

CLIMATE JUSTICE WITHOUT BORDERS:

CAP AND SHARE AS A MITIGATION AND CLIMATE FINANCE SOLUTION

August 2023



Autonomy



EQUAL RIGHT

ECONOMIC JUSTICE WITHOUT BORDERS

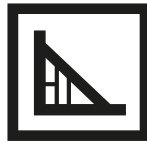
Authors



EQUAL RIGHT
ECONOMIC JUSTICE WITHOUT BORDERS

Equal Right is a global justice organisation that works for economic and climate justice without borders

<https://www.equalright.org>



Autonomy

Autonomy is an independent research organisation which creates data-driven tools and research for sustainable economic planning.

<https://autonomy.work/>

This discussion paper was drafted by **Laura Bannister** at Equal Right with additional economic modelling by **Luiz Garcia** at Autonomy.

Contributions to the text were provided by **Father Arbogast Lekule** of the Church of the Sacred Heart of Jesus, Sittingbourne and former chair of the Justice and Peace Commission of the Archdiocese of Southwark, and by **Rahul Basu** at The Future We Need.

Editing support has been provided by **Lucy Shaverin** and **Tchiyiwe Chihana** at Equal Right.

Equal Right and Autonomy are co-founders of the Cap and Share Climate Alliance



The authors would like to thank the other co-founders of the Cap and Share Climate Alliance for their input into this paper

We invite and welcome feedback and contributions to further develop these ideas. Please contact us at info@equalright.org

Published 2023 by © Autonomy

Autonomy Research Ltd
Cranbourne
Pilcot Road
Crookham Village
Hampshire
GU51 5RU

CONTENTS

4

Executive summary

9

Introduction

22

Part I

Cap and share: How it works

49

Part II

Outcomes and effects of cap and share

70

Part III

Getting it started: country-by-country implementation

78

Conclusion

82

Appendices



EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

- » This report sets out a plan for a cap and share system that would tackle the climate crisis, fund a transformational global Green New Deal, and drastically reduce levels of international poverty and inequality.
- » A 'cap and share' system would involve the introduction of a 'cap' on fossil fuels, along with a fee paid 'at source' for extraction. Proceeds from this make polluters pay, and then share the resulting wealth amongst communities and citizens.
- » We propose two kinds of cap and share system:
 - » **A global system**, in which all fossil fuel extraction is capped and charged for at source, and all countries and peoples enjoy the economic benefits of the cap and share system. This is achieved through a Global Climate Commons Fund capable of funding a global Green New Deal, including over \$1 trillion in annual climate grants, and a global citizen's dividend.
 - » **A country-by-country implementation model**, which could act as a 'stepping stone' to a global scheme. This retains key features of the global model including international pooling of carbon charge proceeds, but can be implemented independently by a small group of forward-thinking countries who choose to lead the way.

- » To stay within the carbon budget required to keep global temperatures below 1.5C of warming, our global system would gradually reduce the extraction cap by around 10% per year. This would see global annual carbon extraction fall from the present rate of 36.3GT, to 2.6GT in 2050 and then 0.01GT in 2100 (i.e., effectively eliminated).
- » Alongside a cap, we suggest an initial carbon price of \$135 per tonne of CO₂e - increasing by 16.7% per year - to ensure fossil fuel companies pay their share. Every tonne of CO₂e would then cost \$6,014 by 2050, and \$30,100 by 2100, based on existing IPCC recommendations.
- » **Proceeds raised by carbon pricing would generate between \$5 trillion and \$20 trillion dollars each year until the 2070s (after which amounts collected decline due to greatly reduced fossil fuel extraction)- \$1838.3 trillion in total by 2200.** We suggest that these funds are used to:
 - » Compensate positive action: ensuring that countries and communities who choose to leave fossil fuels in the ground are compensated for doing so.
 - » Fund a people-owned green energy transition: a publicly owned fund could power the green transition at a global scale, supporting a massive increase in people-owned renewable energy generation and research as well as major expansions in public transport, zero-carbon housing and green industrial development.
 - » Pay for reparations and beyond borders: those most affected by the climate crisis should be offered reparations, through grants for loss and damage, adaptation and mitigation measures.

- » Provide basic income security to people everywhere, through a monthly cash 'dividend' payment to every adult and child. By distributing these payments from income of the people's fund, rather than from the carbon charge itself, we ensure that these dividends can continue indefinitely, therefore providing a permanent defence against global inequality and extreme poverty.
- » Our modelling finds that a cap and share system would prove globally transformational - supporting not only the emissions cuts, investment and infrastructure required to tackle the climate crisis, but also drastically reduce levels of global inequality and poverty.
 - » By paying out \$71 a month by 2050, the dividend scheme will be substantial enough to significantly reduce longstanding global inequality and would wipe out extreme poverty entirely (defined as living on less than \$2.15 per day).
 - » In the system's first year, the dividends are sufficient to cushion people everywhere from rising fossil fuel prices (which would be inevitable under any meaningful climate action). People in lower income countries gain the most, seeing a potential monthly loss of \$8 per person turned into a gain of \$23 per person. In high income countries people's extra costs are reduced down from \$81 to \$50 per person per month.

- » At a 'macro' level, substantial amounts of wealth - equivalent to at least 3.3% of global GDP - would be redistributed from Global North to South, in line with climate justice. In 'Year 1' of a global scheme - taking into account dividend payments, 'sharing' of national emission allowances and proposed climate grants - low income countries would see an annual increase in their total national income of \$1058 per capita, while lower middle income countries would enjoy a boost of \$713 per person. Further boosts to lower income countries' prosperity would likely be achieved as a result of the fund's spending on a global green new deal, which would create decent jobs and new national industries.

- » We suggest the creation of two new international organisations to manage this system: 1) a Global Climate Commons Trust to set the carbon cap, issue fossil fuel extraction licences and national allowances, collect the licence fees and issue LITG compensation; and 2) a Global Climate Commons Fund to preserve the carbon charge money for the future, invest it in Green New Deal projects, and distribute the proceeds as climate grants and as dividends.

In addition, we also model a two-country version of the system featuring Costa Rica and Denmark (the chairs of the Beyond Oil and Gas Alliance). We find that this would bring significant benefits to both nations in terms of climate mitigation, wealth redistribution and poverty eradication, and we conclude that this positive finding is likely to apply to other groupings of countries, especially where a mixture of Northern and Southern nations implement the system together. This suggests that cap and share has significant beneficial potential if implemented on a gradual country-by-country basis, providing a positive way forward for proactive countries wishing to take action for climate justice.



INTRODUCTION

INTRODUCTION: CLIMATE FINANCE FOR CLIMATE JUSTICE

Our atmosphere is global. Climate change, caused primarily by wealthy communities in the Global North, leads to a loss of land, rights and livelihoods in the Global South and for disadvantaged communities everywhere. The climate justice movement, which has emerged from Black, Indigenous and youth activist networks, demands that these issues be addressed in our global response to the climate emergency.

“Young people around the world are anxious about the future, and rightfully so, but a warped focus on it suggests that the general populace would rather care about white children’s future than Black, Brown and Indigenous children’s present. If this is to continue, then we have already lost.”

Disha A Ravi, ‘The climate crisis is about the Global South’s present’¹

Funding climate action at the necessary scale is an immense global challenge. Funding climate justice - in which the inequities linked to climate change are also addressed - is harder still. Where could the money come from? And how could we ensure that climate mitigation and climate justice can proceed hand in hand?

Cap and share aims to provide part of the answer. It offers a radical but practical solution that could halt fossil fuel extraction, fund a global green transition, and return extracted wealth to communities all over the world.

This paper presents a proposal for how climate reparations, redistribution and finance could actually happen, and how we could work together at the global level to achieve this. It outlines a workable international system that would simultaneously end fossil fuel extraction and build the alternatives we need, while redistributing long overdue financial resources back to the global majority.

¹ Ravi, D. A. (2021) ‘The climate crisis is about the Global South’s present’, *Al Jazeera*. Available at: <https://www.aljazeera.com/opinions/2021/11/19/climate-crisis-is-global-south-today-not-global-norths-tomorrow>

BOX 1: WHOSE EMERGENCY?

Father Arbogast Lekule² grew up in Kiraracha on the slopes of Mount Kilimanjaro in Tanzania. His family and their neighbours had small coffee and banana farms but sourced much of what they needed - building materials, firewood, animal forage and more - from the forest. In the 1980s and 90s, the effects of climate change were becoming obvious as the glaciers on the mountain were melting and local sources of water became diminished.

Under pressure from the international community, the Tanzanian government introduced strict laws against using the forest. Local people were told that their own 'overuse' of forest resources was causing the glaciers to melt, and eventually the police were deployed and the forest was closed. The villagers received no compensation for this dispossession: years later they still suffer hardship and many have moved into cities. But, of course, the glaciers on the mountain continue to disappear at an alarming rate.

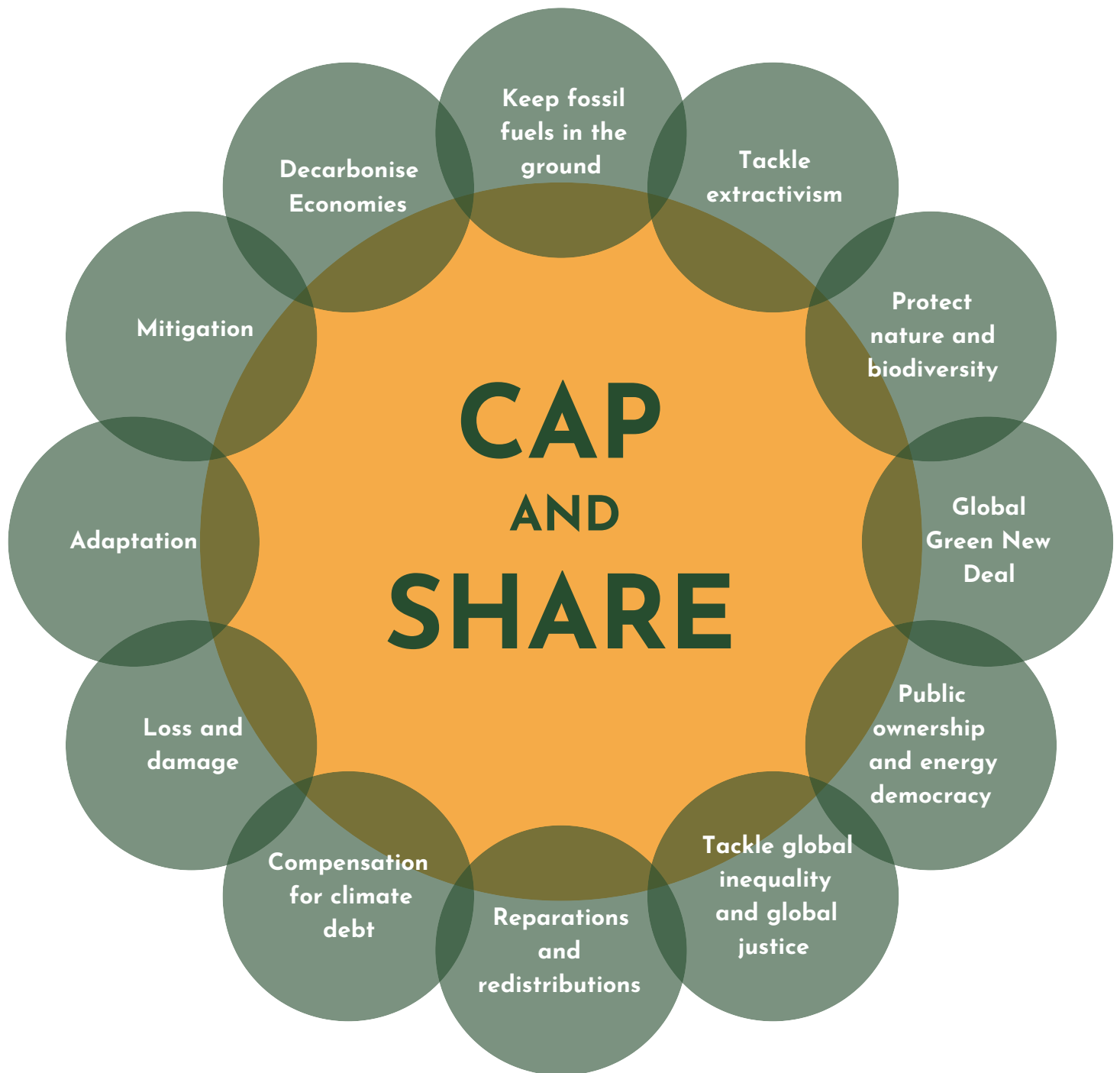
REDISTRIBUTIVE CLIMATE FINANCE CAN MAKE OTHER ACTIONS POSSIBLE

Cap and share does not aim to be the whole answer to the climate crisis. Instead, its role would be to link together the other vital initiatives that we need for climate justice, providing a backdrop of redistributive climate finance that would make other essential actions possible.

With a carbon cap in place and reducing each year, fossil fuel non-proliferation and climate mitigation would become a meaningful reality. The fund would pay for a global Green New Deal, to establish an ecosocial energy transition and energy democracy. 'The share' would fund adaptation and compensate for loss and damage, while achieving international redistribution and a degree of reparations (though action to address historic climate debts and other injustices would still be needed).

In these ways and more, cap and share would help to address key climate justice demands and support the initiatives already proposed by the global climate movement.

² Father Arbogast Lekule is the priest of the Church of the Sacred Heart of Jesus in Sittingbourne, UK, and former chair of the Justice and Peace Commission of the Archdiocese of Southwark. The author would like to thank Father Lekule for sharing this story with her.



HOW IT WORKS

Cap and share has, at its core, a simple idea: to cap fossil fuel extraction, make polluters pay, and then share the resulting wealth amongst communities and citizens.

A number of cap and share proposals have been proposed over recent years.³ The system proposed here is one variant, which could be implemented globally or by a group of forward-thinking countries acting together. The proposed system would consist of six parts:

³ See, for instance, FEASTA (2023) 'Cap and Share'. Available at: <https://www.feasta.org/category/documents/projects/cap-and-share/>

CAP & SHARE	<p>» CAP EXTRACTION</p> <p>Keep fossil fuels in the ground: a legally binding cap on fossil fuel extraction, applied via a compulsory licensing system, would directly keep fossil fuels in the ground and would reduce towards zero over a few decades.</p>
	<p>» NATIONAL ALLOWANCE</p> <p>Limit countries to their fair shares: a parallel system of national allowances would limit each country's fossil fuel use and compensate countries with low use ensuring that nations converge on an equal and fast-reducing amount of fossil fuel consumption.</p>
	<p>» CHARGE</p> <p>Make polluters pay: an extraction license fee, aka a carbon charge, would make fossil fuel companies pay, and would capture the value of rising fossil fuel prices for the people</p>
	<p>» COMPENSATION</p> <p>Compensate positive actions: countries and communities that choose to leave fossil fuels in the ground would be compensated for doing so. N.B. payments would NOT be made for "carbon offsets": only for coal, oil and gas left in the ground.</p>
	<p>» FUND</p> <p>Fund a people owned green energy transition: a people-owned integrational fund would hold and invest the rest of the carbon charge money. This would fund the global green transition and keep it in the public ownership at the local, national and international level.</p>
	<p>» SHARE</p> <p>Reparations and redistribution beyond borders: provide climate reparations to MAPA communities via grants for loss and damage, adaptation and mitigation. Redistribute to the global grassroots via monthly cash payments to every adult and child.</p>

Table 1: Components of a cap and share systems

We describe two implementation options. The first is a global system, in which all fossil fuel extraction is capped and charged for at source, and all countries and peoples enjoy the economic benefits of the cap and share system.

As a potential 'intermediary step' however, we also outline a country-by-country implementation model. This retains key features of the global system including, crucially, international pooling of carbon charge proceeds, but can be implemented independently by a small group of forward-thinking countries who choose to lead the way.

BOX 2: WHY GO INTERNATIONAL?

"We must move beyond country-by-country responses that have become bogged down by issues of who should do more. We need a global mechanism for raising reconstruction grants."

*Mia Mottley, Prime Minister of Barbados and founder of the Bridgetown Initiative.*⁴

This system proposes an *international* carbon charge with *international* redistribution of its proceeds. This is in contrast to most carbon charging proposals, which treat the atmosphere as a national (or sub-national) commons and keep any money arising from it for their 'own' people.⁵

Keeping things national might appear to be a simple option, but it creates a major global justice problem as the money raised through *national* carbon charges lands in *national* government budgets. This sets up a 'highest polluter wins' scenario in which the Global South massively loses out.

Countries that consume a lot of fossil fuels would raise significant funds from carbon charges, so in a national system, those citizens would get a big carbon payout (either in cash or via public spending). However, citizens in countries that 'do the right thing' and use little fossil fuel - many of which are lower income countries - would raise very little through a national carbon charge, and so would get practically nothing in climate finance or dividends.

An international cap and share system tackles this problem as the money lands in an international pot, ready to benefit every person equally. This is a radical way forward but it is entirely feasible from a practical perspective. Most importantly, it is vital for climate justice - we should settle for nothing less.

4 Government of Barbados (2022) 'The 2022 Bridgetown Initiative'. Available at: <https://www.foreign.gov.bb/the-2022-barbados-agenda/>

5 See, for instance, Citizens' Climate Lobby (2023) 'The Basics of Carbon Fee and Dividend'. Available at: <https://citizensclimatelobby.org/basics-carbon-fee-dividend/>

IMPACTS: CLIMATE MITIGATION AND ECONOMIC JUSTICE

A carbon cap, backed up by a 'Leave it in the Ground' (LITG) compensation offer, would directly ensure that fossil fuels remain in the ground. This would keep overall global fossil fuel use within the world's remaining carbon budget, and offer a much better chance of keeping global temperature rises within safe levels.

At the same time, the carbon charge would raise trillions of dollars each year, would be used to build the future we need, and provide economic security to people everywhere as we weather the transition. Specifically the system would redistribute the carbon charge money from fossil fuel firms and wealthy consumers to:

- » Governments and communities - as Leave It In The Ground compensation, climate grants and other payments.
- » Ethical companies and other organisations who are implementing the global Green New Deal, as grants, loans and investments.
- » All of us, as monthly cash dividends to every adult and child.

We model a range of options for raising and distributing the carbon charge. One potential scenario is presented below.

SCENARIO 1							
Year	Carbon extraction cap (gigatonnes)	Carbon charge (per tonne of CO ₂ e)	Amount raised by carbon charge	Amount put into the fund	Total amount in the fund	Amount of climate grants distributed this year	Monthly dividend per person
2025	36.3	\$135	\$4.9 trillion	\$0.2 trillion	\$0.2 trillion	\$1 trillion	\$31
2030	21.4	\$288	\$6.2 trillion	\$0.9 trillion	\$3.2 trillion	\$1 trillion	\$37
2040	7.5	\$1,317	\$9.8 trillion	\$3.3 trillion	\$23.6 trillion	\$1 trillion	\$51
2050	2.6	\$6,014	\$15.6 trillion	\$8.4 trillion	\$81.4 trillion	\$1 trillion	\$71
2060	0.9	\$14,300	\$12.9 trillion	\$9.4 trillion	\$190.3 trillion	\$1 trillion	\$70
2080	0.1	\$19,300	\$2.1 trillion	\$1.8 trillion	\$282.4 trillion	\$1 trillion	\$71
2100	0.01	\$30,100	\$0.4 trillion	\$0.04 trillion	\$304.2 trillion	\$1 trillion	\$71
2200	0.0000004	\$30,100	\$0.00001 trillion	\$0.00001 trillion	\$420.1 trillion	\$1 trillion	\$102
Total CO ₂ e extracted up til 2200 (Gt)			363	Total money distributed to the people and to climate work			\$1838.3 trillion

Table 2: Amounts raised and redistributed in Scenario 1

This scenario achieves a significant redistribution of wealth from fossil fuel firms and wealthy consumers (who would pay most of the carbon charge) to the global grassroots, with around 5% of overall global GDP redistributed from fossil fuels to the global green transition, and at least 3.3% of global GDP moving from Global North to South.⁶ By 2048 our dividends would exceed \$2.15 per day, so would - by definition - eradicate extreme poverty permanently, worldwide.

All countries participating in the system would benefit from the fund's Green New Deal investments, which would build the renewable energy infrastructure, sustainable housing and public transport that countries urgently need. The provision of \$1 trillion per year of climate grants, as well as direct transfers from Northern to Southern governments via the national allowance system, would facilitate debt-free climate action and other public spending in Southern countries and within other MAPA communities.

Cap and share would achieve significant redistribution on an international scale. Although this system provides equal universal dividends to every person worldwide, the aggregate effect of all of its elements together would be a massive and long overdue return of wealth from the Global North to the South.

Cap and share would therefore achieve several key climate justice goals. It would halt fossil fuel extraction, close down polluting extraction sites and fund the green transition. At the same time it would redistribute wealth to the global 99%, primarily from Global North to South, preserve wealth for future generations, and directly end extreme poverty everywhere through the provision of monthly cash.

POLITICAL FEASIBILITY

The change proposed by this system is unapologetically transformative. We face a climate emergency, and any globally-just solution to it will be necessarily disruptive. Nevertheless, this system has been designed with political feasibility firmly in mind.

Firstly, we recognise that 'Leave it in the Ground' compensation is essential to enable countries with substantive fossil fuel reserves to join the system. Many of the world's richest economies have historically built their wealth and dominance, at least in part, by extracting and using their fossil fuels. Requiring countries who still have fossil fuel reserves - some of whom are lower income countries - to forgo this advantage is both unfair and infeasible. As such, compensation equivalent to the value (less extraction, risk and other costs) of those fuels will make the system very much more attractive.

⁶ The 5% figure is calculated by comparing the amount that would be paid in carbon charges in the system's first year against 2021 global GDP as stated here: <https://data.worldbank.org/indicator/NY.GDP.MKTP.CD> (accessed 26/06/2023). Because the charge rises faster than the cap falls, the amount raised by the carbon charge would increase until the mid 2050s (after which it would decline as fossil fuel extraction would be reduced to such low levels), so the proportion of global GDP redistributed to the green transition may then be higher. However, this will of course depend on future levels of GDP growth, which may continue to rise but also may not rise if a degrowth strategy is pursued. The 3.3% figure is calculated by multiplying the annual per capita gains on low and lower middle income countries by their populations, and then assessing that as a percentage of current global GDP.

Secondly, we propose a system of climate grants and Green New Deal investments to ensure that green investment happens in every participating country, without requiring governments to exclusively finance such transitions themselves. Green investment is already, in most countries, lower than governments and their electorates would prefer, because most investments are undertaken by private funds where profit (often short-term profit) rather than the wider public interest remains the key goal. The huge, publicly-owned investment fund and the climate grant budget provided in this system would help to plug this gap, helping countries to build their post-carbon societies with less pressure on national budgets.

Thirdly, our cap and share system includes monthly dividends paid out to all - a transformative step for at least half of the world's people, and beneficial for most of the rest. This is likely to help embed the system's popularity and legitimacy, especially with households on lower incomes, who comprise the majority of the population in most countries. In democracies, popular support is highly significant in making an initiative politically feasible. Furthermore, dividends will bring extra money into most countries, to be spent into local and national economies, generating economic multiplier effects (i.e. more economic activity and jobs) and higher national tax revenues. Governments often stake their reputations on their ability to manage the economy 'well', so these economic benefits are likely to be popular with governments too.

Fourthly, we recognise that people care about global justice more than is often portrayed or presumed by their governments. We know there is a significant appetite for radical change among populations of high income countries, even if the effects are felt within their household budgets. A team based at the French National Centre for Scientific Research (CNRS) has found high levels of support amongst populations in the Global North for a global climate plan similar to this cap and share proposal, and have found that a progressive candidate may win a larger vote share by endorsing it.⁷

⁷ Fabre, A., Douenne, T., Mattauch, L. (2023) 'International Attitudes Towards Global Policies'. Available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4448523

Finally, the country-by-country implementation model described in Part III provides a politically feasible route by which this system could take hold. Countries that are keen to take action on climate change, are committed to climate justice and/or are interested in providing unconditional cash transfers for their people would be empowered to take the lead by implementing the system alongside one or more other early pioneers. Potential first-adopters include countries that stand to benefit economically from a cap and share system (most of the Global South), the countries of the Beyond Oil and Gas Alliance such as Costa Rica and Denmark (see Part III), countries or regions with a strong interest in climate justice and cash dividends such as Barbados, other small island states and the EU, and well-off fossil fuel extractor countries such as Norway that increasingly recognise their national responsibility for climate change and are developing an appetite to act.

Implementation by a few of these frontrunners would demonstrate the feasibility of the system and generate evidence on its impacts. If the impacts are positive (as expected), activists and progressives in other countries are likely to pick up on it and may begin demanding that their own governments sign up. In this way, the system could gradually spread to many countries and eventually reach global implementation.

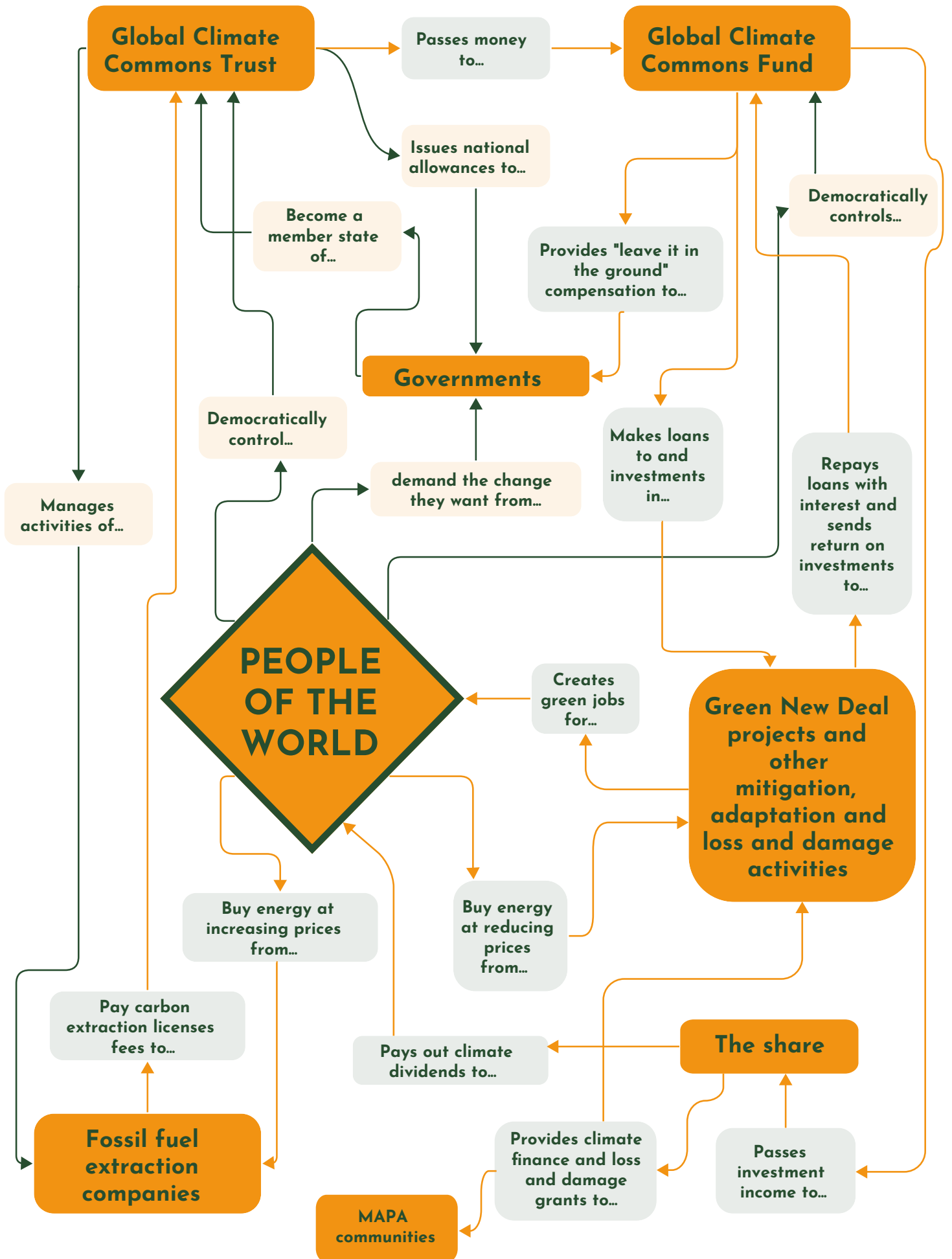
Of course, there still remain political challenges that cannot be simply 'designed out'. Although there is evidence of appetite for change within the Global North, it may still be difficult for governments and citizens in wealthier nations to accept the effects of a fair global sharing of revenues, which will inevitably mean a smaller-than-usual slice for the well-off. The fossil fuel industry and its supporters are also likely to fight back fiercely, as this new system would constitute an existential challenge to their profits.

Therefore, as with most meaningful climate initiatives, implementing cap and share would be far from easy. This system is large scale and radical, but this is only because it offers no less than what needs to be done. It will take a dedicated international effort from the climate justice movement, and from the movement's allies in government and international institutions, to develop the necessary public and political demand and get cap and share off the ground. This is a daunting prospect, but doing nothing is more daunting still. The time has come to fight for what we need.

A DAY IN THE LIFE OF CAP AND SHARE

The cap and share system proposed would involve the creation of new global bodies, which would interact with national governments, communities, fossil fuel extraction companies, organisations working on the Green New Deal and - of course - us, the people of the world.⁸ The graphic below summarises the ways in which these bodies would interact, and how money and decision-making would flow around the system.

⁸ We would like to thank FEASTA, originators of the CapGlobalCarbon proposal, who provided much of the initial inspiration for this proposal, as well as ongoing input and collaborative development. See <https://capglobalcarbon.org/> for details of their similar proposal.



A journey around this diagram helps to envision how this all works in practice, starting in the centre with 'the people of the world'.

The system begins by citizens demanding that their governments become member states of the system. We then directly participate in the democratic management of the trust and fund.

All fossil fuels extracted within - or imported into our country will have to have been extracted under licence in line with the agreed global carbon cap, and will have to be consumable within the country in line with our national allowance.

In the early years at least, we will continue to buy coal, oil and gas from fossil fuel companies, who now must apply to the trust for licences for every bit of fuel they want to dig up. If their licence requests fit within the global carbon cap, and they pass the prioritisation process, the licences would be granted for specific extraction sites and amounts.

Over the years fewer licences would be granted, meaning less and less fossil fuel is dug up and burned, effectively halting fossil-fuel induced climate change.

This would also mean there is not much fossil fuel available to buy, which would push up the market price. To capture this inevitable price increase, fossil fuel companies would be obliged to pay high and rising fees for the extraction licences they are granted. These licence fees - the carbon charge - would be collected by the trust who would then pass the money to the Global Climate Commons Fund.

Some of the money would be used to pay compensation to governments that are opting to leave their fossil fuels in the ground, and in the early days most of the rest would be distributed as climate grants to MAPA communities and as cash dividends to us all. Over the years a growing proportion - eventually 100% - of the money remaining after LITG compensation would be added to the fund for green investment.

The fund would invest the money in Green New Deal projects in every participating country, either by loaning money to them at interest, buying shares in those projects, or by setting up its own projects that are 100% owned by us all (but would be run locally, with community control). Some would get well-paid jobs with those projects, and others would benefit from the energy that they produce, the public transport they provide or the houses that they build. Those projects would make money (by selling renewable energy or sustainable housing, etc) and return loan interest or a shareholder dividend back to the fund each year.

That interest and investment income would then be added to the amount being directly distributed, and then shared between two activities. Some of it would be paid out as climate grants for mitigation, adaptation and loss and damage, mostly for MAPA communities. This would build and rebuild yet more useful infrastructure, creating further green jobs, and providing vital support for countries and communities facing climate crisis. The rest would be paid out to every adult and every child in the world, every month forever, as our carbon dividend.

A TRANSFORMATIVE OPPORTUNITY

For a single policy, cap and share packs a lot of punch. Via a simple mechanism, it has the potential to prevent runaway climate change and build an alternative, while simultaneously establishing economic democracy, reducing global inequality and ending extreme poverty.

The significant redistribution of money proposed would help every one of us - but especially those on the lowest incomes - to adapt to our changing climate, both individually, and via public spending on a Green New Deal and on other key infrastructure and services. It would also compensate us every month for the losses, damage and hardships that we may suffer. With climate grants and carbon dividends provided at the scale discussed below, climate change will not cause famine or destitution, and every person will have a small secure income that they can use to help them adapt. In these ways, cap and share gives us options: a way out, a way through and a way forward.



**PART I
CAP AND
SHARE:
HOW IT WORKS.**

CAP AND SHARE: HOW IT WORKS

A SIX-PART SYSTEM FOR CLIMATE JUSTICE:

The system presented in this paper consists of six parts, all of which play a crucial role in halting climate change and achieving climate justice. The descriptions below focus on the global system that we ultimately hope will be created. Options for an intermediary step to this global system, working one country at a time, are presented in Part III.

I. CAP EXTRACTION: KEEP FOSSIL FUELS IN THE GROUND

To keep fossil fuels in the ground we need direct, supply-side controls on fossil fuel extraction.⁹ A global body, which we call the Global Climate Commons Trust, should be created and empowered through international law to control and licence all fossil fuel extraction.¹⁰ Companies wishing to extract fossil fuels, for instance by mining coal or drilling for oil or gas, would become legally obliged to apply to the trust for a licence for each and every tonne of coal, barrel of oil or cubic metre of gas that they extract. These licences would then travel, in digital form, with the fossil fuels to which they are connected. This would provide traceability of fossil fuels as they move through supply chains, allowing buyers later in the chain to present these licences during compliance checks and ensuring the system is difficult to undermine (see the section on Enforcement).

The annual amount of licences issued should start at current levels of fossil fuel extraction - 36.3 gigatonnes of CO₂e¹¹ - and then be reduced each year towards zero. To have a decent chance of keeping global temperature rises below 1.5, we need to extract and burn no more fossil fuel than is remaining within our global 'carbon budget'.¹² The remaining global carbon budget as of the start of 2023 is 380 Gigatonnes of CO₂e.¹³

9 Equal Right would like to thank CapGlobalCarbon whose ideas provided much initial inspiration for this element of the system. See <https://capglobalcarbon.org/>. This proposal has also been influenced by a growing literature on fossil fuel extraction caps, for instance, Pellegrini, L. (2021) 'Institutional mechanisms to keep unburnable fossil fuel reserves in the soil', *Energy Policy* 149. Available at: <https://www.sciencedirect.com/science/article/pii/S0301421520307400>; Pellegrini, L. & Arsel, M. (2022) 'The Supply Side of Climate Policies: Keeping Unburnable Fossil Fuels in the Ground', *Global Environmental Politics* 22(4): 1-14. Available at: <https://direct.mit.edu/glep/article/22/4/1/113630/The-Supply-Side-of-Climate-Policies-Keeping>

10 We discuss options for the structure and legitimacy of this organisation later in the paper. It should also be noted that the cap and other regulations described in this paper should be understood as the regulatory baseline, and should in no way constrain local efforts to exceed these standards.

11 <https://www.iea.org/reports/global-energy-review-co2-emissions-in-2021-2> Accessed 16/11/2022

12 Sassams, L. (2018) 'Carbon Budgets Explained', *Carbon Budgets Initiative*. Available at: <https://carbontracker.org/carbon-budgets-explained/>

13 Friedlingstein, P. et al. (2022) 'Global Carbon Budget 2022', *Earth System Science Data* 14(11): 4811-4900. Available at: <https://essd.copernicus.org/articles/14/4811/2022/>

If 36.3 gigatonnes of extraction licences are issued in the system's first year, we need to reduce extraction by around 10% per year to stay within budget over the life of the system.¹⁴ Reduction rates of 5% and 15% per year are also modelled below for comparison.

It is important to note that the carbon cap system is not a carbon market and therefore no secondary trading in extraction licences should be permitted. Just as you cannot sell your driving licence to someone else (or at least not in a way that would actually permit them to drive), extraction licences would be issued to specific companies for specific extraction sites and could not be traded or exchanged. If the licences remained unused at the end of the year they could be passed back to the trust with some or all of the fee returned.

In this system, it is the companies - rather than the countries - extracting fossil fuels that would have to apply for licences. This raises two questions:

- » Given that there will be insufficient licences to go to all those who wish to extract, which companies would be granted extraction licences and which would be turned down?
- » Once fossil fuels have been extracted, how do we ensure that they - and the products made using them - are fairly distributed to countries and peoples around the world?

II. NATIONAL ALLOWANCES: ETHICAL PRIORITISATION TO ENSURE FAIR DISTRIBUTION OF FOSSIL FUEL PRODUCTION

To address the first question, a preference system will need to be developed by the trust (led by its democratic management body - see below) to ensure that the available fossil fuel licences are allocated to extractors in a fair, sustainable and practical way.¹⁵ This system should ideally consider:

- » Human rights, including whether free, prior, informed and continuous community consent for fossil fuel extraction is present, and whether rights provided under the UN Declaration on the Rights of Peasants and the UN Declaration on the Rights of Indigenous Peoples are duly respected.
- » Human health and ecology. Highly-polluting or damaging forms of extraction should be placed at the end of the queue for licences or excluded altogether.
- » The historic carbon emissions of the countries being supplied by each extractor. Countries that have used little fossil fuel to date should be first in line for what remains, if they so choose.

¹⁴ We model up to 2200 by which point fossil fuel extraction has effectively ceased and therefore the payments from the fund are broadly stable year-on-year.

¹⁵ Note, in this system this will never be a free allocation: all licences must be paid for at full price.

- » The importance of fossil fuel royalties and employment in supporting lower income economies. Where the carbon cap allows and if they wish to do so, lower income countries should be able to make use of their fossil fuel reserves and related industries before richer countries do.
- » Practical and technical issues, for instance relating to pipeline and refinery availability.

Extractors that score badly against these priorities would be last in line for licences, and would increasingly miss out. Without licences, fossil fuel production at those sites would become illegal and the sites would be forced to shut down. Fossil fuel sites that are fairer, cleaner, and that benefit a wider population would be the last ones standing (although eventually, as the cap shrinks effectively to zero, these would close down too).

The second question digs into the difficult issue of how to share the world's remaining extractable fossil fuel in an unequal world. Once fossil fuels become scarce as a result of the cap, there is a significant risk that rich countries, companies and individuals will buy up all the fossil fuel that is left, leaving little or nothing for those with lower incomes. If climate justice is our objective, and if we want to enable country-by-country implementation of the system, it will be necessary to create a parallel system of national fossil fuel allowances, which would operate alongside the global licensing system to ensure that a country's overall national consumption of fossil fuel is within agreed limits.

In practical terms, this would mean that each consignment of fossil fuels would need be accompanied by two digital documents: a licence showing it has been extracted legally in line with the global extraction cap, and a national allowance allocation to show that it has been imported/distributed in line with the relevant country's national share of global fossil fuel consumption (see the section below on Enforcement for more on this). These allowance allocations would be initially issued to each national government by the trust, and would then be distributed within each country by a relevant government agency. They would need to be acquired by the types of businesses listed below, in order for their operations to be legal:

- » Distributors of locally-extracted fossil fuels (e.g. the big firms that buy fossil fuels directly from refineries and sell them within that country)
- » Importers of fossil fuels and of goods made using fossil fuels (e.g. that contain 'embedded carbon')

Neighbouring countries who are in a customs union, have porous borders or who are simply happy to work together in this way could choose to merge their allowances, and their in-country allowance-allocation processes, in order to simplify trade between themselves.

How much fossil fuel should each country be allocated? This issue is complicated by the huge disparities in countries' per capita fossil fuel consumption. Carbon emissions in the United States are nearly 15 tonnes of CO₂e per person.¹⁶ In Burundi each person's emissions are just 0.06 tonnes - 250 times less.¹⁷ Historic emissions are an important justice consideration too. Nearly one quarter of man-made CO₂e emissions throughout history have come from just the USA,¹⁸ whereas only 0.0008% of total global climate damage has come from Burundi.¹⁹ Considering these disparities, there are three ways in which national allowances could be allocated.

The first and simplest way would be for countries to be allocated national fossil fuel allowances according to the size of their population effectively giving every person worldwide the same fossil fuel ration. Countries like the US, whose fossil fuel consumption is currently well above the global per capita average, would then be obliged to make drastic cuts in their fossil fuel use before joining the system. Countries like Burundi would need to either hugely increase their fossil fuel consumption, or would leave most of their national allowance unused. In this version they would receive no direct compensation for unused national allowances.

The second option would be to recognise historic climate debt, and issue a smaller than average per capita national allowance to countries like the US, in recognition that they've already used up more than their fair share of the global carbon budget before joining the system. This is in line with climate justice but would require high-consuming countries to make extremely drastic cuts in fossil fuel use from day one. Low-consuming countries of the Global South could either use the bigger-than-average allocations that they would then receive, or leave them unused, again without compensation.

The third option would be for countries like the US to temporarily receive an extra national allowance, which would then be wound down over perhaps five to ten years while they bring their fossil fuel use in line with their global fair share (based either on current population, or recognising historic climate debt). This is in line with 'contraction and convergence' principles, which aim to start from where we are at but then oblige countries to converge onto a pathway of drastic fossil fuel cuts.²⁰ These extra national allowance allocations could then be paid for by the countries that require them, with the money transferred directly to countries like Burundi that use less than their national allowance. An example of how this process might work is provided in the Costa Rica-Denmark example in Part III.²¹

16 Ritchie, H. and Roser, M. (2020) 'United States: CO2 and Greenhouse Gas Emissions', *Our World in Data*. Available at: <https://ourworldindata.org/co2/country/united-states>

17 Ritchie, H. and Roser, M. (2020) 'Burundi: CO2 and Greenhouse Gas Emissions', *Our World in Data*. Available at: <https://ourworldindata.org/co2/country/burundi>

18 Ritchie, H. and Roser, M. (2020) 'United States: CO2 and Greenhouse Gas Emissions', *Our World in Data*. Available at: <https://ourworldindata.org/co2/country/united-states>

19 Ritchie, H. and Roser, M. (2020) 'Burundi: CO2 and Greenhouse Gas Emissions', *Our World in Data*. Available at: <https://ourworldindata.org/co2/country/burundi>

20 Meyer, A. (2004) 'Briefing: Contraction and convergence', *Proceedings of the Institution of Civil Engineers - Engineering Sustainability* 157(4): 189-92. Available at: <https://www.icevirtuallibrary.com/doi/full/10.1680/ensu.2004.157.4.189>

21 High-consuming countries will already be paying the full carbon charge for all of the fossil fuel that they use - including that which they use as part of their extra national allowances - as the carbon charge will inevitably be passed on by extractors to buyers further down the supply chain, wherever they may be. The payment by countries requiring an extra national allowance would therefore be in addition to full payment of these carbon charges, so they would effectively pay for these extra fossil fuels twice. We do not suggest in this paper what extra amount should be paid by countries for extra allowances, nor is this amount included in our modelling, as the amount decided would be a direct transfer from high-consuming countries to low-consuming countries and would not affect the LITG compensation, Green New Deal investments, climate grants and monthly dividends that this system would generate. The amount that is ultimately paid by over-consuming countries for extra national allowances should be decided between participating countries in line with climate justice principles.

The first and second options feel appealing as they oblige over-polluting countries to make immediate major cuts to their fossil fuel use. Achieving this in reality may, however, be extremely challenging, and if this is the price of joining the system then many of the world's biggest emitters may simply opt out.

In contrast, the third option would give countries like the US time to insulate their buildings, decarbonise their power stations and adapt their consumption practices. This is likely to be much more practically and politically feasible and would allow all countries to join the system early on, and then work within the system to achieve the necessary ongoing reductions. The third option also has the added advantage of creating a further mechanism for global redistribution (in addition to the money provided as LITG compensation, climate grants, Green New Deal investments and carbon dividends), which would further increase the flow of money being returned by this system from the Global North to the South. Use of this contraction and convergence model would therefore support green development, public services and other social goals in lower-income countries, as well as making the system more practically and politically feasible worldwide.²²

It is vitally important, however, that these extra national allowance allocations be temporary: rich countries must not be allowed to forever buy their way out of reducing their fossil fuel use. There should be a brisk timetable for eliminating extra national allowance allocations, to bring countries in line with their global fair share of fossil fuel use. This timetable would be enforced by the trust, which would allocate only the agreed amount of national allowances each year. If countries were to then extract or import fossil fuels beyond the scope of their allowances, they would be subject to the usual penalties (see the Enforcement section below).

Together, the fossil fuel extraction cap and the system of national allowances would ensure that:

- » Only a safe and briskly-reducing amount of fossil fuel is extracted worldwide.
- » The fossil fuel that is extracted is fairly shared among countries and regions.
- » Countries that need to temporarily use more than their fair share pay proper compensation to the countries that use less than their share.

²² Similar personal allowance systems may be needed within some countries to ensure that well-off individuals and companies do not use up most of the available fuels, leaving little for the less well-off majority. These should be decided and designed within countries to best suit local cultures and conditions.

BOX 3: ACCOUNTING FOR CARBON IMPORTS - A TRICKY BUSINESS

To make the national allowances system work, countries would need to manage and limit fossil fuel imports as they arrive at the border.

Controlling fossil fuel imports should be relatively straightforward when it comes to oil, gas and coal in their raw form. Owners of pipelines, tankers and coal ships would need to apply for a share of the receiving country's national allowance before each shipment of fuel enters that country (or, more sensibly, before they load it for that destination). The total number of shipments allowed to unload would be limited by the country's overall national allowance, so some applications to import fossil fuels would be denied, and this proportion would grow year-on-year. Countries could use whatever systems they see fit to allocate these national allowances to importers: the ethical prioritisation criteria described above could be a good starting point.

This is only half the story however, as by the time fossil fuels reach borders they have often become 'embedded' in other goods and services. These embedded fossil fuels are much harder to account for, as it is tricky to know how many one-tonne allowance shares should be required for each lorry-load. How much fossil fuel is embedded in a lorry-load of tomatoes? How much in organic tomatoes? For imported services this is even more complicated. For instance internet services may rely on energy-hungry data centres overseas, so ideally this 'imported' carbon should be accounted for too.

Similar complications are already being faced by countries as they apply national carbon taxes, as onshore producers don't want offshore producers to have an unfair advantage when they import into the national market. Systems such as the EU's proposed Carbon Border Adjustment Mechanism are attempting to work through these complexities.²³

These kinds of accounting mechanisms will be needed as part of the national allowance system within cap and share. The results are likely to be imperfect, but it should at least broadly prevent the Global North from hogging a grossly unfair share of the available fossil fuels. This is important for justice, so it is vital that workable policies be devised.

One benefit of this cap and share system however, at least in the system's global version, is that the cap itself - and therefore our ability to halt climate change - is not reliant on messy border calculations. By controlling overall quantities of fossil fuels at the point of extraction (rather than only at importation) we can directly block fossil fuels from ever coming out of the ground (see the section on Enforcement for more on how this could be made effective). This is a significant advantage of a global system over a set of national ones: the fossil fuel tap can be turned off at source, ensuring that this system achieves meaningful climate mitigation.

²³ See Simões, H. M. (2023) 'EU carbon border adjustment mechanism: implications for climate and competitiveness', *Briefing: EU Legislation in Progress*. Available at: [https://www.europarl.europa.eu/RegData/etudes/BRIE/2022/698889/EPRS_BRI\(2022\)698889_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/BRIE/2022/698889/EPRS_BRI(2022)698889_EN.pdf). An important caveat for repurposing a mechanism such as the EU CBAM is that much more thought needs to be given to who pays the money (the tax or charge paid at the border to level the playing field between producers in different countries) and where the money from payment of border adjustment charges lands. In the EU CBAM, importers to the EU - many of whom are lower income countries - will pay a carbon tax at the EU border (when they have not paid such a tax already in the producer country) which would land in the EU. In our system it would normally be the importers who apply import licences/national allowance allocations and apply for the carbon charge, i.e. Tesco, or Tesco's wholesaler, would do and pay this, rather than the vegetable producers whose products Tesco imports. The money should land not with the country whose border is being crossed but in the international fund, to ensure that countries that import (e.g. consume) a lot of fossil fuel do not end up with higher payments from the system.

III. A CARBON CHARGE: MAKE POLLUTERS PAY

Once fossil fuel extraction is capped, demand for fossil fuels will exceed supply. This will cause the price to rise as people compete to buy the little that is available. If we were to have only a cap without a charge, the companies selling fossil fuels would benefit greatly from this price rise, making fossil fuel extraction even more profitable than it is today. This would clearly be unjust.

We can't stop these fossil fuel price rises - they would be an inevitable result of making fossil fuels more scarce. However we can and should capture the value of price rises for the people of the world, and invest that money to ensure cheap renewable energy is available for people to use instead. We can do so by requiring extraction companies to pay handsomely for fossil fuel extraction licences - we refer to the fees paid for these licences as the 'carbon charge'. Extraction companies would inevitably pass on most or all of the cost of the carbon charge down the supply chain, so it will ultimately be paid for by end consumers: mostly wealthy consumers in the Global North who use a lot of fossil fuel.

The practice of carbon charging is already well established. According to the World Bank 68% of global greenhouse gas emissions are already covered by some kind of carbon pricing.²⁴ However the amounts charged in most countries are far too low.²⁵ The IPCC has modelled what level a carbon charge would need to be to keep emissions below 1.5. They find that the charge would need to be an absolute minimum of \$135 per tonne of CO₂e by 2030, so the carbon charges that we model all start at this level. Uruguay, Sweden and a few others already have carbon charges around this rate, so we know that energy systems can accommodate this cost.²⁶

As discussed above, the carbon cap would shrink each year, allowing less and less fossil fuel to be extracted as time goes on. This growing shortage of fossil fuels will drive up the price yet further, and we again want to capture that inevitable price increase for the people of the world.

At what rate should the charge increase in order to capture this inevitable rise in fossil fuel prices? A meta-analysis of studies found that a 10% increase in energy prices led to only a 6.1% reduction in long-term energy demand.²⁷ Flipping this the other way round, it suggests that all available fossil fuel would get sold if the supply was reduced by 6.1% while the price was increased by 10%, a cap:charge ratio of 1:1.64. Our modelling therefore follows these ratios: in scenarios where the cap falls by 10% per year, the carbon charge rises annually by 16.4%.

24 World Bank (2022) State and trends of carbon pricing 2022', *State and trends of carbon pricing*. Available at: <https://openknowledge.worldbank.org/handle/10986/37455>

25 Ibid.

26 Ibid.

27 Boyce, J. K. (2018) 'Carbon pricing: effectiveness and equity', *Ecological Economics* 150: 52-61. Available at: <https://www.dclimate.org/wp-content/uploads/2018/05/Boyce-Ecol-Econ-2018.pdf>

How high should the charge go? A charge that rises by 16.4% a year would exceed \$100,000 per tonne of CO₂e by 2070, and would be above \$1 million by 2084. If the charge is allowed to rise to these extreme levels, the market price of coal, petrol and other fossil fuels would become so high that no one would be able to buy them. In this case, firms would stop extracting fossil fuels even if this were still permitted by the cap. This reduced extraction would obviously be good from a climate change perspective, but it would reduce the amount of carbon charge collected in unpredictable ways that make it difficult to model the outcomes.

It is impossible to know how high the charge could get before it became financially unviable for companies to apply for extraction licences, so for the modelling presented below we have capped the carbon charge at the maximum carbon prices explored by the IPCC. They estimate that carbon prices may need to rise as high as \$14,300 by 2050, \$19,300 by 2070 and \$30,100 by 2100,²⁸ so our charges have been capped at these levels.

CARBON CHARGE LEVEL UNDER DIFFERENT SCENARIOS			
Year	Scenarios 1,4,5,6,7 and 8	Scenario 2	Scenario 3
2025	\$135	\$135	\$135
2030	\$288	\$405	\$200
2040	\$1,317	\$3,657	\$440
2050	\$6,014	\$14,300	\$968
2060	\$14,300	\$14,300	\$2,130
2080	\$19,300	\$19,300	\$10,300
2100	\$30,100	\$30,100	\$30,100
2200	\$30,100	\$30,100	\$30,100

Table 3: Carbon charge rates in different charging scenarios

²⁸ Rogelj, J. et al. (2018) 'Mitigation pathways compatible with 1.5°C in the context of sustainable development', *Global Warming of 1.5°C*, p.152. Available at: https://www.ipcc.ch/site/assets/uploads/sites/2/2019/02/SR15_Chapter2_Low_Res.pdf

An alternative to applying a fixed carbon charge is that the available licences be auctioned (with a minimum reserve price) enabling them to reach the price that best fits with supply and demand.²⁹ These auctions may generate a much higher carbon price than we have modelled here - or a lower one. It is impossible to know how much would be raised for the fund or for climate grants and dividends, as we don't know what the going rate for fossil fuel licences would be each year. For that reason alone, this paper models a fixed (but steadily rising) fee, simply to give an idea of the scale of money that could be raised. It should be noted that even in the auction scenario, licences should be tied to specific extraction sites and should not be permitted to be traded on, as this could undermine the main carbon charge and make it impossible to fairly allocate extraction licences to countries at different income levels.

BOX 4: FOSSIL FUEL SUBSIDIES, WINDFALL TAXES AND PUBLIC OWNERSHIP

Fossil fuel subsidies totalled an astonishing \$5.9 trillion in 2020, which was nearly 7% of the world's entire GDP.³⁰ This is an enormous and unsustainable giveaway of public money, which is outrageously inconsistent with national climate commitments. Even the IMF considers these subsidies inefficient and recommends that they be replaced with better social spending and productive investments,³¹ and G7 leaders had committed to scrap them by 2022.³² For our purposes, these subsidies could frustrate enforcement of the carbon cap and subvert the effects of the carbon charge by diluting its incentive effects. It would therefore make sense to outlaw fossil fuel subsidies as part of the package of legal changes that will need to be implemented to establish the carbon cap and share system.

The carbon charge described in this paper aims to capture for the people the value of fossil fuel price rises, which will inevitably occur as a result of the carbon cap. Windfall taxes on fossil fuel companies provide an additional means by which these price increases could be captured for the people, either at the national level or internationally if applied by the trust.

More radically, but perhaps essentially, fossil fuel firms could be brought into public ownership as a first step in establishing cap and share. This is recommended as a vital first step by many global justice advocates as a way of ensuring that Big Oil no longer profits from damaging the planet, and to ensure the industry can be properly controlled in the public interest.³³ It is also worth noting that the fund, through the investments that it makes, would establish growing global people's ownership over much of the world's productive capacity. See the section titled 'The fund' for more on this.

29 No secondary market for fossil fuel extraction permits should be permitted, as this may provide opportunities to game the system.

30 IMF (2022) 'Fossil Fuel Subsidies'. Available at: <https://www.imf.org/en/Topics/climate-change/energy-subsidies>

31 Ibid.

32 King, E. (2016) 'G7 leaders set 2025 deadline to scrap fossil fuel subsidies', *Climate Home News*. Available at: <https://www.climatechangenews.com/2016/05/27/g7-leaders-set-2025-deadline-to-phase-out-fossil-fuel-subsidies/>

33 Public ownership of remaining fossil fuel infrastructure is seen by many as a vital step in a just transition. See, for instance, Dowson, N. (2022) 'How We Halt Big Oil's Climate-Wrecking Business', *New Internationalist*. Available at: <https://newint.org/features/2022/04/04/big-story-big-oil-beyond-big-oil>

IV. COMPENSATION: COMPENSATING COMMUNITIES FOR LEAVING FOSSIL FUELS IN THE GROUND

Will countries and communities agree to cap their fossil fuel extraction if it means forgoing the money they would make from selling their coal, oil and gas? It's clearly a challenging ask. Most countries see their fossil fuel reserves as a source of national wealth and they may rely on selling coal, oil and gas to earn foreign currency that they need to buy imports and pay off their national debt. Where sub-national territories and communities own fossil fuel rights, they also stand to lose out economically if their national government agrees to a carbon cap. They may understandably protest such a policy being passed.

To address this challenge and to support those that do the right thing, this system includes a 'leave it in the ground' (LITG) compensation package that should be made available to all countries and communities³⁴ that commit to leaving fossil fuels in the ground. Money raised via the carbon charge would be used to pay this compensation. The amount this would cost depends on how the untapped fossil fuel is priced.

One option for pricing untapped fossil fuels, put forward by a team of academics from the Netherlands, Ecuador and Spain, involves inviting governments with fossil fuel reserves to participate in a reverse auction in which they bid against each other as to the price at which they are willing to sell their untapped fossil fuels.³⁵ In the context of a tightening global carbon cap, with countries unsure whether extraction licences will even be granted for their fossil fuel sites, getting compensation at any level for their unextracted fossil fuels may be an attractive option.

A further paper from the same researchers developed a global compensation estimate based on the oil price accepted by the Ecuadorian government in the Yasuní-ITT Initiative, in which Ecuador sought international compensation for leaving oil untapped beneath the Yasuní National Park.³⁶ The accepted untapped oil price in this initiative was \$4.20 per barrel, and from this they estimate that \$5.4 trillion would be needed in total to compensate all rights-holders worldwide for the fossil fuel that must be left in the ground.

34 The permanent right-holders to the relevant fossil fuels should be compensated, presuming this is a public body such as a nation, a sub-national territory or a community. This compensation should not be provided to companies, who do not have inalienable rights to resources and should have factored in the risk of possible non-extraction when acquiring rights.

35 Pellegrini, L. (2021) 'Institutional mechanisms to keep unburnable fossil fuel reserves in the soil', *Energy Policy* 149. Available at: <https://www.science-direct.com/science/article/pii/S0301421520307400>

36 Orta-Martinez, M. et al. (2022) 'Unburnable Fossil Fuels and Climate Finance: Compensation for Rights Holders', *Global Environmental Politics* 22(4): 15-27. Available at: <https://direct.mit.edu/glep/article/22/4/15/113510/Unburnable-Fossil-Fuels-and-Climate-Finance>

Another option, put forward by the organisation Heinrich Böll Stiftung and two major universities, uses standard oil and gas industry valuation techniques to venture how much countries might need to be compensated in order to persuade them to leave it in the ground.³⁷ This study found that compensation of between \$2 and \$10 per tonne of untapped CO₂e should be sufficient to persuade countries to leave their coal, oil and gas untouched. For the purposes of this paper we will assume that a mid-point of these prices - \$6 per tonne of CO₂e - may be sufficient. If we leave 60% of oil and gas and 90% of coal in the ground, as required to keep climate change within safe levels,³⁸ we estimate this would amount to an all-time cost of around \$27 trillion in compensation.³⁹ This is significantly more than the estimate ventured by the European-Ecuadorian research team,⁴⁰ so to ensure we are not undercounting the true cost of compensation, we will use our own higher compensation estimate in the modelling below.

Of course it wouldn't make sense to pay out this amount in one go, as countries could take the money and then begin extracting their fossil fuels the very next day. Countries should instead receive annual payments, subject to an annual check via satellite imaging and international inspectors to ensure they are not extracting fossil fuels that they have promised to leave untouched. To avoid incentivising fossil fuel exploration, countries with suspected but unproven fossil fuel reserves could receive an annual payment based on the global average level of fossil fuel reserves, and an assumption that they will leave at least the necessary safe share in the ground.⁴¹ These annual payments could be spread out over the rest of this century (75 years⁴²) and would therefore amount to a global cost of just under \$360 billion per year.

37 West, J. (2021) 'Compensating Indebted Countries for Keeping Fossil Fuels in the Ground Background Paper #6', *Heinrich Böll Stiftung*. Available at: <https://www.boell.de/en/2021/01/05/compensating-indebted-countries-keeping-fossil-fuels-ground>

38 Welsby, D. et al. (2021) 'Unextractable fossil fuels in a 1.5°C world', *Nature* 597: 230-34. Available at: <https://www.nature.com/articles/s41586-021-03821-8>

39 The best available estimates suggest that the world possesses a maximum of 108,000 exajoules of fossil fuels that could reasonably be extracted, of which 21,000 exajoules is coal and the rest is oil and gas. See Teste, S. & Niklas, S. (2021) 'Fossil Fuel Exit Strategy'. Available at: <https://indd.adobe.com/view/e0092323-3e91-4e5c-95e0-098ee42f9dd1>. To reach our overall global cost estimate, we convert these exajoule amounts to the amounts of CO₂e that would be released if these fuels were dug up and burned and then convert that into barrels of oil. This calculator was used to convert exajoules to kilowatt hours can be found at <https://www.convertunits.com/from/exajoule/to/kWh>. Conversion of kilowatt hours to kg of CO₂e for each type of fossil fuel were undertaken using these figures (the numbers for natural gas were used for conventional and unconventional gas, and the figure for diesel was used for conventional and unconventional oil in the absence of more granular data. These approximations are adequate given the large ranges involved in these calculations anyway - they suffice to give a ballpark amount that compensation may cost), see https://prod-drupal-files.storage.googleapis.com/documents/resource/public/Conversion_fac-tor_introduutory_guide.pdf

40 Orta-Martinez, M. et al. (2022) 'Unburnable Fossil Fuels and Climate Finance: Compensation for Rights Holders', *Global Environmental Politics* 22(4): 15-27. Available at: <https://direct.mit.edu/glep/article/22/4/15/113510/Unburnable-Fossil-Fuels-and-Climate-Finance>

41 Of course any alternative approach could be used to decide on compensation amounts for countries with unproven reserves. The priority should be to provide fair compensation to countries for doing the right thing, without the need for them to undertake environmentally-damaging test drilling.

42 The longevity of the compensation scheme could be set at any level. 75 years has been chosen on the basis that by that time, and following decades of significant investment from the fund, renewable energy is likely to outcompete fossil fuel energy so completely that it would be uneconomic to extract fossil fuel anyway. If this is not the case after 75 years a further compensation scheme or other enforcement mechanism could be devised to ensure fossil fuels remain unextracted.

This sounds like a lot but it is less than a tenth of the money raised each year by the carbon charge in the next several decades. The effect of these LITG compensation payments on Green New Deal investments, climate grants and our eventual carbon dividends is therefore relatively minimal. Given that this compensation could make the difference between no countries signing up to the system and most countries signing up, it feels like a price worth paying. Of course an added benefit of this compensation package is that it would add money to government budgets, without the need for them to extract fossil fuels to get it. This money could support public services, climate spending, a national carbon dividend or any other local spending priorities.

V. FUND: A PEOPLE-OWNED FUND FOR A GLOBAL GREEN NEW DEAL

The sale of carbon licences would generate several trillion dollars each year (see Part II below). In the models presented below, a growing proportion of this money would be retained in a people-owned investment fund which we have dubbed the Global Climate Commons Fund.⁴³ The money would then be invested in Green New Deal and ‘just transition’ initiatives in every country. This would fund a massive increase in people-owned renewable energy generation and research,⁴⁴ as well as major expansions in public transport, zero-carbon housing and green industrial development.⁴⁵ The fund would, in time, provide most or even all of the investment needed to move us beyond fossil fuels, while also establishing growing public ownership over our new green economy.⁴⁶

This fund draws inspiration from existing people’s wealth funds including the Goa Mineral Ore Permanent Fund, the Alaska Permanent Fund and the Norwegian Pension Fund, which hold onto the money made from mineral and oil mining, and invest it for the benefit of the people. The purposes of our fund would be two-fold.

43 Equal Right would like to thank Rahul Basu of The Future We Need for his contributions to developing the fund element of this proposal

44 Large-scale expansion of renewable energy brings its own challenges especially regarding the increased need for mineral inputs. A discussion of the ethical and environmental challenges is provided in Appendix 3.

45 For a more detailed vision of what kinds of investments could constitute a Green New Deal see for instance GND Rising (2023) ‘What is the green new deal?’. Available at: <https://www.gndrising.org/what-is-the-green-new-deal/> and Mazzucato, M. & McPherson, M. (2018) ‘The Green New Deal: A bold mission-oriented approach’, *IIPP Policy Brief*. Available at: https://www.ucl.ac.uk/bartlett/public-purpose/sites/public-purpose/files/iipp-pb-04-the-green-new-deal-17-12-2018_0.pdf

46 The International Energy Agency estimates that \$5 trillion of new investment will be needed each year by 2030 to get us to net zero. See IEA (2021) ‘Net Zero by 2050’. Available at: <https://iea.blob.core.windows.net/assets/deebef5d-0c34-4539-9d0c-10b13d840027/NetZeroBy2050-ARoadmapfortheGlobalEnergySector-CORR.pdf> Note that the IEA are modelling for net zero whereas this paper models for near zero (brisk reductions to close to zero fossil fuel extraction, with no account taken of ‘carbon offset’ activities). The IEA’s proposed investment amount may therefore be an underestimate of actual investment requirements, although it is likely to be in a similar ballpark and therefore suggests that the Global Climate Commons Fund could provide a substantial proportion of the capital needed.

Firstly, the fund would provide much of the public investment money we need to build- and to retain public ownership of- the alternative to fossil fuels (see Box 5). The fund would invest in these alternatives by:

- » Lending money at modest interest rates to Green New Deal projects
- » Buying shares in Green New Deal projects, so receiving annual shareholder dividends
- » Investing directly, to build the infrastructure and facilities that we need for a post-carbon society. This means the fund would set up wholly-owned public companies to build wind farms, solar arrays and zero-carbon housing, which would be owned by the people of the world directly, with up to 100% of the profits accruing collectively to us all.⁴⁷

Importantly, the fund would invest in infrastructure in every participating country, and would therefore help to ensure that people everywhere have access to abundant green energy, decent sustainable housing and effective public transport. Many Green New Deal projects, especially in the Global South, would be supported by grants instead of - or as well as loans - see the 'Share' section below for more on this.

The second, and equally important, function of the fund would be to preserve the wealth extracted from fossil fuel companies, ensuring that future generations are not left out in the cold (see Box 9: Intergenerational Equity), and to then use that wealth to establish growing public ownership of our green economy and therefore a reliable public income in the form of dividends. The fund's investments would eventually amount to people's ownership of much of the global means of production (see the Outcomes section for modelling of this).

Through the fund's investments, a substantial and everlasting income stream would be generated that would enable the people of the world to receive loss and damage, adaptation and mitigation grants as well as substantial cash dividends every month. How much it makes would depend on the annual real return on investment. It is impossible to know how much new real ethical income would be generated by the new public companies and the public share ownership and loans established by the fund. Our modelling below therefore uses an assumed real rate of return equivalent to the long-term rate that has been accrued by the world's biggest existing wealth fund, the Norwegian Pension Fund, which is 3.62%.⁴⁸ Our investment approach would differ from that of the Norwegian fund, and other influencing factors would be different too in a world under cap and share, but this is the closest proxy we have available and it gives us an idea of the scale of money that a Global Climate Commons Fund might be able to generate for the people of the world.

⁴⁷ Or, if preferred, the profit share from people-owned projects going to the fund could be capped, with any other profits then reinvested in those projects, enabling them to provide energy or sustainable housing more cheaply, or pay workers or host communities more generously. For an example of the high rates of profit that may be possible via wholly-owned green investments, for instance in wind farms, see Renewables First (2023) 'What would the return on investment be from a wind turbine?' Available at: <https://www.renewablesfirst.co.uk/windpower/windpower-learning-centre/what-would-the-return-on-investment-be-from-a-wind-turbine/#:~:text=The%20approximate%20Rate%20of%20Return,rise%20by%20inflation%20of%203%25>.

⁴⁸ NBIM (2023) 'Returns'. Available at: <https://www.nbim.no/en/the-fund/returns/>

Our modelling shows that the amounts raised would achieve the transfer of hundreds of trillions of dollars from fossil fuel firms and wealthy consumers to the global 99%, and would be sufficient to abolish extreme poverty permanently. Although this system provides equal universal dividends to every person worldwide, the aggregate result would be a massive and long overdue return of wealth from the Global North to the South.

The fund is also vital to the long-term moral and political feasibility of this system. Carbon charge proceeds are going to dry up within a few decades as we phase out fossil fuel extraction. If we were to pay out all of the licence fee money directly as dividends, these payments would end as soon as we stop extracting fossil fuels. If, instead, we ethically invest the carbon charge money, it will bring in interest and profit payments every year forever. In this way we can ensure that our children and grandchildren continue to benefit from grants and dividends just as we will do. We will also prevent a scenario in which extreme poverty - which will have ended worldwide as a result of carbon dividends - will have to be reintroduced, as without a fund the money to pay out carbon dividends will dwindle away. The fund is therefore essential to ensure that extreme poverty remains consigned to the history books.

How much of total carbon charge proceeds should be placed in the fund? If, from day one, all proceeds (less LITG compensation) were placed in the fund, and only the fund's investment income was distributed as climate grants and dividends, the capital in the fund would build up quickly. This would provide a very substantial budget for Green New Deal investments, which would ultimately create a lot of green infrastructure and jobs. This has clear benefits, but there is one major drawback with this approach: the amount of money available for climate grants and cash dividends in the first few years of the system would be very low (see Scenario 7 in Part II). This is really bad timing as it coincides with the point at which energy prices will be rising (because of the cap and the charge, and the time lag involved in replacing fossil fuels with renewables). This risks causing temporary hardship among people who, in the early years of the system, would have no choice but to continue buying fossil fuels, but would still receive too little in carbon dividends to offset much of that cost. That is the opposite of what this system aims to achieve, so all but one of our scenarios use a different approach.

To ensure that dividends are sufficient to offset increased energy prices in the early years of the system (or as close to that amount as can be managed), most of our modelled scenarios begin by putting only 5% of carbon charge proceeds into the fund, while directly distributing the rest as climate grants and as dividends that year. The proportion of proceeds invested via the fund then increases briskly, going up by 2% per year, so by 2050 more than half of proceeds are placed in the fund, rising to all proceeds by 2073. This boosting of grants and dividends in the system's early years takes a chunk out of the fund's eventual capital, but it means that dividends would start at a decent amount. This is important for climate justice and is likely to significantly boost the system's political feasibility. As time goes on, the growing proportion of proceeds going into the fund will ensure that dividends can continue in the long term, which is vital for intergenerational equity and makes the system politically sustainable too.

BOX 5: THE FUND, THE GREEN NEW DEAL, AND A 'JUST TRANSITION'

The fund would be an enormous global money pot, owned and controlled by the people of the world to provide for us all, and for our children and grandchildren too. Lending rules would be decided by the fund's democratic leadership body (see the Democratic Management section) but would ideally include:

- » A strong definition as to what counts as a Green New Deal investment, and a commitment to dedicate all funds to these investments.
- » A commitment to equal lending in all participating countries, or a formula that allocates lending progressively (i.e. countries in greatest need of investment are prioritised). This will ensure that Green New Deal investments reach the communities that most need them, providing green energy, infrastructure and jobs in areas that frequently miss out.
- » Priority lending to public-, worker- or community-owned projects, with the potential to charge preferential interest rates for these initiatives.
- » First-class ethical lending criteria with effective, active monitoring. Finance should be automatically denied to projects that fall below the highest possible environmental, labour and social impact standards including the principle of Free, Prior and Informed Consent and the payment of decent wages to all.⁴⁹
- » Priority lending to projects that replace high-carbon industries which are being wound down. This will be vital to ensure a just transition for industry workers who need to move into new forms of employment.

Coupled with the Green New Deal spending that is provided as grants (see the Share section below), this level of investment would create millions of new green jobs, bringing additional wage income into communities everywhere and complementing the effects of carbon dividends in reducing inequality and consigning extreme poverty to the history books. These investments would therefore allow us to build a decent and sustainable post-carbon society in which we could all live well within the cap.

49 FAO (2016) 'Free Prior and Informed Consent: An indigenous peoples' right and good practice for local communities'. Available at: <https://www.fao.org/3/i6190e/i6190e.pdf>

VI. THE SHARE: CLIMATE GRANTS FOR COMMUNITIES AND CASH DIVIDENDS FOR ALL

The money raised by the carbon charge and the investment income of the fund would ultimately be shared out among the people of the world. This would happen in two ways:

- » Climate finance and loss and damage grants, primarily for MAPA communities.
- » Carbon dividends, received by us all as monthly cash payments to spend as we see fit.

Climate finance refers to “financing to support mitigation and adaptation actions that will address climate change.”⁵⁰ Our goal is to ensure that countries of the Global South and other MAPA communities, most of whom have contributed little to causing the climate crisis, are provided with the necessary resources to build green infrastructure and develop resilience to climate shocks without getting into debt (loans can be provided separately via the fund as desired - see above). Loss and damage grants must also be made available, which are payments to communities to enable them to recover and rebuild following climate-related disasters.⁵¹ These various kinds of grants could be distributed via international agencies, national or local governments, NGOs or community groups and could finance many kinds of projects and services as needed and chosen by the recipient communities.

Carbon dividends are cash payments that would be paid out to every adult and child in the world on a regular basis. These payments are a recognition that both fossil fuels and the atmosphere are a shared inheritance, and that we are all owed a share when money is raised from their use. Dividend payments can also be considered a form of compensation, both to help cover rising energy costs in the early years of the system (before our energy mix becomes made up mainly of cheap renewable energy) and to enable us to make our own choices as to how to mitigate, adapt and rebuild in relation to the climate emergency. Finally, and importantly, these payments constitute a very substantial and long overdue redistribution of wealth from fossil fuel firms and from wealthy high consumers to the rest of us. As shown in the modelled scenarios below, this redistribution will be substantial enough to wipe out extreme poverty entirely before 2050 (defined as living on less than \$2.15 per day), and will significantly reduce longstanding global inequality.⁵²

50 UFGCC (2023) 'Introduction to Climate Finance'. Available at: <https://unfccc.int/topics/introduction-to-climate-finance>

51 Tagliapietra, S. (2022) 'Success at COP27 will be defined by progress on climate finance and 'loss and damage'', *Bruegel*. Available at: <https://www.bruegel.org/blog-post/success-cop27-will-be-defined-progress-climate-finance-and-loss-and-damage#:~:text=Rich%20countries%20should%20also%20at.%245.9%20trillion%20up%20to%202030>

52 For the purposes of this paper we have assumed a steady rate of return on the fund's investments, and therefore a dividend which remains at the same level each month. In reality the fund's income will vary month-to-month and one option would be to give people variable dividends in line with this. A potentially preferable way forward would be to average these dividends over one or more years to provide people with a more predicted dividend income, as this is likely to have a stronger effect on quality of life.

Grants and dividends are neither charity nor aid. They should be understood both as climate reparations and as shareholder dividend payments, based on the historic climate debt of the Global North to the South, and on our shared ownership of the atmospheric commons from which the carbon charge proceeds arise. Both are essential for climate justice, yet one pressing question remains: how to split the available money between these two equally important forms of global redistribution? Various scenarios are presented in Part II to explore different amounts of climate grants, in particular to explore grant budgets of \$1 trillion⁵³ and \$2 trillion per year.⁵⁴ We also explore the effects on dividends of paying nothing in climate grants, or of paying dividends only to residents of lower income countries.

Actual distribution of the money would be the responsibility of the fund, in line with rules developed by its democratic leadership body. The overall climate grant budget would need to be carefully allocated to cover mitigation, adaptation and loss and damage, and to distribute the money fairly around the world. Dividends would, in most of the scenarios that we model, go to every person in the world, regardless of age (our model provides the same dividend for children as for adults), gender, employment status, income, wealth level or location (except when this system is implemented country-by-country, or in Scenario G where dividends are provided only to lower income countries). Payments would be to individuals rather than to households, ensuring that everyone - including women providing unpaid care, older people and those with disabilities - receives their own money. Children's dividends would be paid to their parents or guardians, or could be paid to a child directly if they live independently.⁵⁵

53 Independent High-Level Expert Group on Climate Finance (2022) 'Finance for climate and development'. Available at: <https://www.lse.ac.uk/granthaminstitute/publication/finance-for-climate-action-scaling-up-investment-for-climate-and-development/>

54 Elton, C. (2023) 'Loss and damage: developing countries need \$2 trillion a year to cope with climate crisis - report', *euronews*. Available at: <https://www.euronews.com/green/2022/11/08/loss-and-damage-developing-countries-need-2-trillion-a-year-to-cope-with-climate-crisis-re>

55 Support from national and local agencies in each country, for example social services or social security offices, may be needed to verify this although a balance would need to be found to ensure that children with minimal access to such services are still able to receive payments.

BOX 6: \$50 MEANS \$50 - NO ADJUSTMENTS FOR PURCHASING POWER

This paper proposes to distribute dividends equally to every registered person, without any adjustments to the amounts based on purchasing power (how much they can buy with a dollar where they live). The dividend amount would simply be credited to each person's account in international currency and would boost their balance according to standard exchange rates on the day each payment arrives. There are several good reasons to not adjust for purchasing power parity:

- » **The simplicity of universalism:** Paying a uniform amount would mean there is no need to assess people's country of residence (except, of course, where this system is implemented country-by-country). This would make it easier for people to register for dividends, as they would not need to show proof of residence, and would reduce administration costs.
- » **No one left behind:** The more documentation that is needed to register for a system, the more likely that vulnerable people will be excluded. People who may struggle to submit valid proof of residence include: undocumented people and migrants; child-headed households; people with low literacy or little access to computers; and residents of dictatorships and conflict states. These are groups that we especially hope would benefit from the dividends in this system.
- » **Economic justice:** Differences in purchasing power are closely correlated to differences in national income: in rich countries things are expensive, and in less well-off countries things are often cheap. If we were to adjust dividends in line with purchasing power parity, we would be giving more to the richest people and less to the least well off - this is regressive and not in line with climate justice. Instead we celebrate the fact that dividends from this system would usually go further in the Global South, as this effectively redistributes more to those areas, in line with climate justice.

Distribution of dividends would require a global payments infrastructure, as well as a system for registering individuals securely. Getting money to every person in the world each month sounds complicated, but thanks to modern technology it's actually the easy bit. The EU summarises the accepted methods for distributing cash transfers as follows:⁵⁶

- » Bank or Microfinance Institute accounts: money is transferred directly into the account.
- » Mobile money transfers: cash transferred through SMS codes to a beneficiary's mobile phone. This modality is increasingly used as network coverage spreads into remote areas and mobile companies introduce money transfers into their services.
- » Smart cards, for instance pre-loaded debit cards to be used in ATMs [or with retailers]
- » Cheques sent by post or collected at local offices
- » "Cash in envelopes" [which would not be suitable for global transfers except in extreme cases]
- » Cash transferred through traders or money transfer agents (such as hawallah in Somalia)
- » Fairs: fairs may be used where traders exist in the area but markets are not accessible by beneficiaries i.e. the market is brought to the beneficiary

The top three methods - bank transfers, mobile money and smartcards - would be the primary means by which people would be paid their carbon dividends, with the remaining methods used only for those in the most inaccessible situations.

PUBLIC AND THIRD SECTORS ENERGY COSTS

In the early years of this system, energy will be more expensive due to the carbon cap and charge and the time it will take to fully replace fossil fuels with renewables in the energy mix. Individuals and households will be compensated for these higher costs via their monthly dividends. However businesses, charities and public sector organisations also use energy. How will they cope with higher prices while the renewables sector catches up?

Businesses that make their income by selling goods and services will have to pass on the increased cost of energy inputs to consumers via increased prices. The transfer of these energy costs into higher prices, including for non-energy goods like food and clothing, has been taken into account in the economic modelling shown in Part II, which shows that most people - especially people on lower incomes - will be better off with carbon dividends even accounting for these price increases. Trading businesses should therefore not require any specific support to cope with higher energy prices. The effect of these higher prices on individual consumers has been considered in the section below titled 'How dividends would offset extra energy costs', which explores the effects of higher energy prices on the prices of goods more broadly, as well as the direct energy costs for households.

The public sector and charities, as well as nonprofit businesses that rely on grant funding or donations for income, will need more careful provision. One option would be to hand over a proportion of the fund's annual share budget to national governments, for distribution as energy grants to public sector bodies, charities and nonprofits. The initiative could operate in a similar way to the UK's Energy Bill Relief Scheme, which works with energy suppliers to apply direct energy bill reductions for non-domestic customers.⁵⁷

How much would need to be taken from the share budget to cover these energy costs? In the UK the 2019 public sector energy bill was £3.4 billion,⁵⁸ which is equivalent to 5% of our total domestic energy bill of £68.2 billion.⁵⁹ No data is available on total UK third sector energy spending,⁶⁰ though estimates suggest that the third sector comprises 0.9% of the UK economy.⁶¹ As the public sector makes up 45% of the UK economy⁶² yet uses only 5% as much energy as households do, we can assume that the total energy use of the third sector is relatively minimal.

57 UK Government (2023) 'Energy Bill Relief Scheme'. Available at: <https://www.gov.uk/guidance/energy-bill-relief-scheme-help-for-businesses-and-other-non-domestic-customers#how-it-works>

58 Centrica (2019) 'Powering Britain's public sector'. Available at: https://www.centrica.com/media/3662/powering_britains_public_sector_web_final.pdf

59 See UK Government, 'Total household expenditure on energy'. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1086577/table_261.xlsx See Table 2.6.1, cell H57.

60 Even finding quantification of the size of the sector as a whole is difficult. See Keen, R. and Audickas, L. (2017) 'Charities and the voluntary sector: statistics', *House of Commons Library Briefing Paper*. Available at: <https://researchbriefings.files.parliament.uk/documents/SN05428/SN05428.pdf>

61 Smith, J. (2022) 'Overview of the UK charity sector', *Prospects*. Available at: <https://www.prospects.ac.uk/jobs-and-work-experience/job-sectors/charity-and-voluntary-work/overview-of-the-uk-charity-sector#:~:text=The%20charity%20sector%20often%20referred,to%20the%20economy%20in%202020>

62 Trading Economics (2023) 'UK public sector total spending to GDP'. Available at: <https://tradingeconomics.com/united-kingdom/government-spending-to-gdp> Accessed 20/10/2022. Figure from 2019 used to be comparable to the other data used in this paragraph.

Diverting 6% of the dividend pot to national governments should therefore be more than adequate to cover extra energy costs for public and third sector organisations: this 6% diversion has been accounted for in the figures presented in this paper.

This diversion should be a temporary necessity, as green investment at the level provided by the fund (coupled with the absolute quantity limits provided by the cap) will mean that very little of our energy supply will come from high-priced fossil fuels within a few decades. We have therefore modelled this system as finishing in the year 2070, after which point the whole distribution pot would be available for climate grants and for cash dividends.

BOX 7: HOW DIVIDENDS COULD PAY FOR PUBLIC SERVICES

Dividends can be understood as simply a way of distributing money equally to all corners of the world, and placing decision-making about how that money is used at the global grassroots. In the many cases where people need public goods and services more than they need extra personal income, there are two ways in which dividend payments could help to achieve this, over and above the support that would be provided for public services spending in many countries via climate grants.

National governments (hopefully with democratic support) could increase national tax rates and in that way harvest some or all of their residents' dividends for public spending. This would be entirely in keeping with the spirit of the system. Money would still be extracted from fossil fuel firms and transferred equally to the people of the world; wealth and income would still be shifted back towards the Global South in recognition of the North's still-accumulating climate debt; and people would still enjoy basic income security as they would still receive their dividends directly. Also, such taxation is normally progressive, so would normally leave the value of dividends with people who need them most while harvesting money for public spending from the better-off.

Options for pooling dividends could also be built into the dividend system, with communities enabled to set up group accounts within the dividend system, direct their dividends into them and control withdrawals from them. This facility could be especially useful for groups that may struggle to get formal bank accounts. These group accounts could work at any scale. A few neighbouring households could pool their money to pay for shared facilities (a water pump, a playground). People in a whole village or city could be invited to pool money for specific local goods or services (a road, youth clubs). Interest groups and causes around the world could also create accounts so that people everywhere could easily contribute.

In these ways, dividends could - where desired - become the basis for collective action, helping to provide the public goods and services that people urgently need. Crucially, however, the decision-making surrounding this would be automatically devolved to the people of the world and to their elected representatives.

DEMOCRATIC MANAGEMENT OF THE TRUST AND THE FUND

This paper proposes the creation of at least two new international organisations.⁶³

- » The Global Climate Commons Trust which would set the carbon cap, issue fossil fuel extraction licences and national allowances, collect the licence fees and issue LITG compensation.
- » The Global Climate Commons Fund which would preserve the carbon charge money for the future, invest it in Green New Deal projects, and distribute the proceeds (as well as some of the carbon charge money itself) as climate grants and as dividends.

Who should run these organisations, and how should they be held accountable?

One option would be to institute these organisations within an existing global body, with the best option likely to be the United Nations (UN). The UN is far from perfect, with wealthy countries still dominating much of its decision-making, and chronic underfunding weakening its effectiveness.⁶⁴ Nevertheless, Southern countries are collaborating to assert their demands and have secured important recent successes, including new powers within the UN to govern global taxation.⁶⁵ With improvements to the UN's democratic functioning, such as those suggested by Democracy Without Borders,⁶⁶ the organisation could have considerable potential to govern a global cap and share system.

A more ambitious way forward would be to look beyond the 'group of countries' approach and make use of new innovations in democratic control and global cooperation. The organisation Global Assembly provides an interesting example of what might be possible. In 2021 they conducted a real-world experiment in direct global democracy, creating a global citizens assembly, selected via 'sortition' (similar to how people are selected for jury service), to collaboratively develop and present climate action proposals at COP26.⁶⁷

63 If nationalisation - or global public ownership - of fossil fuel firms is chosen as a first step to achieving this system, there will be even more organisations requiring democratic management, as fossil fuel firms will then need to be run by publicly accountable bodies on behalf of the people of the world or national or local communities.

64 Malone, D. M. (2015) 'The United Nations and Its Discontents - An Academic View', *UN Chronicle*. Available at: <https://www.un.org/en/chronicle/article/united-nations-and-its-discontents-academic-view>

65 Tax Justice Network (2022) 'UN adopts historic decision to take on new tax leadership'. Available at: <https://taxjustice.net/press/un-adopts-historic-decision-to-take-on-new-tax-leadership/>

66 UNPA Campaign (2023) 'Who we are'. Available at: <https://www.unpacampaign.org/>

67 Global Assembly (2023) 'The Core Assembly'. Available at: <https://globalassembly.org/the-core-assembly>

The specifics of this process are interesting, as they demonstrate how recent technologies can work together with local community knowledge to locate a group that is truly representative of the global community. Global Assembly used a NASA population density database to randomly select 100 locations around the world, and they then contacted local community organisations in each area. Those organisations used door-knocking and other methods to each select a group of four to six people who were representative of their local community. From this pool of 675 people a lottery was drawn using open source software to select 100 people that together were representative of the world's population in terms of gender, age, geography, education level and attitude towards climate change.⁶⁸ These 100 people then spent 68 hours together online formulating a shared response to the question, "How can humanity address the climate crisis in a fair and effective way?"⁶⁹ This kind of global democracy has not yet been tried on a large scale but its introduction is more than overdue. Building this kind of democratic infrastructure could have benefits far beyond the control of climate change, with the potential to contribute to world peace, much greater global equality and many other kinds of cooperation.

However the cap and share system is eventually governed, the key will be to ensure that the people of the world have as much direct control as possible over the activities of the trust and the fund. Difficult decisions, including setting the level of the cap, agreeing the price of fossil fuel extraction licences and allocating climate grants, should be influenced by science and by a well-selected team of expert. Ultimately though, these choices should be made - as far as is reasonably possible - by the people of the world who, after all, must live with the outcome.

ENFORCEMENT OF THE CARBON CAP AND CHARGE

In the global version of this system, the carbon cap would be applied at the global level to every extractor of fossil fuels. In theory, once this system is in place at the global level no company should then be breaking ground to dig up coal or pump out oil or gas until they have bought a permit for every tonne, barrel or cubic metre that they extract. However, ensuring that this actually happens will require a carefully designed monitoring and enforcement infrastructure, which detects and penalises illegal extraction (and importation beyond each country's national allowance) at both the legal and practical levels. Existing systems such as the Extractives Industry Transparency Initiative provide examples of how such global governance can be undertaken,⁷⁰ but enforcement processes for this system would need to be embedded much more deeply to be effective.

68 Ibid.

69 Global Assembly (2023) 'The Process'. Available at: <https://globalassembly.org/the-core-assembly>

70 EITI (2023) 'Our Mission'. Available at: <https://eiti.org/our-mission>. For an analysis of the Initiative's strengths and limitations see Sahla, S., Gillies, A. and Salomon, M. (2021) 'How can anticorruption actors use EITI disclosures?', *National Resource Governance Institute*. Available at: https://resourcegovernance.org/sites/default/files/documents/how_can_anticorruption_actors_use_eiti_disclosures.pdf

One advantage of taking a global approach is that it enables enforcement at the point of carbon extraction, with only minor checks and balances taking place down the supply chain. This is vastly simpler than attempting to enforce a carbon cap and charge on carbon emissions, as emissions take place once the fossil fuel has been dispersed to billions of individual people and companies. Just 100 companies carry out 72% of all global fossil fuel extraction.⁷¹ This is a very manageable number of operators to monitor, making enforcement of these strict global limits and high carbon charges much more plausible. National allowance enforcement would also be applied primarily to big companies: to the major distributors of fossil fuels that are mined within the country, and to importers as they bring goods over the border. Most ordinary people and companies working within borders (except fossil fuel firms) would never encounter either the extraction licensing or the national allowance systems and would have no responsibilities in relation to them.

Legal enforcement of the extraction licensing system would require the passing of a body of international law, or national laws in each participating country, that would make unlicensed carbon extraction either a civil offence or a crime against the people of the world. A new or existing international court would be required to hear cases, which may be brought by enforcement officers, governments, non-governmental organisations (charities or campaign groups for instance) or by individuals or community groups. Penalties should include multi-billion-dollar fines, suspensions that prevent companies from applying for extraction licences (effectively locking coal, oil and gas companies out of production for a period of time) and uncompensated take-overs of companies, making the companies and their assets the property of the fund. In this latter case, the people of the world would then own these confiscated extraction companies and could choose either to collect the profits of their activities for the public pot (subject to the appropriate licences of course) or shut down their operations entirely. These stiff legal penalties would threaten the profitability and indeed the very existence of fossil fuel companies, so should constitute a decent deterrent against illegal extraction.

Nevertheless, some people and especially some corporations are expert at getting around the law, so controls that reach into every port, power station and lorry firm will be needed to make it extremely difficult and costly to get illegally extracted fossil fuels to market.

Port authorities and customs officers already check ships and cargoes for everything from safety to stowaways. They could be further charged with checking that any oil tanker or coal ship has sufficient licences for every tonne or barrel carried. Gas pipeline owners would be responsible for ensuring that gas entering the pipeline is licensed. Power stations, lorry firms and factories receiving fossil fuels loads could have similar responsibilities. Ports, pipelines and others not fulfilling these roles adequately could face penalties in national courts or be brought to international courts charged with facilitating illegal extraction. These checks would create a major headache for illegal fossil fuel extractors who would have to try and line up dodgy operators at every stage of the shipping and sale system, and could be taken down by a single weak link. To make this enforcement system work, extraction licences would need to travel (digitally) with the extracted fuels as they move onwards to refineries and wholesalers and on to end consumers, so that they could be checked at every stage and unlicensed loads could be reported.

71 Griffin, P. (2017) 'The Carbon Majors Database', CDP, p.10. Available at: <https://cdn.cdp.net/cdp-production/cms/reports/documents/000/002/327/original/Carbon-Majors-Report-2017.pdf?1501833772#:~:text=CDP's%20Carbon%20Majors%20Report%202017,driving%20the%20global%20energy%20transition>

The cooperation of national governments will be vital for these practical measures to work. They will need to direct their port authorities and others to carry out these essential checks, and their evidence may be needed to support prosecutions. National governments will also be vital for allocating shares of their national allowance to fossil fuel importers and to producers within their country. This cooperation will certainly be hard to achieve in some cases, and some countries may choose not to join the global system (which could then operate a little like the World Trade Organisation, in which most but not all countries are members). However, once signed up and participating in the system, there would be good reasons for governments to toe the line and apply these enforcement measures effectively.

Firstly, specific penalties for governments for inadequate enforcement action could be built into the system, including a loss of financial benefits such as the 6% budget for public sector energy costs. Refusal to support enforcement of fossil fuel licensing could also lead to countries becoming pariahs on the international stage, leading to a loss of benefits in other areas.

Secondly, governments would have little to gain by allowing illegal fossil fuels into their countries: the profits from illegal extraction would land with the extraction companies rather than with governments themselves (though of course bribery and corruption may redirect some of this money to politicians or officials).

Thirdly, if the green investments, climate grants and dividend payment are shared between all participating countries, good governments should want the system to succeed as it would bring investment, jobs and cash into their economies while also enabling them to meet their climate commitments. This system ultimately solves many of the problems that good governments are already struggling with, so it should be in their interest to help make it work.

Countries that extract fossil fuels mainly for their own use or as a very major part of their economy, such as the USA and the Gulf states, may present an extra challenge to this practical enforcement regime, as the political proximity of fossil fuel companies to the government could encourage them to turn a blind eye to unlicensed extraction or excessive in-country distribution or imports. In these cases international legal enforcement routes would become especially important, and activists and pro-active governments from elsewhere may be especially motivated to keep a close eye. Modern satellite photography and online information-sharing would make it even more difficult for large-scale unlicensed fossil fuel extraction or excessive in-country distribution or imports to go unnoticed.

A further option would be to bring all fossil fuel firms into public ownership, bringing extraction under the direct control either of governments or of the trust or fund. In both cases control and profit shares could be further handed over to local communities, giving them the power to directly manage - and if they like, to shut down - the fossil fuel infrastructure in their area. Public ownership is seen by many as a vital first step to controlling fossil fuel industries, on the grounds that, "Big Oil has had decades to do the right thing - it can't, and it won't."⁷²

Whichever route is taken, even the best-designed enforcement regime will have holes in it, and we can expect some unlicensed fossil fuel extraction and trading to still take place. This is annoying but it happens with every law and policy, and we have not yet abandoned law-making just because some people are criminals. The important thing is that, if the aforementioned enforcement measures are in place, most fossil fuel operators would have good reason to grudgingly stick to the licensing and national allowance systems. This would ensure that fossil fuel extraction is enormously reduced relative to today's levels, and the remaining extractable fossil fuels are mostly shared fairly around the world.

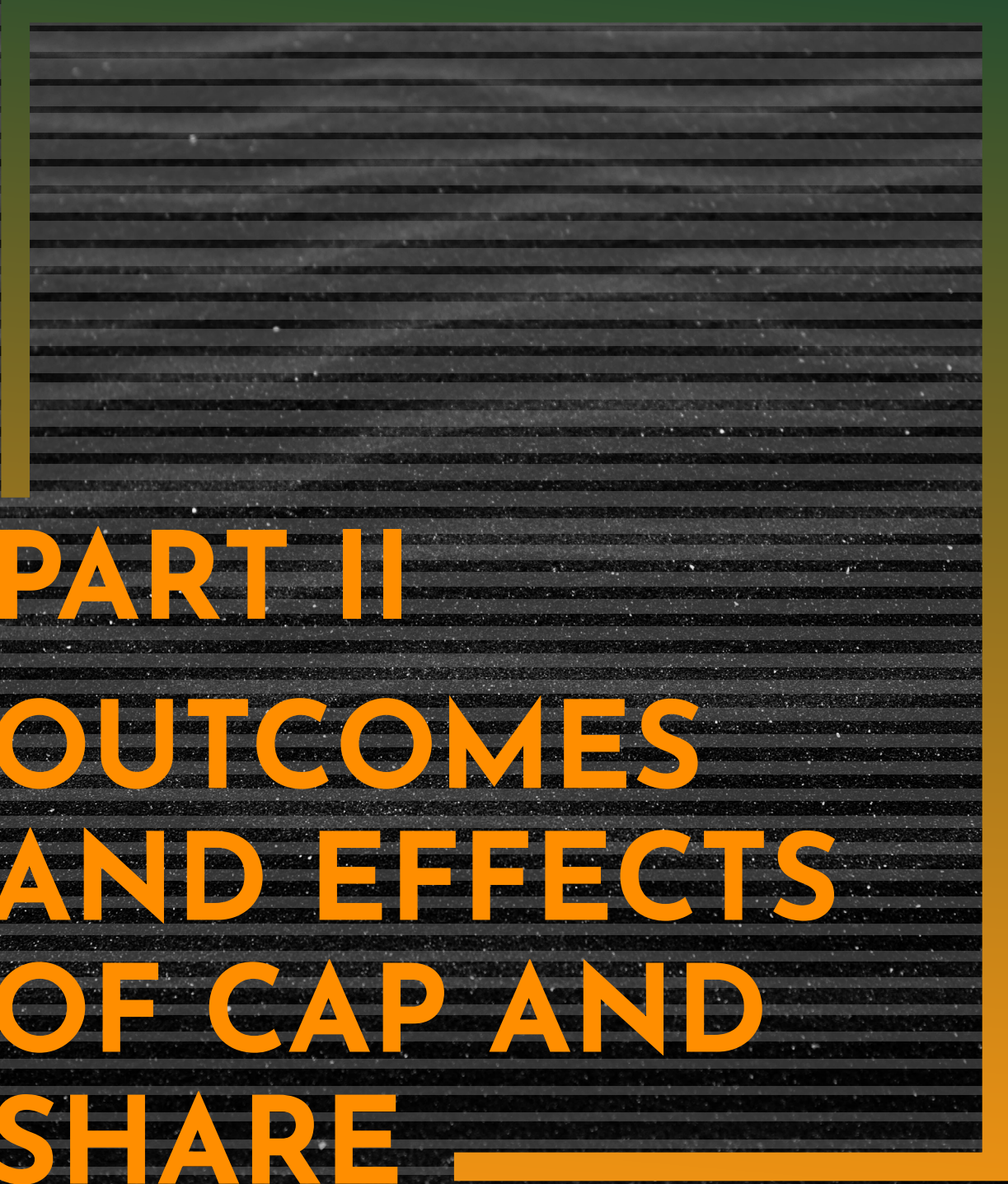
SUMMARY: IT'S COMPLEX, IT'S CHALLENGING. IT'S NECESSARY, IT'S POSSIBLE.

This proposal has, at its core, a simple idea: to cap fossil fuel extraction, make polluters pay, and then share the resulting wealth amongst communities and citizens. Cap and share is a proposed climate system that aims to provide part of the answer. It offers a radical but practical solution to halt fossil fuel extraction, fund a global green transition, redistribute money from the Global North to the Global South, and return extracted wealth to communities all over the world. The system outlined above drills into the detail of how that could be done, and from there it inevitably gets more complicated.

While this complexity can feel challenging, every one of the six parts described is needed. Without the cap, climate change may not be kept within safe levels. Without LITG compensation, governments may not feel able to join the system. Without the fund, no green investment pot would be created and people in the future would be plunged back into poverty. If we really want to halt climate change, build the alternative, redistribute global wealth and end poverty, and we want these goals to complement rather than frustrate one another, the initiative that will ultimately be required will be necessarily multi-faceted. The system that we have described is as stripped down as we could make it: losing anything else would mean taking away key climate justice or feasibility features that we feel are too important to scrap. The result is a system that would be challenging to implement. However it would not be more challenging than enduring runaway climate change. It would not be harder than getting through the day with less than \$2.15 to live on. And it would not be more intolerable than the historic global climate injustice, which goes unanswered year after year.

This paper outlines what needs to be done to respond to these greater challenges. Unlike most analyses of its kind, it ventures a detailed, holistic system which aims to help move the climate justice debate beyond principled arguments towards workable plans for action. The resulting plan is hugely ambitious, but the only real barrier to its implementation will be political will. To overcome that can be a long road, but to take the first steps we need a clear and persuasive demand, which this paper aims to outline. The possible outcomes of implementing it are modelled and discussed below.

-



PART II
OUTCOMES
AND EFFECTS
OF CAP AND
SHARE

OUTCOMES AND EFFECTS OF CAP AND SHARE

Part I of this paper has described how cap and share could work. This part explores what the outcomes might be if this system were implemented worldwide. For an explanation of how this would apply if implemented by a small group of willing countries, see Part III.

CLIMATE MITIGATION

The first outcome we must consider is the impact of this system on climate change. The need to transition away from fossil fuels, achieve and overshoot Nationally Determined Contributions (NDCs), and remain within our global carbon budget has never been more urgent than it is now. The cap described in this system would halt fossil fuel extraction, close down polluting extraction sites and fund the green transition, therefore making an extremely significant contribution to climate mitigation.

A global cap on fossil fuel extraction, established in international law and implemented through a compulsory licensing system and supply chain monitoring, has unique potential to directly keep fossil fuels in the ground. The carbon charge and the 'leave it in the ground' (LITG) compensation package would help to make the cap work, while the fund would provide the alternative energy that we need to replace fossil fuels. By turning off our fossil fuel supply at source, we can be certain (at least insofar as the cap is properly enforced) that emissions will be significantly reduced.

The extent of climate mitigation depends on how quickly we shrink the fossil fuel extraction cap. Most of the scenarios that we model are based on a 10% annual reduction in fossil fuel extraction (see Table 4). This allows total fossil fuel extraction by 2200 (by which point fossil fuel extraction will have effectively come to an end) equivalent to 363 gigatonnes of CO₂e emissions. This is just about within our remaining global carbon budget, so should be sufficient to keep global temperature rises below 1.5 . A 10% annual decrease in fossil fuel use is a very big deal, and will be far from easy to achieve. Nevertheless, this is the scale of action needed if we are to have a decent chance of preventing runaway climate change.

CLIMATE MITIGATION IMPACTS OF DIFFERENT SCENARIOS			
	Scenarios 1,4,5,6,7 and 8	Scenario 2	Scenario 3
Annual reduction in fossil fuel extraction	10%	15%	5%
Total fossil fuel extraction by 2200 (Gt of CO₂e)	363	242	726
% of remaining global carbon budget used	96%	64%	191%

Table 4: Climate mitigation impacts of different scenarios

For some climate justice advocates, this does not go far enough. Using 96% of our remaining global carbon budget for fossil fuel emissions doesn't leave much wiggle room for other contributors to climate change, such as methane from livestock farms and the CO₂e produced during the manufacture of cement (see Appendix 3 for more on this). Furthermore the 380 Gt global carbon budget figure does not guarantee that temperature rises will remain below 1.5 : it just gives a good likelihood that they will.

To be more certain that climate change will be halted, we may therefore need to reduce fossil fuels at a faster rate, such as 15% per year. As shown in Table 4, this leads to total fossil fuel extraction equivalent to 242 gigatonnes of CO₂e. This is only 64% of our remaining global carbon budget, so is a much safer bet for the climate. However, cutting fossil fuel use at 15% per year is even more challenging than cutting at 10%. It also leads to considerably lower total carbon charge proceeds - essentially because less fossil fuel is extracted, so the charging base is smaller. This reduces the amounts being invested in the Green New Deal, potentially making it difficult to build enough renewable energy capacity to meet our needs. It also significantly reduces the amounts that could be paid out to the people of the world and to future generations as climate grants and carbon dividends, with dividends never reaching a high enough level to eradicate extreme poverty and much less money ultimately being redistributed (see the next section for details). Therefore while this way forward may be superior from a climate action perspective, it may not be the best approach for climate justice.

Given the practical and political challenges of cutting fossil fuel extraction at 10% or 15% per year, we also model the option of cutting at only 5% per year. This feels more achievable, and - because it ultimately permits a lot more fossil fuel extraction - it generates a huge amount of carbon charge money so provides an excellent dividend and climate grant budget, and a Green New Deal investment pot that eventually reaches nearly a quadrillion dollars (see following section). However, this rate of reduction is much too slow to keep us within our global carbon budget. This approach would permit total fossil fuel extraction equivalent to 726 gigatonnes of CO₂e, nearly twice as much as we can safely emit to avoid runaway climate change.

These different outcomes highlight the tensions inherent in climate justice policy making. It is vital for climate justice that we keep global temperature rises within safe limits, to avoid causing further unjust impacts on MAPA communities. Yet it is also vital that we recognise the economic justice aspects of the climate crisis, and understand how closely our individual level of suffering from climate change is related to our income status. Any model that raises money for reparations, redistribution or just transition on a 'polluter pays' basis will face this challenge, as cutting pollution faster means raising less money to redistribute and invest.

The ultimate choices about what to prioritise should, of course, be made by the people of the world through a participatory democratic process, such as that which we describe above (see the section on Democratic Management). In advance of that decision-making, this paper attempts to steer a course through these challenges by using a 10% annual reduction rate for fossil fuel extraction in most of our scenarios, which would be enough to keep us within our global carbon budget while raising the money needed to support wider justice goals.

GLOBAL ECONOMIC JUSTICE AND ENERGY DEMOCRACY

Cap and share has two basic effects: it keeps fossil fuels in the ground (see above), and it moves money around the world. Specifically, it moves money away from:

- » Fossil fuel companies
- » Wealthy consumers (and the countries in which they live)

And it moves that money towards:

- » People-owned renewable energy and other activities needed for a global green transition
- » Countries that keep fossil fuels in the ground
- » Countries of the Global South
- » People on average and lower incomes everywhere.

To truly understand the climate justice implications of a cap and share system we need to explore how much money lands where. The following section aims to answer this key question.

THE MONEY RAISED WILL FUND THE FUTURE WE NEED

**Over \$80 trillion
invested in a
Green New Deal
by 2050**

**\$1 trillion a year
transferred to
MAPA
communities**

**\$70 a month to
every adult and
child by 2050**

Eight scenarios have been modelled, all of which start in 2025 with a carbon charge of \$135 per tonne of CO₂e and a carbon cap that mirrors current global fossil fuel extraction. The amounts distributed as 'leave it in the ground' compensation remain the same, except in scenarios 2 and 3 where it varies in line with the different amounts of fossil fuel left in the ground. All scenarios use the fund to establish growing public ownership over our new green economy and predict a 3.62% average real return on investment for the fund. They all incorporate admin, fund management and distribution costs at the same rates (see Appendix 2), and the same shares are reserved to cover public and third sector energy costs. Finally, in all scenarios the dividend amounts per person have been calculated in line with UN projections of global population, which predict a rising global population for several decades followed by a levelling off at around 10.4 billion people worldwide.⁷³

Scenario 1 is explained in detail below. The remaining seven scenarios are then presented in summary form, with fuller details on these provided in Appendix 4.

SCENARIO 1: SHRINKING THE CARBON CAP BY 10% PER YEAR

Scenario 1 models a carbon cap that shrinks by 10% per year, which would bring fossil fuel extraction to less than 3% of current levels by 2060. The carbon charge would start at \$135 per tonne of CO₂e, so in the first year \$4.9 trillion would be raised. The amounts raised would grow year on year (because the charge goes up more quickly than the cap shrinks) until reaching a peak in 2056, by which point the carbon charge will have reached a massive \$14,300 per tonne. That year the carbon charge will raise nearly \$20 trillion. After that the carbon charge levels off, in line with IPCC proposed maximum levels (see The Charge above), so the amounts raised begin to reduce as fossil fuel extraction dwindles.

SCENARIO 1							
Year	Carbon extraction cap (gigatonnes)	Carbon charge (per tonne of CO ₂ e)	Amount raised by carbon charge	Amount put into the fund	total amount in the fund	Amount of climate grants distributed this year	Monthly dividend per person
2025	36.3	\$135	\$4.9 trillion	\$0.2 trillion	\$0.2 trillion	\$1 trillion	\$31
2030	21.4	\$288	\$6.2 trillion	\$0.9 trillion	\$3.2 trillion	\$1 trillion	\$37
2040	7.5	\$1,317	\$9.8 trillion	\$3.3 trillion	\$23.6 trillion	\$1 trillion	\$51
2050	2.6	\$6,014	\$15.6 trillion	\$8.4 trillion	\$81.4 trillion	\$1 trillion	\$71
2060	0.9	\$14,300	\$12.9 trillion	\$9.4 trillion	\$190.3 trillion	\$1 trillion	\$70
2080	0.1	\$19,300	\$2.1 trillion	\$1.8 trillion	\$282.4 trillion	\$1 trillion	\$71
2100	0.01	\$30,100	\$0.4 trillion	\$0.04 trillion	\$304.2 trillion	\$1 trillion	\$71
2200	0.0000004	\$30,100	\$0.00001 trillion	\$0.00001 trillion	\$420.1 trillion	\$1 trillion	\$102
Total CO ₂ e extracted up til 2200 (Gt)			363	Total money distributed to the people and to climate work		\$1838.3 trillion	

Table 5: Amounts raised and redistributed in Scenario 1

Each year around \$360 billion would be set aside for paying LITG compensation to communities and governments. What happens to the rest of the money depends on how many years into the system we are.

MONEY GOES INTO THE FUND

To ensure that climate grants and dividends can be provided at a decent level from day one, in the first year (2025) only 5% of carbon charge proceeds would be saved and invested via the Global Climate Commons Fund, while 95% would go straight into the pot for redistribution via grants and dividends. This is vital in the early years of the system to boost grant and dividend amounts to a decent level (Scenario 7 below shows how low they would be without this tweak).

As the years go by the fund's capital would build up, and this would generate a bigger investment income. This bigger income would go into the pot for distribution, so the need for direct distribution of carbon charge proceeds would reduce. We therefore ramp up the amount being invested via the fund relatively quickly, with 7% invested in 2026 and a further 2% each year after that, reaching 100% by 2073. By that time, the fund would be so big that its investment income alone would be sufficient to cover climate grants and dividends, and we would all be better off in the long run if we invest rather than immediately redistribute the remaining proceeds of the carbon charge.

Once it receives its first deposit of carbon charge money, the fund would begin making investments in renewable energy infrastructure, public transport, zero-carbon housing and other Green New Deal projects.

As these investments are being made by a people-owned fund, this effectively establishes global public ownership over a fast-growing share of the global economy, starting with our new green energy infrastructure and then beyond. The Norwegian pension fund, with a current value of around \$1.2 trillion, owns 1.5% of the shares of every listed company in the world.⁷⁴ Before 2060 the Global Climate Commons Fund would contain more than one hundred times this amount, so all of us together would, by then, own a very large proportion of the global economy. This collectivisation of wealth is at the core of the demands of the climate justice movement and will ultimately be vital for social and global justice too. Through shared public ownership - and localised democratic control over these public assets, which should be established in every case - we will be free to redirect our economy, to ensure it serves well-being and justice rather than corporate greed.

⁷⁴ Milne, R. and Wiggleworth, R. (2022) 'World's largest wealth fund warns 'permanent' inflation will hit returns', *The Financial Times*. Available at: <https://www.ft.com/content/10fc6f3f-1f45-4cdd-a176-bb4a9d9afa0c>

MONEY IS SHARED AS CLIMATE GRANTS AND AS DIVIDENDS

The fund's investments would pay back a real return of around 3.62% through interest payments and shareholder dividends. This investment income would be added to the carbon charge money that was not invested via the fund, and together these funding streams would provide a huge pot of money for global redistribution.

In Scenario 1 we allocate \$1 trillion of that money for climate grants, covering mitigation, adaptation and loss and damage, primarily for MAPA communities. The rest would be shared out as a monthly dividend for every adult and child in the world.

DIVIDENDS

From the very first year of the system, and then continuing forever, every adult and every child in the world would get a cash dividend. It would be paid directly into your bank or mobile money account, along with a dividend for every child in your care. In Scenario 1 dividends would begin at \$31 per person in 2025, which would come to just over \$1,500 per year for a family of four.

The monthly amount would rise to \$51 per person by 2040 and would smash through the global extreme poverty line of \$66 per person per month (i.e. \$2.15 per day) in 2048. By 2050 every family of four in the world would receive \$3,400 per year as unconditional cash. By 2200 monthly dividends may rise to as much as \$100 per person, nearly \$5k per year for a four-person household. They would then continue in perpetuity at around this level or more (see the next section as well as Box 8 for details of how inflation has been accounted for in our calculations).

HOW DIVIDENDS WOULD OFFSET EXTRA ENERGY COSTS

We need to limit further climate change, and that means keeping most remaining fossil fuels in the ground. Whichever system we use to achieve this, it is going to create a scarcity of fossil fuels in the economy: there will be more people trying to buy coal, oil and gas than there is coal, oil and gas available. This will drive up the price of fossil fuels, simply as a result of that mismatch between supply and demand. As a result, in the early years (until we produce enough renewable energy to plug the gap), the overall price of energy will be higher than it was before. This will also have knock-on effects on the prices of food, transport and other goods.

BOX 8: INFLATION

In order to maintain the value of grants and dividends over time, our model accounts for inflation in several ways.

Firstly, future carbon prices are expressed in 2022 dollars: the specified year-on-year increases are intended to be over and above inflation, so the actual fees charged for fossil fuel extraction licences would be higher than the expressed amounts. This would ensure that the amounts of money being raised by the system would continue to be as substantial as expected, regardless of inflation.

Secondly, inflation is built in when we calculate the expected investment income of our fund and the size of the grant and dividend budget that will arise from that. The fund's expected rate of return mirrors the Norwegian Pension Fund's average 'real' rate of return', which is adjusted to account for inflation. The Norwegian fund's annual rate of return without this adjustment has averaged 5.81%, but when adjusted for inflation this rate is 3.62%.⁷⁵ This latter rate is used in our model to show how much money we expect would be made by the fund after inflation is taken into account.

Thirdly, from 2075 onwards (once proceeds from fossil fuel extraction have almost dried up) we would retain a growing proportion of each year's investment income in the fund, reaching and then remaining at 10% of the annual real return by 2095. This would help to ensure that both the fund's capital and therefore its returns would retain their value despite inflation. This is a more conservative approach than that currently taken by the Norwegian Pension Fund, which transfers nearly all of their 3.62% annual real return to the Government of Norway for public spending.⁷⁶ Despite this the Norwegian fund's website states that, "More than half of the fund's value is return on the investments," and by 2022 their capital stood at 11,657 billion Kroner even though only 3,265 Kroner of oil money has ever been put in.⁷⁷ By going a step further and retaining 10% of returns in our Climate Commons Fund, we can therefore be confident that our fund will be able to retain and possibly even increase its value over time, even after fossil fuel proceeds have stopped coming in.

Finally, inflation is considered when we explore the expected economic outcomes of the system. When assessing how much a household might expect to gain (or, in the case of the best-off households, to lose) from implementation of this system, we consider the effects of the proposed carbon charge on the prices of energy, food and other key goods on which each household will need to spend money. We can then understand what proportion of the dividend payments that each household receives will be used to cover extra costs, and how much will provide extra money to spend.

75 NBIM (2023) 'Returns'. Available at: <https://www.nbim.no/en/the-fund/returns/>

76 SEB Group (2021) 'Norwegian Fiscal Policy', Macro & FICC Research. Available at: <https://research.sebgroup.com/api/puppeteer/mficc/19705>

77 NBIM (2023) 'Market Value'. Available at: <https://www.nbim.no/en/the-fund/Market-Value/>

The dividends provided in cap and share are vital to ensure that these inevitable price rises are offset, especially for lower income households. Table 6 below shows the results of our modelling, which assesses these impacts in different countries.⁷⁸ All data is for the first year of this system: the time at which we would see the biggest jump in energy prices, because the cap and charge are applied for the first time. Table 7 is provided for comparison: this shows the changes in monthly spending power that each person would experience if fossil fuels were kept in the ground to the necessary extent, but we received no dividends.

MONEY IN OUR POCKETS: HOW IT WOULD CHANGE IN THE EARLY YEARS OF CAP AND SHARE		
Year 1 Actual dividend is \$31 per month	Change in monthly spending power: people with average incomes	Change in monthly spending power: people with low incomes
High income countries	-\$50	-\$13
Upper middle income countries	-\$3	+\$12
Lower middle income countries	+\$10	+\$20
Low income countries	+\$23	+\$27

Table 6: How people's spending power would change with dividends, accounting for increased energy prices

WITHOUT CAP AND SHARE: IMPACTS OF RISING FOSSIL FUEL PRICES WITHOUT DIVIDENDS		
Year 1 No dividends without cap and share	Change in monthly spending power: people with average incomes	Change in monthly spending power: people with low incomes
High income countries	-\$81	-\$44
Upper middle income countries	-\$34	-\$19
Lower middle income countries	-\$21	-\$11
Low income countries	-\$8	-\$4

Table 7: How people's spending power would change without dividends, accounting for increased energy prices

⁷⁸ The estimates of how much each person would pay in extra energy costs are based on carbon footprint data for each group. This therefore considers not only the extra that people would pay for household energy bills and vehicle fuel, but also builds in expected inflation in the cost of food, travel and other goods as a result of higher energy costs for producers. This model should therefore provide a decent approximation for the true extra costs of living under a cap and share system.

As these tables show, the economic impacts of cap and share in middle and lower income countries are very positive. For upper middle income countries, energy cost increases are almost entirely offset by dividends for average earners, and low earners would see their extra energy costs entirely offset, plus a modest \$12 increase to the monthly spending power of each person, including children. In lower middle income countries, extra energy costs for both groups are fully covered, and people would see spending power increases of \$10 to \$20 per person per month. Low income countries benefit most of all, with extra energy costs covered and extra spending of \$23 to \$27 per person. The top five winners from the system are Ethiopia, Zimbabwe, Rwanda, Malawi and Uganda.

Meanwhile, people in high income countries are going to be hit the hardest by energy price rises. People in these countries consume far more energy than people elsewhere, so they are going to be shouldering most of the cost of keeping fossil fuels in the ground. Conversely, lower income countries have the lightest load as people in these regions already consume very little fossil fuel.

This creates a policy challenge in higher income countries. Nevertheless, a comparison between tables 6 and 7 demonstrates that people in every region end up better off with dividends than without. Without dividends, people on average incomes (50th centile) in high income countries would lose \$81 per person per month, as they would be paying a lot more for home energy, transport, food and other goods. With a cap and share system in place, this loss is significantly offset, reduced to \$50 per person per month. Whilst, the loss for low earners (10th centile) is reduced from \$44 to \$13 per month.

These losses are still significant, but the fact that they are confined to high income countries makes the problem easier to solve, as governments in these richer nations have the resources available to support their populations through the transition. Support options include price caps (which oblige energy firms to absorb some of the costs rather than pass them onto consumers), household subsidies such as 'free basic energy',⁷⁹ and subsidised public transport. These supports are already in place in many countries, or are on the political agenda, as a result of excessive energy price rises in recent years.⁸⁰ Adopting these complementary policies would ensure that households still have access to affordable energy and other vital services while the green transition is in progress. Once sufficient renewable energy capacity is operational these cost challenges would melt away, as very little of the overall energy mix would then be made up of expensive fossil fuels.

Even where these losses are not entirely offset by dividends or government schemes, a system of this kind may still be popular among people in the Global North as well as net beneficiaries in the Global South. A team based at the French National Centre for Scientific Research (CNRS) has found high levels of support amongst populations in the Global North for a global climate plan, even when it would cost the respondents money. Indeed, a survey of 40,680 respondents in 20 high-emissions countries found strong majority support in each country for such a policy, even when it led to losses of up to \$85 per person per month.⁸¹

79 See, for example, New Economics Foundation (2022) 'Warm homes, cool planet'. Available at: <https://neweconomics.org/2022/09/warm-homes-cool-planet>

80 The UK, for instance, already has a range of energy price caps and government subsidies in place, to deal with the excessively high prices that households would otherwise have faced in recent years. See Ofgem (2023) 'Energy price cap explained'. Available at: <https://www.ofgem.gov.uk/information-consumers/energy-advice-households/check-if-energy-price-cap-affects-you#To%20help%20protect>

81 Fabre, A., Douenne, T., Mattauch, L. (2023) 'International Attitudes Towards Global Policies'. Available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4448523

These findings suggest there is significant appetite for change among people in high income countries, even if the effects are felt within their household budgets.

OTHER MOVEMENTS OF MONEY AFFECTING GLOBAL ECONOMIC JUSTICE

Dividends are only one of several ways in which money would move in an international cap and share system. Money would also travel across borders via:

- » **National allowance sharing:** As direct monetary transfers from high-consuming countries to low-consuming countries, in exchange for the temporary use of their spare national allowance (their national ration for carbon importation and consumption).
- » **'Leave it in the ground' compensation:** As payments from the fund to countries and communities in exchange for the fossil fuels they choose not to dig up.
- » **Green New Deal investments:** As investments and loans from the fund to renewable energy installers and other transition activities in every country.
- » **Climate grants:** As non-repayable transfers from the fund to countries of the Global South and other MAPA communities for mitigation, adaptation and loss and damage.

The global economic justice impacts of these elements of the system are considered below

I. NATIONAL ALLOWANCE SHARING

Average CO₂ emissions per person in high income countries are 9.8 tonnes. In upper middle income countries people emit 6.4 tonnes on average, compared to 1.7 tonnes in lower middle income countries and 0.3 tonnes in low income countries.⁸² Taking into account the populations of each group,⁸³ the midpoint that would represent a fair per capita national allowance for fossil fuel imports and local extraction in this system's first year would be around 4.5 tonnes per person. Until participating countries shrink their fossil fuel use to this fair global share (which would also keep reducing each year as the overall global carbon cap reduces), countries that consume too much would need to negotiate with countries who use less in order to temporarily acquire a portion of their national allowance. These negotiations would enable overall global fossil fuel extraction and use to remain within safe levels, while ensuring that high consuming countries are under economic pressure to briskly reduce their fossil fuel use.

82 World Bank (2023) 'CO2 emissions (metric tons per capita)'. Available at: <https://data.worldbank.org/indicator/EN.ATM.CO2E.PC> Accessed 04/05/2023

83 World Bank (2023) 'Population (total)'. Available at: <https://data.worldbank.org/indicator/SP.POPTOTL> Accessed 04/05/2023

This paper does not recommend what level of compensation low-consuming countries should demand during such allowance-sharing arrangements. However for the purposes of modelling we could assume that they might request the same amount per tonne of CO₂ as is paid in carbon charges when fossil fuels are extracted. This is \$135 per tonne of CO₂ in the system's first year.

Based on their current fossil fuel use, high income countries would need to pay, on average, \$717 per head of population to acquire enough spare national allowance to keep the lights on in year 1.⁸⁴ Upper middle income countries would need to pay the lesser but still substantial amount of \$258 (on average) to cover their own over-consumption. Countries with lower incomes would, of course, not need to pay anything but would instead receive these direct transfers from higher-polluting nations. Lower middle income countries would receive, on average, \$377 per capita per year from higher-consuming countries, while low income countries would receive a massive \$566 per person: a transfer that would, on its own, nearly double their gross national income per person.⁸⁵

These transfers are, in effect, a mechanism that would prevent wealthier countries from getting even deeper into climate debt year on year, as a result of their continuing over-consumption of fossil fuels. These payments would constitute a substantial transfer of resources from Global North to South that is more than overdue in climate justice terms. It should be noted that these payments do not consider or redress historic climate debt: separate mechanisms would be needed to tackle this, including the cancellation of low income countries sovereign debts to the North (as demanded by Debt for Climate) alongside further measures.

II. 'LEAVE IT IN THE GROUND' COMPENSATION

As discussed above, the amount redistributed from the fund each year for LITG compensation would be, on average, around \$360 billion, though this would vary according to the specific commitments made by countries and communities regarding their fossil fuels. These payments would be made to countries and communities of any income group, as incentive and recognition for doing the right thing. Without knowing which countries and communities will make LITG commitments, it is not possible to model the distributional effects of this compensation.

III. GREEN NEW DEAL INVESTMENTS

The fund would invest and lend its capital to drive the green transition in every country. Beyond a commitment that this investment should be balanced across the world, and should especially support green investments in countries that are capital-poor, this paper does not venture any particular formula for how the money should be distributed. Furthermore, as these investments and loans would be interest-bearing and would ultimately need to be paid back, this does not constitute redistribution in the same way as dividends, national allowance sharing, compensation and climate grants. It is therefore not included in our calculations as to the redistributive effects of the cap and share system.

84 Please contact info@equalright.org to view the methodology behind these numbers.

85 World Bank (2023) 'GNI per capita' Available at: <https://data.worldbank.org/indicator/NY.GNP.PCAP.CD> Accessed 09/05/2023

IV. CLIMATE GRANTS

Scenario 1 allocates \$1 trillion per year to climate grants for the Most Affected People and Areas (MAPA), which should be distributed by a democratically-accountable body of the fund on the basis of need. If we assume that this results in 90% of the \$1 trillion going to low and lower-middle income countries, in which more than half of the world's population live, this equates to climate spending of \$219 per person per year in those areas. The remaining 10% would then be allocated to disadvantaged groups in other areas.

OVERALL GLOBAL ECONOMIC JUSTICE IMPACTS OF SCENARIO 1

Cap and share would achieve progressive redistribution on an international scale. Although this system provides equal universal dividends to every person worldwide, the ultimate results are a massive and long overdue return of wealth from the Global North to the South.

OVERALL GLOBAL JUSTICE IMPACTS - PER CAPITA PER YEAR				
Year 1	Spending power per person	National allowance sharing	Climate grants	TOTAL
High income countries	-\$598	-\$717	+\$27	-\$1289
Upper middle income countries	-\$38	-\$258	+\$27	-\$270
Lower middle income countries	+\$117	+\$377	+\$219	+\$713
Low income countries	+\$273	+\$566	+\$219	+\$1058

Table 8: The macro-distributional impacts of cap and share

As shown in Table 8, cap and share would represent an overturning of current outcomes. Instead of the poorest being hit hardest, the (essentially unavoidable) net losses in this system would be felt in high income and upper middle income countries, as people and governments in these regions would be obliged to pay the cost of their excessive fossil fuel use. The richest would feel the pinch most of all, while governments would be put under intense pressure by their populations to support the less well-off. This cost pressure on the rich and powerful would shift economic incentives away from fossil fuel mining, making renewable energy and low carbon economies the most economically-viable option. This would align with the actual availability of resources, as fossil fuels would be made scarce by the cap. Economic managers would therefore face several complementary and very sharp nudges in the direction of a green transition.

Meanwhile, MAPA communities in the Global South would enjoy real and significant economic gains from the cap and share system. Lower middle income countries like Bolivia, India and Morocco would receive an overall income boost equivalent to \$713 per person per year. Low income countries like Afghanistan, Somalia and Madagascar would see their national income per person more than doubled via direct transfers of over a thousand dollars per person.

Cap and share scenario 1 therefore attempts to chart a course towards climate justice. By directly controlling fossil fuel extraction and keeping it within safe limits, this scenario would also force the closure of most fossil fuel facilities and should prevent runaway climate change from taking hold. It would ensure that the costs of addressing climate change fall squarely on the countries and people that have caused the emergency, rather than on those with the lowest climate debt. It would also create the biggest investment fund the world has ever known, which would be owned by us all and would be invested to create the future that we need and choose.

At the same time, cap and share would redistribute thousands of trillions of dollars from top polluters to the global 99%. People everywhere would be supported through the transition, though governments of wealthy countries would need to top up support for their own residents if people continue to consume energy at current rates. By far the greatest benefits would accrue to the Global South.

From day one of this system, MAPA communities facing climate crisis would be guaranteed a regular basic income, sufficient to protect people from some of the most severe climate outcomes such as famine. As dividends increase in value over the years, they would help to cover the household-level costs of adaptation and loss and damage, paying for (re)building materials, better adapted seeds, equipment for new businesses and bus fares to new jobs: essentially helping every person directly to adapt to- and recover from climate shocks. This reliable monthly income would also help to cover essentials like food, rent, medicines and phone credit for people who have too long been denied this basic economic security. Direct, permanent dividends to every person would make certain that global extreme poverty is eradicated before 2050, never to return.

EXPLORING OUR OPTIONS: FURTHER SCENARIOS TO REFLECT DIFFERENT PRIORITIES

Scenarios 2 to 8 are all variations of scenario 1, in which certain parameters have been changed. They demonstrate the effects of:

- » **Reducing our fossil fuel use more or less quickly.** Scenario 2 reduces fossil fuel extraction by 15% per year rather than 10%. This means that more is left in the ground and therefore less money is collected via the carbon charge. Scenario 3 investigates a 5% annual reduction in the carbon cap, so greater overall fossil fuel extraction.
- » **Distributing different amounts of money as climate grants.** Scenario 4 explores the effect of spending \$2 trillion per year, rather than \$1 trillion, as climate grants. Scenario 5 investigates how much dividends would increase if no climate grant budget was set aside.
- » **Distributing dividends only to people in lower-income countries.** Scenario 6 explores how much dividends would increase if the pot were shared only between residents of low and lower-middle income countries rather than between people everywhere.
- » **Investing different amounts of money via the fund.** Scenario 7 calculates what our dividends would look like if we invested all carbon charge proceeds in the fund from day one. Scenario 8 explores the effects of investing nothing in the fund.

The effects of these changes are summarised below in Table 9, while more detailed results are provided in Appendix 4.

SCENARIOS	Amount distributed as climate grants each year	Monthly dividend per person			IMPACTS BY 2200		
		2025	2050	2200	Total CO ₂ e extracted (Mt)	Total invested in the Green New Deal	Total money redistributed
Scenario 1: Cut extraction by 10% per year, \$1 trillion climate grants	\$1 trillion	\$31	\$71	\$102	363	\$304.2 trillion	\$1838.3 trillion
Scenario 2: Cut extraction by 15% per year (extracting less overall)	\$1 trillion	\$28	\$45	\$23	242	\$87.0 trillion	\$692.0 trillion
Scenario 3: Cut extraction by 5% per year (extracting more overall)	\$1 trillion	\$33	\$43	\$470	726	\$927.8 trillion	\$5759.7 trillion
Scenario 4: \$2 trillion climate grants	\$2 trillion	\$22	\$63	\$94	363	\$304.2 trillion	\$1838.3 trillion
Scenario 5: No climate grants	\$0	\$41	\$79	\$110	363	\$304.2 trillion	\$1838.3 trillion
Scenario 6: Dividends only for lower income countries	\$1 trillion	\$61	\$137	\$197	363	\$304.2 trillion	\$1838.3 trillion
Scenario 7: No boosting of dividends in the early years	\$1 trillion	-\$8	\$59	\$181	363	\$528.3 trillion	\$2906.7 trillion
Scenario 8: No fund, just immediate distribution	\$1 trillion	\$34	\$114	-\$8	363	\$0.0 trillion	\$515.0 trillion

Table 9: Amounts raised and wider impacts of Scenarios 1 to 8

As shown in Table 9, these scenarios generate very different outcomes in terms of climate action, green investment, and reparations and redistribution.

Scenarios 1, 2 and 3 explore the effects of extracting more or less fossil fuel, with very different outcomes for the safety of our climate (see 'Impacts on climate change' section above). When choosing between these scenarios we should also consider the amounts that are being invested in the Green New Deal, and whether that will be sufficient to build the new sustainable energy, transport and housing that we will need to make the transition. Scenarios 1 and 2 both see investment by 2050 of over \$80 trillion, but this is only \$59 trillion in Scenario 3. Without adequate investment in post-carbon infrastructure it would be very difficult for us to stick to the fossil fuel cap, as we would not have enough sources of clean energy to replace coal, oil and gas. If we persisted with the cap and the charge without these affordable alternatives there could be severe energy shortages worldwide.

The amount of money raised in this system is huge but it is not limitless. In all of the scenarios that we model, it is challenging to find enough money within the first few years' carbon charge proceeds to fund Green New Deal investments at the necessary scale, as well as carbon dividends sufficient to support people everywhere during these early energy price rises. Scenario 1 and 2 are closer to achieving this balance than Scenario 3, but to achieve the transition quickly enough while still cutting carbon briskly, it would make sense to boost Green New Deal spending for the first fifteen years through an additional financing method: see for instance the proposals made by the Government of Barbados and others via the Bridgetown Initiative.⁸⁶ Additional financing could top up the money raised for the fund in these scenarios, and would allow Green New Deal projects to get up and running in most or even all countries quickly. This would ensure that abundant cheap renewable energy is soon available to take over from increasingly scarce and expensive fossil fuels, enabling us to stick to the cap and keep climate change within safe levels.

Scenario 4 explores the option of redistributing more of the system's proceeds as climate grants and less as dividends, while Scenario 5 considers the opposite: all money to dividends and none for grants. Scenario 5 is a poor fit with the demands of climate justice advocates, who are clear in demanding grants rather than loans to support climate action in the Global South.⁸⁷ There is also a huge unmet need for loss and damage funding,⁸⁸ which could be significantly addressed by this system. Scenario 4, which provides a \$2 trillion annual budget for climate grants, rather than the \$1 trillion budget included in most other scenarios, could contribute significantly here. Allocating \$2 trillion of the pot to grants means there is less for dividends, so they start at \$22 per person per month rather than \$31 as in Scenario 1, but this could be a trade off worth making. This kind of decision should ultimately be made by the democratic leadership body of the fund, so that it reflects people's real priorities.

Scenario 6 explores giving dividends only to people in lower income countries, and therefore presents a different trade-off: between universalism and targeting. The universal approach, in which every person in the world receives an equal dividend, has several advantages including simplicity (and therefore low overhead costs) and a likelihood of high democratic sustainability, as the dividends would be clearly understood as a right rather than a 'benefit' and people everywhere would feel invested in making the system work.

By contrast, targeting dividends only at people in lower income countries provides a higher dividend amount for those who receive payments, and would do much more to correct global inequality. It also feels like the right thing to do (or an approximation of that at least) given historic climate debt and other global justice debts that the North owes to the South. However, it would give nothing to people living in poverty in upper middle income and high income countries, including asylum seekers and other migrants living there.⁸⁹ Countries described as 'upper middle income' include many countries with high poverty rates such as Botswana, Guatemala, Iraq, South Africa and Turkmenistan.⁹⁰

86 Government of Barbados (2022) 'The 2022 Bridgetown Initiative'. Available at: <https://www.foreign.gov.bb/the-2022-barbados-agenda/>

87 Atwoli, L. et al. (2022) 'COP27 Climate Change Conference—Urgent Action Needed for Africa and the World', *JAMA*, 328(22): 2215-2216. Available at: <https://jamanetwork.com/journals/jama/fullarticle/2798333>

88 Carbon Brief (2022) 'COP27: Why is addressing 'loss and damage' crucial for climate justice?'. Available at: <https://www.carbonbrief.org/cop27-why-is-addressing-loss-and-damage-crucial-for-climate-justice/>

89 Unless birth nationality rather than country of residence is the deciding factor for who gets dividends.

90 World Bank (2023) 'World Bank Country and Lending Groups'. Available at: <https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups> Accessed 08/09/2022

Even high income countries can have high poverty rates: according to the World Bank one in every fifty people in the USA lives on less than \$5.50 per day.⁹¹ Targeting dividends to fewer countries may also erode the system's political feasibility and sustainability, as better-off countries may not be willing to commit if their citizens and economies will receive nothing. Deciding between these options will clearly be challenging: extensive democratic and diplomatic discussion will be needed to ensure that questions of justice, equity and sustainability are all fully considered.

Scenario 7 illustrates why it is useful to boost dividends in the early days of this system via some temporary direct distribution of the carbon charge proceeds. As the fund's capital - and therefore its investment income - builds up slowly, the dividends in Scenario 7 (where no boosting takes place) actually start off negative. This is because we have fixed the amount for climate grants at \$1 trillion, but this amount is not actually yet available from the as-yet-fairly-small income from the fund's investments. By 2030 dividends would be positive but still only 99 cents per person per month; it takes until 2042 for dividends to reach above \$30. This would make the first 18 years of the system very challenging, as it coincides with the time when we would face high fossil fuel energy costs while waiting for renewables to scale up. Without a decent dividend, lower income families all over the world could face real hardship from a carbon cap and charge. This feels like a poor fit with climate justice.

Scenario 8 makes it abundantly clear why the fund is so vital for this system. Without it our dividends would wind down along with fossil fuel extraction, disappearing entirely by 2085, and by 2100 there would be no money for climate grants either. This really throws our grandchildren under the bus (see Box 9), especially if climate change makes future life on Earth more challenging, as most experts predict: dividend payments would start to fall away just as extreme weather and crop failures are really starting to bite. We should also consider whether the people of the world would actually be willing to give up fossil fuels if it means an end to their dividends.

People dislike losing what they already have, and for billions of people the end of dividends could mean a return to extreme poverty. Finally, the absence of a fund means no Green New Deal investments (at least from this system), so moving beyond fossil fuels would be extremely challenging. Given that the boost in dividend payments in this scenario is fairly small and very temporary, it feels short-sighted to proceed without a fund. The losses are just not balanced out by the gains.

These scenarios show how this system can be adapted to suit different priorities. Some variants produce poor results in climate justice terms so can probably be excluded from further consideration, but Scenarios 1, 2, 4 and 6 all have merit and should be on the table for democratic debate. Choosing between the specific benefits offered by each of these scenarios will be challenging: allocating more money to one good purpose inevitably means less for another, and shutting down fossil fuel extraction more quickly will mean less money all round. These tensions are inherent in the climate justice concept and they should be resolved as democratically as possible if this system is implemented. The aim should be to balance different and equally valid goals as well as possible to ensure that climate justice is best served.

⁹¹ World Bank (2023) 'Poverty headcount ratio at \$6.85 a day (2017 PPP) (% of population)'. Available at: <https://data.worldbank.org/indicator/SI.POV>. UMIC Accessed 08/09/2022

BOX 9: INTERGENERATIONAL EQUITY - OUR OBLIGATIONS TOWARDS FUTURE GENERATIONS

By Rahul Basu, Research Director at the Goa Foundation

The principle of intergenerational equity is, at its heart, quite simple: We, the present generation, must ensure that future generations inherit at least as much as we did. Only after that do we have a right to consume some of the fruits of our inheritance. If we implement this rule successfully, our children will be at least as well off as we are.

This rule is not well followed today. Our economy continues to permanently deplete our shared inheritance of fossil fuels while raising carbon dioxide levels in the atmosphere for hundreds of years. We are consuming the inheritance of our future generations. What is to be done?

Consider the example of inherited family gold. If the family decides to keep the gold as it is, they ensure the gold remains to be passed onto future generations, but they would get no income from it. Alternatively, if they decide to sell the gold and invest the proceeds in land, for example, they can benefit from the income of the land, and both the value and the income is passed on to future generations as long as it is well maintained. The crucial point is that if the gold were to be lost or the investments mismanaged, the loss of capital would be permanent for all future generations.

A Global Climate Commons Fund provides an opportunity for us to preserve and benefit from the value of our global 'family gold' - our fossil fuels and our atmosphere. Rather than consuming the income from the carbon charge immediately, that money is preserved for future generations to inherit. Income from the investments of the fund would be shared equally among all of us alive today as our carbon dividends, and future generations would benefit from this income in the future.

If we simply paid out the carbon charge directly as a dividend, as many propose, it would be a stock-flow error - the charge for dumping long-lived carbon in the atmosphere being used only by the present generation while the impacts will affect generations far into the future. In effect, the present generation would continue plundering the inheritance of future generations, who would inherit less than we did. This is not sustainable.

SUMMARY: SHOCKS ARE COMING SO HOW SHOULD WE RESPOND?

Whatever we do, economic shocks are coming for us. Without meaningful climate action, unmitigated climate change would generate the biggest economic shock the world has ever known.⁹²

To avoid this, we need to limit further climate change, and that means keeping most remaining fossil fuels in the ground. Whichever system we use to achieve that, it is going to create a scarcity of fossil fuels in the economy: there will be more people trying to buy coal, oil and gas than there is coal, oil and gas available (as reducing their availability is the point). This will drive up the price of fossil fuels, simply as a result of that mismatch between supply and demand. As a result, the overall price of energy will be higher than it was before, until we produce enough renewable energy to plug the gap. These temporary higher energy prices will be the inevitable result of taking any meaningful climate action: they cannot be avoided, no matter which climate mitigation system we choose.

This presents a major policy challenge: if energy prices are going to go up, how can people everywhere be supported to cope with that change? If we are to move beyond climate action towards climate justice, we need to consider where the economic gains land in any proposed system, and ensure that any money or rents arising from the change find their way back to the people.

The cap and share system we have described above can provide part of the answer. In this system, the value of inevitable energy price rises is captured for the people via the carbon charge. The charge stops that extra money landing with fossil fuel companies, and instead directs it into our people-owned fund. From there, it is invested in the energy transition, to bring abundant, cheap renewable energy online as soon as possible, and to make sure that 'we the people' own that new energy infrastructure.

The money we make from our shared energy investments is then shared out between us all, directly into each person's pocket, and with an additional share to MAPA communities via climate grants. This money partly or fully offsets the extra amount we are paying for energy, so gives us vital support as we push through the transition.⁹³

Altogether, the outcomes of cap and share would be significant and even transformative for the world. Fossil fuel extraction would be scaled down swiftly enough to minimise further climate change. People everywhere would be better off than they would be under other climate mitigation systems (ones that limit fossil fuels, e.g. have a cap, but do not have a share element), and would almost certainly fare much better economically than they would under runaway climate change. And the significant ongoing redirection of wealth that this system achieves would make meaningful inroads into North-South inequality, while ending extreme income poverty everywhere.

92 UCL (2021) 'Economic cost of climate change could be six times higher than previously thought'. Available at: <https://www.ucl.ac.uk/news/2021/sep/economic-cost-climate-change-could-be-six-times-higher-previously-thought>

93 The countries in which higher energy prices are only partly offset by these payments are mainly higher income countries (see below), so national governments there should provide additional support as needed, through approaches such as free basic energy and other cost controls. An international fund should also be created to support the small number of middle-income countries that see only a partial offset: this could easily be provided as a small bolt-on to the main fund.



PART III
GETTING IT
STARTED:
COUNTRY-
BY-COUNTRY
IMPLEMENTATION

GETTING IT STARTED: COUNTRY-BY-COUNTRY IMPLEMENTATION

In its final version, this cap and share system is global, with every country in the world participating and control of the system operating at the global level. However, getting the whole world to agree to something is highly challenging, especially if it has not yet been tried. It is therefore important to consider the potential for gradual implementation of the system, starting with a few countries and then spreading around the world. One potential first-mover scenario is explored below - others will be modelled in upcoming papers.

LEADING COUNTRIES OF THE BEYOND OIL AND GAS ALLIANCE (BOGA): COSTA RICA AND DENMARK

The Beyond Oil and Gas Alliance (BOGA) is a coalition of countries and sub-national territories that have committed to a just and managed phase-out of oil and gas production.⁹⁴ The alliance is chaired by Costa Rica and Denmark, has seven further core members (France, Greenland, Ireland, Quebec, Sweden, Wales and Portugal), and a further eight territories that are associate members or 'friends of' BOGA (California, New Zealand, Italy, Finland, Luxembourg, Chile, Fiji and Washington State).⁹⁵ As these countries have already committed to a managed phase-out of oil and gas (and have generally made commitments elsewhere to phase out coal⁹⁶), they may be especially receptive to a proposal like the one presented here, which could accomplish that phase-out while providing important climate justice and social justice benefits alongside. Let's assume that the two countries who initiated the alliance, Costa Rica and Denmark, lead the way on carbon cap and share. What would a BOGA-chairs-only cap and share system look like?

94 BOGA (2022) 'At COP27, BOGA announces support fund for oil and gas phase out'. Available at: https://beyondoilandgasalliance.org/wp-content/uploads/2022/12/BOGA_COP27_Press_Release_updated.pdf

95 Ibid.

96 Powering Past Coal Alliance (2023) 'Our Members'. Available at: <https://poweringpastcoal.org/members/>

THE CAP AND NATIONAL ALLOWANCES

These countries' governments would work with civil society and others to set up an international Climate Commons Trust and Fund. The trust would set a notional global carbon cap and then establish a shared carbon cap for the countries participating in the system based on the percentage of global population that lives in those countries. 0.066% of the world's people live in Costa Rica and 0.075% of the world's people live in Denmark, so this system's overall carbon cap would be 51 million tonnes in the first year.⁹⁷ The system would then issue licences for that quantity of fossil fuel extraction, which would be allocated according to a prioritisation process similar to that described in Part I. The cap would decline year-on-year as the global carbon cap is tightened, so the annual amount of licences issued would gradually reduce.

The cap would ensure that the total amount of fossil fuel extracted under the whole system remains in line with our global carbon budget. Ideally fossil fuel extractors, wherever they may be, would be required to apply for licences for extraction of the fossil fuels they intend to sell to Costa Rica and Denmark. This would be similar to how regulatory systems in certain regions already affect production elsewhere, for instance many farmers in the Global South deliberately comply with EU food standards during production so that they can later export to countries of the EU.⁹⁸ However if that proves infeasible, for instance because the participating countries represent too small a share of the fossil fuel market and cannot exert the necessary influence, an alternative approach is discussed at the end of this section.

The trust will also need to issue national allowances to ensure that the overall amount of fossil fuel that is extracted is shared fairly between Costa Rica and Denmark (the section titled 'The Cap' in Part I of this paper provides details of the differences between these two control systems, while Box 3 gives information on how national allowances could be implemented at the border to capture embedded as well as raw fossil fuels).

How should the available national allowances be allocated between Costa Rica and Denmark, given their different populations and current consumption levels? The starting point for national allowance discussions should be an assumption that each country will receive an equal per capita share of the available fossil fuel. However Denmark's consumption-based CO₂e emissions, which include emissions produced elsewhere as a result of goods ultimately consumed in Denmark, are currently 43 million tonnes, which is substantially more than the 27 million tonnes that they would be allocated in the first year of this system if based on their per capita share.⁹⁹ Meanwhile Costa Rica's consumption-based emissions are only 11 million tonnes: less than half of what would be permitted if they used their full first-year national allowance allocation.¹⁰⁰

97 Own calculations based on data from <https://data.worldbank.org/indicator/SP.POP.TOTL> (accessed 15/12/2022) and an assumption that the overall global carbon cap would be set at the same level as we have chosen in this system, i.e. current levels of global fossil fuel consumption.

98 EURACTIV (2022) 'Ripple Effects: How EU Decisions Impact African Farmers'. Available at: <https://en.euractiv.eu/wp-content/uploads/sites/2/special-report/Ripple-effects-How-EU-decisions-impact-African-farmers-SR-1.pdf>

99 Ritchie, H. and Roser, M. (2020) 'Denmark: CO₂ and Greenhouse Gas Emissions', Our World in Data. Available at: <https://ourworldindata.org/co2/country/united-states>

100 Ritchie, H. and Roser, M. (2020) 'Costa Rica: CO₂ and Greenhouse Gas Emissions', Our World in Data. Available at: <https://ourworldindata.org/co2/country/united-states>

Denmark may therefore hope to secure an extra national allowance, to ensure it can keep the lights on while building green infrastructure to replace fossil fuels. Costa Rica may be willing to offer up some or all of its unused national allowance (circa 12.5 million tonnes) to Denmark, in return for fair compensation. The two countries, supported by the trust and guided by principles of climate justice, would have the opportunity to reach an agreement on how much extra national allowance Denmark may be permitted, and how much money they should transfer to Costa Rica for that privilege. If we assume that Costa Rica agrees to allow Denmark to (temporarily) use all of their spare national allowance, and they agree a compensation rate per tonne of extra national allowance that mirrors the carbon charge amounts, Denmark would need to compensate the Government of Costa Rica to the tune of \$1.7 billion in the system's first year. This would mean that Denmark would effectively pay double for the fossil fuel that it uses above its per capita national allowance, as the people and companies of Denmark will pay once through the carbon charge being passed on in the price of fossil fuels and then their government will pay again via compensation for their extra national allowance. As discussed above, this is entirely in line with climate justice and is a strong incentive for Denmark to swiftly reduce its fossil fuel use.

To back up this incentive, the countries would also agree to a fixed timeline for phasing out Denmark's extra allowance, to bring them in line with their per capita share of global fossil fuel consumption. After eight years of the system, Costa Rica's per capita national allowance will have shrunk (due to a shrinking carbon cap) to 11 million tonnes, which is in line with the amount of fossil fuel that they are using today. After that point Costa Rica would have to begin making cuts to their own fossil fuel consumption - if they haven't already - and may have no spare national allowance available each year to share. It may therefore make sense to phase out Denmark's extra national allowance within eight years so that the two countries together can manage to consume only fossil fuels which have been licensed and extracted within the cap.

Once the system is underway, all fossil fuel consumption in Costa Rica and Denmark should ultimately be limited by both the cap and the national allowance. The responsibility for securing the necessary licences and national allowances would lie with the company types below:¹⁰¹

- » Companies that extract fossil fuels within Costa Rica or Denmark
- » Companies that distribute nationally-extracted fossil fuels within Costa Rica or Denmark
- » Companies that import fossil fuels into Costa Rica or Denmark
- » Companies that import other goods and services that contain 'embedded carbon' into Costa Rica or Denmark

¹⁰¹ Most individuals would never need to interact with this licensing system directly, as sensible *de minimis* limits should be applied to prevent the need for small parcels, or cars crossing borders with petrol in the tank, to need to apply for licences. A section of the national allowance may need to be set aside to notionally cover the cumulative fossil fuel imports arising from these small activities.

Importers would be required to secure licences and allowances well before goods reach the border, with checks then undertaken by border officials, similar to how many kinds of imports and exports, e.g. animal products, chemicals, are already handled today.¹⁰² Complications may arise as a result of Denmark's membership of the EU and the free movement of goods that comes with that. However EU countries already charge wildly different rates of carbon tax¹⁰³ and simultaneously participate in the EU Emissions Trading Scheme,¹⁰⁴ so it appears likely that any additional complexity brought about by the cap and share system could be managed.

If the cap-related licensing system is applied at the point of importation rather than extraction (for fossil fuels extracted outside of Costa Rica and Denmark), the distinction between the cap and the parallel system of national allowances would be reduced, and it may ultimately be necessary to use only the national allowance system for country-by-country implementation of carbon cap and share. In that case the carbon charge would need to be applied directly to the national allowance allocation, so fossil fuel importers (as well as extractors within each participating country) would need to pay the carbon charge as a fee for each unit of national allowance that they are allocated.¹⁰⁵ Denmark would still need to pay additional compensation to Costa Rica if they (temporarily) have a larger national allowance to allocate, as described above.

THE CHARGE

Extractors and importers would need to pay the relevant carbon charges once their extraction licence and (in the case described in the last paragraph above) national allowance applications are granted. This means they would pay for every tonne of coal, barrel of oil and cubic metre of gas that they extract or import. The charge level for all participating countries would be the same and would be agreed democratically by these countries and the trust: here we assume that the charge levels proposed in Scenario 1 are used. Costa Rica would then generate \$1.5 billion in carbon charges in the system's first year, while Denmark would generate \$5.4 billion.

This carbon charge money would be collected by the trust when paid for fossil fuel extraction, and by national border agencies within each country when paid for importation, and would then be transferred (less a fair percentage for collection costs - see Appendix 2) to the shared international fund. Just as in the full global model, we propose a single fund in which all participating countries pool their carbon charge proceeds, as this would ensure that dividends are equal for people in all countries rather than higher in the most polluting countries, which is contrary to climate justice.

102 UK Government (2023) 'Export goods from the United Kingdom'. Available at: <https://www.gov.uk/export-goods> Accessed 06/12/2022

103 Bray, S. (2022) 'Carbon taxes in Europe', *Tax Foundation*. Available at: <https://taxfoundation.org/carbon-taxes-in-europe-2022/>. Accessed 07/12/2022

104 European Commission (2023) 'EU emissions trading system'. Available at: https://climate.ec.europa.eu/eu-action/eu-emissions-trading-system-eu-ets_en Accessed 07/12/2022

105 This is a little different than the main system described in this paper, in which the cost of the carbon charge would be passed down to importers and beyond through supply chains, as companies selling fossil fuels would want to recoup the amount they have paid upstream for fossil fuel extraction licences. In the main version of the system described in this paper, importers would have to apply for a portion of their country's national allowance, but would not be required to pay for it, as they will have already effectively paid the carbon charge via the higher prices they are paying for the fossil fuels or embedded fossil fuels they are importing (unless of course their national government introduced their own charging system for issuing national allowances, which would be supplementary to the global system described above).

THE COMPENSATION

As well as the compensation flowing from Denmark to Costa Rica for use of Costa Rica's spare national allowances, both countries could also receive LITG compensation if they committed to leaving any of their fossil fuel reserves untouched. This would continue as an annual payment for 75 years. Inspectors would check each year via satellite imaging and, if needed, in-person visits to ensure that no extraction is taking place at sites that have been committed under this system.

Costa Rica produces no fossil fuels and the country's electricity already comes almost entirely from renewables. Fossil fuel exploration is banned so the country has zero proven reserves.¹⁰⁶ Nevertheless there are suggestions that the country does have oil and gas reserves, and some political parties want to open up the possibility of exploiting them.¹⁰⁷ Costa Rica's ban on fossil fuel exploration should be supported, and they should not lose out on LITG compensation on this basis. It may therefore make sense to assign a compensation amount to Costa Rica notionally based on the global average level of fossil fuel reserves, and an assumption that they will leave at least the necessary safe share in the ground. This would require an annual compensation amount of \$235 million.

Denmark is a minor fossil fuel producer, just about (and temporarily) covering its own demand for natural gas and still a net importer of oil and coal.¹⁰⁸ Nevertheless, the government of Denmark has made nearly \$1.6 billion per year on average from oil and gas production since 1972.¹⁰⁹ However, its reserves for the future are low (just 68 million cubic metres of oil and 26 billion cubic metres of gas according to the Danish Energy Agency¹¹⁰), and oil and gas production is down to a sixth- and an eighth- respectively of peak levels in the early 2000s.¹¹¹ In this context we can consider the amounts that Denmark would receive in LITG compensation under our system, which would be \$268 million per year (for 75 years) if Denmark had a global average (per capita) level of fossil fuel reserves, but only \$11 million per year based on their government's reserve estimates.¹¹² These amounts are considerably less than the revenues they have historically enjoyed from oil and gas, but considering Denmark's commitment to phase out oil and gas production they are considerably better than nothing.

106 <https://www.cia.gov/the-world-factbook/countries/costa-rica/> Accessed 08/12/2022

107 See, for instance, Peck, M. R. (No Date) 'Non-extraction - a long term solution', Available at: <http://www.sussex.ac.uk/lifesci/pecklab/yasuniglobal/fossilfuels/non-extraction> and Meredith, S. (2021) 'We need to stop: Inside the world's first diplomatic alliance to keep oil and gas in the ground', CNBC. Available at: <https://www.cnbc.com/2021/09/20/oil-and-gas-inside-the-diplomatic-alliance-to-keep-fossil-fuels-in-the-ground.html>

108 Nordsoefonden (2023) 'Oil and gas in Denmark'. Available at: <https://eng.nordsoefonden.dk/oil-and-gas/oil-and-gas-in-denmark>

109 Data converted to USD from Nordsoefonden (2023) 'Oil and gas in Denmark'. Available at: <https://eng.nordsoefonden.dk/oil-and-gas/oil-and-gas-in-denmark>

110 Danish Energy Agency (2018) 'Resource assessment and production forecasts'. Available at: https://ens.dk/sites/ens.dk/files/OlieGas/ressourcer_og_prognoser_20180829_rev_en.pdf

111 See the yearly production chart at Danish Energy Agency (2023) 'Monthly and yearly production'. Available at: <https://ens.dk/en/our-services/oil-and-gas-related-data/monthly-and-yearly-production>

112 Please contact Equal Right for a copy of our calculations.

THE FUND

Each year a growing proportion of the carbon charge money would be placed in Costa Rica and Denmark's shared Climate Commons Fund for green investment (see the main section on The fund above for more on this). As soon as it receives carbon charge money, the fund would start making investments in Green New Deal projects in Costa Rica and Denmark. The fund's democratic board (see Democratic Management section above) would decide how to allocate these investments between the two countries. For instance, they could be allocated on a per capita basis (so the level of investment would be equivalent to each country's population size) or a more progressive approach could be taken in which the communities most in need of green investment - for instance those lacking access to reliable electricity or adequate sustainable housing - could be first in line.

Where these investments are made as loans, interest on those loans would begin to accrue in the fund. Where money is invested via the purchase of shares in Green New Deal companies or by setting up companies or projects directly (which would then be owned collectively by the people of Costa Rica and Denmark), a return on investment would be received each year by the fund. These investment incomes would be pooled internationally in the fund, with investment income from Costa Rica and from Denmark landing in the same pot.

THE SHARE

Each year the investment income from the fund would be added to the carbon charge money that is being directly distributed (see main section on 'The share' in Part I and the 'Impacts on global economic justice' section in Part II), and this amount would then be divided between climate grants and carbon dividends.

As a lower income country with low historic carbon emissions, most of the climate grant money would be distributed to Costa Rica. It could fund mitigation initiatives such as offshore wind, adaptation projects such as coastal mangrove restoration, and loss and damage projects such as rebuilding facilities following hurricanes.

When considering how much countries would receive in dividends, it becomes obvious why the carbon charge money must land in a single central pot. If countries were to keep the proceeds of their own carbon charges for their own dividends, residents of Denmark - who are already comparatively wealthy and using a lot of fossil fuel - would get the biggest dividends: \$52 per person per month in the first year of this system. Residents of Costa Rica, with their clean green lifestyles and lower incomes, would get only \$8 per person per month.¹¹³ Given that Denmark's CO₂e pollution is at least as likely to cause havoc in Costa Rica as in Denmark, it makes no sense to allow Danish residents to hoard carbon charge proceeds for themselves. Pooling the proceeds is the obvious way forward to ensure that the system is consistent with climate justice, progressive in its impacts and ready to develop into a global system as more countries join.

¹¹³ In time of course, the cap should ensure that all countries have broadly the same licence fee income (and therefore dividend) per person, as it would force all participating countries to the same low level of fossil fuel usage - but in the early days of the system, when the cap still permits fairly high levels of carbon extraction/importation, lower income countries may not actually import their full per capita share and would therefore get a lower dividend.

With proceeds pooled, the dividends in both countries would be \$30 per person per month in the first year, so over \$1,400 per year for a family of four. This rises to \$50 pppm by 2040 and breaks through the global extreme poverty line of \$66 pppm - over \$3,000 for a four person family per year - by 2048.

These amounts would be useful to residents in both countries. In Denmark they would help to offset a temporary rise in energy costs, caused by the scarcity of fossil fuels and the carbon charge. Once energy costs fall again, as cheap renewable energy takes over from expensive fossil fuels, people in Denmark would enjoy a small boost to their monthly incomes while Danish residents on the lowest incomes, including asylum seekers and others in vulnerable positions, would experience a more substantial boost to their economic security. In Costa Rica, where people use less fossil fuel, these dividends would more than cover most people's extra energy costs from day one so would boost overall standards of living. The effects would be especially dramatic for people on lower incomes who would have significantly more money to spend each month. People in both countries would have a guarantee that they would never in their lives, nor in the lives of their children or grandchildren, experience the worst extremes of poverty.

SUMMARY: FROM FIRST-MOVERS TO WIDER IMPLEMENTATION

In an ideal world, carbon cap and share would start with a 'big bang' - global implementation via a global agreement with complete coverage of all fossil fuel extraction. In the real world, gradual adoption of the system starting with a few forward-thinking countries is an excellent second-best.

Once the system is implemented in a few places, the effects on emissions targets, green investment, job creation, economic justice and poverty reduction will be apparent, and people in neighbouring countries are likely to want the same benefits for themselves. This has the potential to create a wave of support that could sweep around the world, pushing many more governments to join the system and eventually leading to wider-scale participation.¹¹⁴

¹¹⁴ Some countries are led by dictators or exist in a state of war and it is very possible that these countries would not join the system. Once sufficient participation has been achieved to raise the necessary funds it may make sense, from a global justice perspective, to open a special facility to provide dividend payments to the residents of these troubled countries, even without their participation in the cap and charge. After all, the atmosphere belongs to us all and people living in troubled nations may be the most in need of their share.



CONCLUSION

CONCLUSION

Cap and share, whether implemented as a 'big bang' global system or steadily, country-by-country, would help to solve some of the world's biggest problems.

It would effectively halt the climate emergency. Fossil fuel burning is the cause of around two-thirds of global heating to date: we cannot tackle climate change unless we keep most of it in the ground. Most climate policies focus on reducing our demand for fossil fuels, but their effectiveness can be limited: after all, if there are fossil fuels for sale, someone is going to buy and burn them. We need a more direct approach. A cap on fossil fuel extraction, backed up by a compensation scheme for leaving it in the ground and a hefty carbon charge, would ensure that most remaining fossil fuels never enter the world economy. This would force down carbon emissions to safe levels simply because there would be no fuel available to burn.

It would fund the building of our post-fossil fuel society. Progressive organisations all over the world are calling for a Green New Deal: an economic transformation programme to build the sustainable energy infrastructure, homes, transport and industries that we need to live well after fossil fuels. A common stumbling block for this policy is the cost: where could the money come from for such an ambitious initiative? The system described in this paper provides an answer. Through the investments of the fund and through climate grants, trillions of dollars per year of new global public money would become available. Coupled with wider funding mechanisms such as those proposed in the Bridgetown initiative, this could provide the necessary funding for a Green New Deal in every country in the world.

It would establish people's ownership over our new green economy. The fund would be owned and controlled by the people of the world, so the investments that it makes would be owned and controlled by us too. As the fund grows, our collective ownership of the world economy would grow with it, with us first establishing ownership over our energy systems (energy democracy) and then the wider goods and services needed for a just transition. Over time, fewer and fewer companies (and share of companies) would be in the private hands of the wealthy, and more and more would be in the hands of the people. This would give us substantial democratic control over our means of production, enable us to localise that control to the communities affected, and would ensure that any economic benefits arising from production (after decent wages and other ethical costs of business) flow to the people of the world.

It would directly reduce global inequality. This system would have an immediate, immense and long lasting impact on global economic justice. The annual direct redistribution from Global North to South achieved by this system (in scenario 1) amounts to around 3.3% of global GDP.¹¹⁵ The South would also benefit from the redistribution of 5%+ of global GDP from fossil fuel companies and major consumers into investment in a global green transition,¹¹⁶ which would provide decent jobs, goods and services. This system scrapes money off the top of the global economy and pumps it back in across the bottom, cascading money into economies via dividends and via the new green jobs that would arise from climate grants and Green New Deal investments. This would represent a significant counterflow in the global economy, helping to return wealth and income to the Global South and to the working class from where and from whom it has often previously been extracted.

It would end extreme poverty forever. From the very first year of this system, carbon dividends would transform life throughout the Global South and for people everywhere on the lowest incomes. Every adult and child in the world would have a small, guaranteed income of around \$30 per month, enough to prevent famine and other acute disasters, and support people everywhere to cope with the costs of our changing climate. Within a few decades, our dividends would exceed \$2.15 per person per day (\$66 per month) so from that point onwards extreme poverty, as officially defined, would be consigned to human history. These dividends, alongside wages from new green jobs and the benefits of economic multiplier effects, would transform economic life for the people of the world. Permanently safe from destitution, we would all be free to live more easily. Especially dramatic benefits would accrue to the 'Most Affected People and Areas', in line with climate justice.

For a single policy, cap and share 'packs a lot of punch'. Via a simple mechanism it has the potential to prevent runaway climate change and build an alternative, while simultaneously establishing economic democracy, reducing global inequality and ending extreme poverty.

In this paper, climate action and economic justice are vitally and deliberately intertwined. This reflects the breadth of the climate justice concept, in which reparations and redistribution are central elements alongside a core demand to address the causes of climate change. This linkage also makes sense if you consider *why* climate change is an emergency in the first place.

Planet Earth is a rock floating in space: it doesn't care what temperature it is, or which animals exist on its surface. But we, the people, care about climate change. Partly we care because animals and ecosystems will be harmed by a changing climate, but mostly we care about climate change because it is unjust and people will suffer as a result of it. And if human injustice and suffering is the problem, then reducing injustice and suffering is surely the answer.

115 Calculated by multiplying the annual per capita gains on low and lower middle income countries by their populations, and then assessing that as a percentage of current global GDP as stated at World Bank (2023) 'GDP (current US\$)'. Available at: <https://data.worldbank.org/indicator/NY.GDP.MKTP.CD>. Accessed 26/06/2023

116 Calculated by comparing the amount that would be paid in carbon charges in the system's first year against 2021 global GDP as stated here: World Bank (2023) 'GDP (current US\$)'. Available at <https://data.worldbank.org/indicator/NY.GDP.MKTP.CD>. Accessed 26/06/2023. Because the charge rises faster than the cap falls, the amount raised by the carbon charge would increase until the mid 2050s (after which it would decline as fossil fuel extraction would be reduced to such low levels), so the proportion of global GDP redistributed to the green transition may then be higher. However this will of course depend on future levels of GDP growth, which may continue to rise but also may not rise if a degrowth strategy is pursued.

Limiting further climate change is an excellent way to prevent further injustice and suffering, so this system tackles that first by keeping most remaining fossil fuels in the ground. But some climate change has already occurred, and even with the tightest of carbon caps some more global warming is likely. One of the best ways to reduce the injustices and suffering that will result and are already resulting from this will be to secure people's incomes.

The immense redistribution of money that is proposed in cap and share would help every one of us - but especially those on the lowest incomes - to adapt to our changing climate, both individually and via public spending on a Green New Deal and on other key infrastructure and services. It would also compensate us every month for the losses, damage and hardships that we may suffer. With climate grants and carbon dividends provided at the scale discussed above, climate change will not cause famine or destitution, and every person will have a small secure income that they can use to help them adapt. This redistribution is vital for justice and the resulting money in our pockets gives us options: a way out, a way through and a way forward.

THE CAP AND SHARE CLIMATE ALLIANCE

The cap and share proposal presented above is just one variant of the cap and share idea. The authors of this paper are members of the Cap and Share Climate Alliance, a growing coalition of civil society, workers, academics and policymakers that is pushing for implementation of these broader proposals. To find out more or to get involved in this work, see <https://www.capandsharealliance.org>.



APPENDICES

APPENDIX I

NOT CARBON PRICING AS YOU MAY KNOW IT: NO OFFSETS, NO MARKETS, JUST REDISTRIBUTION

Many carbon pricing schemes are deeply flawed, which has led to a well-reasoned rejection of carbon taxation and licensing by many climate justice activists.¹¹⁷ This discussion paper attempts to listen to those critiques and use them to sculpt an alternative. The proposal that we outline above is not carbon pricing as you may know it. Here's why:

- » **The carbon cap is key.** A legal cap on fossil fuel extraction would turn off the carbon tap at source, reducing extractivism and making it illegal to dig up unsafe amounts of fossil fuel. This proposal therefore does not rely on the carbon price to 'incentivise' emissions reductions: it is the cap that would keep fossil fuels in the ground. The role of the carbon price is simply to ensure that the value of inevitable fossil fuel price rises is captured for the people instead of letting it land in fossil fuel companies' profits.
- » **As the cap falls, mines and drill sites would be forced to close.** Every year the number of available extraction licences would reduce, so mines and drill sites would gradually be forced to close down, reducing air pollution and supporting our health. The trust's rules could force the most harmful to close down first.
- » **People (not companies) who leave their fossil fuels in the ground would get fair compensation.** People in low income countries would no longer be forced to exploit their fossil fuel resources as a way of making money. Meanwhile people and governments everywhere would have an extra reason to do the right thing.
- » **There would be no trading of extraction licences.** This is not a market: nothing is for sale. Licences must be applied for and then a fee paid, and nothing can be traded on.
- » **There would be no off-sets and no passing the buck.** Off-setting does not exist in this system. No amount of tree-planting would remove the need for a coal mine to attain licences for every tonne they dig up. And as the cap shrinks and licences become scarce, leaving it in the ground would become the only option.

¹¹⁷ See for instance NAACP (2021) 'Nuts, Bolts, and Pitfalls of Carbon Pricing: An Equity-Based Primer on Paying to Pollute'. Available at: <https://naacp.org/sites/default/files/documents/Carbon%20Pricing%20Primer.pdf>, Climate False Solutions (2021) 'Hoodwinked in the Hothouse'. Available at: <https://climatefalsesolutions.org/> and Front and Centred (2020) 'A Just Transition, not Cap and Trade, Will Advance Climate Justice'. Available at: <https://frontandcentered.org/just-transition-not-cap-trade-will-advance-climate-justice/>

- » **The carbon charge would be high and fast-rising.** The carbon charge would ensure that the value of fossil fuel price rises (arising from the scarcity of these fuels, as the cap limits extraction) ends up with the people rather than with fossil fuel firms. A high carbon charge, alongside the cap, would make green energy always the cheapest option.
- » **This system would fund the Green New Deal and a just transition.** The Global Climate Commons Fund would have the necessary trillions to build the alternative, creating millions of new green jobs each year. These could be reserved for displaced or disadvantaged workers if desired.
- » **The fund would enable a people's takeover of the energy system and the wider economy.** The fund would provide the means to buy up and build energy infrastructure and other Green New Deal initiatives, either to be owned by the people of the world in common or by local communities.¹¹⁸ If the fossil fuel industry is taken into public ownership too (which would be an excellent - though not essential - way to start this system) communities would have the power to shut down local industries ahead of time if they were harming local health or ecology.
- » **The system transfers resources back to the 99% and to the Global South.** The money that MAPA communities would receive in climate grants, and that we would all receive in dividends, would represent a major and long-overdue transfer (or return) of wealth from the elite to the majority and from the Global North back to the South.
- » **It could build a new kind of global democracy.** Enacting this proposal would require a significant uplift in global democracy, and in its ideal version it would require us to build new global democratic structures that could ultimately contribute to world peace and equality.
- » **It could pave the way for a more equal world.** This system is part of a wider proposal for a global basic income.¹¹⁹ The aim is to develop practical mechanisms for global redistribution, providing return routes for unjustly extracted global wealth and ensuring our human rights to life and security are fulfilled.

This paper aims to build on existing efforts to operationalise global climate justice. We welcome discussion of the points raised: to contribute please contact us using the details provided on the final page.

118 Public ownership of remaining fossil fuel infrastructure is seen by many as a vital step in a just transition. See for instance Dowson, N. (2022) 'How We Halt Big Oil's Climate-Wrecking Business', *New Internationalist*. Available at: <https://newint.org/features/2022/04/04/big-story-big-oil-beyond-big-oil>

119 Equal Right (2023) 'Global Basic Income'. Available at: <https://www.equalright.org/global-basic-income.html>

APPENDIX II

MANAGEMENT AND ADMINISTRATION COSTS

It will cost money to set up and run a cap and share system. The costs are likely to arise from:

- » Administering and enforcing the carbon cap, compensation and charge
- » Managing the investments of the fund and the distribution of climate grants
- » Registering the world's people and distributing dividends to them

The first cost area covers the work of the Global Climate Commons Trust, and the most expensive aspect of this work is likely to be the administration and enforcement of the carbon charge. This charge is similar to a carbon tax, so the real-world admin costs for carbon tax collection and general tax collection are informative here. A team at Stanford found that carbon taxes cost between 0.1% and 1.5% of total revenues to administer, at least in countries that report this information.¹²⁰ Meanwhile an overview of general taxation collection costs by the University of New South Wales found that it generally costs “well below one percent” of tax revenue yield to collect and enforce taxes.¹²¹

Given the simplicity of the proposed system (which targets the few fossil fuel extractors rather than the many carbon dioxide emitters), the global nature of the proposed system and the effects of economies of scale, it is fair to assume that our system will fall at the lower end of this scale. Adding in an amount to cover aspects of the trust's work beyond charging, including the setting of the cap, the provision of compensation payments, and the activities of a potential global democratic assembly to oversee its work, we might assume that total admin costs for the trust will take up 0.5% of carbon charge proceeds each year. This figure is built into the modelling presented in Part II above.

¹²⁰ Carl, J. & Fedor, D. (2016) 'Tracking global carbon revenues: A survey of carbon taxes versus cap-and-trade in the real world', *Energy Policy* 96:50-77. Available at: <https://www.sciencedirect.com/science/article/pii/S0301421516302531#t0165>

¹²¹ Evans, C. (2008) 'Taxation Compliance and Administrative Costs: An Overview' in *Tax Compliance Costs for Companies in an Enlarged European Community*. Available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3729037

The second cost area covers the work of the Global Climate Commons Fund. The world's biggest existing fund, the enormous Norwegian Government Pension Fund, spends 0.04% of the fund's total assets on management costs each year.¹²² Adding in a little extra to cover our fund's democratic oversight structures, the cost of supporting its rigorous ethical criteria, and defining spending criteria and subjects for climate grants, we increase the assumed annual cost to 0.05% in our modelling.

The third set of costs arise from the requirement for the fund to register the people of the world and transfer the fund's investment income (and any directly distributed proceeds of the carbon charge) to them each month. To estimate this we can look at the admin costs of social protection systems, especially those that are universal. The International Labour Organisation reports that the average cost of universal cash transfer programmes is 2.5% of the total amount transferred.¹²³ The report also notes that the size of the system matters: "Administration costs for the most part accrue in absolute terms. They can therefore benefit from efficiencies of scale as the system grows in size. A sufficiently large system will therefore typically exhibit a relatively lower administration cost percentage as compared to a smaller system." The lowest admin spend in their study came from New Zealand's old age pension which costs 0.5% of the total budget. It seems reasonable to assume that the extreme economies of scale for our global system would keep costs at the lower end, and that a similarly efficient distribution system could be developed as used in New Zealand. It is therefore assumed that admin costs for distribution equal 0.5% of the amount distributed each year.

122 See NBIM (2022) 'Annual Report'. Available at: https://www.nbim.no/contentassets/99de366397a847db99ab7a156e15aaa0/gpfg_annual-report-2022.pdf

123 ILO (2017) 'Universal Social Protection Floors: Costing Estimates and Affordability in 57 Lower Income Countries', p.50. Available at: https://www.ilo.org/wcmsp5/groups/public/---ed_protect/---soc_sec/documents/publication/wcms_614407.pdf

APPENDIX III

BROADER ENVIRONMENTAL JUSTICE AND PROTECTION

CONSIDERATIONS:

MINERALS, PLASTICS, CHEMICALS, OTHER CO₂E SOURCES, OTHER GREENHOUSE GASES AND AIR POLLUTION

MINERALS

Minerals are, quite literally, what helped to bring humanity out of the stone age, and they will be equally vital for moving us beyond fossil fuels. An energy system based on renewables will ultimately require far less total mineral extraction than one based on fossil fuels, as noted by Stanford professor Mark Jacobson:

"The total amount of mining that's going to be needed for wind, water, solar, compared to [the] fossil fuel system, is much less than 1% in terms of the mass of materials."¹²⁴

Nevertheless, renewable energy technologies such as wind turbines, solar PV panels, electric vehicles and lithium-ion batteries require a significant quantity of minerals for their manufacture. To achieve 100% renewable energy worldwide, the following minerals will be needed in much greater quantities than today:¹²⁵

- » Cobalt, lithium, nickel and manganese for lithium-ion batteries
- » Rare earths (neodymium and dysprosium) for electric vehicles and wind power
- » Cadmium, indium, gallium, selenium, silver and tellurium for solar PV panels
- » Aluminium and copper for all of these technologies

¹²⁴ Carrington, D. (2023) "No miracles needed: Prof Mark Jacobson on how wind, sun and water can power the world", *The Guardian*. Available at: <https://www.theguardian.com/environment/2023/jan/23/no-miracles-needed-prof-mark-jacobson-on-how-wind-sun-and-water-can-power-the-world>

¹²⁵ Dominish, E., Florin, N. and Teske, S. (2019). 'Responsible Minerals Sourcing for Renewable Energy', Institute for Sustainable Futures. Available at: https://earthworks.org/wp-content/uploads/2019/04/Responsible-minerals-sourcing-for-renewable-energy-MCEC_UTS_Earthworks-Report.pdf

In ethical and environmental terms, mining industries have a very poor track record. The communities and countries in which mining operations take place often see little economic benefit from the extraction of their natural resources.¹²⁶ Human rights abuses towards local and Indigenous communities, land grabs, involvement in violent conflicts, use of child-, forced- and underpaid labour, unsafe working practices, habitat destruction, excessive water source depletion and severe pollution of air, soils and water courses are all shockingly common in mineral industries.¹²⁷ Mining of the sea bed in international waters raises further concerns, as little-understood deep-water ecosystems could suffer long-term harms, with related impacts on coastal communities.¹²⁸ On top of these many challenges lies the broader question of how the mining of finite resources can ever be truly sustainable: as resources become depleted over time it is inevitable that less and less will be available for use by future generations.¹²⁹ It is vital that we find a better way forward to facilitate the renewable energy expansion anticipated in this paper. Fortunately there are grounds for hope.

Firstly, it should be noted that not all minerals need to come from new mining. Earthworks demonstrate the importance of mineral recycling as well as material efficiency improvements to reduce primary mineral demand.¹³⁰ The potential of recycling varies between different minerals, but for some this could represent a substantial proportion of overall supply. New facilities, methods and financing will be needed to enable mineral recycling on a wide scale: these could be among the Green New Deal investments made by the fund, and could be among the initiatives funded by climate grants.

Secondly, it is possible to significantly improve the environmental, social and governance (ESG) performance of mines, including the requirement that they acquire and maintain 'social licence to operate' (e.g. community consent¹³¹).¹³² Calls to action such as the African Union's Africa Mining Vision demand a much stronger ethical and environmental framework for mining activities, coupled with fairer arrangements for revenue-sharing.¹³³ To create pressure for the enactment of these improved standards, the fund could use its power as both an investor and a buyer to insist on new ultra-high environmental and social standards for all mine products entering its supply chains. The sheer size of the fund would give it very significant market power, which may be sufficient to drag much of the world's mineral industry up to new levels of ESG performance. This could apply to small and artisanal mines as well as larger scale projects, as demonstrated by organisations such as The Alliance for Responsible Mining.¹³⁴

126 African Union (2009) 'Africa Mining Vision'. Available at: https://au.int/sites/default/files/documents/30995-doc-africa_mining_vision_english_1.pdf

127 <https://www.iea.org/reports/the-role-of-critical-minerals-in-clean-energy-transitions/executive-summary>

128 Seas at Risk (2023) 'Saving deep sea from mining'. Available at: <https://seas-at-risk.org/what-we-do/ocean-use/saving-deep-sea-from-mining>. See, for an alternative perspective, Katona, S., Paulikas, D. & Stone, G. S. (2021) 'Ethical opportunities in deep-sea collection of polymetallic nodules from the Clarion-Clipperton Zone', *Integrated Environmental Assessment and Management* 18: 634-54. Available at: <https://setac.onlinelibrary.wiley.com/doi/full/10.1002/ieam.4554>

129 Smith, D. & Wentworth, J. (2022) 'Mining and the sustainability of metals', *House of Commons Library*. Available at: <https://researchbriefings.files.parliament.uk/documents/POST-PB-0045/POST-PB-0045.pdf>

130 Dominish, E., Florin, N. and Teske, S. (2019). 'Responsible Minerals Sourcing for Renewable Energy', Institute for Sustainable Futures. Available at: https://earthworks.org/wp-content/uploads/2019/04/Responsible-minerals-sourcing-for-renewable-energy-MCEC_UTS_Earthworks-Report.pdf

131 European Commission (2023) 'RMIS - Raw Materials Information System'. Available at: <https://rmis.jrc.ec.europa.eu/?page=social-licence-to-operate-b86e6d> Accessed 06/10/2022

132 Smith, D. & Wentworth, J. (2022) 'Mining and the sustainability of metals', *House of Commons Library*. Available at: <https://researchbriefings.files.parliament.uk/documents/POST-PB-0045/POST-PB-0045.pdf>

133 African Union (2009) 'Africa Mining Vision'. Available at: https://au.int/sites/default/files/documents/30995-doc-africa_mining_vision_english_1.pdf

134 Alliance for Responsible Mining (2023) 'What is the Sustainable Mines Program?'. Available at: <https://www.responsiblemines.org/en/sustainable-mines/>

Thirdly, new technologies are being developed which may drastically reduce the environmental impacts of some kinds of mineral extraction. Lithium mining, for example, much of which currently takes place in arid salt flats using very large quantities of scarce fresh water, could expand in partnership with renewable energy production as recently demonstrated in Cornwall. This involves pumping up deep groundwater to produce geothermal energy, and then filtering it for lithium using safe, low-energy technologies.¹³⁵ Elsewhere the University of Arizona and partners are developing ecologically sustainable extraction methods for rare earths using a naturally occurring protein.¹³⁶ With more investment in these and similar developments, potentially from the fund, further innovations and upscaling are likely.

Finally, the fund proposed in this system and the existing funds that inspired it provide a model for how the economic benefits of mining can be preserved for future generations. Funds such as the Goa Iron Ore Permanent Fund,¹³⁷ the Alaska Permanent Fund¹³⁸ and Norway's immense oil fund demonstrate how the proceeds from mineral extraction can be permanently retained. If this principle is applied to all new renewables-related mining - or at least that linked to the fund's investments - then our children and grandchildren will be able to benefit economically long after the minerals themselves have been dug up. Coupled with the greater potential of recycling that will be available once more of today's untouched minerals are in circulation, a minerals fund of this kind could provide intergenerational justice and the means for future generations to meet their needs.

PLASTICS AND OTHER CHEMICALS

Most plastics, pesticides and fertilisers are made from oil and gas, so in this model producers of these goods would face availability restrictions (due to the cap) and higher prices (due to the charge) for their raw material. This would have a big knock-on effect on the availability and price of plastics, chemical fertilisers, pesticides and various other chemicals that are derived from - or made using fossil fuels. Inflation of food and other prices that may be caused by the carbon charge and the way it pulls through the supply chain has been, as far as possible, built into the models presented in this paper (see Box 8 on inflation). However this topic would benefit from further study to better understand potential impacts and ways forward.

Circular economy systems that require less plastics and other chemicals, as well as research into - and the development of - substitute products will be key to ensuring that we can live well while controlling fossil fuels. Although this change will be challenging it could bring wide-ranging benefits for human health and the health of our oceans, soil and climate.

135 Scott, T. (2021) 'Lithium: Cornwall's White Gold?', *The Land*. Available at: <https://www.thelandmagazine.org.uk/articles/lithium-cornwall%E2%80%99s-white-gold>

136 Stark, A. M. (2022) 'Green, bio-based extraction of rare earths from domestic ores for a sustainable world'. Available at: <https://www.llnl.gov/news/green-bio-based-extraction-rare-earths-domestic-ores-sustainable-world>

137 The Goa Foundation (no date) 'The State of Mining in Goa'. Available at: <http://goafoundation.org/mining/> Accessed 06/10/2022

138 Alaska Permanent Fund Corporation (no date). 'Who we are'. Available at: <https://apfc.org/>

Regarding plastics, environmental lawyer Tatiana Luján writes,

*There are unquantified effects of plastic on human health, on the ocean's carbon pump, and on climate change, purely from the presence of plastic in the ocean. We already know that plastic aids the transmission of antibiotic-resistant genes. We know that microplastic can be found in the air that we breathe, and the deposits of microplastics in our lungs can cause cancer in the long-term. Traces of plastics have been found in human placentas, so babies can actually be swimming in microplastics when still in the womb. We know that the fertility and function of soil is being affected by microplastic pollution. It's everywhere.*¹³⁹

Meanwhile a United Nations Environment Programme (UNEP) report on the environmental and health impacts of pesticides and fertilisers states that, "Business as usual is not an option."¹⁴⁰ According to the report, chemical pesticides cause 385 million poisoning incidents and 11,000 deaths each year, and can cause cancers and neurological, immunological and reproductive effects in communities with high exposure. They also harm bees, beneficial insects important for natural pest control, birds, aquatic organisms and biodiversity in general. Excessive use of fertilisers contributes to a loss of natural soil nutrients, and can damage freshwater and coastal ecosystems and contaminate drinking water. Global targets to minimise the adverse impacts of pesticides and fertilisers by 2020 were missed.

OTHER CO₂E SOURCES, OTHER GREENHOUSE GASES AND AIR POLLUTION

Most carbon dioxide emissions come from the burning of fossil fuels, but cement production, deforestation, the draining of bog land, the melting of permafrost soils and other sources all contribute significantly to the problem. Furthermore, carbon dioxide causes only around three quarters of anthropogenic climate change.¹⁴¹ Most of the rest is caused by methane emissions, of which around 40% are natural (from rotting vegetation in wetlands for example) while agriculture, energy and waste industries create most of the rest.¹⁴²

139 Client Earth (2021) 'Fossil fuel and plastic: what's the link? - We ask our lawyers'. Available at: <https://www.clientearth.org/latest/latest-updates/opinions/fossil-fuel-and-plastic-what-s-the-link-we-ask-our-lawyers/>.

140 UNEP (2022) 'Environmental and health impacts of pesticides and fertilizers and ways of minimizing them'. Available at: <https://wedocs.unep.org/xmlui/bitstream/handle/20.500.11822/34463/JSUNEPPF.pdf?sequence=13>

141 Ritchie, H. and Roser, M. (2020) 'Greenhouse Gas Emissions', *Our World in Data*. Available at: <https://ourworldindata.org/greenhouse-gas-emissions> Accessed 08/03/2022

142 IEA (2020) 'Methane Tracker'. Available at: <https://www.iea.org/reports/methane-tracker-2020> Accessed 08/03/2022

Given the role of cement production, methane and other sources in polluting our atmospheric commons it would be reasonable to apply similar cap and charge systems to the industries involved. Where these activities are undertaken by a few large producers, as with fossil fuel extraction (see the section on Enforcement), this would be relatively simple to do and the model presented in this paper could be adapted to suit the industries concerned. This would add further money into the fund and would boost green investments, climate grants and our dividends accordingly. However where industries are made up of thousands or millions of small producers, this becomes much more complicated.

Methane production would be particularly complex to regulate. Methane emissions come from many different sources including farm animals, rice paddies, energy generators, landfill sites and others, and emissions vary according to the methods used at each site.¹⁴³ Designing a fair and effective charging system for methane emissions would be challenging. In particular it would need to consider and perhaps exempt the many millions of people that are involved in animal and rice farming who are working at a small scale and are often not well-off. Nevertheless, if a fair and progressive system could be designed it would disincentivise polluting activities, add more money to the fund and to climate grants, and ultimately boost our dividends. Efforts to design and implement such a system would therefore be worthwhile.

Beyond climate change, air pollution is a very significant global problem, which constitutes a further abuse of our atmospheric commons and a major public health risk.¹⁴⁴ It affects communities unequally, often with people on the lowest incomes suffering the most as they cannot afford to move away from pollution sources. However, as with methane, sources of air pollution are many and varied. These include vehicles (from fuel-burning and from the erosion of tyres), waste incineration, industry, energy generation and household biomass burning (using wood, dung or peat for cooking and heating).¹⁴⁵ Swift reductions in air pollution are vital and may well be supported by a licensing and fee-charging system, which could cap overall levels for various pollutants and make it advantageous for companies to shift to cleaner ways of working. Nevertheless, designing such a system would be highly complex and would need very careful design to ensure progressive outcomes.

143 Global Methane Initiative (no date). 'Global Methane Emissions and Mitigation Opportunities'. Available at: https://www.globalmethane.org/documents/analysis_fs_en.pdf Accessed 08/03/2022

144 See, for instance, The Ella Roberta Foundation (no date) 'Ella's Life and Legacy'. Available at: <https://ellaroberta.org/about-ella> Accessed 06/01/2023

145 WHO (no date) 'Air Pollution'. Available at: https://www.who.int/health-topics/air-pollution#tab=tab_2 Accessed 17/03/2022

APPENDIX IV

DATA TABLES FOR THE EIGHT SCENARIOS

The data tables below show a snapshot of the amounts raised through cap and share when different charging and distribution parameters are applied. To access a copy of the full data tables underlying these numbers, please contact info@equalright.org

SCENARIO 1: CUT EXTRACTION BY 10% PER YEAR, \$1 TRILLION CLIMATE GRANTS

The cap shrinks by 10% per year. The charge money goes to LITG compensation, to investment in the Green New Deal via the fund, to climate grants and to our carbon dividends

Year	Carbon extraction cap (gigatonnes)	Carbon charge (per tonne of CO ₂ e)	Amount raised by carbon charge	Amount put into the Fund	Total amount in the fund	Amount of climate grants distributed this year	Monthly dividend per person
2025	36.3	\$135	\$4.9 trillion	\$0.2 trillion	\$0.2 trillion	\$1 trillion	\$31
2030	21.4	\$288	\$6.2 trillion	\$0.9 trillion	\$3.2 trillion	\$1 trillion	\$37
2040	7.5	\$1,317	\$9.8 trillion	\$3.3 trillion	\$23.6 trillion	\$1 trillion	\$51
2050	2.6	\$6,014	\$15.6 trillion	\$8.4 trillion	\$81.4 trillion	\$1 trillion	\$71
2060	0.9	\$14,300	\$12.9 trillion	\$9.4 trillion	\$190.3 trillion	\$1 trillion	\$70
2080	0.1	\$19,300	\$2.1 trillion	\$1.8 trillion	\$282.4 trillion	\$1 trillion	\$71
2100	0.01	\$30,100	\$0.4 trillion	\$0.04 trillion	\$304.2 trillion	\$1 trillion	\$71
2200	0.0000004	\$30,100	\$0.00001 trillion	\$0.00001 trillion	\$420.1 trillion	\$1 trillion	\$102
Total CO₂e extracted up til 2200 (Gt)			363	Total money distributed to the people and to climate work		\$1838.3 trillion	

SCENARIO 2: CUT EXTRACTION BY 15% PER YEAR (EXTRACTING LESS OVERALL)

The cap shrinks by **15%** per year. The charge money goes to LITG compensation, to investment in the Green New Deal via the fund, to climate grants and to our carbon dividends

Year	Carbon extraction cap (gigatonnes)	Carbon charge (per tonne of CO ₂ e)	Amount raised by carbon charge	Amount put into the fund	Total amount in the fund	Amount of climate grants distributed this year	Monthly dividend per person
2025	36.3	\$135	\$4.9 trillion	\$0.2 trillion	\$0.2 trillion	\$1 trillion	\$28
2030	16.1	\$405	\$6.5 trillion	\$0.9 trillion	\$3.1 trillion	\$1 trillion	\$37
2040	3.2	\$3,657	\$11.5 trillion	\$3.8 trillion	\$25.5 trillion	\$1 trillion	\$59
2050	0.6	\$14,300	\$8.9 trillion	\$4.5 trillion	\$82.0 trillion	\$1 trillion	\$45
2060	0.1	\$14,300	\$1.7 trillion	\$0.8 trillion	\$102.4 trillion	\$1 trillion	\$23
2080	0.0	\$19,300	\$0.1 trillion	-\$0.6 trillion	\$97.1 trillion	\$1 trillion	\$19
2100	0.00	\$30,100	\$0.006 trillion	-\$0.71 trillion	\$87.0 trillion	\$1 trillion	\$15
2200	0.0000000	\$30,100	\$0.0000000005 trillion	\$0.0000000005 trillion	\$118.8 trillion	\$1 trillion	\$23
Total CO₂e extracted up til 2200 (Gt)			242	Total money distributed to the people and to climate work			\$692.0 trillion

SCENARIO 3: CUT EXTRACTION BY 5% PER YEAR (EXTRACTING MORE OVERALL)

The cap shrinks by **5%** per year. The charge money goes to LITG compensation, to investment in the Green New Deal via the fund, to climate grants and to our carbon dividends

Year	Carbon extraction cap (gigatonnes)	Carbon charge (per tonne of CO ₂ e)	Amount raised by carbon charge	Amount put into the fund	Total amount in the fund	Amount of climate grants distributed this year	Monthly dividend per person
2025	36.3	\$135	\$4.9 trillion	\$0.2 trillion	\$0.2 trillion	\$1 trillion	\$33
2030	28.1	\$200	\$5.6 trillion	\$0.8 trillion	\$3.1 trillion	\$1 trillion	\$34
2040	16.8	\$440	\$7.4 trillion	\$2.5 trillion	\$19.8 trillion	\$1 trillion	\$37
2050	10.1	\$968	\$9.7 trillion	\$5.2 trillion	\$58.8 trillion	\$1 trillion	\$43
2060	6.0	\$2,130	\$12.8 trillion	\$9.4 trillion	\$132.3 trillion	\$1 trillion	\$54
2080	2.2	\$10,300	\$22.1 trillion	\$22.0 trillion	\$451.5 trillion	\$1 trillion	\$119
2100	0.77	\$30,100	\$23.2 trillion	\$23.0 trillion	\$927.8 trillion	\$1 trillion	\$234
2200	0.0045871	\$30,100	\$0.14 trillion	\$0.14 trillion	\$1830.5 trillion	\$1 trillion	\$470
Total CO₂e extracted up til 2200 (Gt)			726	Total money distributed to the people and to climate work			\$5759.7 trillion

SCENARIO 4: \$2 TRILLION CLIMATE GRANTS

The cap shrinks by 10% per year. The charge money goes to LITG compensation, to investment in the Green New Deal via the fund, to double the previous amount of climate grants and to our carbon dividends

Year	Carbon extraction cap (gigatonnes)	Carbon charge (per tonne of CO ₂ e)	Amount raised by carbon charge	Amount put into the fund	Total amount in the fund	Amount of climate grants distributed this year	Monthly dividend per person
2025	36.3	\$135	\$4.9 trillion	\$0.2 trillion	\$0.2 trillion	\$2 trillion	\$22
2030	21.4	\$288	\$6.2 trillion	\$0.9 trillion	\$3.2 trillion	\$2 trillion	\$28
2040	7.5	\$1,317	\$9.8 trillion	\$3.3 trillion	\$23.6 trillion	\$2 trillion	\$42
2050	2.6	\$6,014	\$15.6 trillion	\$8.4 trillion	\$81.4 trillion	\$2 trillion	\$63
2060	0.9	\$14,300	\$12.9 trillion	\$9.4 trillion	\$190.3 trillion	\$2 trillion	\$62
2080	0.1	\$19,300	\$2.1 trillion	\$1.8 trillion	\$282.4 trillion	\$2 trillion	\$63
2100	0.01	\$30,100	\$0.4 trillion	\$0.04 trillion	\$304.2 trillion	\$2 trillion	\$63
2200	0.0000004	\$30,100	\$0.00001 trillion	\$0.00001 trillion	\$420.1 trillion	\$2 trillion	\$94
Total CO ₂ e extracted up til 2200 (Gt)			363	Total money distributed to the people and to climate work			\$1838.3 trillion

SCENARIO 5: NO CLIMATE GRANTS

The cap shrinks by 10% per year. The charge money goes to LITG compensation, to investment in the Green New Deal via the fund, and to our carbon dividends

Year	Carbon extraction cap (gigatonnes)	Carbon charge (per tonne of CO ₂ e)	Amount raised by carbon charge	Amount put into the fund	Total amount in the fund	Amount of climate grants distributed this year	Monthly dividend per person
2025	36.3	\$135	\$4.9 trillion	\$0.2 trillion	\$0.2 trillion	\$0	\$41
2030	21.4	\$288	\$6.2 trillion	\$0.9 trillion	\$3.2 trillion	\$0	\$46
2040	7.5	\$1,317	\$9.8 trillion	\$3.3 trillion	\$23.6 trillion	\$0	\$59
2050	2.6	\$6,014	\$15.6 trillion	\$8.4 trillion	\$81.4 trillion	\$0	\$79
2060	0.9	\$14,300	\$12.9 trillion	\$9.4 trillion	\$190.3 trillion	\$0	\$78
2080	0.1	\$19,300	\$2.1 trillion	\$1.8 trillion	\$282.4 trillion	\$0	\$79
2100	0.01	\$30,100	\$0.4 trillion	\$0.04 trillion	\$304.2 trillion	\$0	\$79
2200	0.0000004	\$30,100	\$0.00001 trillion	\$0.00001 trillion	\$420.1 trillion	\$0	\$110
Total CO ₂ e extracted up til 2200 (Gt)			363	Total money distributed to the people and to climate work			\$1838.3 trillion

SCENARIO 6: DIVIDENDS ONLY FOR LOWER INCOME COUNTRIES

The cap shrinks by 10% per year. The charge money goes to LITG compensation, to investment in the Green New Deal via the fund, to climate grants and to carbon dividends which are provided only to people living in lower income countries.

Year	Carbon extraction cap (gigatonnes)	Carbon charge (per tonne of CO ₂ e)	Amount raised by carbon charge	Amount put into the fund	Total amount in the fund	Amount of climate grants distributed this year	Monthly dividend per person
2025	36.3	\$135	\$4.9 trillion	\$0.2 trillion	\$0.2 trillion	\$1 trillion	\$61
2030	21.4	\$288	\$6.2 trillion	\$0.9 trillion	\$3.2 trillion	\$1 trillion	\$72
2040	7.5	\$1,317	\$9.8 trillion	\$3.3 trillion	\$23.6 trillion	\$1 trillion	\$99
2050	2.6	\$6,014	\$15.6 trillion	\$8.4 trillion	\$81.4 trillion	\$1 trillion	\$137
2060	0.9	\$14,300	\$12.9 trillion	\$9.4 trillion	\$190.3 trillion	\$1 trillion	\$136
2080	0.1	\$19,300	\$2.1 trillion	\$1.8 trillion	\$282.4 trillion	\$1 trillion	\$139
2100	0.01	\$30,100	\$0.4 trillion	\$0.04 trillion	\$304.2 trillion	\$1 trillion	\$138
2200	0.0000004	\$30,100	\$0.00001 trillion	\$0.00001 trillion	\$420.1 trillion	\$1 trillion	\$197
Total CO ₂ e extracted up til 2200 (Gt)			363	Total money distributed to the people and to climate work			\$1838.3 trillion

SCENARIO 7: NO BOOSTING OF DIVIDENDS IN THE EARLY YEARS

The cap shrinks by 10% per year. The charge money goes to LITG compensation, to investment in the Green New Deal via the fund and to climate grants. Only the investment income from the fund is then used for carbon dividends.

Year	Carbon extraction cap (gigatonnes)	Carbon charge (per tonne of CO ₂ e)	Amount raised by carbon charge	Amount put into the fund	Total amount in the fund	Amount of climate grants distributed this year	Monthly dividend per person
2025	36.3	\$135	\$4.9 trillion	\$4.5 trillion	\$4.5 trillion	\$1 trillion	-\$8
2030	21.4	\$288	\$6.2 trillion	\$5.8 trillion	\$30.8 trillion	\$1 trillion	\$1
2040	7.5	\$1,317	\$9.8 trillion	\$9.4 trillion	\$107.0 trillion	\$1 trillion	\$24
2050	2.6	\$6,014	\$15.6 trillion	\$15.2 trillion	\$230.2 trillion	\$1 trillion	\$59
2060	0.9	\$14,300	\$12.9 trillion	\$12.6 trillion	\$395.5 trillion	\$1 trillion	\$103
2080	0.1	\$19,300	\$2.1 trillion	\$1.8 trillion	\$497.6 trillion	\$1 trillion	\$132
2100	0.01	\$30,100	\$0.4 trillion	\$0.04 trillion	\$528.3 trillion	\$1 trillion	\$130
2200	0.0000004	\$30,100	\$0.00001 trillion	\$0.00001 trillion	\$726.1 trillion	\$1 trillion	\$181
Total CO₂e extracted up til 2200 (Gt)			363	Total money distributed to the people and to climate work			\$2906.7 trillion

SCENARIO 8: NO FUND, JUST IMMEDIATE DISTRIBUTION

The cap shrinks by 10% per year. The charge money goes to LITG compensation, to climate grants and to our carbon dividends. None is invested in the Green New Deal or preserved for future generations via a fund.

Year	Carbon extraction cap (gigatonnes)	Carbon charge (per tonne of CO ₂ e)	Amount raised by carbon charge	Amount put into the fund	Total amount in the fund	Amount of climate grants distributed this year	Monthly dividend per person
2025	36.3	\$135	\$4.9 trillion	\$0.0 trillion	\$0.0 trillion	\$1 trillion	\$34
2030	21.4	\$288	\$6.2 trillion	\$0.0 trillion	\$0.0 trillion	\$1 trillion	\$44
2040	7.5	\$1,317	\$9.8 trillion	\$0.0 trillion	\$0.0 trillion	\$1 trillion	\$72
2050	2.6	\$6,014	\$15.6 trillion	\$0.0 trillion	\$0.0 trillion	\$1 trillion	\$114
2060	0.9	\$14,300	\$12.9 trillion	\$0.0 trillion	\$0.0 trillion	\$1 trillion	\$90
2080	0.1	\$19,300	\$2.1 trillion	\$0.0 trillion	\$0.0 trillion	\$1 trillion	\$6
2100	0.01	\$30,100	\$0.4 trillion	\$0.00 trillion	\$0.0 trillion	\$1 trillion	-\$8
2200	0.0000004	\$30,100	\$0.00001 trillion	\$0.00000 trillion	\$0.0 trillion	\$1 trillion	-\$8
Total CO ₂ e extracted up til 2200 (Gt)			363	Total money distributed to the people and to climate work			\$515.0 trillion



EQUAL RIGHT
ECONOMIC JUSTICE WITHOUT BORDERS

Equal Right is a global justice organisation that works for economic and climate justice without borders

<https://www.equalright.org>



Autonomy

Autonomy is an independent research organisation which creates data-driven tools and research for sustainable economic planning.

<https://autonomy.work/>

This discussion paper was drafted by **Laura Bannister** at Equal Right with additional economic modelling by **Luiz Garcia** at Autonomy.

Contributions to the text were provided by **Father Arbogast Lekule** of the Church of the Sacred Heart of Jesus, Sittingbourne and former chair of the Justice and Peace Commission of the Archdiocese of Southwark, and by **Rahul Basu** at The Future We Need.

Editing support has been provided by **Lucy Shaverin** and **Tchiyiwe Chihana** at Equal Right.

Equal Right and Autonomy are co-founders of the Cap and Share Climate Alliance



CAP & SHARE
CLIMATE ALLIANCE

The authors would like to thank the other co-founders of the Cap and Share Climate Alliance for their input into this paper

We invite and welcome feedback and contributions to further develop these ideas. Please contact us at info@equalright.org

Published 2023 by © Autonomy

Autonomy Research Ltd
Cranbourne
Pilcot Road
Crookham Village
Hampshire
GU51 5RU