today it is increasingly important for cities to be climate resilient in order to succeed. Many post-industrial cities are now moving away from their histories of excessive emissions to become leaders on climate action. As such these cities pose rich research grounds for examining the interactions between physical, social and economic vulnerabilities to hazards through a climate justice lens.

This paper examines the current role of post-industrial cities in taking action on climate change in a just and equitable manner through two in-depth case studies. Research was conducted on the trajectories of both Pittsburgh and Glasgow. It explores trends of post-industrial decline and development and its relationship with climate disadvantage through spatial analysis, Local Climate Impacts Profiles, semi-structured interviews and policy analysis. Results provide insights into how the case-study post-industrial cities are acting to address inequalities and enhance climate resilience simultaneously. It identifies a set of recommendations for cities to mainstream and align their climate work with social justice initiatives. These findings will be relevant not only for current post-industrial cities but also those who face industrial decline in the near future and must consider just transitions now.

Keywords: post-industrial, Glasgow, climate disadvantage

Assessing the social equity of the use of urban parks

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Although green areas represent one of the main urban infrastructures, their distribution, access and use are unfairly distributed in most urban areas. The needs of vulnerable groups aren't sufficiently understood and taken into account when planning and designing urban green infrastructures. The aim of this study is to assess the access and use of urban parks, focusing on the needs and behavior of two vulnerable groups – children and elderly people – in relation with the ones characterizing the urban population. These vulnerable groups have restrictions regarding the access and use of green areas lacking the ability to travel over long distances or to change the use of different spaces.

The study was based on spatial analysis of the urban heat island and extensive surveys carried out in urban parks in Bucharest encompassing over 1000 questionnaires directed to all categories of visitors and around 400 questionnaires focused on children and elderly people. The surveys were conducted in warm sunny days both during the week and in weekends.

The study highlights the need for green spaces near residential areas, proximity and walkability being the main reasons for choosing the parks. The most appreciated services were those related with vegetation, like climate regulation, shadow, improving air quality, reduction of noise. The activities carried out by the two categories inside parks emphasize that part of the needed infrastructure could be used by both groups, fact which could simplify the planning process.

Optimally planning urban parks should increase the equity in the distribution of ecosystem services between different categories of visitors. Particularly, all categories of population could benefit in greater and equal measure by climate regulation services, very important in large cities affected by urban heat island and by excessive climate, like Bucharest is.

Keywords: climate regulation services, children, elderly people, urban parks

Climate Justice & Global Governance

Climate change governance and the allocation of risks, rights and responsibilities

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Policy inaction on climate change represents a major global challenge. Despite broad international agreement on what needs to be achieved and the setting of global targets, policymakers have almost universally failed to implement policies that are consistent with their own stated principles or agreed targets. While climate change poses a risk to the entire planet, it is the differential sources and impacts that create political complexity and amplify global inequality.

This paper reviews the substantial literature on the allocation and shifting of risk, rights and responsibility for climate change, finding that the predominant focus to date has been on efforts to allocate risk and responsibility from a multi-lateral top-down perspective, according to assumptions about rights to global resources. As the international regime shifts to a bottom-up approach under the Paris Agreement, with states making voluntary emissions reduction pledges, the paper identifies gaps in the social science literature. In particular, there are few studies that seek to understand how particular definitions of risks, rights and responsibilities come to prevail in specific political arenas, or how they serve to normalise some policy responses while excluding others from consideration.

The paper goes on to review current literature on sustained policy under-reactions - a nascent field emerging from political science scholarship on policy disproportionality that challenges the notion that policy under-reactions are necessarily a consequence of cognitive errors related to bounded rationality, but rather are the result of deliberate and strategic policy decisions. The paper focuses on the policy narratives that attend this process in one political arena – that of New Zealand, discussing initial findings from frame analysis of political leaders' speeches and releases, identifying further opportunities for study and research.

Keywords: risks, rights and responsibilities, climate change governance, policy disproportionality, sustained policy under-reactions

Youth Climate Leaders

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Climate Change is the biggest challenge of our century, and still, there is a lack of climate change education all over the world. Our generation is the first one to have all information to understand what climate change is and the last one that can manage to do something about it. Due to the whole complexity of this challenge, climate justice must be integrated into every single action regarding climate change, and the Youth Climate Leaders (YCL) wants to play an important role providing climate change education to young people from all over the world. We offer a trip around the world to learn more about climate change, in theory, understand it in practice, and work on hands-on projects with other young people. We combine three empowering experiences: travelling, coaching and networking. We work with those concerned young people which still have not had the opportunity to see how they can act in practice to tackle climate change while learning more about themselves. And with our network, they will be able to join forces and leverage their impact in the following years, ensuring that their local efforts are part of a larger global movement.

After working with so many young people from all over the world, we can show in the Forum their concerns, actions, fears and hope! Bringing awareness and raising their voices to show how important is the inclusion of youth in the field of climate change. In this context, climate justice is one of our best allies to provide space for youth.

Keywords: youth, education, empowerment, opportunities

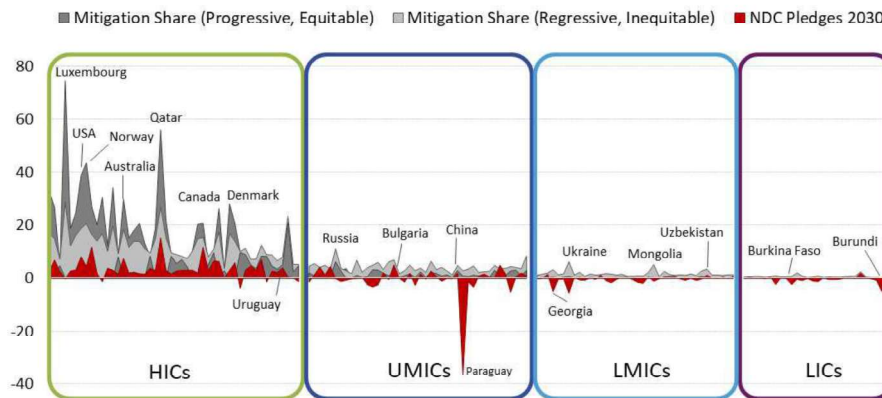
Climate-resilient development pathways rehumanize 1.5°C warmer worlds

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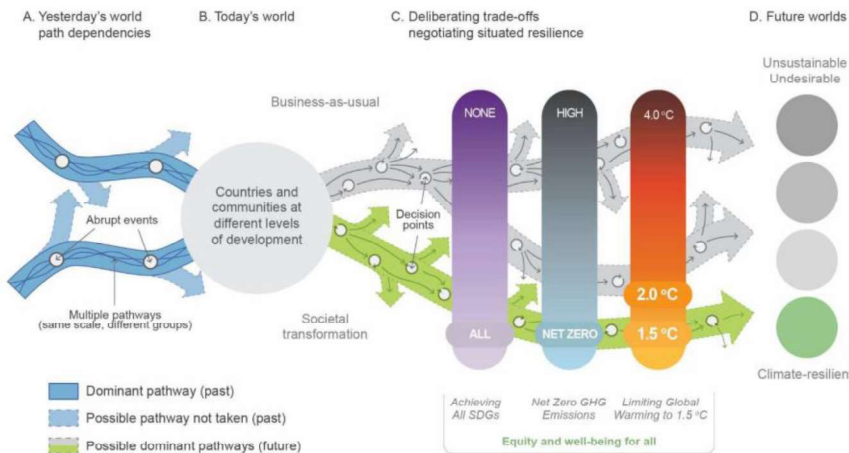
Emission reduction pathways to limit global warming to 1.5°C above pre-industrial times will avoid risks associated with higher levels of warming; yet, ambitious mitigation creates its own risks, when it jeopardizes national and local efforts to eradicate poverty, end hunger, reduce inequalities, and address other aspects of the 2030 Sustainable Development Goals (SDGs). While quantitative climate models describe possible climate futures, including pathways for rapid emission reductions, they represent neither the profound historical development differences between nations and communities nor their visions and capacities for moving towards socially desirable and politically feasible post-carbon societies. Here we show grossly imbalanced starting positions between and within countries at different levels of development and well-being as they embark on 1.5°C-compatible pathways. We underscore the pervasive nature of inequalities between affluent and poorer countries regarding poverty, hunger, vulnerability, (in)equality, consumption expenditures, emissions, and happiness and well-being. Many of these dimensions of inequalities are entrenched, reflecting uneven patterns of deprivation and historic disadvantage. Furthermore, and arguably most unsettling, the emission reduction pledges of most affluent nations do not reflect equitable shares, despite their privileged positions (Figure 1).

Figure 1:



Our results demonstrate that, given the multiple and systemic inequalities that continue to exist between and within countries, trade-offs between ambitious and just mitigation and adaptation and ensuring well-being for all will be exceedingly difficult. Equally difficult will it be to expedite the equitable societal transformation needed to resolve these trade-offs. To address this fundamental justice challenge, we outline core features of climate-resilient development pathways, understood as normative and equitable decision-making trajectories where these trade-offs are deliberated and place-specific resilience is negotiated and also contested (Figure 2). Such a people-centred approach rehumanizes 1.5°C warmer worlds and recognizes people’s differential needs, values, rights, and aspirations on the transformational path toward a climate-resilient future.

Figure 2:



Keywords: development pathways, inequalities, trade-offs, climate resilience

“Youth is not a political position”: Claims-making and intergenerational justice for youth participants in global climate change governance

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This paper responds to recent calls for research into who is raising justice claims and to what effect in global climate governance (Bulkeley et al, 2013; Klinsky et al., 2017). It explores the justice claims of an understudied constituency of the United Nations Framework Convention on Climate Change (UNFCCC): Youth NGOs (YOUNGO), using longitudinal ethnographic methods to track the evolution of claims made by youth participants between 2015 and 2018 (including COPs 21, 22 and 23 and intersessionals in between).

We find that youth are initially drawn to the UNFCCC by perceptions of intergenerational injustice but, over time, this is diluted by the dominant discourse of intergenerational justice at global level, which silences intergenerational claims, embarrassing youth for having raised concerns about their futures on account of their current privileges. We present an analytical framework to distinguish between types of justice claim and the authority they hold, and discuss the implications of this for claims-making by non-state actors in the UNFCCC. We propose that a more pluralistic understanding of justice is needed in order to recognise the diversity of voices therein.

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Keywords: youth, intergenerational, claims-making, UNFCCC

LDCs: Carbon budget and climate justice among nations

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Climate change is recognized, monitored and researched by broad sectors of the scientific community and considered one of the greatest challenges of the current century. From this vast and transdisciplinary topic, it was argued, based on the theories that discuss Hegemony and the relationship between Core-Periphery, how the narrative of dominant countries is being used under the context of climate change. The analysis took place from inducted method based on study case, collecting data from primary and secondary sources. Core countries have been constructing their arguments, such as the “excusable ignorance”, in order to reduce their responsibility and blame of all the potential damages provoked by CO₂ emissions since industrial revolution. Those living in developing world, who gives the lowest contributions to climate change, are suffering the most. Peripheric nations, as those from the Least Develop Countries (LDCs), are already facing climatic challenges under vulnerable conditions, therefore, LDCs shall reconsider hegemonic narrative spread by Core countries during climate negotiations. One important outcome from Paris Agreement is the need of a broad cooperation in terms of mitigation expressed by the Intended Nationally Determined Contributions (INDCs). According to the Paris Agreement every UNFCCC Party should take voluntary mitigation targets and actions through international aid or by self-investment. Through the understanding of historical emissions, climate justice and carbon budget, it was argued that LDCs should not consent and assume the narrative that every country has responsibilities to mitigate emission from 2020-30, taking such charge only from the medium-long term. Therefore, LDCs whose historical CO₂ contribution is negligible, should not assume any immediate actions to mitigate emissions as proposed by their INDCs. According to climate justice and carbon budget, LDCs must seek better socio-economic standards rather than investing in the short-term their scarce financial budget to fight against a crisis made by Core countries.

Keywords: least developed countries, climate justice, hegemony, carbon budget

How equitable are greenhouse gas emission entitlements in the Paris agreement? Overcoming politics of knowledge in international climate governance

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While the landmark Paris agreement negotiated by 195 countries under the auspices of UNFCCC COP21 meeting provides a bottom-up voluntary framework for nation-states to commit to reduce Green House Gas (GHG) emissions through so-called “Nationally Determined Contributions” (NDCs), these commitments do not necessarily appear to be equitable in terms of allocation of GHG emission entitlements in the global atmospheric commons. Although Paris Agreement stipulates measurable, reportable and verifiable nationally appropriate mitigation commitments on a “common but differentiated” basis, the NDCs submitted by the nation states are symptomatic of “grandfathering” decision heuristic, i.e. high emitters like US and oil producing countries will gain a substantially large allocation in the global GHG budget determined through running 1.5C and 2C above pre-industrial policy targets in Global Climate Models. Using a critical policy analytical lens of politics of knowledge, this paper explores two inter-related questions: (1) Why high emitting countries are naturalizing grandfathering as a decision heuristic? (2) How equitable are GHG emission entitlements in the Paris Agreement? In this context, this study undertakes a comparative analysis of GHG emission allowances that will be available to each country of the world under Paris agreement negotiated “grandfathered” NDCs and GHG per capita decision heuristic for assessing the climate justice implications of the emerging international climate policy under the Paris agreement. Preliminary results indicate that there is a wide discrepancy between NDC and GHG per capita allocation principle. This discrepancy however varies from country to country. Implications of these findings for improving global climate justice are explored, such as provision of specific GHG emission reduction targets for raising ambitions, design of an international emission trading mechanism and funding loss and damage mechanism.

Keywords: global climate justice, greenhouse gas emission entitlements, politics of knowledge, climate governance

Non-state climate change action: Hope for just response to climate change?

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Although states continue to work together to act on climate change under the United Nations Framework for the Convention on Climate Change (UNFCCC), most recently by ratifying the Paris Agreement, their response has so far been agonisingly slow-paced. With temperatures rising and climactic changes taking hold across the world, it is increasingly apparent that not enough is being done. In October 2018, scientists at the Intergovernmental Panel on Climate Change (IPCC) warned that the world has twelve years remaining to change the course of climate change policy and avoid a 1.5°C rise in global mean temperatures. Climate justice scholars are acutely aware that an inadequate response to climate change will have significant impacts on human rights and worsen existing patterns of inequality across the globe. And yet, there is some room for cautious optimism. A growing ‘alternative response’ is taking shape at the non-state level. Cities, corporations, nongovernmental organizations, and even individuals are said to have significant potential to contribute to the climate change response. This paper examines the potential of non-state actors by asking whether non-state actors offer hope for a just response to the climate change problem. The paper puts forward non-state actors are not only capable of lowering emissions and/or contributing to adaptation efforts, but more importantly are capable of significantly shifting the context of climate change action. This capability is imperative if we are to implement the wide-scale system change that the newest IPCC report calls for. In this sense, the paper concludes that non-state climate change responses (cautious) hope for a just response to climate change at a time of floundering multilateral action.

Keywords: non-state actors, climate justice, climate change governance, transnational actors

Levels of Climate Action

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Climate action of different sorts is possible for national governments, for individual persons, and for various other intermediate agents – collective agents operating at a subnational level, such as regional governments, cities, corporations, and non-government associations of various kinds. This paper examines the relationship between agency and responsibility at these three levels: national, intermediate, and individual. It begins with a simple three-way distinction. The principal climate duties of national governments are duties of difference-making: duties to perform actions that themselves will make a significant difference to the welfare of future people. The principal climate duties of individuals are duties of participation: duties to join in those larger-scale collective actions that can address the problems of climate change, in whole or part. The principal climate duties of intermediate agents are duties of influence: duties to perform those actions that, through incentive and example, can influence national agents to do what they should. The paper examines the adequacy of this distinction, and asks how duties of these three kinds interact – in particular, how the content of our individual duties of participation are shaped by the content of the duties that apply to higher-level collective agents, and by whether they are being discharged.

Keywords: sub-national, climate duties, difference-making, influence

Climate Justice & Community Resilience

Community resilience in response to extreme events

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Introduction: Community resilience has been described as the ability of people living together to cope with economic, social and environmental problems. Ideally this would move beyond merely coping, towards communities becoming stronger and more adaptable over time (Patel et al, 2017). A complex interplay of inputs will obviously lead to a variety of outcomes, often context specific, that make evaluating and defining community resilience via individual communities, publications or projects difficult. Therefore, there is a need to consolidate what we know in Scotland, identify the key themes that make communities more resilient and transfer these lessons to other communities to build stronger networks. This presentation will discuss the initial findings, conducted with the support of the National Centre for Resilience in Scotland, of qualitative research on community resilience in a Scottish context and how we engage with communities in order to better promote resilience in the face of extreme events such as climate change.

Methods: Two workshops were held that brought together academics, practitioners, policy-makers and community stakeholders involved in community resilience work to discuss gaps in practice and research knowledge and next steps to promote growth in this area. Thematic analysis of these discussions were used to inform interviews with experts in the field to explore these themes in more detail.

Results and Discussion: The process of exploration of best practice will be discussed, as will key themes that emerged from the workshops and interviews. A focus on the inequalities that are present in community resilience and responses to climate change will also be present. The presentation will conclude with suggestions for policy makers, practitioners and academics about how to move forward with communities in order to ensure resilience to climate change related events in a just and equitable way.

Keywords: community resilience, extreme events, climate change

Climate justice and coastal fishing communities in Brazil: policy mapping as a tool to enhance action needed

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Climate change is influencing marine ecosystems, living resources and marine-dependent communities, especially those more exposed and vulnerable to those effects. Climate justice may be seen as a process that includes the effectiveness of the governance system, where action is required in order to increase the adaptive capacity of those communities and ecosystems. The South Brazil Bight is an important area for small-scale fisheries and has been classified as a marine hotspot of ocean warming. The aim of this study was to identify and afterwards to map components of the governance system which can embrace climatic justice for these fishing communities through a policy analysis. Based on surveys within eight key-communities representative of that region, the perception and vulnerability of fishing communities to climate change guided the investigation and review of formal documents addressing their policy interface. The analysis enabled the identification of key topics that translate governance compounds associated to it. The policy mapping showed that among eight formal documents verified, none of them directly mentioned the words "fisheries", "fishing communities" and "fishing resources" and only one policy instrument cites the key-words "communities and populations", "biodiversity, and coastal zones vulnerabilities to climate change and natural disasters risks" (PNA, 2016 v.II). However, that document misses information about those topics, hence all guidelines and goals proposed were solely related to data collection needs. Overall, PNA being a national-scale document, seems to not represent local particularities (top-down and bottom-up) that are essential to identify the actors and flows that could potentially enhance climatic justice pathways to that particular sector and issue, both indeed relevant to several sustainable development goals.

Keywords: local, regional, international frameworks, climatic changes, coastal communities, public policies, fisheries

Community resilience: Relational capital and active belonging shape wellbeing in response to disasters

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Community resilience is commonly held to be critical for coping with adversity and disturbance. This general concept underspecifies however, how community resilience relates to wellbeing. Here we propose relational capital and active belonging as dimensions of community resilience that affect the wellbeing of individuals, and which are emergent when communities are perturbed. These elements are explored with data on communities in England directly affected by flood impacts, using a longitudinal mixed methods approach (surveys =n1000 and interviews n=35). Results show that active belonging is consistently significantly related to individual wellbeing throughout recovery but relational capital's correlation with wellbeing changes after the flood event. Hence community resilience changes qualitatively in nature through the aftermath of perturbation. We show how this can be explained by identity processes including perceptions of what constitutes community, and collective identity in making sense of personal experience. We conclude that systemic processes underlie how community resilience affects individual wellbeing and hence affects collective responses to disaster events.

Keywords: resilience, community, disaster, flooding

Social capital, resilience and climate justice

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Recognition is growing of the need for significant systemic change in order to enhance resilience for different social groups and communities in the context of climate change. Attention to both climate change and social justice for transformative forms of change is increasingly seen as important for shaping more sustainable futures. Key to resilience building process is the role of social relationships, often considered to be social capital. There is however limited understanding of the relationship between social capital and resilience, especially with regards to climate justice for more transformative systemic forms of change.

This presentation draws on research examining the nature and role of social capital in resilience building processes at the community level. Firstly, findings from meta-synthesis of 153 studies about resilience and social capital are presented, outlining current conceptual and empirical understandings about the relationship and identifying critical research gaps. This suggests that socio-cultural dimensions of social capital play an important role in resilience by shaping interactions between actors and the type of outcomes that emerge (what and for who). However conceptually and empirically attention to these underlying factors is often superficial. Secondly, qualitative case study findings from an innovative unfolding community climate change and poverty initiative are presented. These findings show the changing nature of social relationships and the importance of underlying beliefs, values and social norms in delivering the initiative in practice. This helps understand what, how and why climate justice outcomes may (or may not) emerge through resilience building processes at the community level.

Keywords: Social capital, Climate resilience, Socio-cultural factors

Resisting resilience? Local climate injustice in São Tomé and Príncipe

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Over the last decade, the development sector has gradually intensified efforts to promote the resilience of countries in the Global South to climate change impacts (Ford et al 2015). However, resilience is a contested concept both in theory and practice, with its hegemonic conceptualizations increasingly resisted by beneficiaries of adaptation and development aid.

This paper will present the findings of a study that investigated community-level resistance to an adaptation project rooted in the concept of 'resilience' and implemented by UNDP and the Government of São Tomé and Príncipe, a small island nation in the Gulf of Guinea. Using the theoretical lens of climate justice, this paper will investigate the causes, dynamics, and effects of this resistance. The study adopted a qualitative approach and involved semi-structured interviews and focus groups with local residents, project team members, representatives of the government and civil society, as well as three field visits to Ponta Baleia. I demonstrate that the community's resistance stems from long-term, structural disempowerment of its residents, owing to the climate-resilient development paradigm guiding adaptation in the country. The findings also indicate that resistance is not uniform due to the highly unequal nature of community life.

The conflict constitutes a missed opportunity to decrease local vulnerability to climate impacts in a more equitable, democratic, and emancipatory manner (Mikulewicz 2018). This is a serious issue for the long-term viability of local livelihoods, especially given the projected increase in the number and intensity of extreme weather events in tropical and sub-tropical regions (Niang et al 2014). It is thus extremely important to develop a nuanced understanding of the nature of these conflicts and to theorize ways to make adaptation and development more responsive, legitimate and thus more effective in the future.

Keywords: Intersectionality, Climate Justice, Sexuality, Vulnerability

Research showcase: GCU Centre for Climate Justice

Voiceless, not Victims. Women as Agents of Change within the Climate Justice Narrative: A Focus on Malawi

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Climate change will cause 250,000 additional deaths per year between 2030 and 2050 (WHO, 2018) and places extreme stress and pressures on environments and landscapes that are already considered vulnerable (Barrett 2014). The unpredictability and extreme weather events associated with climate change are therefore exacerbating water, food and energy security issues. These stresses on the environment and landscapes are translated to the human populations that rely on such landscapes for survival (Rodriguez Acha 2017). Rural communities in Malawi are included in the many communities that are experiencing the extremes of climate change in the form of resource and energy scarcity. However, this burden is arguably felt most by women who are disproportionately negatively affected by climate change. It is reiterated in various climate justice and ecofeminist literature that “there will be no climate justice without gender justice” (Terry 2009). Therefore, there is a growing consensus within climate justice research that women are voiceless and should be seen as agents of change as opposed to victims (Agostino and Lizarde 2012). Moving away from this reasoning and instead underlining that women have a fundamental and crucial understanding of their environment that can help frame the climate change adaptation and mitigation solutions (Agostino and Lizarde 2012) is of central importance. With a focus on rural communities within Malawi, this presentation will provide an overview of research to date within this context, outline the aims and objectives and discuss the next steps of this research project.

Investigating the Barriers to the uptake of WASH Intervention in Non-Household Settings in South East Nigeria - A Cultural and Political Ecology Approach

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The importance of sanitation and water supply has been an issue of serious concern among public health practitioners and scholars. This is evidenced by its inclusion among the sustainable development goals (SDG 6) which specifically emphasized sustainable management of water and sanitation for all by 2030 (Sultana 2018). Current estimates put at 1.1 billion and 2.6 billion the number of people that lack improved water supply and adequate sanitation respectively, majority of whom are based in Asia and Sub-Saharan Africa (Dickin et al., 2017). Nigeria ranks among the countries with poorest access to portable water and improved sanitation with a corresponding increase in morbidity and poverty especially among the rural population (Nwankwoala 2011). In Eastern Nigeria, WASH adoption and practices remain low.

Supply-driven methods and behavioural change theories have been used to proffer solutions in the past. However, such methods though with little progress are not entirely suitable with regards to the challenges of WASH adoption. This study will explore tailor-made approach to the failure of WASH intervention in Enugu State, Eastern Nigeria using Culture and Political Ecology. A mixed method research approach will be used to provide a more robust account of the research problem. Questionnaires, key informant interviews and focus group discussions will be used in getting results. These results will then be analysed and interpreted.

The role of Green Infrastructure in mitigating overheating and flooding risks and creating a Climate Just Transition for Glasgow City Region

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Having understood the benefits Green Infrastructure can provide in tackling the impact of climate change while ensuring intergenerational and environmental equity for Glasgow city, we attempt to access the equitability of Green Infrastructure for Glasgow city especially in relation to the potential for Green Infrastructure to reduce vulnerability and exposure of deprived communities to climate risk. We also highlight the potential of ecosystem services within urban areas to provide cooling and increase resilience to sub-surface flooding which is prevalent within the study area. Climate change has been ongoing for centuries and with the continuous re-occurring impacts, there is an urgent need for climate just mechanisms aimed at reducing vulnerability and increasing adaptability.

Adopting a “Climate Just Transition” pathway has been identified as an effective means in tackling climate change. Climate just transition is aimed at encouraging adaptation, increasing resilience and providing a fair transition for all by investing in social protection, enhancing worker skills to adopt a low carbon economy and promoting sustainable development, technology and energy for all communities including the poor. Between 1961 and 2004 temperature in Glasgow and Clyde Valley has increased by 1oC and is expected to rise higher over the next 3 decades. Sea level is expected to rise by approximately 70cm by the end of the century and the River Clyde which is at the heart of Glasgow city poses a major risk. Tackling climate change using a “Climate Just Transition” pathway cannot be over emphasised and we all need to act now.

The Role Social Innovation plays in addressing Climate Justice in the provision of Water in Zambia

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Although there are natural variabilities attributed to climate change, scientific evidence shows that it is largely an anthropogenic phenomenon. The effects of climate change disproportionately impact the poor than the rich who lack skills and other resources required for adaptation to the impacts of climate change. The poor are the least contributors to climate change despite being more vulnerable to impacts of climate change. Among other fronts, climate change affects water.

To address the impact of climate change globally, social innovation has increasingly been placed at the centre of mitigation and adaptation measures. Social innovation is an emerging concept that is applied to many social challenges to bring about social solutions. Although social innovation is a not a new concept, its application in Zambia generally is new. There are scientific gaps in understanding the role social innovation can play to address climate justice in the provision of water. There is very little research undertaken linking social innovation and water in Zambia.

Nineteen percent of Zambia’s sixteen million people lack access to basic water services. Access to water is characterised by reactive and fragmented policy framework. Access to water is not a right in Zambia. The main means of delivery of water in rural Zambia is through communal hand pumps- they have low functionality rate. The urban poor who reside are poorly serviced by monopoly utility companies. Service delivery is unreliable resulting in poor households accessing water from unprotected water sources. The regulatory framework that underpin the management of the water resources is not informed by principles of climate justice.

This qualitative research takes a grounded theory approach to studying social innovation in addressing climate justice in the provision of water in Zambia.

Place Making Attributes of Climate Sensitive Street Design - A Case Study in the Central Business District of Glasgow

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Streets are considered the most fundamental and stable element of urban form as they offer greater resistance to this process of urban transformation and often act as the only open public space in most city areas. Furthermore, the compositions of these streets result in distinct climatic signatures that can cause discomfort due to heat stress, poor ventilation, pollutants and noise in urban dwellers. Therefore, a key design question is the role of climate guidelines at street scale towards place-making initiatives.

The current project was carried out to explore the implications of the proposed urban design strategies by the City Centre Strategy and Action Plan 2014-19 of Glasgow towards environmental quality and pedestrian thermal comfort which are often overlooked during the place making initiatives. Traverse temperature data and simulations of Mean Radiant Temperatures (MRT) across key street typologies identified within the Central Business District (CBD) provided the basis for the analysis. Research findings suggest that one fixed design strategy would not be applicable across all street typologies and that several from based parameters including orientation, street aspect ratio and surface and façade properties can play a vital role in climate sensitive street design.

An investigation into the socio-economic and environmental challenges faced by migrants and urban dwellers of informal settlements in Zambia from a climate justice perspective

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Informal settlements, commonly called 'slums', are characterised by lack of statutory tenure, informal economies, social exclusion by governmental authorities, poverty, lack of basic utility services, high disease burden, overcrowding, poor environmental conditions and high vulnerability to extreme weather events due to poor urban layout and infrastructure. Yet, despite the severe socio-economic and environmental challenges, vulnerable migrant groups in Zambia and Sub-Saharan Africa are seeking refuge in these hazardous and marginalised urban communities out of necessity.

The impact of climate change on the livelihoods of rural populations in Zambia and Sub-Saharan Africa is expected to drive climate-induced migration and displacement to towns and cities in the coming decades. Extreme weather, as well as long dry periods and short wet periods, are disrupting rural livelihoods and provoking migration among the poorest and most vulnerable. This action research reveals that those migrating and living within three informal settlements in Lusaka, Zambia, are suffering from a diminished right to development and a climate injustice due to limited protection afforded to migrants and informal dwellers under current national legislation and international treaties. Under this context, the research advocates for climate justice as a foundation for international policy on climate-induced migration and displacement, as well as inclusive urban regulation, to address the double injustice faced by those forced to leave their homes and find another in an unwelcoming city.

An investigation on how climate finance can advance climate justice in Ghana

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The impacts of climate change and variability in Ghana include declining crop yield, unmet water needs and food insecurity, as well as increased northern-southern migrations due to adverse climatic conditions. Climate projections for Ghana indicate that temperatures will continue to increase between 1-3 degrees Celsius by 2060. The projected rate of warming will be more rapid in this research's study area, Lawra and Nandom Districts of Upper west region of Ghana, than the coastal regions of Ghana. In the face of increases in the frequency and severity of extreme weather events in the future, it is most likely that climate change will worsen future water scarcity in many places in the country; especially in the study area. All of these will have significant implications for the poorest and most vulnerable people in Ghana.

Extreme weather events and poor soils of the northern savannah regions of Ghana, reinforced by historical marginalization of these areas and relatively low-level financing instruments over the past decades, contribute to high levels of poverty and vulnerability in the region.

Climate finance has emerged in response to the need for predictable, adequate and sustainable financing in order to address climate related issues in Ghana. To improve the resilience level of the poorer communities of developing countries requires sustainable and innovative financing strategy that takes into consideration issues of climate justice. Climate change related expenditure in Ghana has not been explicitly recognized through specific coding of expenditure as a policy theme within the national budget. In the context of climate justice, it is crucial to determine how climate finance is channelled to implement climate change relevant actions at the community level with focus on the most vulnerable population. Using qualitative research techniques, this research seeks to investigate how climate finance can advance climate justice in Ghana.

Exploring the Environmental Refugee Crisis in Nigeria through a Climate Justice Framework

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Climate change and migration are two cross-cutting issues demanding immediate and appropriate responses from duty-bearers. The consequences of climate-induced displacement and migration raise questions of equity, justice and human rights in cognisance of the asymmetrical burdens of climate change between the developed and less developed nations. Gaps in policy and the inherent need to amplify the voices of the most vulnerable and marginalized buttresses the need for climate justice approach in addressing the climate change—migration phenomenon. The concept of climate justice encapsulates the human rights, equity and social justice aspects of climate change, thus provides the idle framework with which the ethical dimensions of climate change could be confronted.

Focusing on the human rights and social justice implications, this research employs a capabilities-based approach to climate justice to explore the plights of people displaced and forced to migrate due to the impacts of climate change in four coastal communities in Ilaje, Ondo state. Findings from qualitative analysis of data show that rising sea levels resulting in frequent sea surges and flooding are primarily responsible for the recurrent displacement of residents in these communities. Furthermore, that the factors constraining capabilities for the displaced population in these communities to enhance their wellbeing and achieve a decent quality of life is rooted in pre-existing social challenges of lack of basic amenities, poverty and gender inequality—exacerbated by climate change. Poor living conditions, compromised wellbeing and the likelihood of protracted displacement are in part, the notable plights confronting this group of people.

Poster Presentation Abstracts

*=Attending author

State-of-the-art analysis of oil and gas resource expectations in the High North within an Energy Justice framework

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The Paris Agreement came into force at the end of 2016, bringing with it a host of challenges and societal problems to be solved in the transition to a low-carbon future where it is argued that justice should be central to this transition. While the direction of travel is largely a departure from fossil fuel economies, in some regions continued (and new) fossil fuel development is currently high on the agenda. One such region is the Arctic where climate change continues to reduce the sea ice cover and thickness on the Arctic Ocean. With the current situation of relatively little knowledge about Arctic oil and gas resources (geologically, economically and technologically), expectations are high, in large part due to United States Geological Survey (USGS) estimates of undiscovered oil and gas in the region. Although these estimates have often been perceived as accurate or definite, they contain much uncertainty. The 2008 USGS estimates have greatly contributed to an 'Arctic bonanza' narrative over the past decade and have influenced most Arctic policies within and outside the region since their publication. Using a meta-narrative review method provides improved integration of different types of transformative knowledge e.g. in this study geological into the social and political science realm.

This has placed Arctic oil and gas in a more realistic position, and very possibly a less attractive one, as this work informs societal and political debate. An innovative energy justice framework applied to the analysis of the resources of the high north allows for a reconceptualization of the potential sustainability challenges resulting from the 'Arctic bonanza' narrative over the past decade. Discussion centres on how a state-of-the-art analysis of oil and gas resource expectations and associated stakeholder discourse effectively guide and inform actors and future research to address the unfolding sustainability challenges in the Arctic.

Keywords: energy justice, arctic, fossil fuel, low carbon transition

Distribution of health co-benefits of decarbonizing urban land transport systems: A scenario study for Beijing

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Decarbonizing economic activities such as transport, built environment and industry has significant co-benefits to public health, especially for vulnerable groups. While the health co-benefits of mitigation in the transport sector are recognized, the social distribution of these health benefits across populations, and hence potential for decarbonisation to enhance and progress social justice, are less well established. This study uses comparative risk assessment methods to estimate the health co-benefits of alternative urban land transport scenarios for Beijing to highlight the potential for progressive climate justice. The analysis develops transport scenarios from present to 2050 on carbon emissions alongside health risks associated with air pollution, physical activity, and risk of road traffic injury. The scenarios represent: 1. business-as-usual (without policies for reduction of greenhouse gases); 2. lower-carbon-emission motor vehicles; 3. increased active travel; and 4. a combination of the two (scenario 2 and 3). The health risks and benefits include decreasing risks of death rate, diabetes, respiratory, and cardiovascular diseases disaggregate by age and sex. The results show that a combination of active travel and lower-emission motor vehicles yields the greatest health benefits, and that women and elderly and young population benefit the most from decarbonizing in transport sector. Within these scenarios, policies that expand the scope for active travel accrue the most health benefits compared to air pollution and road traffic injury. The results demonstrate that health benefits and their social and economic dimensions are strong arguments for decarbonizing the transport sector particularly through increasing active travel. Policies to encourage active travel, increase the safety of active travel and decarbonize in motor vehicles would provide larger health benefits and health equity. In addition, the social disaggregation demonstrates how health benefits are disproportionate towards vulnerable populations thereby representing progressive climate justice.

Keywords: climate change mitigation, health co-benefits, urban land transport, climate justice

Fixing the scope of intergenerational climate justice

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Climate change threatens to cause large amounts of suffering in the near and remote future. To formulate just climate policies, we therefore urgently need to assess what, if anything, is owed to future generations, and exactly who this is owed to. Drawing on the work of Onora O'Neill I suggest that the scope of climate justice is best determined by an action-centred account of scope. On this account, the scope of justice extends to all those whom our actions presuppose: whenever we act on the presupposition that there are others, who can be affected by our actions, and whose capacities are finite, we must also include them in the scope of justice. Our climate policies are heavily shaped by presuppositions about future others. Consider global mitigation policies: states recognise that, at a minimum, warming beyond 2°C needs to be avoided, yet current mitigation pledges leave a large emission gap. All scenarios that keep us on track for a 2°C warming or less thus rely on much greater emission reductions in the future, and most include the future use of large-scale Carbon Dioxide Removal technologies. So the failure to sufficiently reduce emissions now is premised on the presupposition that future, vulnerable others will react by substantially reducing their own emissions, or have developed the technologies to deal with our emission burden. These presuppositions illustrate the intergenerational scope of our actions, and highlight that our actions do not just affect future persons, but are premised on their existence as agents. Assessing our actions thus shows that the ethical, in addition to the physical, scope of climate change extends far into the future. The proposed account of scope can serve as a first step towards bridging the 'institutional gap' in intergenerational climate justice, and determining what climate policies must do for future generations.

Keywords: intergenerational justice, future generations, the scope of justice, mitigation

Quality and Urban Climate Justice in Chile

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The effect of urbanization is evident in all city's scales. In all of them, urbanization has caused the loss and replacement of natural and agricultural land coverings by urban land uses, which imply a profound transformation of landscapes, such as the pollution of the air and the formation of an urban climate. Within the modifications of the urban climate include the formation of islands of heat, cold and humidity, which can become a risk factor, affecting human health, comfort, quality of life, the use of public spaces. Hence, the importance of considering the climate in urban planning to have more sustainable cities and generate conditions of greater comfort for its inhabitants. About the above, the concept of climate quality arises, associated with the correct on of climatological elements at different levels of planning and design, to produce an improvement of local climates, considering both the pollution control of the air, as the creation of comfort. There is no single level of climate quality for the entire city; on the contrary, it varies between different urban spaces, which is why there would be inhabitants of the same city who could access a better climate quality, demonstrating the existence of urban climate injustice. Considering that urban climate quality is a new challenge for urban planning, especially in the context of climate change and rapid growth of Latin American cities, the main objective of this proposal is to improve knowledge on climate quality in Chilean cities. To do this, through an indicator that includes some climatic and comfort variables, atmospheric pollution and urban characteristics, such as morphology, structure and urban design, the climatic quality of the cities will be determined and the elements that progress towards climate-sensitive planning, to improve the conditions of urban climate justice.

Keywords: climate quality, air pollution, thermal comfort

“Fiscal modules”: Implications for restoration and conservation programs in Brazil

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The Fiscal Modules (FM) were created in 1979. In theory, the area of an FM should be enough for a family to have income, survive and thrive. The current Brazilian Forestry Law, nº. 12.651/2012 through the Environmental Regularization Program (PRA). FM were parameters for flexibilities, reducing the area in which recomposing with native vegetation is mandatory. The total area to be restored decreased from 50 ± 6 to 21 ± 1 Mha (figure 1). With FM flexibilities, the Brazilian government hopes to boost PRA in a total area of at least 12 million hectares by 2030. With these actions, it is expected to comply with commitments and agreements, such as the UN SDG Goal 15, Life on Land. This work had as an objective to describe the history of creation of the Fiscal Modules and discuss how the updating can affect the Environmental Regularization proposed from the New Forest Law. We rely on a comprehensive review, using bibliographical and documentary research. It was observed that FM were created in 1979, set in 1980 but have never been updated. The databases and criteria used to calculate the MF are not being updated for more than 50 years. Data such as land use, rates of deforestation and productivity in the rural environment showed changes that should modify the FM values to values that are current, with more rural properties being considered large and should re-compose larger areas than they are currently required. The Fiscal Modules were created with tributary purpose, which are distantly related with the current types of usage, mainly with the public policies associated to the sustainability conditions of the rural environment. The FM updating would result in an area of natural re-compositing larger than 21 Mha and would favour the overall goals of forest restoration contributing to climate justice.

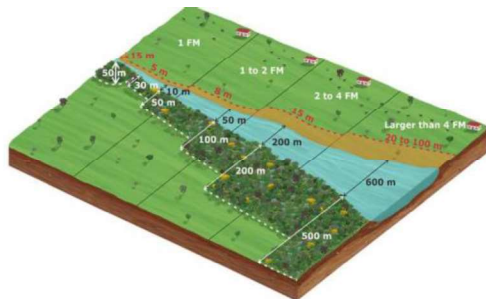


Figure 1 - Comparison: In the lower part of the river we see the Areas of Permanent Preservation (written in white) according to the width of the river (written in black); in the upper part of the river, the minimum adjustment areas (written in red) according to the size of the properties (written in white).

Keywords: forest policy, conservation, forestry legislation, environmental management

Scotland Adapts: A Capability Framework for a Climate Ready and Climate Just Public Sector

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Adaptation Scotland supports organisations to adapt to climate change in a just and equitable way. We have recently produced Scotland Adapts: A Capability Framework for a Climate Ready Public Sector. This resource enables implementation of climate justice principles and actions in practice. Through collaboration with a diverse group of public sector practitioners, we identified key capability areas and actions which enhance climate adaptation within organisations. The framework was developed on the principle that successful adaptation involves not only better understanding and analysing climate data and risk models but also effective leadership, governance arrangements, inclusive planning and working beyond organisation and sectoral silos. Climate justice considerations are a vital component of many of these areas. The framework identifies four adaptation ‘capabilities’, which are (i) Organisational Culture and Assets (ii) Understanding the Challenge (iii) Planning & Implementation and (iv) Working Together. A number of tasks are detailed for each capability and develop over four maturity stages from starting to mature. The concepts of equity in preparing for and responding to climate impacts is implicit throughout the framework, as well as explicitly through specific tasks which support users to consider and act upon climate justice. Information is provided for organisations to develop understanding of climate risk, vulnerability and justice as well as guidance to assess how their organisation’s functions and users may be affected by climate change, considering how those most vulnerable may be impacted. Taking action on climate justice requires collaboration, capacity building and governance links. This framework fosters the development of such social and institutional networks and enhances professional capacity across the public sector. This framework will play a significant role in building capacity to understand and act upon climate justice across Scotland. This presentation will introduce the framework and present case studies of how organisations have used it in practice.

Keywords: adaptation, capabilities, justice, public sector

A just approach to climate change adaptation for the Glasgow City Region

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Climate Ready Clyde is supporting Glasgow City Region to meet the challenges of adapting to climate change. A recently completed Risk and Opportunity Assessment assessed the extent of climate justice in adaptation planning across the city region. The initiative of 13 organisations is now developing an adaptation strategy and action plan, with climate justice at the core of its approach. The approach will attempt to provide a state of the art framework to address procedural, distributive and intergenerational elements of climate justice. Innovative approaches to engagement and consultation with communities exposed to future climate impacts and that are more socially vulnerable to their effects will give them a voice in the decision making around the future of their city region. This will ensure that the priorities and needs of Glasgow's diverse communities are taken into account when developing the strategy and action plan. Workshops with disadvantaged communities will help drive the strategic direction and focus of the action plan, and an embedded artist will deliver creative ways to engage with diverse communities about climate impacts and resilience. An appraisal and impact assessment will assess the potential contribution of the actions contained in the plan. Focusing on procedural, distributive and generational justice and ensuring that socially vulnerable communities have input into, and ownership of, the adaptation strategy and action plan will help ensure that Glasgow City Region's efforts to adapt are fairer and deliver more just outcomes. Glasgow is one of the most deprived areas in Scotland, with significant inequality across the city region. Disadvantaged communities are likely to experience negative climate change impacts, and this has the potential to increase the inequalities that already exist. This session will focus on showcasing the approach, outlining the method used to progress climate justice in the city region's adaptation strategy and action plan.

Keywords: adaptation, resilience, climate risk, engagement

A Charter of the Fundamental environmental rights of the EU?

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Combatting climate change requires an urgent systemic change in our society, economy and narratives. The sense of urgency is becoming tangible in our society; with citizens demanding climate justice through political activism, climate litigations and even urging governments to declare the state of climate emergency. Furthermore, many international legal experts are supporting the adoption of a global covenant, such as a comprehensive declaration, charter or multilateral agreement (e.g. The Pact for the Environment), including the commonly shared principles of environmental law that are not yet consolidated in a unique piece of international law. It is clear that such a paradigm shift must be sustained by a strong legal infrastructure. Humanity has dealt with emergencies in the past: the atrocities of the IWW led the international community to adopt the Universal Declaration of Human Rights. Since then, Fundamental Human Rights were developed resulting in the adoption of the European Charter of Fundamental Rights (CFR) and creation of its Court. Will the next European Parliament and Commission act with the same strength to solve the environmental emergency? The EU Environmental acquis comprises approximately 200 legal acts, including strategic documents in the areas of climate change and nature protection. Yet, there isn't a European formal statement of the rights pertaining to the environment (such as a Charter) and it is urgently required. This research is a theoretical legal analysis of the context, the challenges and the opportunities that a European overarching legal apparatus (such as the equivalents of the CFR and its court) would present. The result is a theoretical analysis of the state of play with different issues and legal debate mapped out graphically, and a proposal for a plausible legal pathway towards a Charter of Fundamental Climate Rights.

Keywords: EU charter, fundamental rights, access to justice, environmental accountability

Assessment of management effectiveness: stakeholders' perceptions of the protected area in the Atlantic Forest, Southeast region, Brazil

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Strategic roles for the conservation of biodiversity and ecosystem services (ES) are developed from protected areas (PA), which also contributes for the achievement of global goals, such as the UN SDG Goal 15, Life on Land. This study aims to explore the governance of the Parque Estadual Cunhambebe (PEC), which represents an expressive fragment of the Atlantic Forest, a hotspot of biodiversity, as well as hydric resources that supply water for approximately 12 million people. The research was conducted with a participatory approach for assessment of the management effectiveness. We used an adaptation of the RAPPAM method with 70 indicators being applied to stakeholders, representatives of public, private and civil society institutions, acting in the Consular Council of the PEC. The PEC achieved moderately adequate effectiveness. The indicators about "vulnerability", "design and planning" and "financial resources" (group C of the figure), reveal the weaknesses of management and what should be the priority projects for better effectiveness. Although the indicators of "vulnerability" have not been taken into account for effectiveness' value, the relevance of stakeholders' perceptions on the issues raised in these indicators is reiterated, since they are extremely important to conflict management in a general context of the PEC. The observed data support the idea that there are nonconformities in relation to the sector plans foreseen in the management plan. Problems regarding possibilities for illegal practices, armed conflicts and conflicts in relation cultural practices were found. We suggest 3 political measures are required in order to overcome the trade-offs biodiversity conservation: 1) enable technical support for the improvement in the land management; 2) bolster the environmental education initiatives in order to suppress the detachment with the population; and 3) include rules mentioning the PEC in the municipal comprehensive plans, aiming for a sustainable integration between urban development and the PEC.

Keywords: protected area, conservation planning, management assessment, sustainable development goals

Effect of climate change in Bangladesh: challenges and opportunities for adaptation

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Bangladesh is one of the worst victim regions of climate change. The existing Geophysical and socioeconomic setting of the country increases vulnerability and severity of the events, because of country's natural susceptibility to extreme weather, the people of Bangladesh have always used migration as a coping strategy. However, as conditions intensify under climate change, more people are being driven from their homes and land by more frequent and severe hazards. Sea level rise, storms, cyclones, drought, river erosion, landslides, flooding and salinization are displacing large numbers of people. Farmer and fishermen are in the worst list. The women and children have a long list of demands - protection from floods, river erosion, cyclones, access to safe water, reforestation, roads, shelter during disasters, interest free credit, health and education facilities in remote areas and political commitment to development. Disaster data were collected from different organizations and sources. The maps for cyclone, earthquake, drought, flood and tornado have been prepared by different organizations, such as Bangladesh Meteorological Department (BMD), Bangladesh Space Research and Remote Sensing Organization, Disaster Management Bureau and concerned non-government organizations, Cyclone Preparedness Programme, and the Geological Survey of Bangladesh. Moreover, information from local and environmental organizations, international journals was gathered for this study. Hazard maps and migration and land development maps were developed by using GIS techniques, climate policy and adaptation opportunities were reviewed. It is very important to address the challenges and opportunities of adapting to climate changes in Bangladesh. This study addressed the effects due to flood, river erosion, cyclone, drought, tornado and the deforestation. Loss of assets in terms of infrastructure, lives and agricultural land were estimated and combined hazard rank were developed for the severe events and developed people migration and adaptation maps were developed. Finally, address the challenges and opportunities adapting to climate changes.

Keywords: hazard, adaptation, migration, opportunities

Modelling ecosystem services based on impacts of climate change on water resources in karkheh basin, Iran

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Climate change has significant impacts on temperature and rainfall patterns in the Middle East especially the Southern part of Iran and consequently has affected millions of people in the region. Access to the water resources might cause huge migrations and worsen political tensions between countries in the Middle East. This research tries to evaluate the climate change impacts in one of the critical basins in the region and propose proactive plans to reduce the negative effects on ecosystem services. This research aim is to predict and propose models for ecosystem services based on the impacts of the climate changes on water resources in the Karkheh river basin (KRB). The Karkheh River, with 900 km length, is the primary source of water for millions of people in Iran. Negative impacts of climate change in the KRB area will affect the lives of more than four million people. Spatial Land Use and ecosystem models were used calibrated and validated using national data between 210 and 2017. Furthermore, InVEST models were used to analyse the changes in the ecosystem's structure in KRB. The research's models were analysed under a range of six climate change and two land use scenarios based on research's target year in 2020. The proposed models and scenarios analysed precipitation and temperature as two main variables of the study. Models showed that the best response scenario is the mixed one which considered both spatial land use and temperature systems. However, temperature and Climate change scenarios showed more significant impacts on ecosystem services than land use scenarios in the KRB area. The mixed scenario and proactive plan will prevent potential migration of one million people in the area. The results show that a 20-year long-term plan based on combination scenarios will reduce the negative impacts of climate change in the area.

Keywords: ecosystem services, climate change, water resources, Karkheh basin

The role of school green areas in ensuring environmental equity for children

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Urban green infrastructure is usually associated with environmental justice even if it has been proven they are not a guarantee of achieving sustainable and inclusive cities. Small green areas represent an alternative easier to implement in densified built environments than parks and through their multifunctionality can increase the amount of ecosystem services offered to urban population acting as stepping stones in the urban green infrastructure network. School green areas represent a category of urban green infrastructure primary dedicated to children which form a vulnerable group. The aim of the paper is to highlight the ways in which school green areas can contribute to the increase of ecosystem services provided to children and to quantify them. The study is based on a survey carried out in 411 educational units (89% of the educational units in Bucharest which is used as case study) and on spatial data regarding the surface and accessibility of green areas. Statistical and spatial analysis were used in order to evaluate the characteristics of school green areas, their use and their connectivity with the urban green infrastructure. The results highlighted that many schools integrate environmental activities in their curricula and involve their students in activities benefiting from cultural ecosystem services the school green areas provide. The spatial analysis shows inequity both in the surface of school green area depending on the school characteristics and in the access and connectivity with other urban green infrastructures. Moreover, the educational units without green areas could usually compensate by organizing activities in nearby parks. The analysis highlights that, even if they can't replace major green infrastructure, school green areas can compensate for the deficit in urban green areas, can offer some specialized cultural ecosystem services like education increasing the multifunctionality of the network and can act as an effective nature based solution.

Keywords: school green areas, inequity, spatial distribution, ecosystem services

Litigation procedure based on cadastral database enhancements to face hydrogeological disasters in Brazil and reverse positive feedback loops with climate change

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Strong traces of positive feedback loops between real estate speculation and hydrological disasters are being evidenced, but it still lacks robust and also accessible procedures to elucidate criminal causalities. Crimes are against ecological and citizenship diversities, both poorly recognised in cadastral databases. A forensic procedure is described, based on cadastral database open-sourcing facing systematic hydrogeological disasters in Brazil, towards full recognition of biodiversity as a means to reverse positive loops from the sources. Some representative samples of recent hydrogeological disasters were analysed, in properties with traces of speculative processes, in order to pinpoint the main agribusiness, urban and peri-urban titling patterns related to land and water grabbing, offshoring of commodities and hydrogeological disaster production. Unusual land and water grabbing patterns were evidenced (legal, apparently legal, illegal and legalised), related to remote investment funds and global urban gluttony, as well as local collusions, translated to the enormous consumption of soils and local communities protecting forested lands and sensitive water bodies. In addition, a planned cadastral chaos was evidenced as a main driver of disasters. Real estate speculation is insufficiently represented at scientific and public discussions as a major driver for climate change, so it deserves urgent, challenging conversations. The lack of transparency of cadastral databases and property registration in developing countries like Brazil, hosting crucial biodiversity systems to mitigate climate change, must be considered in public policies with stronger conviction.

Keywords: cadastral databases, forensic procedure, hydrogeological disasters, Brazil

Climate justice: increasing contentious mobilization

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The poster will map the initial contours of climate justice as a contentious struggle—an emergent movement comprised of a coalition of disparate groups on local, state and transnational levels that have advanced the following:

- A transnational public campaign engaged in protest tactics (Della Porta and Park 2014)
- A framework for understanding inequality: As Anti-capitalist struggle, Feminist concern, Indigenous focus, Global North and South, Environmental Justice
- Epistemology; Embedding of scientific knowledge with arguments for (social) Justice: Decolonization of knowledge; “Challenge to knowledge capitalism” (Sze et al 2018)
- A field/network of organizations and activists in coalition

Recent research from Jennifer Hadden, 2015 and others examine the rise in protest events and the spill over of tactics between global justice groups and climate actions and the emergence of a social movement repertoire of contentious tactics on an international level. In addition, prior sociological research from Dana Fisher examined the processes that led to the stymieing of climate change policies and decision-making on the national level of US government (Fisher, 2011). Scholars of the emergence of climate justice as a movement-like campaign argue that the current moment of climate justice contention involves the concatenation of elements emerging out of strands from the Environmental Justice mobilization in the US, indigenous rights in the Global South and anti-globalization mobilization in Europe.

Keywords: contentious politics, climate justice, social movements, direct action

The unequal nature of environmental displacement and climate change adaptation: the case of Hurricane Sandy

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How do we understand displacement and return in the era of climate change? Sudden onset extreme weather events drive the movement of populations and alter the physical and social landscape of regions in ways not evenly distributed across the affected population. Identifying who is displaced and who is able to return in the aftermath of extreme events is critical for ensuring extreme events do not serve to worsen existing inequalities or drive people to more precarious dwellings.

The context of sudden onset events can render traditional data sources inaccessible or inadequate, as data collection is disrupted or on a larger time and spatial scale than is needed to determine internal, sometimes short-term displacement. In this study, we combine geographic data on high water marks during the 2012 flooding from Hurricane Sandy in New York City with census tract-level data on demographic characteristics of areas affected. With these data, we assess changes neighbourhood characteristics before and after the storm and compare those changes between places that experienced flooding and those that did not. The preliminary results from this study indicate that areas damaged by the 2012 flooding in fact saw greater increases in household income over the 2010-2015 period than those that were not flooded. These results suggest that the displacement resulted not in the same residents being able to return, but rather on average higher income residents following the storm. In light of these results, we discuss the complex challenge of rebuilding in an era of climate change, in which communities must 'rebuild better' or manage retreat from future storms, and the consequences these choices have on inequality and affordability.

Keywords: environmental displacement, adaptation, inequality

Climate Governance for Future Generations: A global review of the implementation of intergenerational justice

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As we try to grapple, globally, with the complexities of dealing with climate change, new dimensions are emerging, in particular when it comes to concerns about justice. While for decades concerns about the fairness to future generations has been in political rhetoric, increasingly there is momentum towards understanding what fairness to future generations, or intergenerational justice, means related to climate change. While new pressures, such as youth movements, have increased the public, political and research attention to this issue, our current understanding of intergenerational justice and how it is being implemented remains anecdotal, biased and fragmented. Therefore, this research maps all governance mechanisms worldwide that seek to implement at a national level intergenerational justice related to climate change, and offers and initial assessment their effectiveness. This poster presents a two-step process.

First a systematic overview, where all national governance systems were catalogued and investigated for the ways in which they work to implement intergenerational justice through four mechanisms: specialized institutions, constitutions, court cases, and youth representation mechanisms. Second, an initial assessment of the effectiveness of all 167 mechanisms identified was conducted to offer some reflections about the role of these mechanisms and the challenges in achieving intergenerational justice related to climate change. This research shows how in spite of many mechanisms working towards this goal, very few governance mechanisms working to implement intergenerational justice that are effective or resulting in significant change. This research works to move beyond theoretical discussions about fairness to the future, to consider more practically how can this happen, who is already working towards it, and what is having an impact on intergenerational justice in addressing climate change.

Keywords: intergenerational justice, climate governance, future generations

Participatory methodologies to ensure community-led climate change adaptation

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Introduction: This poster exhibits two participatory methodologies, Participatory Vulnerability and Capacity Assessment (PVCA) and Manual for Global Advocacy Practitioners, deployed within the Climate Challenge Programme Malawi (CCPM). These methodologies aimed to ensure both the practical and policy needs of communities affected by climate change were brought to the fore to design a holistic community-led climate justice programme.

Methods: The PVCA methodology comprises of nine participatory tools implemented by Trócaire Malawi and partners. The interactive tools assisted communities to identify their climate-related needs, both practical and policy, and co-design subsequent solutions that would be relevant to their context. Based on the communities' policy needs, which arose during the PVCA, Trócaire Malawi and partners identified policy-related issues. Using the Manual ten step method, these were distilled into an advocacy strategy to ensure communities' policy needs are addressed at local, national and international level thus bringing the voices of communities to decision makers within the programme.

Results: The PVCA enabled communities and partners to identify and prioritize programmatic interventions whilst ensuring the CCPM achieves: 1) a human rights based approach, 2) inclusion of marginalised groups, 3) gender sensitive analysis, 4) co-creation with programme participants, 5) community validation of results.

The Manual method identified community-driven advocacy priorities which were then integrated into the programme: 1) to raise the climate literacy of local and national government, 2) secure community inputs into national adaptation planning processes, 3) improve systems to provide quality climate finance for community-led adaptation.

Discussion:

- Solutions to climate change have a better chance of uptake when they are developed through a process that is democratic, participatory, and community-led
- Solutions must be co-created with communities, to find the most relevant and meaningful interventions to address climate-related challenges.
- Feedback loops and repeated community validation of results are essential
- This reciprocal approach facilitated programmatic adaptation