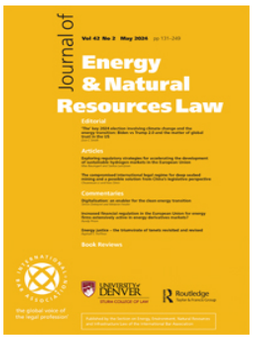

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Climate change, energy transition, and the Global South: learnings from the international framework on the ozone layer

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The pursuit of climate action to meet net-zero targets has triggered the call for a global energy transition from fossil fuels to clean energy sources. However, this global energy transition does not entirely recognise all countries' social, economic and technological capacities as well as emission contributions as envisaged under the Common but Differentiated Responsibilities (CBDR) principle, which underlies international climate policy. It is concerned more with the outcome of transitioning to clean energy than with justice in the transition process. Recognition justice, an element of energy justice, enables us to identify the inequalities that global energy paradigms (such as the energy transition) can create and how a justice framework can help us understand the implications of energy injustice and address the inequities across energy systems. Recognition justice acknowledges the divergent perspectives rooted in social, economic and racial differences and the varied strengths of developed and developing countries. The energy transition process ought to recognise these differences so that they are reasonably expected to benefit everyone. Implementing the energy transition in the Global South (GS) in the same way as it is being advanced in the Global North will have security, justice, economic, resource-stranding, and sustainable development implications. This issue (of injustice in the energy transition) is aggravated by two dichotomous realities: many countries in the South will be most impacted by climatic changes, yet there remains political and social opposition to climate action through the energy transition. As a solution, this paper relies on the notion of recognition justice with support from the Rawlsian justice concept to argue that a delayed transition represents justice and recognises the peculiar nature and different circumstances of the GS. It identifies that learnings from the Kigali Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer and the notion of CBDR under international climate treaties can be mainstreamed into energy transition research and policies to achieve justice for countries of the GS. The paper further finds that a delayed transition for the GS will (i) enable the region to address sustainability-related issues of hunger and multidimensional poverty, essential to realising other Sustainable Development Goals, whilst gradually implementing energy transition policies; (ii) present an attractive case against political and social opposition to energy transition in the GS; (iii) advance the goal of CBDR already recognised under international climate treaties and the bifurcated approaches established in such treaties; and, finally, (iv) ensure that developed countries contributing the most to greenhouse gas emissions take the lead now and act while the GS effectuates national contributions sustainably.

Keywords: energy transition; recognition justice; Montreal Protocol; delayed transition; Global South; John Rawls

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1. Introduction

There is near global consensus that to limit global warming to 1.5 or 2°C above pre-industrial levels, energy systems need to be transformed, and fossil fuel dependence needs to be reduced and eventually phased out.[1] Clean energy is critical to curbing greenhouse gas (GHG) emissions.[2] The Intergovernmental Panel on Climate Change (IPCC) Working Group III note that the concentrations of GHG in our atmosphere and the annual anthropogenic emissions are on the rise.[3] This upward trend is predominantly propelled by fossil fuel use which is influenced by rising global energy demand.[4,5] As a primary contributor to global GHG emissions, the energy sector is pivotal in addressing the global climate challenge.[6]

To reverse this energy-sector-primary-contributor status, countries have pledged to attain net-zero GHG emissions through, amongst other things, transitioning their energy sectors towards carbon freedom.[7] Countries in the Global South (GS) have also made similar pledges.[8] This transition entails a shift from conventional fossil fuels to environmentally benign energy sources. Also, state parties spent the majority of the Conference of the Parties of the United Nations Framework Convention on Climate Change 2023 (COP28) calling for a total ban on fossil fuels.[9] However, it becomes evident that the path towards this global energy transition falls short of comprehensively acknowledging the diverse economic capabilities and developmental conditions intrinsic to some states, especially those in the GS. Worries are expressed given such countries' historical contributions to GHG emissions. Developed countries account for the largest proportion of historical cumulative GHG emissions.[10]

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1 Article 2(1)(a) of the Paris Agreement. See also Engobo Emeseh, 'Climate Change and the Oil Industry in Nigeria: Policy and Action Imperatives for Sustainability' in W Akpan and P Moyo (eds), *Revisiting Environmental and Natural Resource Questions in Sub-Saharan Africa* (Cambridge Scholars 2017); Volker Roeben and Smith I Azubuike, 'Climate Change and Responsibility: Arctic States' Cooperation through the Arctic Council in Climate Change Mitigation and Adaptation Efforts' in L Heininen, H Exner-Pirot, and J Barnes (eds), *Arctic Yearbook 2020: Climate Change and the Arctic: Global Origins, Regional Responsibilities?* (Northern Research Forum 2020)

2 Smith I Azubuike, Obindah Gershon and Ayodele Asekomeh, 'Introduction: Decarbonising African Cities in a Carbon-Constrained World' in Smith I Azubuike, Ayodele Asekomeh and Obindah Gershon (eds), *Decarbonisation Pathways for African Cities. Palgrave Studies in Climate Resilient Societies* (Palgrave Macmillan, Cham 2022)

3 Intergovernmental Panel on Climate Change, *Emissions Trends and Drivers* (1st edn, Cambridge University Press 2023)

4 Shobhakar Dhakal and others, 'Emissions Trends and Drivers (Chapter 2)' in Priyadarshi R Shukla and others (eds), *Climate Change 2022: Mitigation of Climate Change. Contribution of Working Group III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* (Cambridge University Press 2022) doi:10.1017/9781009157926.004

5 Felix Creutzig and others, 'Towards Demand-Side Solutions for Mitigating Climate Change' (2018) 8 Nature Climate Change 260

6 IEA, *Net Zero by 2050* (*International Energy Agency*, 2021) <www.iea.org/reports/net-zero-by-2050> accessed 16 October 2023

7 Kaya Axelsson and others, *Net Zero Stocktake 2023: Assessing the Status and Trends of Net Zero Target Setting Across Countries, Sub-National Governments and Companies* (NewClimate Institute, Oxford Net Zero, Energy and Climate Intelligence Unit and Data-Driven EnviroLab 2023)

8 *Ibid*

9 'COP28 Ends with Call to "Transition Away" from Fossil Fuels; UN's Guterres Says Phaseout Is Inevitable' (*UN News*, 13 December 2023) <https://news.un.org/en/story/2023/12/1144742> accessed 18 December 2023

10 For instance, in 2018, China and the United States alone were responsible for 40% of total GHG emissions – 58 $GtCO_2eq$/year. Meanwhile, the Middle East, Africa, and Southeast Asia accounted for only

With available data on the level of GHG emissions, concerns about violating the Earth's atmospheric boundaries are strong. Yet the overwhelming focus has been on a one-size-fits-all cosmopolitan approach, which is rife in global climate reporting and activism.[11] For example, the International Renewable Energy Association (IRENA)'s and International Energy Association (IEA)'s outlooks consistently focus on globalised pathways for the energy transition. IRENA, in its 2023 World Energy Transition Outlook, emphasises the need for a 'holistic global policy' because the decarbonisation process requires 'action on a global scale' to transform the 'global energy sector'.[12] For its part, the IEA summarily concludes that 'global commitments and actions' currently fall short of achieving 1.5°C and a 'transformation of the global energy system' is required.[13]

1.1. *Conceptualising the problem*

The globalised perspective of climate reporting indicates that the energy transition should be a cosmopolitan process with a global one-size-fits-all approach involving the developed and developing countries all taking similar action to decarbonise. Whereas their contributions to GHG emissions differ, the timeline of these countries to decarbonise is typically treated as the same in global climate reporting and activism. The global perspective is further evident in the call for an immediate end to fossil fuel development at COP28 in Dubai in 2023.[14] However, the economic injustice that will result from an immediate end to fossil fuel development in the GS and its implications for Sustainable Development Goals (SDGs) 1 and 2 have not been given the urgency they deserve. Furthermore, international financial institutions are no longer willing to finance conventional energy projects in developing countries due to the cosmopolitan perspective on climate change and the backlash during their financial auditing.[15] This approach can be viewed as cosmopolitanism without justice as it does not provide a varied end to fossil fuel development like the Montreal Protocol on Ozone-Depleting Substances did. Again, the loss and damage fund and other climate funding commitments have yet to be fully implemented. This raises the justice question of whether the developing and

~0.5 $GtCO_2eq$ over that period. IPCC Working Group III estimates East Asia (China) and North America (the US) to account for 27% and 12%, respectively, of the total GHG emissions of 59 $GtCO_2eq$/year in 2019, while the combined total for the entire Africa and the Middle East is 14%. This includes big producers like Saudi Arabia and consumers like South Africa. In the absence of these G20 countries from the equation, the GHG emissions of these two regions drop significantly. See William F Lamb and others, 'A Review of Trends and Drivers of Greenhouse Gas Emissions by Sector from 1990 to 2018' (2021) 16 Environmental Research Letters 073005; Intergovernmental Panel on Climate Change, *Emissions Trends and Drivers* (n 3)

11 Human Rights Watch, 'Uganda: Oil Pipeline Project Impoverishes Thousands: Land, Livelihoods Lost for Fossil Fuel Project Disastrous for Climate' (10 July 2023) <www.hrw.org/news/2023/07/10/uganda-oil-pipeline-project-impoverishes-thousands> accessed 3 April 2024

12 IRENA, *World Energy Transitions Outlook 2023: 1.5°C Pathway* (IRENA, June 2023) <www.irena.org/Publications/2023/Jun/World-Energy-Transitions-Outlook-2023> accessed 16 November 2023

13 IEA (n 6)

14 UN Sustainable Development Group, 'COP28 Ends with Call to 'Transition Away' from Fossil Fuels; UN Chief Says Phaseout Is Inevitable' (UNSDG, 13 December 2023) <https://unsdg.un.org/latest/stories/cop28-ends-call-%E2%80%98transition-away%E2%80%99-fossil-fuels-un-chief-says-phaseout-inevitable> accessed 3 April 2024

15 James Garvin, 'African Fossil Fuel Projects Face Up to Funding Challenges' (*African Business*, 12 July 2023) <https://african.business/2023/07/energy-resources/african-fossil-fuel-projects-face-up-to-funding-challenges> accessed 3 April 2024; see also Human Rights Watch (n 11)

underdeveloped countries in the Global South (DUCGS) and countries in the Global North (GN) should transition or decarbonise equally and simultaneously, irrespective of their contributions to GHG emissions.

Aside from falling short of energy justice and just transition considerations, another challenge with cosmopolitanism without justice is that its fundamental underpinnings ignore the Common but Differentiated Responsibilities (CBDR) principle – a policy principle captured in the United Nations Framework Convention on Climate Change (UNFCCC) and the Paris Agreement. The CBDR principle stipulates that the obligation to mitigate climate change should be apportioned in accordance with nations' differing capacities and responsibilities.[16] This principle also underscores the notion that while the goal of transitioning to clean energy is vital for the preservation of our planet, it should also uphold principles of equity and justice throughout the transition process. The current discourse (especially in global climate reporting and activism) prioritises the eventual outcome of the transition – a low-carbon, sustainable future – rather than ensuring that the transition is fair and considering the diverse circumstances of countries around the globe, especially those of the DUCGS. Some developed countries object to CBDR being a legally enforceable principle and have promoted heightened consistency in parties' responsibilities.[17]

Thus, the energy justice framework is relied on in this paper to question cosmopolitanism without justice and its failure to recognise the peculiarities of the DUCGS. Five sub-frames have been identified in energy justice conceptualisation. Using the sub-frame of recognition and distributive justice, this paper will interrogate the prevalent notion that decarbonisation must be 'globally holistic' or pursued at 'global scale' – these terms feature in IEA and IRENA reports[18] on decarbonisation and the energy transition. This paper relies on the notion of distributive justice based on the Rawlsian theory of justice and the Hegelian recognition paradigm to argue that a delayed transition will produce a justice pathway for DUCGS.

In what follows, we review the relevant literature (Section 2) and then analyse data on global emissions, highlighting the various contributions of GN and GS countries and how emissions in the past, present and future have been and will be driven by activities outside the GS (Section 3). Section 4 then discusses the justice implications of these data, highlighting how they demonstrate a lack of justice and that any transition that ignores this is not justified. Section 5 theorises/expands on the concept of delayed transition as a solution to lack of recognition. It also considers global instruments and principles, such as the Paris Agreement, Montreal Protocol, Kigali Amendment and CBDR, in terms of their recognition of the peculiarities of developing countries in the GS, and how some of these instruments support the idea of a delayed transition. Section 5 also discusses four identified benefits of a delayed transition. Section 6 is the conclusion.

16 Pieter Pauw and others, 'Different Perspectives on Differentiated Responsibilities: A State-of-the-Art Review of the Notion of Common but Differentiated Responsibilities in International Negotiations' (German Development Institute 2014) Discussion Paper 6/2014

17 Thomas Deleuil, 'The Common But Differentiated Responsibilities Principle: Changes in Continuity After the Durban Conference of the Parties' (2012) 21(3) Review of European Community & International Environmental Law 271; Paul G Harris and Jonathan Symons, 'Norm Conflict in Climate Governance: Greenhouse Gas Accounting and the Problem of Consumption' (2013) 13(1) Global Environmental Politics 9

18 See IRENA 2023 (n 12) and IEA 2021 (n 6).

2. Literature review

In the Anthropocene epoch, the pressing imperative to decarbonise energy systems can come into tension with considerations of energy justice.[19] Public discourses (climate reporting and activism) and the literature increasingly focus on the urgent need for rapid transition and leaving fossil fuel underground, often at the expense of justice issues.[20] However, incorporating energy justice principles is vital to realising an equitable and sustainable energy transition.

The risks and challenges posed by an immediate energy transition[21] for DUCGS are well documented.[22] These challenges include job losses, inequity,[23] resource stranding,[24] loss of revenue,[25] energy poverty and lack of energy access,[26] labour,[27] growing energy demand,[28] energy system planning,[29] lack of economic development,[30] multidimensional poverty,[31] green extractivism and colonialism,[32] and lack of justice.[33] This latter concern

19 Johanna Höffken, Auke Pols and Ankit Kumar, 'Energy Transitions in the Global South' in Ankit Kumar, Johanna Höffken and Auke Pols (eds), *Dilemmas of Energy Transitions in the Global South* (1st edn, Routledge 2021) <www.taylorfrancis.com/books/9780367486457/chapters/10.4324/9780367486457-9> accessed 21 November 2023

20 Christophe McGlade and Paul Ekins, 'The Geographical Distribution of Fossil Fuels Unused When Limiting Global Warming to 2°C' (2015) 517 Nature 187; Monica Noon and others, 'Mapping the Irrecoverable Carbon in Earth's Ecosystems' (2022) 5(1) Nature Sustainability 37; Kjell Kühne and others, '"Carbon Bombs" – Mapping Key Fossil Fuel Projects' (2022) 166 Energy Policy 112950, doi:10.1016/j.enpol.2022.112950

21 Victoria R Nalule and Smith I Azubuike, 'Challenges and Opportunities for Energy Transitions and Decarbonisation in Southern African Countries' in Tade Oyewunmi and others (eds), *Decarbonisation and the Energy Industry: Law, Policy and Regulation in Low-Carbon Energy Markets* (Hart 2020)

22 Siân Bradley, Glada Lahn and Steve Pye, 'Carbon Risk and Resilience' [2018] Chatham House, London; Steve Pye and others, 'An Equitable Redistribution of Unburnable Carbon' (2020) 11 Nature Communications 3968; Nalule and Azubuike (n 21)

23 Pye and others (n 22)

24 Sivan Kartha, Michael Lazarus and Kevin Tempest, 'Fossil Fuel Production in a 2°C World: The Equity Implications of a Diminishing Carbon Budget' (Stockholm Environment Institute 2016) <https://policycommons.net/artifacts/1359759/fossil-fuel-production-in-a-2degc-world/1972993/> accessed 30 November 2023; Augusto Heras and Joyeeta Gupta, 'Fossil Fuels, Stranded Assets, and the Energy Transition in the Global South: A Systematic Literature Review' [2023] WIREs Climate Change e866

25 Georges Alexandre Lenferna, 'Can We Equitably Manage the End of the Fossil Fuel Era?' (2018) 35 Energy Research & Social Science 217

26 Nalule and Azubuike (n 21)

27 Noel Healy and John Barry, 'Politicizing Energy Justice and Energy System Transitions: Fossil Fuel Divestment and a "Just Transition"' (2017) 108 Energy Policy 451

28 Bruna Jaeger and Patrícia Machry, 'Energy Transition and Challenges for the 21st Century' (2014) 2 IUFGSMUIN Model United Nations 337; Anthony Afful-Dadzie, Alexandra Mallett and Eric Afful-Dadzie, 'The Challenge of Energy Transition in the Global South: The Case of Electricity Generation Planning in Ghana' (2020) 126 Renewable and Sustainable Energy Reviews 109830

29 Eimear Heaslip and Frances Fahy, 'Developing Transdisciplinary Approaches to Community Energy Transitions: An Island Case Study' (2018) 45 Energy Research & Social Science 153

30 Mark Swilling and others, 'Linking the Energy Transition and Economic Development: A Framework for Analysis of Energy Transitions in the Global South' (2022) 90 Energy Research & Social Science 102567

31 George E Halkos and Panagiotis-Stavros C Aslanidis, 'Addressing Multidimensional Energy Poverty Implications on Achieving Sustainable Development' (2023) 16 Energies 3805

32 Felix Malte Dorn, 'Green Colonialism in Latin America? Towards a New Research Agenda for the Global Energy Transition' [2022] European Review of Latin American and Caribbean Studies/Revista Europea de Estudios Latinoamericanos y Del Caribe 137; Leandro Vergara-Camus, 'The Energy Transition and the Global South' in Paul Bowles and Henry Veltmeyer (eds), *The Essential Guide to Critical Development Studies* (Routledge 2021)

33 Ankit Kumar, Auke Pols and Johanna Höffken, 'Urgency vs Justice: A Politics of Energy Transitions in the Age of the Anthropocene', in *Dilemmas of Energy Transitions in the Global South* (Taylor and Francis 2021); Ping Huang and Ying Liu, 'Toward Just Energy Transitions in Authoritarian Regimes: Indirect

for lack of justice is particularly crucial because it has the potential to contribute to redressing the other identified challenges and related energy law imbalances. According to Heffron and others,[34] energy justice is the appropriate metric for achieving a just and equitable balance between the three dimensions of the energy trilemma.

Pye and others[35] argue that questions of justice (equity) in global climate change policy have been infused in the UNFCCC process for some time. The Paris Agreement acknowledges the principle of CBDR and establishes a framework where state parties pledge emissions reduction targets – nationally determined contributions (NDCs) – which reflect their differing circumstances and capacities. Pye and others, however, also note that the approach to addressing equity (justice) concerns under the Paris Agreement has only been in relation to fossil fuel consumption, not its production. That is, the Paris Agreement operates to place limits on national GHG emissions by restraining consumption from carbon-emitting sources. In contrast, addressing justice concerns from a production perspective has been a less travelled path.[36] This is due to a lack of sufficient interest to address the question of loss and damage claims.

Johansson[37] adduced a separate reason for this inchoate treatment of justice concerns in the transition under the Paris Agreement. According to Johansson, the agreement only recognises labour rights concerns in its preamble in recognising the need for a just transition.[38] It ignores other well-documented factors that breed injustices in the energy transition, which negatively impact DUCGS, such as socio-political inequities and economic inequalities. More so, as Abram and others[39] have aptly contended, creating jobs does not inherently ensure equitable outcomes, as justice encompasses factors beyond job availability or respect for labour rights. An example of such economic inequality is resource stranding. Caney[40] and Kartha and others[41] contend that policies leading to the stranding of resources in some (lesser developed) countries while allowing extraction (or use) in others will unavoidably raise equity issues. Kartha and others[42] further argue that allowing markets alone to determine the distribution of fossil fuel production could overburden the most vulnerable and least capable countries. In their view, states cannot reasonably be expected to limit their fossil fuel output without parallel broader efforts across the international community.

Participation and Adaptive Governance' (2021) 64 Journal of Environmental Planning and Management 1; Luis Mundaca, Henner Busch and Sophie Schwer, '"Successful" Low-Carbon Energy Transitions at the Community Level? An Energy Justice Perspective' (2018) 218 Applied Energy 292; Raphael J Heffron, 'Applying Energy Justice into the Energy Transition' (2022) 156 Renewable and Sustainable Energy Reviews 111936; Healy and Barry (n 28).

34 Raphael J Heffron, Darren McCauley and Benjamin K Sovacool, 'Resolving Society's Energy Trilemma through the Energy Justice Metric' (2015) 87 Energy Policy 168

35 Pye and others (n 22)

36 *Ibid*

37 Vilja Johansson, 'Just Transition as an Evolving Concept in International Climate Law' (2023) 35 Journal of Environmental Law 229

38 *Ibid*

39 Simone Abram and others, 'Just Transition: A Whole-Systems Approach to Decarbonisation' (2022) 22 Climate Policy 1033

40 Simon Caney, *Climate Change, Equity, and Stranded Assets*: *Research Backgrounder* (Oxfam America 2016)

41 Kartha, Lazarus and Tempest (n 24)

42 Sivan Kartha and others, 'Whose Carbon Is Burnable? Equity Considerations in the Allocation of a "Right to Extract"' (2018) 150 Climatic Change 117.

Pye and others found that equity principles require that the production of the remaining extractable natural resources (under the Paris Agreement's 2°C scenario) should come from developing countries.[43] This is because the rapid decline of fossil fuels needed to limit warming to 2°C under Paris Agreement has serious implications for these countries.[44]

Kartha and others[45] argue that an equitable transition would minimise economic disruption and lead to investment in diversification, energy access and job creation based on fair cost distribution. Muttitt and Kartha[46] posit that the social dimensions of rapidly phasing out fossil fuel extraction are an important but under-discussed aspect of climate justice. They explore principles for managing the phase-down of fossil fuels in an equitable manner. Three challenges are identified in managing the phase-down process: first, how do we define fair distribution between countries? The second issue is whether and how to account for forgone potential production, which can be uncertain to predict. The third concern is the presumed tension between equity and economic efficiency – for example, equity criteria could delay phasing out high-cost existing reserves. Caney[47] proposes three criteria to deal with the first challenge (defining a fair [re]distribution of the phase-down process): development stage of the country, available energy alternatives in the country, or historical responsibility (in terms of production and pollution). In this regard, Swilling and others argue that energy transition should focus more on economic development. Lenferna[48] argues that rich countries, who have benefited the most from fossil fuel extraction and who have the most available alternative development pathways, must lead in leaving fossil fuels in the ground. Lenferna further argues that there could be value in focusing on phasing out reserves where equity and economic efficiency goals align, for instance by prioritising the stranding of high-cost, carbon-intensive reserves in wealthy countries such as the oil sands in Canada or oil resources in Norway's far northern regions. This approach strands resources that are inefficient while also directing phase-outs towards countries with greater resources to manage the energy transitions.

Another aspect of injustice in the energy transition manifests because the energy system challenges of countries in different regions are hardly ever cosmopolitan. Halkos and Aslanidis contend that developed and developing countries have different energy issues, as the former deal with fuel poverty and the latter with energy poverty.[49] As Hansen and others[50] and Swilling[51] argue, the transition frameworks that 'work' for the GN context need to be adapted to fully understand the transition pathways emerging in the GS. Hence, according to Vergara-Camus, fossil fuels (especially natural gas) are still critical for economic growth and meeting energy demand in most developing

43 Pye and others (n 22)
44 *Ibid*
45 Kartha and others (n 42)
46 Greg Muttitt and Sivan Kartha, 'Equity, Climate Justice and Fossil Fuel Extraction: Principles for a Managed Phase Out' (2020) 20 Climate Policy 1024
47 Simon Caney (n 40)
48 Lenferna (n 25)
49 Halkos and Aslanidis (n 31); Vergara-Camus (n 32)
50 Hansen and others, 'Sustainability Transitions in Developing Countries: Stocktaking, New Contributions and a Research Agenda' (2018) 84 Environmental Science & Policy 198
51 Mark Swilling, *The Age of Sustainability: Just Transitions in a Complex World* (1st edn, Routledge 2020)

countries. Likewise, in some of these countries, renewable energy and fossil fuels are growing in parallel in what some call a 'counterrevolution'.[52]

These works highlight the present challenges in harmonising climate and transition goals with the need for equity and justice. In part, this conflation between the urgent call to address climate change through an immediate energy transition and the need to ensure justice has been recognised in the literature, with equitable and just outcomes highlighted as consistently under-recognised pieces of this jigsaw puzzle. Kumar and others[53] signpost this rift between climate urgency and justice, acknowledging that current actions and projects have still failed to address democracy, distributional justice, long-term sustainability, and gender and racial inequities.

The part that remains unaddressed is the optimal redistribution of benefits and burden (of an energy transition) in a way that advantages peoples and communities in DUCGS – hence, we propose a delayed transition as a way of acknowledging and ameliorating these social and economic inequalities in the GS as well as distributing the benefits and burdens of the energy transition to avoid disadvantaging these categories of people. It allows the use of a timeline for fossil fuel development in the DUCGS to meet their economic needs rather than an immediate halt of these activities. To advance this discourse, we turn to the notion of justice and its operationalisation in the energy transition debate. This is a fundamental backdrop against which we shall, in this paper, propose what we have termed a delayed transition. To do this, we first outline some background data that underlie the case of the DUCGS.

3. Global GHG emissions and the energy transition

As far back as 1992, state parties to the UNFCCC recognised that developed countries produced the largest share of historical and current global GHG emissions and that emissions by developing countries remained relatively low.[54] The carbon emissions level of the GS has remained low.

3.1. *Emission contributions of the GN*

From the onset of the Industrial Revolution in 1851 until the 21st century, global cumulative CO_2 emissions are put at circa 1.66 trillion metric tons.[55] Anthropogenic emissions from developed nations have contributed the most to these overall historical cumulative emissions, with around 57% of total global emissions coming from activities in the North.[56] Out of this, the USA, UK and EU-27 countries have contributed 47%, 25% and 22%, respectively, of all global historical production-based emissions since

52 Vergara-Camus (n 32)

53 Ankit Kumar, Auke Pols and Johanna Höffken, 'Urgency vs Justice: A Politics of Energy Transitions in the Age of the Anthropocene' in Ankit Kumar, Johanna Höffken and Auke Pols (eds), *Dilemmas of Energy Transitions in the Global South* (Taylor and Francis 2021) 1

54 See Preamble to the UNFCCC

55 'Cumulative CO_2 Emissions by World Region' (Our World in Data, 2019) <https://ourworldindata.org/grapher/cumulative-co2-emissions-region?stackMode=absolute> accessed 19 November 2023

56 Johannes Gütschow and others, 'The PRIMAP-Hist National Historical Emissions Time Series' (2016) 8 Earth System Science Data 571; H Damon Matthews, 'Quantifying Historical Carbon and Climate Debts among Nations' (2016) 6 Nature Climate Change 60

1851.[57] Unlike these countries, the majority of DUCGS, in the African continent for instance, have contributed an extremely miniscule fraction to total global GHG emissions over these 250 years. Specifically, current scientific evidence indicates that most African countries have been responsible for approximately 0.01% of cumulative worldwide emissions since 1851.[58]

One key reason for the historical disparity in GHG emissions contribution remains the size of the countries' gross domestic product (GDP) and per capita income. The sheer level of economic advancement and industrialisation translates to high energy consumption and transportation activities. Research points out that economic growth (measured as GDP), GDP per capita and population were the strongest drivers of GHG emissions in the last decade, in line with long-term patterns.[59] In particular, however, economic affluence (measured as GDP per capita) remains the strongest driver of these emissions, resulting especially in high energy consumption.[60]

3.2. *Emission contributions of the GS*

In contrast to the historical contributions of the USA, UK, and EU-27 countries, least-developed countries (LDCs) and small island developing states (SIDS), for instance, have contributed only a minuscule amount to historical GHG emissions growth and currently have the lowest per capita emissions globally. As of 2019, LDCs accounted for just 3.3% of total global GHG emissions that year (from both anthropogenic and non-anthropogenic sources), even though they represent 13% of the world's population. Meanwhile, SIDS were responsible for only 0.6% of global emissions in 2019 despite making up 0.9% of the global population. Looking cumulatively from 1850 through 2019, the contribution of LDCs to total global CO_2 emissions sits at just 0.4%. Over that same extensive period, SIDS contributed only 0.5% of cumulative CO_2 emissions globally. The extremely small contributions, both historically and currently, from these DUCGS stand in stark contrast to their disproportionate vulnerability to the impacts of climate change.[61]

3.3. *Emission contributions relative to GDP*

In general, data show that countries in the GN sustain higher levels of per capita emissions, in some cases as high as three times that of DUCGS. In terms of GHG emissions per capita, seven countries from the GN including China make up the top 10 emitters of global GHG emissions per capita as measured by the IPCC Working Group III in 2019.[62] For context, Australia's GHG emissions per capita is measured at 25t CO_2eq/year.

57 H Ritchie, 'Who Has Contributed Most to Global CO_2 Emissions?' (Our World in Data, 2019) <https://ourworldindata.org/contributed-most-global-co2#:~:text=The%20USA%20has%20emitted%20most,over%20the%20last%20266%20years> accessed 19 November 2023

58 *Ibid*

59 Luis F Sanchez and David I Stern, 'Drivers of Industrial and Non-Industrial Greenhouse Gas Emissions' (2016) 124 Ecological Economics 17; Arunima Malik, Jun Lan and Manfred Lenzen, 'Trends in Global Greenhouse Gas Emissions from 1990 to 2010' (2016) 50 Environmental Science & Technology 4722

60 Lamb and others (n 10)

61 Intergovernmental Panel on Climate Change, *Emissions Trends and Drivers* (n 3)

62 Lamb and others (n 10)

Meanwhile, the average GHG emissions per capita for African countries is 1.2 tCO_2eq/year. Also in 2019, developed nations maintained per capita CO_2 emissions from fossil fuels and industry at an average of 9.5 metric tons per person. This is more than triple the African countries' average of 1.2 tCO_2eq per capita. Latin America and the Caribbean emitted on average 2.7 tons per capita in the same year.[63]

3.4. *Locked-in emissions*

Some argue that developing the infrastructure and markets for any fossil fuel production will lock in emissions.[64] Global estimates show existing and planned fossil fuel infrastructure will emit around 850 $GtCO_2$ in emissions, if operated as they are presently.[65] Tong and others estimate current fossil-based infrastructure to hold approximately 658 Gt CO_2. These exceed the total cumulative net emissions permissible to limit warming to 1.5°C, and almost equal those in 2°C pathways.[66] However, a significant portion of these locked-in emissions come from or are set to come from the US, EU27 plus UK, China, and India, based on their existing and planned fossil fuel activities.[67] Yet again, the locked-in emissions for current and planned fossil-based infrastructure for countries in Africa (except South Africa), Latin America (except Brazil), Southeast Asia, the LDCs and SIDS are, in comparison, miniscule.[68]

Aside from these staggering estimates, further evidence shows that the probability of the largest emitters (principally US and China) meeting their NDCs and downsizing their locked-in emissions remain low. This is due in part to the fact that wealthy countries, such as the US, are still producing record quantities of fossil fuels daily.[69] McGlade and Ekins find that to meet the 2°C target, 33% of oil, 49% of gas, and 82% of coal reserves should remain unused globally by 2050. They also find that most of the coal reserves in China, Russia and the US, and most of the oil reserves in the Middle East, should be left underground.[70]

Past locked-in emissions are a critical part of this discourse because a substantial portion of previously emitted CO_2 persists in the atmosphere for centuries after initial release.[71] Due to this prolonged atmospheric lifetime, past emissions continue to drive climate change and its deleterious impacts experienced presently. Hence, those who demand historical accountability argue that despite nuanced increases in emissions of some developing countries, the accumulation of these huge emissions over the last two centuries obligates these GN countries to lead and finance mitigation efforts.

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63 *Ibid*
64 Pye and others (n 22)
65 Dan Tong and others, 'Committed Emissions from Existing Energy Infrastructure Jeopardize 1.5 °C Climate Target' (2019) 572 Nature 373
66 Intergovernmental Panel on Climate Change, *Emissions Trends and Drivers* (n 3)
67 Tong and others (n 65)
68 See Supplementary tables of country-by-country locked-in emissions in Tong and others (n 65)
69 In 2023, it obliterated a four-year record by producing 13 million barrels of crude oil per day. See Matt Egan, 'Under Biden, US Oil Production Is Poised to Break Trump-Era Records | CNN Business' (*CNN*, 9 August 2023) <www.cnn.com/2023/08/09/business/oil-production-biden-trump/index.html> accessed 1 December 2023
70 McGlade and Ekins (n 20)
71 IPCC, *Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [TF Stocker and others (eds)] (Cambridge University Press 2013), 1535

3.5. *Economic development and GHG emissions*

3.5.1. COUPLING AND (DE)COUPLING OF GHG EMISSIONS AND ECONOMIC GROWTH

There are studies which show that it is possible to decouple reduction in GHG emissions from economic growth.[72] Decoupling counters the argument that deep emission reductions will constrain economic growth. In other words, countries can grow economically without relying on the energy sector to drive this growth. Even where there is nascent evidence to this effect, however, it is, at best, relative. This decoupling does not happen on a widespread or global scale.[73] In other words, GHG emissions only show relative, not absolute, decoupling from GDP at the global level.[74] This is because the efficiency gains that could lead to emissions reduction are outpaced by a global increase in GDP per capita. The implication of these facts for the GS countries is this: as of today, compelling an immediate cessation of all forms of natural resource harnessing in the GS will, as shown by data, have worrying economic impacts on their development indices – GDP per capita – even if only in relative terms.

3.5.2. TRADE-, SUPPLY CHAIN- AND CONSUMPTION-BASED EMISSIONS

To stretch this further, a critical factor in the aforementioned quantum of GHG emissions in GS countries is the emission contribution from supply chains linked to consumption in GN countries (ie the so-called consumption-based emissions (CBEs)).[75] That is, emissions are driven by trade and consumption in GN countries rather than the GS where the emissions occur. International trade plays a major role in emissions in many countries, and data show emissions from the production and consumption of traded goods and services increased in the two decades after 1990.[76] In other words, to satisfy consumption patterns in the GN, emissions in the GS are triggered to satisfy those needs, essentially outsourcing emissions from GN to GS. This is reinforced by substantial disparities in consumption levels between developed and developing countries and between socioeconomic classes worldwide.[77] Advanced economies of the GN retain vastly higher per capita consumption than the developing GS. Research shows that in many Western countries, emissions from the consumption of goods have grown faster than intra-country territorial emissions.[78] The transfer of these emissions

72 Intergovernmental Panel on Climate Change, *Emissions Trends and Drivers* (n 3). Decoupling is absolute, relative, or nil. Absolute decoupling refers to a decline of emissions in absolute terms or as being stable while GDP grows (ie a decoupling index 11 greater than 1); relative decoupling refers to growth of emissions being lower than growth of GDP (a decoupling index between 0 and 1); and no decoupling refers to a situation where emissions grow to the same extent as or faster than GDP (a decoupling index of less than 0).

73 John Deutch, 'Decoupling Economic Growth and Carbon Emissions' (2017) 1 Joule 3

74 *Ibid*

75 CBEs are emissions along the entire supply chain induced by consumption, irrespective of the place of production. See Zhu Liu and others, 'Four System Boundaries for Carbon Accounts' (2015) 318 Ecological Modelling 118

76 Glen P Peters and others, 'Growth in Emission Transfers via International Trade from 1990 to 2008' (2011) 108 Proceedings of the National Academy of Sciences 8903

77 Yannick Oswald, Anne Owen and Julia K Steinberger, 'Large Inequality in International and Intranational Energy Footprints between Income Groups and across Consumption Categories' (2020) 5 Nature Energy 231; Thomas Wiedmann and others, 'Scientists' Warning on Affluence' (2020) 11 Nature Communications 3107

78 Peters and others (n 76)

through CBE has been identified as a key driver of emissions in developing countries,[79] and it is indeed a notable failure of the one-size-fits-all approach to energy transition and climate governance. This also has led to the adverse outsourcing of emissions from the GN to the GS.

3.6. *Energy transition, emissions, energy justice: why these data matter*

The negligible historical, present and future GHG contributions from DUCGS stand in stark contrast to the outsized emissions originating from countries in the GN over the same periods. This has several implications for the energy transition and justice discourse. One is that the countries most responsible for the highest historical GHG emissions should carry the greater onus to pursue aggressive emissions reductions in the present day and into the future.

Another implication is that these imbalanced contributions justify our call for a just (re)distribution of the global carbon budget available under either the 1.5 or 2°C scenario. Carbon budget, as per the IPCC definition, refers to 'the maximum amount of cumulative net global anthropogenic CO_2 emissions that would result in limiting global warming to a given level with a given probability, taking into account the effect of other anthropogenic climate forcers'.[80] This (re)distribution of the carbon budget should entail that DUCGS have the greatest allocation from such a budget given their historical emissions, locked-in emissions, and low Human Development Index. This will also entail that the distribution of unburnable carbon and unextractable fossil fuels be just and reflect both the comparatively low GDP per capita of most DUCGS and their low Human Development Index. The suggestion that there may be a weak case for a distribution of the carbon budget based on economic conditions (such as the Human Development Index)[81] completely ignores the premise that for many of these countries, economic factors are part of, but not the only consideration in, resource allocation and extraction. Considerable social and political factors weigh heavily on their individual rational choices as well as sovereign actions.

Furthermore, this issue (of injustice in the energy transition) is aggravated by two dichotomous realities: many countries in the South will be most impacted by climatic changes, yet there remains political and social opposition to climate action through the energy transition. Thus, a third implication of an unjust transition is the lack of socio-political support for climate action through energy transitions in DUCGS that will follow a disregard for their circumstances. It will also create justification for the resistance, and outright opposition, to positive climate-friendly policies; and will enable disinterest in any positive citizen action towards climate mitigation. It will also lead to a re-enacting of the mistakes of the past, where North–South power and economic dynamics create imbalances that are detrimental to local communities and indigenous people. However, concerns about SDGs call for a holistic approach to transitioning that ensures sustainability and justice.

79 *Ibid*
80 IPCC, 'Annex I: Glossary', in Priyadarshi R Shukla and others (eds), *Climate Change 2022 – Mitigation of Climate Change* (1st edn, Cambridge University Press 2023)
81 Lamb and others (n 10)

4. Energy justice and energy transition

4.1. *Using justice as a framework for the GS energy transition*

A conceptualisation of energy justice and a just energy transition should begin with what constitutes justice in society. Answering this has been a preoccupation of political philosophers across different times. The perspectives of such political thinkers vary broadly from viewing justice as maximising aggregate utility, virtue, liberty, and the well-being of the lowest member of society.[82] Energy justice can be achieved by applying extant conceptions of justice to the energy transition. Indeed, justice in the energy industry has, for the last decade, been discussed within the framework of the notion of energy justice. Energy justice is conceptualised as the achievement of 'equity in both the social and economic participation in the energy system, while also remediating social, economic, and health burdens on marginalised communities'.[83] Heffron[84] identifies five broad constituent elements of energy justice. These are procedural, restorative, cosmopolitan, distributive and recognition justice.[85] We are most concerned here with the latter two: distributive and recognition justice. They are most relevant for our analytical framework because they ask the most pertinent questions about fair distribution and recognition of the peculiar circumstances of the DUCGS.

Although commonly credited with addressing the problem of a socially just distribution of societal goods, John Rawls proposes a recognition as well as a distributive model of justice by asserting, firstly, that 'Each person is to have an equal right to the most extensive scheme of equal basic liberties compatible with a similar scheme of liberties' and, secondly, that 'Social and economic inequalities are to be arranged so that they are both reasonably expected to be to everyone's advantage'.[86] The presence of an equal right is unveiled by recognising that right, and when such a right is recognised it can then be asserted via tools and institutions of society. Thus, justice, recognition of peculiar circumstances, and distribution of benefits depend on each other, and justice is a criterion, among others, to accomplish recognition and distribution in transitions.[87]

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82 Michael Jakob and Jan Christoph Steckel, 'The Just Energy Transition' [2016] Background Paper for the WWF 622539162. On John Rawls, see the following: J Rawls, *A Theory of Justice* (rev edn, Harvard University Press); John Rawls, *Justice as Fairness: A Restatement* (Harvard University Press 2001). In sum, John Rawls argues that the correct principles of justice are those that would be agreed to by all rational and free persons, placed in an imaginary original position behind a veil of ignorance (without knowing their place in society, their class, race, sex, abilities, intelligence or strengths, or even their conception of good).

83 Shalanda Baker, Subin DeVar and Shiva Prakash, *The Energy Justice Workbook* (Initiative for Energy Justice 2019)

84 Raphael J Heffron, 'Energy Justice – The Triumvirate of Tenets Revisited and Revised' [2023] Journal of Energy & Natural Resources Law 1

85 *Ibid*. For an in-depth discussion of these tenets, see the following literature: G Walker and R Day, 'Fuel Poverty as Injustice: Integrating Distribution, Recognition and Procedure in the Struggle for Affordable Warmth' (2012) 49 Energy Policy 69; Baker, DeVar and Prakash (n 83); C Ruano-Chamorro, GG Gurney and JE Cinner, 'Advancing Procedural Justice in Conservation' (2021) 15(3) Conservation Letters e12861; M Hazrati and R Heffron, 'Conceptualising Restorative Justice in the Energy Transition: Changing the Perspectives of Fossil Fuels' (2021) 78 Energy Research & Social Science 102115

86 John Rawls, 'Justice as Fairness: Political Not Metaphysical' in J Angelo Corlett (ed), *Equality and Liberty* (Palgrave Macmillan UK 1991)

87 Smith I Azubuike, *Risk Allocation and Distributive Justice in the Energy Industry: Law, Policy and Practice* (Edinburgh University Press 2024)

4.2. *Distributive justice and energy transition*

From a Rawlsian distributive perspective, justice emphasises important outcomes – benefits and burdens.[88] A key perspective on justice holds that fair systems of benefits and burdens should be allocated to those who deserve them. This means justice involves paying compensation for harm caused and punishing crimes, as well as having principles for the just distribution of benefits and burdens.[89] This perspective emphasises the distributional ethos of justice. Essentially, Rawls' theory stipulates that primary goods (ie liberties, opportunities, income and wealth) are to be equitably apportioned among all members of a society, with exception of the possibility of positive discrimination to further advantage the least privileged groups. Thus, distributive justice involves an impartial allotment of benefits and burdens among constituents of a defined community. Equitable distribution considers the quantity of resources, the procedural methodology of allocation, and the resultant distribution pattern. In this, distributive justice is not merely circumscribed to economic considerations; it also constitutes a normative tenet that accounts for the equitable allotment of the pros and cons of duties contiguous to energy systems. Also, this kind of distribution can manifest within political units such as nation-states, inter-nation-state relations, GN–GS dynamics, intergenerational ties, and among social groups.[90] The exception for the least advantaged group is that a distribution is just if it benefits the least disadvantaged in society. This principle suggests a fundamental redistribution of wealth by the government or society through the reallocation of such wealth from the wealthy and giving to the less privileged.

Within the context of the energy transition, justice advances the balance between benefits and burdens among states with rights and responsibilities in pursuing a just transition for the energy sector. This means appropriately and equitably assigning both benefits (eg access to electricity) and burdens (eg environmental externalities) across members of an energy system. Inequalities of benefits and burdens exist in the global decarbonisation process. Wealthy countries have the technical and regulatory expertise to drive a decarbonisation process. Yet wealthy countries have contributed the most to historical emissions and will continue to contribute the most to future emissions through locked-in emissions. This means they appropriate the benefits of a carbonised energy system as well as those of the decarbonisation process through controlling technological development, existing infrastructure, and supply chains for clean and low-carbon energy. In contrast, poorer countries bear the burdens and negative effects of climate change as well as the inequities of the decarbonisation process. Energy justice principles operate to remediate the negativities of these inequalities.

Distributive justice often connects with the other energy justice principles in examining the benefits and the negatives experienced by the different stakeholders; and in this case, more specifically, it bears a strong relationship with recognition justice. Further to this relationship, it becomes necessary, in the implementation of transition policies and actions, to recognise the peculiarities of the DUCGS as well as to fairly distribute benefits and burdens to them.

88 Rawls, 'Justice as Fairness: Political Not Metaphysical' (n 86)
89 Azubuike (n 87)
90 Adrian Martin and others, 'Justice and Conservation: The Need to Incorporate Recognition' (2016) 197 Biological Conservation 254

4.3. *Recognition justice and energy transition*

Recognition justice has deep roots in the philosophy of Georg W Hegel. Hegel is considered the founder of the European ethics of recognition. He conceived the struggle against injustice and human freedom as based on an essential need to be recognised and respected by others.[91] For Hegel, such recognition is the basis of individual freedom, and the failure to respect key aspects of one's identity and beliefs is a denial of freedom.[92] Hegel sees recognition by others, especially the more powerful, as essential for freedom and self-worth. Failure to respect cultural identities causes psychological and freedom harm. Advancing justice requires reciprocal recognition of relationships alongside economic and political lines. The denial of recognition leads to harm.

Consequently, recognition justice confers a status upon relevant stakeholders that particularly warrants the acknowledgment of and respect for their different conceptions of value, identities, circumstances and practices.[93] Recognition injustice may encompass marginalising a group of countries' axiology of the climate that does not reinforce the prevailing economic, political or cultural interests.[94] Thus, recognition injustice leads to cosmopolitanism without justice. In the energy transition, recognition justice is concerned with 'who' is affected by decisions, policies and actions in the energy industry[95] – that is, 'who' needs to be recognised and respected. Recognition justice accounts for the heterogeneous perspectives of different countries rooted in social, economic, cultural and racial differences and varied strengths. In essence, people and countries affected by the energy transition need to be a central focus for all stakeholders in distributing benefits and burdens. As Hegel posits, such recognition is the basis for essential well-being without which harm will occur.

Recognition and distributive justice are the centripetal forces for our proposal for a delayed or staggered energy transition in favour of DUCGS, whose economic growth and Human Development Index are closely tied to the global energy system.

5. A delayed transition for the GS?

5.1. *Theorising the concept of a delayed energy transition for developing countries in the GS*

5.1.1. What is the concept of a delayed energy transition

The concept of a delayed energy transition for DUCGS is adapted from the Montreal Protocol on Substances that Deplete the Ozone Layer. Article 5 of this protocol allows developing countries that had not been the major creators of the environmental problem and with low annual calculated consumption of the controlled substances identified in it to 'delay compliance' with the protocol to meet their domestic needs.[96] The article also

91 Martin and others (n 90)
92 Andrew Buchwalter, 'Hegel, Global Justice, and Mutual Recognition' in Andrew Buchwalter (ed), *Hegel and Global justice* (Springer 2012)
93 Dominic Lenzi and others, 'Justice, Sustainability, and the Diverse Values of Nature: Why They Matter for Biodiversity Conservation' (2023) 64 Current Opinion in Environmental Sustainability 101353
94 *Ibid*
95 Martin and others (n 90)
96 Article 5 of the Montreal Protocol on Substances that Deplete the Ozone Layer, as adjusted and amended in 2016 (the Kigali Amendment)

specified a financial transfer mechanism for the funding and technical assistance of these developing countries to eliminate or reduce the use of ozone-depleting substances. DeSombre noted that this approach has been adopted to solve several global environmental challenges.[97]

In this paper, 'delayed transition' entails that, from an economic, social, technical and energy justice perspective, DUCGS countries should not transition their economies using similar implementation periods to those in the GN. It means, for instance, that while fossil fuel development can end now in the GN, the GS should be allowed some time before being required to end fossil projects. DUCGS require different emissions timelines to achieve a low-carbon transition. As such, they should be allowed to access financing from global financial institutions to develop their resources in the interim. As noted above, while countries in the GN may suffer fuel poverty, DUCGS typically suffer both fuel and energy poverty. In the same vein, while countries in the GN have locked in emissions for decades that put the achievement of Paris Agreement goals at risk, most DUCGS' planned or potential projects do not have emissions profiles that lock in carbon outside the 1.5 or 2°C pathways. And, as we have seen, the historical contributions to global GHG emissions of DUCGS pale in significance in comparison to those of their more developed counterparts. Thus, a delayed energy transition will allow these countries to develop and grow in a way that does not jeopardise 1.5 or 2°C if the GN acts responsibly. These submissions are reinforced by the premise that there is no legal obligation on the part of DUCGS to decarbonise within the same time frame or follow the same pathway as countries in the GN.

These considerations call for a just distribution of the global carbon budget(s) available under either the 1.5 or 2°C scenarios. This distribution should entail that DUCGS have the highest allowance from such budget(s). This will also require that the distribution of unburnable carbon and unextractable fossil fuels be just and reflect both the historical emissions profiles of these countries as well as their relatively small locked-in emissions. The suggestion that there may be a weak case for a distribution of carbon budget based on peculiar economic conditions (such as the Human Development Index)[98] completely ignores the premise that for many of these countries, economic factors are part of but not the only consideration in resource allocation and extraction. Considerable social and political factors weigh heavily on their individual rational choices as well as sovereign actions.

5.1.2. What the delayed energy transition concept is not

The concept of a delayed transition does not deny the fundamental science upon which the modern international climate regime is based. Rather, it reinforces it by asserting that the most carbonised economies must take leadership in the decarbonisation process. This position is not entirely new. Article 3(1) of the UNFCCC provides in part that ' … developed country Parties should take the lead in combating climate change and the adverse effects thereof'. Strengthening this, Article 4(1) of the UNFCCC provides that parties should consider 'their common but differentiated responsibilities and their specific

97 Elizabeth R DeSombre, 'The Experience of the Montreal Protocol: Particularly Remarkable, and Remarkably Particular' (2000) 19(1) UCLA Journal of Environmental Law and Policy 49

98 Lamb and others (n 10)

national and regional development priorities, objectives and circumstances' in formulating and implementing programmes to mitigate climate change.

A delayed energy transition for DUCGS draws from, for instance, the *Lofoten Declaration on the Managed Decline of Fossil Fuels*, in which more than 300 organisations called for a managed decline of fossil production where developed nations exhibit responsibility and engage their moral duty to lead.[99] According to this declaration, fossil fuel phase-out 'should be first addressed by countries, regions, and corporate actors who are best positioned in terms of wealth and capacity to undergo an ambitious just transition away from fossil fuel production'. The DUCGS, which are the least carbonised economies, must plot a decarbonising pathway that allows for industrial development, poverty eradication, and growth.

In this regard, a delayed transition recognises the right of DUCGS to sustainable and affordable energy and calls for the equitable sharing of benefits and burdens in decarbonisation policymaking – at global, regional and national levels. As Rawls postulated, primary goods in society should be arranged so that they are to everyone's advantage. A delayed transition for DUCGS, as an approach, recognises the inequalities between the GN and GS, and such recognition applies to the broader part of society (ie everyone's advantage), especially in the realisation of SDGs 1 and 2 for DUCGS. However, an immediate energy transition disadvantages DUCGS in the sense that it limits their ability to provide desperately needed energy and achieve SDGs 1 and 2 (hunger and poverty).

5.2. *Delayed transition within international climate law*

Is there a legal basis for the call for a delayed transition for DUCGS countries? Whilst there are no express provisions on this concept in international (climate) law, there are provisions that provide a strong indication of what such a concept embodies in practice, and we can draw learnings from these provisions.

5.2.1. The Montreal Protocol

The Vienna Convention for the Protection of the Ozone Layer through the Montreal Protocol on Substances that Deplete the Ozone Layer, as adjusted and amended in 2016 (the Kigali Amendment), provides for a delayed transition model that pursues equity and fairness. The background to the Montreal Protocol was the concern of the scientific community regarding the health impacts of ozone-depleting substances. Diplomatic efforts were driven by the United Nations Environment Programme (UNEP) that culminated in the 1985 Vienna Convention and its 1987 Montreal Protocol. The protocol aimed to reduce the production and use of ozone-depleting substances.

At the time, these substances were ubiquitous – used in refrigeration, air conditioning, cleaning solvents, manufacturing, etc. The protocol started modestly, phasing out a few of these substances. As scientific evidence grew, more substances were annexed to the list of substances to be phased out on accelerated schedules. In connection with climate

99 'A Global Call for Climate Leadership' (The Lofoten Declaration, 6 August 2021) <https://lofotendeclaration.org/#read> accessed 28 November 2023

change, Guus Veldes and others identified that the protocol is essential in climate protection and has reduced emission targets more than the first commitment period of the Kyoto Protocol.[100] Again, the climate and ozone affect each other as humidity, temperature, winds, and the presence of other chemicals in the atmosphere influence ozone formation, while the presence of ozone, in turn, influences those atmospheric components.[101]

Against this backdrop, Article 5 was inserted into the wording of the Montreal Protocol. This article is headed the 'Special situation of developing countries', and it allows developing countries (Article 5 parties) with very low historical consumption of ozone-depleting substances extra time to phase out the use of these substances. Further, it subjects their obligations to receiving financial support (Article 10 – financial mechanism) and technology transfer (Article 10A – transfer of technology). Specifically, Article 5 (1) of the protocol (Special situation of developing countries) provides to the effect that developing country parties whose calculated level of annual per capita consumption of substances controlled under the protocol is less than 0.3 kilograms per capita on the date the protocol enters into force for them, or at any point until 1 January 1999, may delay compliance with phase-out obligations by ten years. This is intended to allow them to meet basic 'domestic needs'.

Such developing countries are then allowed to report their inability, having taken all practicable steps, to implement the obligation to maintain levels of banned substances such as chlorofluorocarbons (CFCs), hydrochlorofluorocarbons, halons, halogenated CFCs, carbon tetrachloride, etc., due to the inadequate implementation of the financial mechanism and the requirements of technology transfer.[102] To qualify for developing country status, parties need to apply to the Meeting of Parties for such designation.[103] Where a party with such designation exceeds the maximum level of consumption, the situation will be addressed on a case-by-case basis such that the decision on country A's action could differ from that for country B.[104] This process inculcates justice and equity in the sense that each country's situation is considered individually in light of their specific circumstances.

Despite this delayed approach of the Montreal Protocol, it has been a success in terms of the phase-out of banned substances and their impact on the ozone layer. The recovery of the ozone layer, which the protocol targets, has been classified as 'progressing' by the World Meteorological Organization (WMO);[105] the protocol has been described as a 'success' by past and present United Nations Secretaries-General;[106] and UNEP confirms that the ozone layer is recovering and the ozone hole over Antarctica is gradually

100 Guus JM Velders and others, 'The Importance of the Montreal Protocol in Protecting Climate' (2007) 104 (12) PNAS 4814

101 Tatiana Egorova and others, 'Montreal Protocol's Impact on the Ozone Layer and Climate' (2023) 23, Atmospheric Chemistry and Physics 5135

102 Article 5(6) of the Montreal Protocol on Substances That Deplete the Ozone Layer 1987 (as amended in Kigali)

103 See Decision IV/7: Definition of developing countries, *Decisions of the Meetings of the Parties to the Montreal Protocol*.

104 See Decision IV/15: Situation whereby parties operating under paragraph 1 of Article 5 exceed the consumption limit set in that Article, *Decisions of the Meetings of the Parties to the Montreal Protocol*

105 World Meteorological Organization, 'Scientific Assessment of Ozone Depletion 2022: Executive Summary' (WMO 2022) GAW Report 278

106 'Marking International Day, Secretary-General Says Montreal Protocol's Success Protecting Ozone Layer Powerful Example of Multilateralism in Action' (*UN 2022*) <https://press.un.org/en/2022/sgsm21447.doc.htm> accessed 29 November 2023

closing.[107] Under current policies and obligations, estimates indicate the ozone layer will likely recover to 1980 baseline levels globally by around 2040. Specifically, recovery to pre-hole conditions is projected by approximately 2066 over Antarctica, 2045 over the Arctic region, and 2040 for the remainder of the planet.[108] The use of these banned substances in Article 5 countries has declined and continues to do so.[109] The Montreal Protocol shows that there can be success in a polyvalent and diverse approach. With its delayed and staggered approach, where focus is placed on state parties that are heavy emitters of ozone-depleting substances, we learn that success can be achieved. This approach fulfils the arguments of proponents of the principles of recognition justice as it considers the peculiarities of different countries and their contribution to ozone depletion.

5.2.2. The UNFCCC and the Paris Agreement

As already suggested above, the UNFCCC supports the treatment of DUCGS as a group with differentiated responsibilities. Articles 3 and 4 capture principles that allow countries to take their development into full consideration in deploying climate mitigation policies. These principles include that developed countries assume leadership in climate actions and that state parties to the UNFCCC shall uphold the CBD and Respective Capabilities (RC) principle. Putting the CBDR principle into practice, the UNFCCC separated state parties' duties in a binary manner, distinguishing 'Annex I' group members – consisting of Organisation for Econmic Co-operation and Development (OECD) member states and additional countries going through the transformation to a market-based economy – from 'Non-Annex I' parties (most developing countries). Essentially, this categorisation was based on the economic welfare of states – measured by their GDP per capita. However, we argue that a delayed transition approach today should be based on per capita emissions as well as per capita income, to reflect a distributional sharing of benefits and burdens. Along with this, the list of differentiated countries would then be updated frequently to reflect the emissions profile and 1.5/2°C pathways. This approach of the UNFCCC has been criticised.[110] Yet what our suggestions show is that the approach needed refinement, not a complete disregard. Aligning the UNFCCC approach to that of the Montreal Protocol (with a moratorium on certain countries' use of banned substances, plus periodic updates) would be more effective than a one-size-fits-all approach.[111]

For its part, the Paris Agreement's objective of limiting global temperature rise to well below 2°C and striving for 1.5°C links the tenet of equity to the wider ambitions of poverty elimination and sustainable development. This acknowledges that concerted

107 'Ozone Layer Recovery Is on Track, Helping Avoid Global Warming by 0.5°C' (*UNEP*) <www.unep.org/news-and-stories/press-release/ozone-layer-recovery-track-helping-avoid-global-warming-05degc> accessed 12 May 2023

108 *Ibid*; Tina Birmpili, 'Montreal Protocol at 30: The Governance Structure, the Evolution, and the Kigali Amendment' (2018) 350 Comptes Rendus Geoscience 425

109 Birmpili (n 108)

110 Thomas Deleuil, 'The Common But Differentiated Responsibilities Principle: Changes in Continuity After the Durban Conference of the Parties' (2012) 21(3) Review of European Community & International Environmental Law 271

111 Stephen A Montzka, Edward J Dlugokencky, and James H Butler, 'Non-CO_2 Greenhouse Gases and Climate Change' (2011) 476 Nature 43; Guus JM Velders and others, 'The Importance of the Montreal Protocol in Protecting Climate' (2007) 104(12) Proceedings of the National Academy of Science 4814.

worldwide efforts aligned with the 2015 SDGs are imperative for impactful climate change mitigation, with equity constituting an orienting principle for such collective action.[112] It also links to the principles of justice and fairness, CBDR-RC, different national circumstances, recognising specific needs and special circumstances. The agreement, though, is universal, without a fundamental legal differentiation between developed and developing countries. All countries alike have an equal obligation to contribute to climate change mitigation. While there is no legal obligation and penal consequences for failure to achieve the mitigation goals as defined by their NDCs, countries are obliged to 'pursue domestic mitigation measures', towards achieving their NDC objectives.[113] The notion of justice in the energy transition process is recognised by the Paris Agreement,[114] but this recognition of a just transition under the Preamble of the Paris Agreement mainly relates to transition impacts on the workforce. Despite the well-documented shortcomings of this preambular approach,[115] it remains an important signpost offered by the parties to the principles that should govern the new international climate order beginning with the agreement.

Both the UNFCCC and the Paris Agreement signpost the CBDR-RC principle. The CBDR mandates a recognition of the needs and circumstances of countries at different stages of development, as was done with the Montreal Protocol.[116] 'Differentiated' in the CBDR principle implies adopting and implementing differing commitments for different states while considering their diverse circumstances and capacities, their historical contributions to CO_2 emissions and their specific development needs.[117] To be differentiated, DUCGS need to adopt and implement commitments that are different from those of developed countries in the GN. All commitments need to align with countries' capacities, historical GHG emissions, and developmental needs.

Therefore, relying on the CBDR-RC and special circumstances requirements, a delayed transition for the DUCGS is not only well founded, but also acknowledged, albeit tacitly, as the preferred approach in the post-Paris Agreement climate order. An acceptance of this by developed countries and affiliated institutions will assure a justice-proof energy transition for both the GN and GS.

The summation of these principles from the UNFCCC and Paris Agreement points to the direction that there is a foundational legal basis for DUCGS to be treated differently in global energy transition policymaking. As identified above, the subframes of justice point to a Rawlsian distribution of benefits and burdens, as well as a Hegelian recognition of the peculiarities of all parts of society. With the recognition of justice and differentiated responsibilities in the climate legal order, the global community ought not to relegate these principles to the sidelines as secondary considerations, as IEA and IRENA reporting or some countries have done in the past.

112 MR Allen and others, '2018: Framing and Context' in V Masson-Delmotte and others (eds) *Global Warming of 1.5°C: IPCC Special Report on Impacts of Global Warming of 1.5°C above Pre-industrial Levels in Context of Strengthening Response to Climate Change, Sustainable Development, and Efforts to Eradicate Poverty* (1st edn, Cambridge University Press 2022)

113 Article 4(2) of the Paris Agreement

114 See the Preamble

115 Johansson (n 37)

116 Pauw and others (n 16)

117 Tuula Honkonen, 'The Common But Differentiated Responsibility Principle in Multilateral Environmental Agreements: Regulatory and Policy Aspects' [2009] The Common But Differentiated Responsibility Principle in Multilateral Environmental Agreements 1

5.3. *Applying the delayed energy transition concept to the energy justice framework*

Here, and in Table 1, we employ a conceptual framework advanced by Martin and others (2016)[118] that breaks down the approaches to defining justice into four compartments: subjects, harms, mechanisms and responses. We apply these four components to the two key manifestations of injustice in the ET discourse – distribution and recognition – in Table 1. We use this to delineate the constituent actors impacted by injustice within the energy transition discourse.

The subjects are the 'who' of the injustice: who is affected by the transition processes and policies. The justification for categorising DUCGS as subjects of recognition and distributive injustice is captured in section 3 of this paper. Two reasons can be deciphered from our discourse so far. First, DUCGS are part of a global energy system in terms of energy needs, but not in terms of use (consumption) and availability (energy access). Second, GHG emissions from DUCGS are negligible compared to the substantial historical and present-day emissions from highly industrialised countries. A rapid transition from fuels (such as natural gas) will create risks of stranded assets, energy poverty, job losses, unmet energy demand, etc., for the DUCGS economies. This entails that, as stakeholders, DUCGS are entitled to a moral consideration of having peculiarities that deserve recognition.

Harms – the kind of injustice suffered by the subjects – can vary across national and regional boundaries. We have identified well-documented challenges presented by the energy transition to DUCGS countries. Generally, these energy transition risks apply across DUCGS. Poverty, for instance, has been identified as a distributional problem faced by these countries.[119] Poverty in this regard is multidimensional: economic poverty as evidenced by low per capita income; energy poverty with very low energy penetration in some countries as well as low per capita access to reliable electricity, cooking fuel, and energy for heating or cooling; and, finally, social poverty through, for instance, the absence of public amenities or access to public institutions. The lack of recognition of these peculiar economic and social circumstances in DUCGS leads to inequitable sharing of benefits and burdens. This can be enabled or exacerbated by the energy transition process where vital assets can be stranded, leading to political and social opposition to the energy transition in some DUCGS. Consequently, global climate actions that fail to recognise poorer countries' right to develop natural resources for their economic growth, as well as their proportionally small aggregation of emissions, remain unjust.

Mechanisms through which harms are delivered or expressed to the subjects appear in various forms. The mechanisms we identify include ignoring past, present and future emissions profiles of these DUCGS in global climate agenda-setting, which is, among other things, a product of climate reporting and activism. We also identify a dilution of Paris Agreement principles – intended or unintended – as harbingers of injustice in the transition process. These principles captured in its preamble include equity (justice and fairness), common but differentiated responsibilities and respective capabilities, different national circumstances, and recognising specific needs and special circumstances. Furthermore, we identify limited financing or steep financing conditions for

118 Martin and others (n 90)
119 *Ibid*

Table 1. Delayed transition and the energy justice framework.

	Recognition justice	Distributive justice
Subjects	Developing and underdeveloped countries in the GS (DUCGS)	
Harms	Lack of recognition of the peculiar circumstances of DUCGS	Leading to inequitable sharing of benefits and burdens of the energy transition
Mechanisms	Historical emissions and locked-in emissions Dilution of the United Nations Framework Convention on Climate Change (UNFCCC) and Paris Agreement principles Limited financing for large energy projects Intellectual property-related restrictions to technology transfer	
Responses	Delayed transition Reaffirmation of peculiarities	Delayed transition within the bounds of a new reaffirming international climate order (ie similar to the Montreal Protocol) Equitable distribution of global carbon budget

large energy projects in DUCGS as well as intellectual property-related restrictions to technology transfer as mechanisms for enabling injustices in the decarbonisation process. Research shows that the economic structures of society are sources of injustice.[120] The withholding of financing for critical projects and the use of restrictive patents for key technologies only serve to extend the injustices that countries without these economic advantages experience.

What responses will be appropriate in the light of these factors? To address the justice concerns of the energy transition, the peculiarities of DUCGS need to be re-asserted and reaffirmed in global climate discourses. Achieving the 1.5/2°C targets will be challenging if important justice issues are relegated to the sidelines in energy transition discussions, global climate reporting and climate activism. The approach adopted in the Montreal Protocol (as amended in Kigali 2016) presents a workable pathway where the benefits and burdens of decarbonising the energy sector can be arranged to address the highlighted concerns. Along with this is a fair (re)distribution of the global carbon budget so that DUCGS who have contributed the least to historical GHG emissions will be allocated a sizeable share of such a budget. Justice for the least contributors to GHG emissions should be projected or we risk presenting the energy transition with socio-political opposition in DUCGS. The proposal for a delayed transition offers a viable solution to the justice issues raised and as an antidote to socio-political opposition to the energy transition in the GS.

6. Conclusion: a pathway for the energy transition

To assure a justice-proof energy transition, developed nations and affiliated international organisations need to uphold and recommit to the founding principles of the new climate legal order – differentiated responsibility based on the respective capacities of states. On this basis, and as part of a new vision for the international climate order, we make the case

120 Craig Parsons, *How to Map Arguments in Political Science* (OUP 2007)

for a delayed (phased) transition for the DUCGS. This vision should be akin to the Montreal Protocol approach, where countries' responsibilities are bifurcated based on their emissions history and profiles as well as their respective capacities. This also implies that high-income countries with higher capacity to constrain fossil fuel production need to act first, while a timeline is set for DUCGS. In essence, the focus on achieving cleaner energy systems should be balanced with a commitment to addressing the disparities in capacities and responsibilities among nations. A more equitable approach to the global energy transition would not only accelerate the shift to clean energy but also ensure that the burdens and benefits of this transformation are distributed fairly, respecting the differentiated responsibilities of countries in the fight against climate change.

As emphasised in this paper, a delayed transition for the GS will (i) enable the region to address sustainability-related issues of hunger and multidimensional poverty, which are essential to realising other SDGs, whilst gradually implementing energy transition policies; (ii) present an attractive case against political and social opposition to energy transition in the GS; (iii) advance the goal of CBDR already recognised under international climate treaties and the bifurcated approaches established in such treaties; and, finally, (iv) ensure that developed countries contributing the most to GHG emissions take the lead now and act while the GS countries effectuate national contributions sustainably.

We have only provided a primer on what a delayed energy transition could entail. The concept is in no way axiomatic. Dealing with the entire contours of what a delayed transition should embody cannot be achieved within the remit of one paper. However, what is argued is that a delayed transition for DUCGS could address the multitude of justice issues in the energy transition process, especially as climate funding and loss and damage implementation have yet to achieve their full purpose.

Disclosure statement

No potential conflict of interest was reported by the author(s).