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»»» Materials on Development Finance Pathways for Social Protection in the Just Transition of Low- and Middle- Income Countries

Authors: Anna McCord & Cecilia Costella
Climate Change and Social Protection Research Initiative (CCASP)
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Pathways for Social Protection in the Just Transition of Low- and Middle-Income Countries May 2023

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Executive Summary

The objective of this study is to explore how social protection can alleviate the adverse socio-economic effects of climate change mitigation policies, especially on vulnerable people and people already living in poverty, and thereby contribute to a just transition to a climate-resilient future.

The 1.5-degree warming target of the Paris Agreement can only be achieved through a substantial reduction in greenhouse gas emissions (GHG), which will require the rapid implementation of bold GHG mitigation policies. This study explores how social protection can contribute to successfully achieving this goal by compensating for the adverse effects of some Climate Change Mitigation (CCM) policies essential for emission control. By drawing on current literature, the study summarises how social protection can mitigate the effects of three major CCM approaches – Energy Subsidy Reform (ESR), Carbon Taxation and the green transition. It also sets out recommendations for designing and implementing social protection systems to support these three approaches, including recommendations for development partner investment.

While Climate Change Mitigation policies are critical, their price and employment effects can entail welfare losses. In some contexts, these policies will be regressive, disproportionately affecting the poor, but in all instances, they will increase the cost of the household consumption basket, increasing both headcount poverty and poverty depth. The distribution of impacts is heterogenous across and within countries. It is contingent on a range of contextual factors such as the prior distribution of poverty, energy consumption patterns and household characteristics, as well as the structure of the national economy.

Energy Subsidy Reform (ESR) and carbon taxes (together known as carbon pricing instruments (CPIs)) tend to affect the poorest through rises in non-fuel commodity prices, notably transportation and food, although the relative impact of different price channels depends on their consumption patterns. In addition to these price effects, green structural change will drive localised employment losses in high carbon ‘brown’ segments of the labour market. Low-skilled workers in this sector may be unable to shift into new ‘green’ employment due to human, physical and financial capital constraints. Workers in agricultural sectors with high emission intensity may also be adversely affected. Together, these policies will impact household consumption through increased prices and reduced income.

Some form of effective compensation for these adverse impacts is required not only to cushion these negative effects, but also to ensure that reforms are acceptable and implemented with public support, and without creating political and social instability.

Revenue from Climate Change Mitigation policies can be used to finance compensation for the impacts of carbon pricing on poverty, although this will be limited in low- and middle-income countries with low carbon footprints. This revenue can be used to finance an extension of national social protection provision through a range of instruments, to provide additional income at household level for those most affected. In this way, social protection is a key component of the just transition to a sustainable, zero-carbon economy. The interventions that might be most appropriate include cash transfers; poverty-targeted subsidies on energy, food and public transportation; increased investment in basic services such as health and education; and the revision of the tax regime to reduce the incidence of regressive taxes such as VAT.

Active labour market policies can be used to address the employment impacts of the green transition, including skills development, job search, job subsidies and direct creation of employment through public works programmes.

The adoption of a pro-poor approach to climate change mitigation policy implementation, such as phasing implementation to prioritise interventions targeted at the fuel consumption of richer segments of the population, can cushion impacts and complement the introduction of social protection compensation.

Based on this study's analysis, a number of general recommendations can be drawn which can guide CCM policy implementation and the use of social protection for compensation. These apply to national governments and development partners supporting the process of CCM policy implementation.

- Before implementing a national CCM programme ensure that it has been informed by an analysis of the distributional impacts of the policy options under consideration.
- Prior to implementation, also assess the capacity of the existing social protection system to provide compensation, taking into consideration: coverage and incidence; the performance of operational systems (identification, registration and delivery); governance; and the potential to implement complementary measures including taxation, subsidies and service provision.
- Carry out a fiscal incidence analysis to assess the potential domestic revenue gains from subsidy reform and carbon pricing and their adequacy in relation to the cost of social protection compensation options.
- Ensure that the labour market impacts of the green transition are appraised across spatial, temporal, and socio-economic dimensions and that the skills development implications are identified.
- Include compensatory social protection provision as an explicit component of CCM policy and implementation plans.
- Promote joint planning between CCM and social protection policymakers to facilitate policy coherence and complementarity.
- Ensure that social protection policy design is informed by CCM, industrial, education and labour policy to ensure a coherent social protection response.
- Use the existing social protection programmes as the basis for compensation where coverage and inclusion are adequate, extending existing transfer programme instruments vertically and horizontally as necessary.
- Where the coverage and inclusion of existing social protection programmes are inadequate to compensate those most affected, but core operational systems are in place (a national ID, comprehensive registries, delivery mechanisms), develop new social assistance programmes such as temporary new transfer schemes or lump sum payments.

- If the core operational systems required for large-scale inclusive social protection provision are not in place, invest in systems development which will facilitate both the delivery of effective CCM policy compensation and create an effective national social protection system.
- Introduce social protection measures, such as subsidised service delivery or tax reform; targeted energy, food, or public transport subsidies; subsidised service provision (such as health and education); and revise tax incidence to reduce regressive taxation, such as VAT, to complement social assistance provision.
- Implement CCM policies in a pro-poor way, for example:
 - a. only implement CCM policies that will have significant adverse effects on the poor and vulnerable after basic compensatory interventions are in place;
 - b. prioritise the least regressive components of CCM policy, phasing implementation to start with the decarbonisation of sectors with lower impacts on the poor;
 - c. initiate ESR on fuels primarily used by the rich (such as aviation fuel) before those directly or indirectly affecting the poor.
- Explore supranational financing options where the revenue generated from carbon pricing is insufficient to fund adequate compensation
- Promote international debate around supranational financing options for the provision of social protection compensation in LMICs as part of a just and green transition.

The study also sets out specific recommendations for German Development Cooperation regarding technical assistance and policy and investment to support national governments in using social protection to facilitate effective CCM policy implementation.

These recommendations also include promoting a global dialogue with national governments and development partners to promote understanding of the role of social protection in the equitable implementation of CCM policies and developing technical guidance material to support national government work on this key issue.

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Acronyms

ACMI	Africa Carbon Markets Initiative
ALMP	Active Labour Market Policies
CCM	climate change mitigation
CCS	carbon capture and storage
COP26	Conference of the Parties (2021)
COP27	Conference of the Parties (2022)
CO ₂	carbon dioxide
CO ₂ -eq	carbon dioxide equivalent
CPI	carbon pricing instrument
ESRAF	Energy Subsidy Reform Assessment Framework
ESMAP	Energy Sector Management Assistance Program
ESR	energy subsidy reform
ETS	emissions trading system
GDP	gross domestic product
GHG	Greenhouse Gas
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
HIC	high-income country
ILO	International Labour Organization
IMF	International Monetary Fund
INDC	Intended Nationally Determined Contribution
JETPs	Just Energy Transition Partnerships (JETPs)
LAC	Latin American country
LEDS	low emission development strategies
LIC	low-income country
LMIC	low and middle-income country
LPG	liquified petroleum gas
MIC	middle income-country
NAMA	Nationally Appropriate Mitigation Actions
PES	payment for ecosystem services
PPP	purchasing power parity
PROEZA	Poverty, Reforestation, Energy and Climate Change (Paraguay)
PSA	Pago por Servicios Ambientales (Mexico)
PWP	public works programme

SBCC	social and behaviour change communication
SSN	social safety nets
TVET	Technical and Vocational Education and Training
VCM	voluntary carbon markets
UNFCCC	United Nations Framework Convention on Climate Change
USD	United States Dollar

Glossary

Active labour market policies

A component of social protection that entails enhancing employment outcomes through vocational training, job search support, job subsidies and direct employment creation.

Climate change mitigation policies

Public policy measures to reduce global warming including the reduction of energy subsidies, the introduction of carbon prices and introducing subsidies for renewable energy production and public transport (from GIZ, 2021).

Carbon crediting mechanism

A system where tradable credits (typically calculated based on metric ton of carbon dioxide equivalent) are generated through voluntarily implemented emission reduction or removal activities. The carbon credits are generated by demonstrating that emissions have been reduced or sequestered relative to a counterfactual baseline.

Carbon dioxide equivalent

A measure to compare the emissions from various greenhouse gases calculated on the basis of their global warming potential, by converting amounts of other gases to the equivalent amount of carbon dioxide with the same global warming potential.

Carbon footprint

The total amount of greenhouse gases (including carbon dioxide and methane) released into the atmosphere as a result of the activities of a particular actor.

Carbon pricing

Mechanisms that incentivise a shift towards a low-carbon economy by putting a price on greenhouse gas emissions.

Carbon tax

A policy instrument which requires businesses to pay for emitting, through the levying of a fee on GHG emissions by government, thereby providing a financial incentive to lower emissions. Under a carbon tax, the government sets the price of carbon.

Emissions trading system

This involves placing a limit or cap on the total volume of GHG emissions and the auctioning or distributing tradable emission allowances by the government. In an ETS, the carbon price is not fixed by a government but is determined by the supply and demand of emission allowances or credits. There are two kinds of ETS – the ‘cap-and-trade’ system and the ‘baseline-and-credit’ system.

Under the ‘cap-and-trade’ system, emissions are permitted up to a specified volume (typically calculated on the basis of metric ton of carbon dioxide equivalent), with the total volume of allowances being equal to the emissions cap. Additional allowances can be bought if necessary and surplus allowances sold.

Under the ‘baseline-and-credit’ ETS system, there is no fixed limit on total emissions per sector, but companies can ‘earn’ emission credits if they produce fewer emissions than the baseline, which can be traded with other companies needing additional credits to cover their surplus emissions relative to the baseline.

Energy poverty

Energy poverty occurs when energy costs represent a high percentage of household income or when households must reduce their energy consumption to a degree that negatively impacts their health and well-being.

Exclusion error

The proportion of those eligible to receive social protection transfers as they meet programme inclusion criteria (for example, an income threshold or other poverty indicator) who are omitted from the programme

Green structural change

The re-allocation of resources from more to less polluting economic activities arising as a consequence of climate change mitigation policies, or changes in consumer or company preferences.

Green transition

The shift towards economically sustainable growth and an economy not based on fossil fuels and overconsumption of natural resources.

Green works

The employment-intensive development, restoration and maintenance of public infrastructure, community assets, natural areas and landscapes to contribute to environmental goals, such as adaptation to climate change and natural disasters, environmental rehabilitation and nature conservation.

Inclusion error

The proportion of social protection programme beneficiaries who receive transfers despite not meeting the programme inclusion criteria (for example, a specified income threshold or other poverty indicator).

Just energy transition

A low-carbon energy transition that does not reinforce or increase social or economic inequality and prevents poverty and social exclusion for those whose income or employment is adversely affected by the effects or mitigation of climate change.

Just transition

A set of principles, processes and practices that produce plans, policies, investments and measures needed to conduct economies and societies to a zero-carbon, prosperous and socially equitable future.

Lifeline tariffs

The provision of fuel at a reduced price for those consuming less than ‘social minima’.

Nature-based solutions

Approaches that regenerate areas affected by human activities, restoring key ecological functions that improve people's quality of life.

Operational systems

The set of administrative systems essential implementing large-scale social protection systems, including national ID systems, registration systems, monitoring and evaluation systems and payment systems.

Universal lump sum transfer

A fixed monetary sum paid in one single payment to all members of a population.

Proportionate

A policy whose benefit is distributed equally across income groups.

Regressive

A policy that disproportionately benefits high-income households, with poor households losing a higher proportion of their disposable income.

Progressive

A policy that disproportionately benefits low-income households, with poor households losing a lower proportion of their disposable income.

Social assistance

Non-contributory transfer programmes funded from the general tax base, which may be poverty targeted (for example, child grants, social pensions, school feeding).

Social protection

A set of policy measures to reduce poverty and provide income security through the provision of social assistance, social insurance and active labour market programmes.

Social protection programme

A government intervention which provides social protection through the implementation of a particular social protection instrument to a subset of the population based on specified poverty and/or demographic characteristics.

Social protection system

The set of social protection policies, programmes and associated operational systems implemented in a given country to provide income security.

Social insurance

Contributory transfer programmes funded through individual contributions and the general tax base (for example, unemployment insurance, health insurance).

Structural unemployment

A form of involuntary unemployment caused by a mismatch between the skills that workers in the economy can offer, and the skills demanded of workers by employers. Structural unemployment is often brought about by technological changes that make the job skills of some workers obsolete as in the case of the transition from a brown to green economy.

Universal carbon rebate

Redistribution of all carbon revenues to all households, on a per capita basis.

Voluntary carbon markets

Markets where carbon credits are purchased, usually by organisations, for voluntary use rather than to comply with legally binding emissions reduction obligations, driven in part by demand from businesses looking to 'offset' their emissions.

Welfare loss

A decrease in economic and social well-being.

1. Introduction

The objective of this study is to explore how social protection can alleviate the adverse socio-economic effects of climate change mitigation policies, especially on vulnerable people and people already living in poverty, and thereby contribute to a just transition to a climate-resilient future.

The 1.5-degree warming target of the Paris Agreement can only be achieved through a substantial reduction in greenhouse gas emissions (GHG), which will require the rapid implementation of bold GHG mitigation policies. This study explores how social protection can contribute to successfully achieving this goal by compensating for the adverse effects of some Climate Change Mitigation (CCM) policies essential for emission control. Drawing on current literature, the study summarises the ways in which social protection can mitigate the effects of three major CCM approaches – Energy Subsidy Reform (ESR), Carbon Taxation and the green transition.¹ It also sets out recommendations for designing and implementing social protection systems to support these three approaches, including recommendations for development partner investment.

It is widely accepted that the transformation to a carbon-free economy will cause economic dislocation, resulting in a range of social and economic impacts that will adversely affect the poor and vulnerable. There is evidence that subsidy reduction and carbon taxation, two key CCM policies, may disproportionately affect poorer households in as much as they spend proportionally more on fuel and carbon-intensive goods (UNFCCC, 2016). This is likely to increase the numbers of poor and the depth of those already in poverty unless steps are taken to compensate for these adverse impacts. At the same time, structural reform as part of the green structural change will entail employment losses in high carbon-emitting sectors with significant implications for those working in, or whose livelihoods are dependent on, affected sectors. Compensatory interventions will be necessary to protect those affected from economic hardship and increased impoverishment if a ‘just transition’ to a low-carbon global economy is to be achieved. Social protection can play a role in offsetting the socio-economic shocks that decarbonisation will cause.

It is clear that poverty reduction and decarbonisation will only occur simultaneously if effective measures are put in place to minimise the trade-off between these objectives. Addressing this challenge requires explicitly aligning climate policies, including CCM, with policies aiming at protecting poor households from welfare losses and increased poverty. Social protection has been identified as a key instrument to play this role. The main goal of this study is to understand what is known about the impacts of CCM interventions on poverty and how these impacts can be mitigated through the implementation of social protection instruments, drawing from both the international experience on Energy Subsidy Reform and carbon pricing, and the microsimulation literature which has been produced in recent years.² This is intended to inform government and donor policy relating to the implementation of CCM in LMICs and also the flow of support for such interventions, as equity and climate justice considerations demand that HICs contribute to protect poor populations in LMICs during this process (Gyori, Diekmann and Kuhne, 2021).

¹ These three policies are referred to collectively as ‘CCM policies’ in this study for brevity, although it is recognised that the term CCM includes a much wider range of policy options than those discussed here.

² Microsimulations make use of input/output matrices and household survey data to model the impact of price and labour changes on the distribution of poverty.

The study synthesises current experience and provides a framework to illustrate the links between decarbonisation strategies, adverse effects on poor and middle-class households and the role of social protection instruments to mitigate these effects based on the current state of research. The main contribution of the study is to highlight the impacts of decarbonisation strategies on poor households in LMICs and to illustrate how social protection interventions might be used to mitigate these effects. The role of social policies in supporting the just transition to a climate-resilient future in this way has yet to be widely incorporated in national plans (FAO, forthcoming).

1.1.Objectives

The objective of the study is to explore how social protection can mitigate the adverse socio-economic effects of decarbonisation strategies on poor and middle-income households and thereby contribute to a just transition. The theoretical framework elaborates the causal relationships between relevant decarbonisation strategies, their socio-economic impact on poor and middle -class households, and relevant social protection responses to compensate for these negative socio-economic effects. The study has three main components. First, it defines and outlines the most relevant decarbonisation policies/strategies across different sectors for low- and middle-income countries deemed effective in reaching climate goals. Next, it outlines the socio-economic impacts on poor and middle-income households. Finally, it discusses the potential role of social protection to mitigate these negative impacts, along with a description of how such social policy instruments can be supported through instruments of the German development cooperation (technical and financial cooperation) as a critical component of the just transition along with decarbonisation policies.

1.2.Methodology

This study builds on a seminal paper prepared by the Germany Agency for International Cooperation (GIZ), by Györi, Diekmann and Kühne, which has been used as a key resource (Gyori et al., 2021). A literature review was carried out which identified 47 additional documents examining the distributive impact of decarbonisation strategies and this research was supplemented by a series of key informant interviews. The literature is largely focused on the Latin America and Caribbean region and the Global North, with limited material covering the Middle East, Asia and Africa.

1.3.Definitions

The study is concerned with how social protection might be used to support the process of a ‘Just transition’ by cushioning poor and middle-class households from the welfare losses expected to occur because of CCM policies.

While the concept of climate change mitigation generally refers all actions that aim to reduce greenhouse gases, we use it here to refer to the set of public policy measures that aim to reduce global warming in line with the commitments made in the Paris Agreement. We focus on direct and indirect carbon pricing policies and on other public measures that promote green structural change. Under carbon pricing policies, we consider primarily the reduction of energy subsidies and the introduction of carbon prices – both of which aim to increase energy prices to discourage energy consumption. Green structural change refers to the structural changes in the economy reflecting a reallocation of resources from more to less polluting economic activities and the shift to the use of renewable energy sources to replace fossil fuel.

In examining the distributive impacts of these policies, the terms regressive, progressive and proportionate are used. A regressive policy disproportionately benefits higher-income households, with poor households losing a higher proportion of their disposable income. A progressive policy disproportionately benefits lower-income households with better-off households losing a higher proportion of their disposable income. A proportionate policy distributes benefits equally across income groups.

Social protection refers to a set of policy measures adopted to reduce poverty and provide income security. This is typically provided through the provision of social assistance (non-contributory cash and in-kind transfer programmes funded from the general tax base), social insurance (transfer programmes funded through a combination of individual contributions and the general tax base) and active labour market policies (ALMP) which promote employment through skills development and training, employment creation and job search support.

Other technical terms are described as they are introduced in the text, and a full glossary is included for reference.

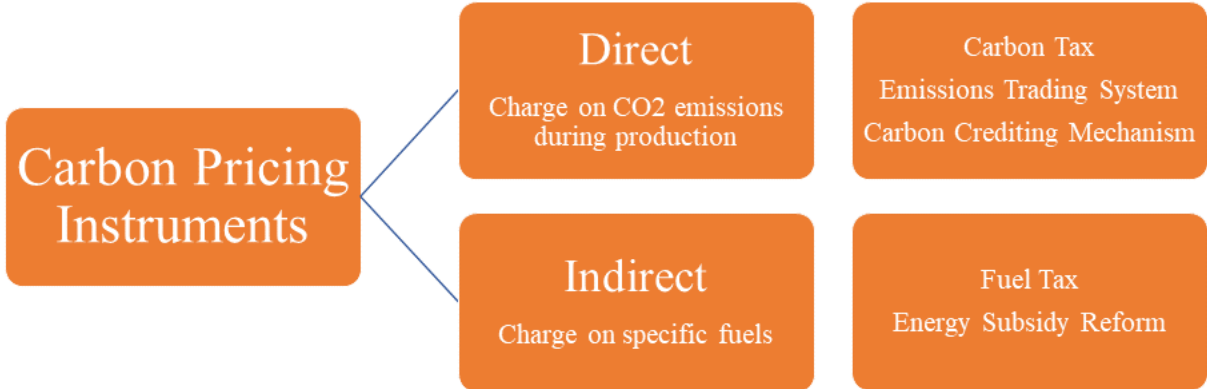
2. Decarbonisation Strategies

This study focuses on three decarbonisation strategies dominant in the current discourse on reaching climate goals: direct carbon pricing, indirect carbon pricing and green structural change. This section introduces direct and indirect carbon pricing instruments (CPIs) and their impacts/relationship with CO₂ consumption and then gives a brief overview of the concept of structural change.

2.4. Carbon Pricing Instruments

Carbon pricing instruments (CPIs) are mechanisms that incentivise a shift towards a low-carbon economy by putting a price on greenhouse gas emissions. Direct (or explicit) carbon pricing typically takes the form of carbon taxes, Emissions Trading Schemes (ETS) or carbon credit mechanisms that create a price on emissions proportionate to emissions. Indirect carbon pricing can take the form of energy subsidy reform (ESR), whose removal increases the price of specified fuels. As well as providing an incentive for lowering emissions, CPIs can provide revenue to support progressive redistribution and alleviate the burden of CCM policies (Soergel *et al.*, 2021). They can also provide a source of revenue for financing investments in clean technology and other sustainable development goals (Vogt-Schilb *et al.*, 2019a); (World Bank, 2022). Figure 1 sets out the instruments under each type of CPI.

Figure 1: Carbon Pricing Instrument



Source: Authors

2.4.1 Direct Carbon Pricing Instruments

Direct Carbon Pricing Instruments (CPI) include take the form of carbon taxes, Emissions Trading Schemes (ETS) and carbon credit mechanisms. Under these instruments, the price of emissions is calculated on the basis of the carbon dioxide equivalent³ (which includes multiple greenhouse gasses) generated by a particular product or activity. The World Bank has identified carbon pricing as one of the most powerful tools for guiding economies toward low-emission paths (World Bank, 2022). Box 1 gives more detail on these three instruments.

Box 1: Direct Carbon Pricing Instruments

Carbon Tax

Under a carbon tax, the government sets a price that emitters must pay for each ton of greenhouse gas emissions. This tax is intended to incentivise businesses and consumers to take steps to reduce their emissions to avoid paying the tax, such as switching fuels or adopting new technologies. Most carbon taxes are implemented in the context of regulated carbon markets, which are used by companies and governments that, by law, have to account for their GHG emissions according to mandatory national, regional or international carbon reduction regimes.

Emissions Trading System (ETS)

There are two kinds of ETS – the ‘cap-and-trade’ system and the ‘baseline-and-credit’ system. The ‘cap-and-trade’ system caps the total level of greenhouse gas emissions and allows industries with low emissions to sell their extra allowances to larger emitters. By creating supply and demand for emissions allowances, an ETS establishes a market price for greenhouse gas emissions. The cap helps ensure that the required emission reductions will

³ This includes CO2 and other greenhouse gases, converting amounts of other gases to the equivalent amount of carbon dioxide with the same global warming potential.

take place to keep emitters (in aggregate) within their pre-allocated carbon budget. Under the ‘baseline-and-credit’ ETS system, there is no fixed limit on total emissions per sector, instead companies can earn tradable emission credits if they produce fewer emissions than the baseline, and these credits can be traded with other companies needing to cover emissions exceeding the baseline.

Carbon Crediting Mechanism

A system where tradable credits are earned through voluntarily implemented emission reduction or removal activities. Carbon credits are generated by demonstrating that emissions have been reduced or sequestered relative to a counterfactual baseline, and are calculated on the basis of each metric ton of carbon dioxide equivalent.

Sources: Centre for Climate and Energy Solutions (n.d.), World Bank (2022)⁴

In recent years, there has been significant global progress in the development of international carbon markets, especially after new rules for their management were introduced as part of the COP26 agreement. In 2021, global revenue from direct carbon pricing, such as higher carbon prices, auctioning in emissions trading systems and other new instruments, reached US\$ 84 billion, 60% higher than in 2020, with the majority of revenues being from ETS revenues. As of 2022, 68 direct CPIs were operational, and three scheduled for implementation, covering a quarter of total global GHG emissions (World Bank, 2022). The World Bank is supporting countries to mainstream carbon pricing into wider fiscal policy and long-term decarbonisation strategies. (See Box 2.)

Box 2: World Bank initiatives to support CPI

Partnership for Market Implementation

The Partnership for Market Implementation (PMI) will provide technical assistance to at least 30 countries in developing and implementing domestic carbon pricing and operationalising Article 6 of the Paris Agreement.

Climate Change Action Plan (2021–2025)

The Action Plan commits the World Bank to increase its climate finance target, align financing flows with the goals of the Paris Agreement and achieve results that integrate climate and development supporting countries to make informed climate decisions on carbon pricing.

Africa Carbon Markets Initiative

The Africa Carbon Markets Initiative (ACMI) was initiated at COP27 to support the growth of carbon credit production in Africa, aiming to mobilize US\$6 billion by 2030 and US\$100 billion annually by 2050 through African voluntary carbon markets (VCM)

Sources: World Bank Group, 2021; ACMI, 2022

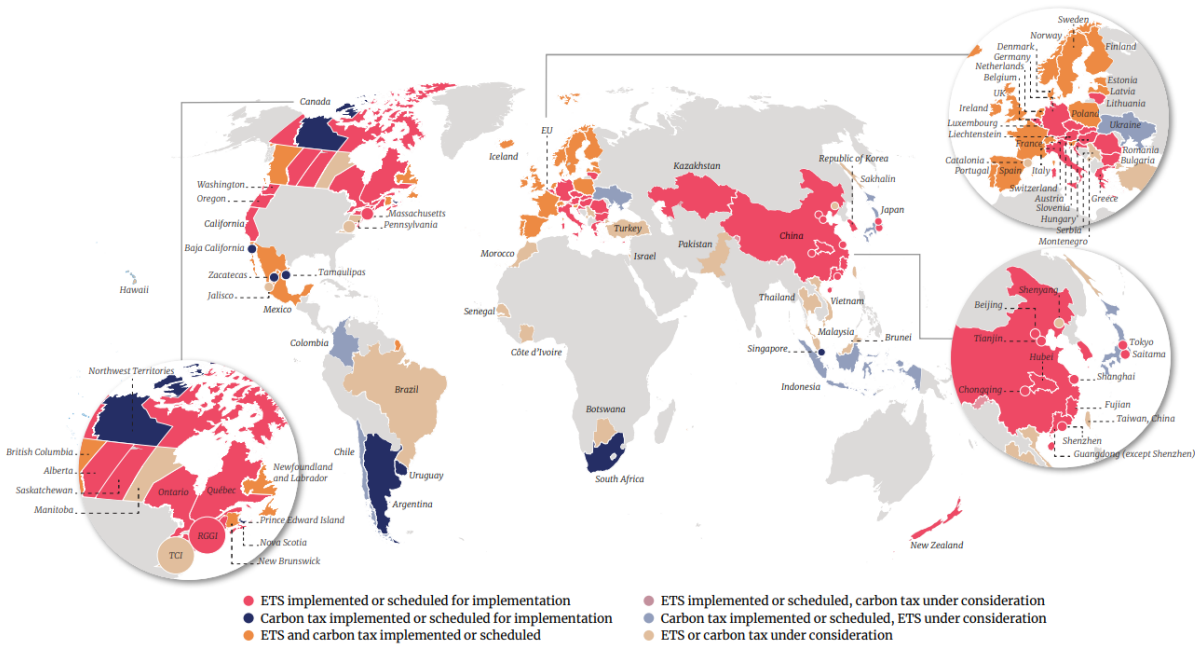
The recent increase in carbon pricing illustrates its potential to reshape incentives and investment toward deep decarbonisation and its potential role as a fiscal tool to contribute toward broader policy objectives. The World Bank notes that for governments, carbon pricing is one of the instruments of the climate policy package needed to reduce emissions and a source

⁴<https://www.c2es.org/content/carbon-tax-basics/>; <https://www.worldbank.org/en/programs/pricing-carbon>; <https://carbonpricingdashboard.worldbank.org/what-carbon-pricing-WB-2022>

of revenue, which is particularly important in an economic environment of budgetary constraints. Businesses use internal carbon pricing to evaluate the impact of mandatory carbon prices on their operations and as a tool to identify potential climate risks and revenue opportunities (World Bank; 2022).

However, despite this optimism around direct carbon pricing systems, carbon tax coverage remains low (Zachmann, Fredriksson and Claeys, 2018; Malerba, Gaentzch and Ward, 2021) and development has been concentrated in high- and middle-income countries. In 2021, 40% of total carbon pricing revenue came from the European Union’s ETS alone (World Bank, 2022). The coverage of direct CPIs in low- and middle-income countries is extremely limited; only South Africa and China have schemes implemented or scheduled for implementation, although a small number of additional countries, including Indonesia, Malaysia, Botswana and Vietnam, have also announced their intentions to develop CPIs (World Bank, 2022), as illustrated in Figure 2.

Figure 2: Current and scheduled CPIs (April 2022)



Source: World Bank, 2022

Reasons for low take-up include the need for functioning capital markets, financial systems and a developed financial sector before direct CPIs are viable. Also, the low per capita and total emissions levels limit the CCM and revenue generating potential of CPIs in many low- and middle-income countries.

2.4.2 Indirect Carbon Pricing: Fossil Fuel Taxes and Energy Subsidy Reform

The other main group of CPI is indirect carbon pricing policies. Indirect carbon pricing generally takes the form of a reduction of energy subsidies, referred as Energy Subsidy Reform (ESR) or increased taxation on specific fuels. These policies increase the price of specific goods and services associated with carbon emissions, such as transport, heating, and electricity, and so indirectly place a price on carbon emissions. These indirect carbon pricing approaches create a price signal to disincentivise consumption and encourage switching to alternative cleaner energy (Andersson and Atkinson, 2020).

Many governments have adopted energy subsidies that reduce the price of carbon-based fuels. The removal of such subsidies through ESR for carbon-based fuels can help reduce fossil fuel consumption in line with climate change mitigation goals, as the removal of subsidies increases the prices of products that use such fuels, thus incentivising businesses and consumers to reduce their consumption of such products. ESR is simple to implement administratively and has the additional benefit of expanding the fiscal space for redistributive and compensatory measures, including social protection. Similarly, introducing specific fuel taxes, with varying tax rates (per tCO₂) can increase prices for products and services whose production requires higher CO₂ and deter consumption. Such policies have been adopted recently in Argentina, Mexico, and Uruguay (World Bank Carbon Pricing Dashboard⁵).

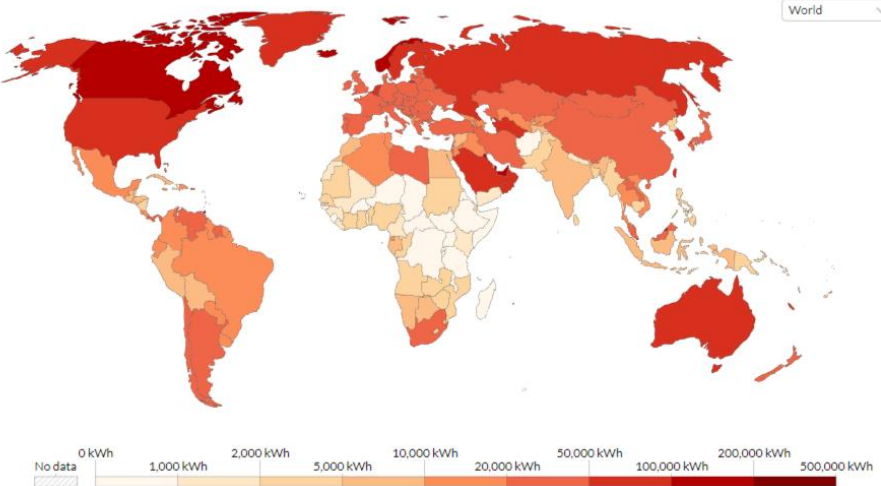
Indirect carbon pricing, and especially Energy Subsidy Reform, has been included in several countries' Intended Nationally Determined Contributions (INDCs), including those of Vietnam, Ethiopia, Singapore, India and Morocco, with China and Mexico reporting plans to improve the pricing and taxation regime for energy products. In the future, these policies may play a significant role in national CCM policies as they become more widely adopted in INDCs, recognised as Nationally Appropriate Mitigation Actions (NAMA), included in Low Emission Development Strategies (LEDS) and supported with climate finance (Whitley and van der Burg, 2015).

2.4.3 Carbon-Pricing Instruments and CO₂ Consumption

To understand the potential negative and positive impacts of decarbonisation policies in LMICs, it is helpful first to consider the highly differentiated nature of energy consumption and emissions levels by country and region, which tend to be extremely heterogeneous. Figure 3 illustrates the global variation in energy use per capita.

*Figure 3: Energy use per capita 2021– including energy, transport, heating and cooking**

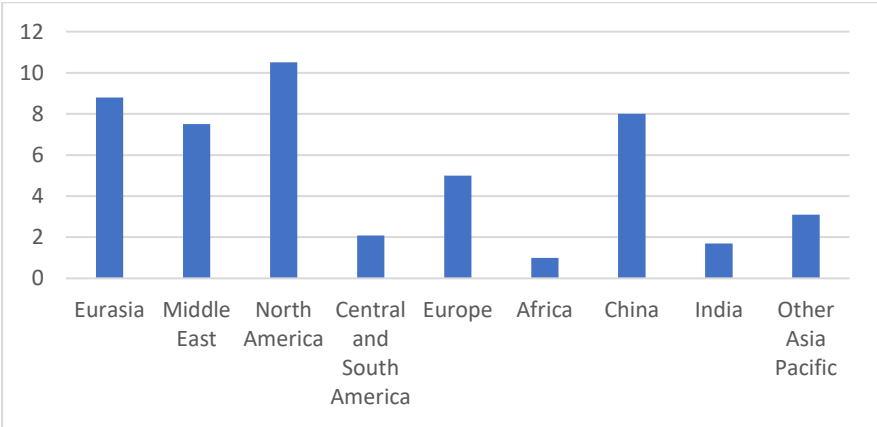
⁵ <https://carbonpricingdashboard.worldbank.org/what-carbon-pricing>



Source: Our World In Data, 2022 (<https://ourworldindata.org/grapher/per-capita-energy-use>).
 Note: Energy refers to primary energy – the energy input before the transformation to forms of energy for end-use (such as electricity or petrol for transport).

When variation in CO2 emissions is considered, the heterogeneity across geographies is even starker. Figure 4 highlights the low per capita emissions from Africa, India and Central and South America, compared to other countries and regions. Only 15% of global CO2 emissions from energy worldwide are from Africa, South and Central America and the Middle East (International Energy Agency, 2020).

Figure 4: Regional CO2 emissions per capita (tonnes) 2020



Source: IEA, 2020

The implication of these extremely low carbon footprints in LMICs, particularly in sub-Saharan Africa is that the amount of income which can be raised through carbon pricing is limited compared to other regions and wealthier countries. As such, while CPIs could incentivise a shift in investment away from carbon intensive industries and generate fiscal revenue for redistribution and/or other investments, these impacts may be muted in LMICs.

The diversity in potential income arising from CPIs among different countries is illustrated by a recent study simulating the revenue generated from six LMICs (Gasior et al., 2023). The study found that revenue raised under different carbon pricing scenarios ranges from 0.2–1% of GDP for Indonesia, Tanzania, Vietnam and Zambia, from 0.6–2.5% of GDP for South Africa, and

from 0.8–3.1% of GDP for Ecuador, depending on whether a low or a high carbon price is modelled. The range of findings illustrates that the potential revenue-generating effects of climate change mitigation policies are highly context-specific and informed by the structure of the economy, GDP and energy consumption patterns. The revenue-raising potential of CPIs is considerably lower, in terms of share of GDP, for poorer countries with lower CO₂ footprints.

2.5. Green Structural Change

Green structural change describes the transition from high to low-carbon economies through the reallocation of resources from more to less polluting economic activities, driven by climate change mitigation policies together with changes in consumer and company preferences. This transition entails the closure of traditional ‘brown economy’ industries in energy-intensive sectors such as coal mining and developing the ‘green economy’ based on the shift from carbon to renewable energy-based production and organic agriculture. If these policies include non-carbon GHG (including methane and nitrous oxide), the impacts will extend to those working in agriculture, forest and other land-use based employments.

There is optimism that the transition to a green economy has the potential to lead to the creation of jobs across sectors such as renewable energy and agriculture, and that indirect job creation resulting from the supply chain process of these sectors will create further employment (ILO, 2016). This optimism is associated with the aspiration that the transition to a green economy can act as an engine for growth and a driver of decent work in LMICs. However, it is recognised that this outcome will not occur spontaneously but is dependent on the implementation of complementary economic and social policies to enable labour force adaptation (Feng et al., 2018; ILO, 2016; ILO, 2018; UNFCCC, 2016) (van der Ree, 2019).

3. The Poverty and Distributional Impacts of Decarbonisation Policies

The impacts of the three CCM policy instruments discussed above (direct and indirect CPIs and green structural change) on poverty can occur through two main vectors: i) changes in the price of goods and services (in the case of ESR and CPI) and ii) changes in the structure of the labour market (in the case of the green structural change). The first vector affects household expenditure, and the second household income. These vectors operate differently in different socio-economic contexts. Thus, the impacts on poverty at household level will depend on how far households are able to accommodate these price rises and reductions in household income by altering their consumption basket and switching to alternative goods.

It is critical to understand these impacts in order to develop appropriate policy responses to compensate. There is an extensive literature modelling the distributional impact of CPIs on fuel and commodity prices and consequently on poverty and income.⁶ The models illustrate short term price effects, capturing immediate households’ responses to price signals, but are not able to capture medium term effects in market behaviour and consumption choices (that is, as new goods and services are developed, and preferences change). The approaches adopted for

⁶ Models generally use approaches based on a combination of input-output (or CGE) models which aim to simulate the direct and indirect price impacts of CPIs on fuel and other commodities and expenditure data from household surveys to model poverty and distributional impacts. A methodology for carrying out such a study is set out in ESRAF Good Practice Note 5, *Assessing the Readiness of Social Safety Nets to Mitigate the Impact of Reform* (Yemtsov and Moubarak, 2019).

modelling employment shocks arising from green structural change are more complex and less consistent and the methodologies were not explored in this study.

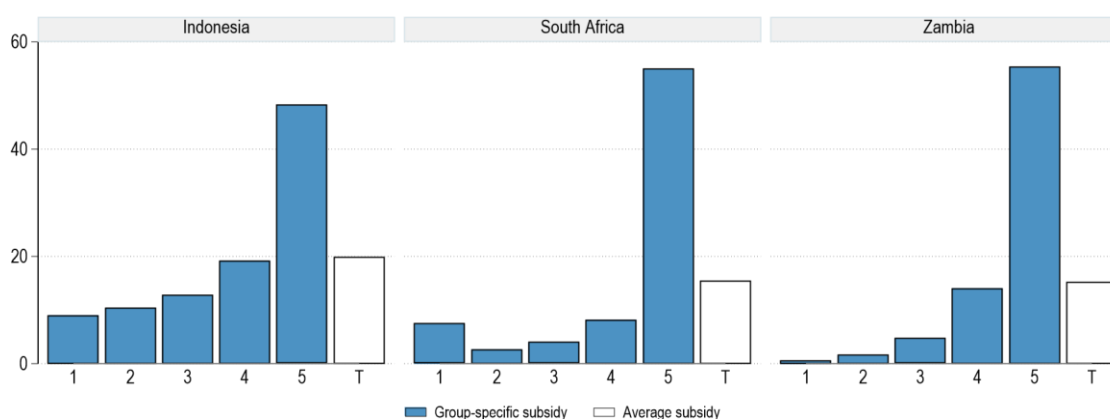
The poverty and distributional impacts of the three interventions outlined above are now examined in turn. We first review the impact of Energy Subsidy Reform, the CPI policy most widely explored in the literature, then the impacts of direct CPIs and then green structural change, about which there is only limited literature.

3.1. Carbon Pricing Instruments' Impacts

3.1.1. Indirect Carbon Pricing: The Impacts of Energy Subsidy Reform (ESR)

Energy subsidies are increasingly seen as an inefficient way to transfer resources to the poor and are also regressive (Vogt-Schilb and Hallegatte, 2017); Malerba, 2021). For example, in 2013 92% of petrol subsidies and 66% of natural gas subsidies in Egypt went to the richest 20% of consumers, while in Angola only 10% of energy subsidy benefits accrued to the poorest 40% (Whitely et al., 2015). A recent study illustrates the highly regressive nature of existing subsidies and VAT exemptions for fossil fuel and electricity, showing the per capita subsidy for those in the highest quintile (Gasior et al., 2023), see Figure 5.

Figure 5: Per-Capita Subsidy in USD by Income/Consumption Group



Source: Gasior et al, 2023.

Energy Subsidy Reform has been a popular instrument over recent decades, and its impact is well documented in the literature. This literature indicates that removing subsidies addresses the regressivity of subsidy benefits and is also fiscally beneficial, returning substantial resources to the fiscus. However, it is also problematic as it can result in welfare losses and increased poverty headcount and depth. These adverse effects on poverty arise due to the increase in energy prices which occur due to the removal of the subsidy, and also indirect effects through impacts on the prices of commodities and services which use previously subsidised energy inputs.

The impacts of energy subsidy reform on poverty depend to a certain extent on the fuel targeted and the particular context, especially because different fuels have different consumption patterns by poor and rich households, for instance, for electricity, gasoline, diesel, natural gas and LPG (liquid petroleum gas). A study of 11 countries in Latin America found that the impacts of subsidy reductions on LPG and natural gas varied according to each country's context but that overall ESR was regressive since these fuels are used largely for basic needs

such as heating and cooking. Reductions in the price of petrol⁷ and diesel, on the other hand, were the least regressive, since transport fuels tend to be used more by wealthier households (Feng et al., 2018). In Ecuador, by contrast, ESR was found to be regressive for diesel and petroleum gas, progressive for petrol and neutral for electricity, illustrating how different patterns of fuel usage across the income range can affect the distributional impact of similar policies in different contexts (Schaffitzel et al., 2019).

In addition to the direct effects on fuel prices, subsidy removal also affects the price of other goods and services which use fuel inputs, indirectly increasing regressivity. These indirect effects impact on poor households mainly through higher public transportation, electricity and food prices. In this way, even when direct ESR impacts are progressive, they can still have a significant adverse effect on poor households and result in increased poverty headcount and depth.

The indirect effects are often more significant than the fuel price rise itself. In Mexico, low-income households faced more significant indirect than direct impacts from fuel tax reform due to higher prices of electricity or public transportation, with these indirect impacts accounting for about 55% of the total impact of subsidy removal on household consumption costs (Arlinghaus and van Dender, 2017); Coady, Famini and Sears, 2015 cited in Yemtsov and Moubarak, 2019). Similarly, indirect effects were found to account for 70% of the total welfare cost of subsidy removal on gas and diesel in the 11 Latin American Country (LAC) study cited above (Feng et al., 2018).

Overall, the poverty and distributional impacts of subsidy reform depend on the proportion of household expenditure spent on the most affected commodities, something that varies within and between countries depending on the energy intensity of household consumption, rural-urban location, household composition, as well as the general economic context (Büchs, Bardsley and Schnepf, 2014). The direct impacts, however, vary depending on the extent to which households consume specific energy products (for example, the direct impact of raising electricity prices will vary significantly between households with electricity connections and those without), while the indirect impacts of an increase in energy price tend to affect all households by raising the prices of a range of goods and services.

Hence ESR impacts are highly context-specific and are not inherently more or less progressive than carbon pricing (Ohlendorf et al., 2021). They vary by country and region due to the structure of the energy sector, the broader policy and economic context and also a range of socio-economic factors, including, for example, ethnic identity, which was found to significantly impact the distribution of ESR outcomes in a Malaysian study (Solaymani, 2015).

While it is important to consider whether the total welfare effects on households are progressive, regressive, or neutral, this is not necessarily the most critical issue. Irrespective of the distributional impact, reducing subsidies or increasing energy taxation will likely adversely affect the poor by increasing consumption costs. Overall, multiple studies indicate that ESR results in significant welfare losses, increasing the number of poor and the depth of poverty (see, for example, Solaymani, 2015 with reference to Malaysia), with some estimates suggesting that it can increase the prevalence of poverty by as much as 17% (Cuesta, El-Lahga and Ibarra, 2015, with reference to Tunisia). For these reasons, ESR tends to be unpopular

⁷ The term petrol is used in Europe and Asia for the substance referred to as gasoline in the US and LAC.

among affected populations and may be politically unacceptable unless introduced alongside explicit compensatory measures.

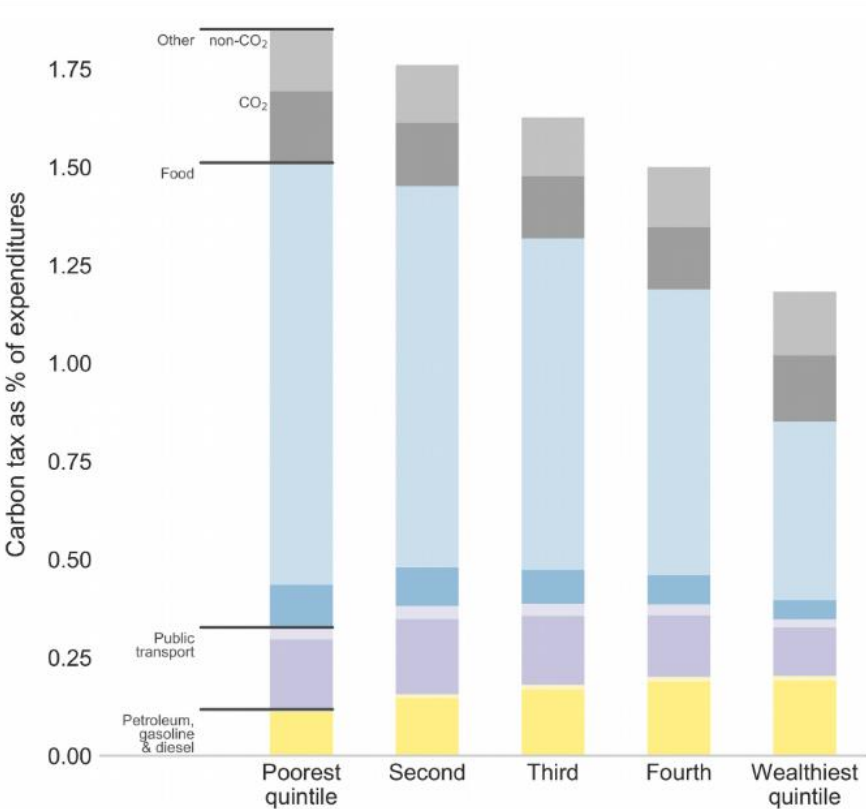
3.1.2. Direct Carbon Pricing Instrument Impacts

CPIs result in direct increases in the price of a wider range of goods and services than ESR because they levy a price on the CO₂ emitted during the production process, rather than targeting specific energy commodities (Büchs et al., 2014). A given carbon price will result in different relative price increases between countries because of variations in energy and commodities prices reflecting different cost structures, taxes and prior subsidies. However, a consistent pattern of impacts is clear from the literature.

The simulated impacts of a US\$30 per tonne CO₂-eq carbon price⁸ across 16 LACs resulted in median price increases of 27% for natural gas, 14% for petroleum products and 9% for electricity. In addition to these direct fossil fuel price increases due to their high carbon content, public transport and food prices were also affected (increasing by 3%). As with ESR, it is the effects of carbon taxes on food, public transportation, and electricity costs that affect households more than the impact on fossil fuels, with the food price increase having the dominant role, due to food making up a significant share of consumer expenses ((Vogt-Schilb et al., 2019). The study also found that in most of the 16 countries, the combined direct and indirect cost of a carbon tax was regressive, with the poorest 20% paying a larger cost relative to their total expenditure than the richest due to the larger share of food, public transport and electricity in the poorest households' budget. This effect is compounded by the limited capacity of poorer households to adjust their consumption patterns when prices increase (Malerba and Wiebe, 2020). Figure 6 illustrates the regressive effect of food price increases resulting from the imposition of a carbon tax in Brazil.

⁸ A carbon price of US\$30 per tonne CO₂-eq is estimated to generate a price signal broadly consistent with the Paris Agreement temperature targets according to a recent World Bank report (Vogt-Schilb et al., 2019).

Figure 6: The impact of a 30\$ per ton CO2-eq carbon tax in Brazil, per consumption items (food, public transport, energy, other) per income quintile

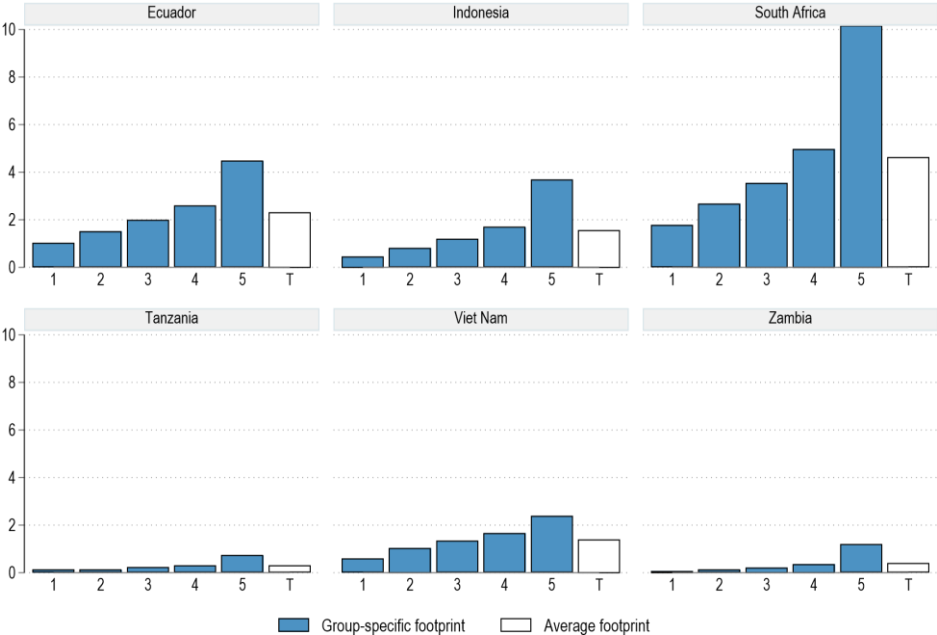


Source: Vogt-Schlib et al., 2019.

While many of the national or regional studies conducted into the impacts of CCM policies find them to be regressive (for example, Zachmann, Fredriksson and Claeys, 2018) (Cuesta, El-Lahga and Ibarra, 2015), this is not always the case. A study across 87 mostly LMICs found that carbon taxation was on average progressive in countries with per capita incomes below US\$15,000⁹ per year and regressive in countries with relatively higher incomes (Dorband et al., 2018). Another recent study reviewing the distributional impacts of carbon taxes across six LMICs found that three were regressive and three progressive (Gasior et al., 2023). Hence as with subsidy reform, it is not possible to say that direct CPIs are inherently progressive or regressive, as many contextual factors influence the impact of a carbon tax on prices and their distribution across households, including energy consumption patterns and how far the tax indirectly increases the price of the food, goods and services consumed by the poor. Figure 7 illustrates the variability of the CO2 footprint across different income groups, which shows increasing CO2 utilisation across the income quintiles in every instance (Gasior et al., 2023). National social and economic factors, including pre-existing income inequality, level of GDP and share of the population engaged in subsistence agriculture also affect absolute levels of the per capita carbon footprint and its distribution (Dorband et al., 2018; Zachmann et al., 2018; Andersson and Atkinson, 2020).

⁹ At PPP-adjusted 2011 US\$.

Figure 7: Per-capita carbon footprint in CO2/t by consumption/income groups



Source: Gasior et al., 2023

As with ESR, however, the impact on inequality is not necessarily the primary concern. Both regressive and progressive carbon taxes can result in absolute price impacts that significantly increase both headcount poverty and the depth of poverty, adversely affecting the living conditions of low-income groups and pushing additional households into poverty.

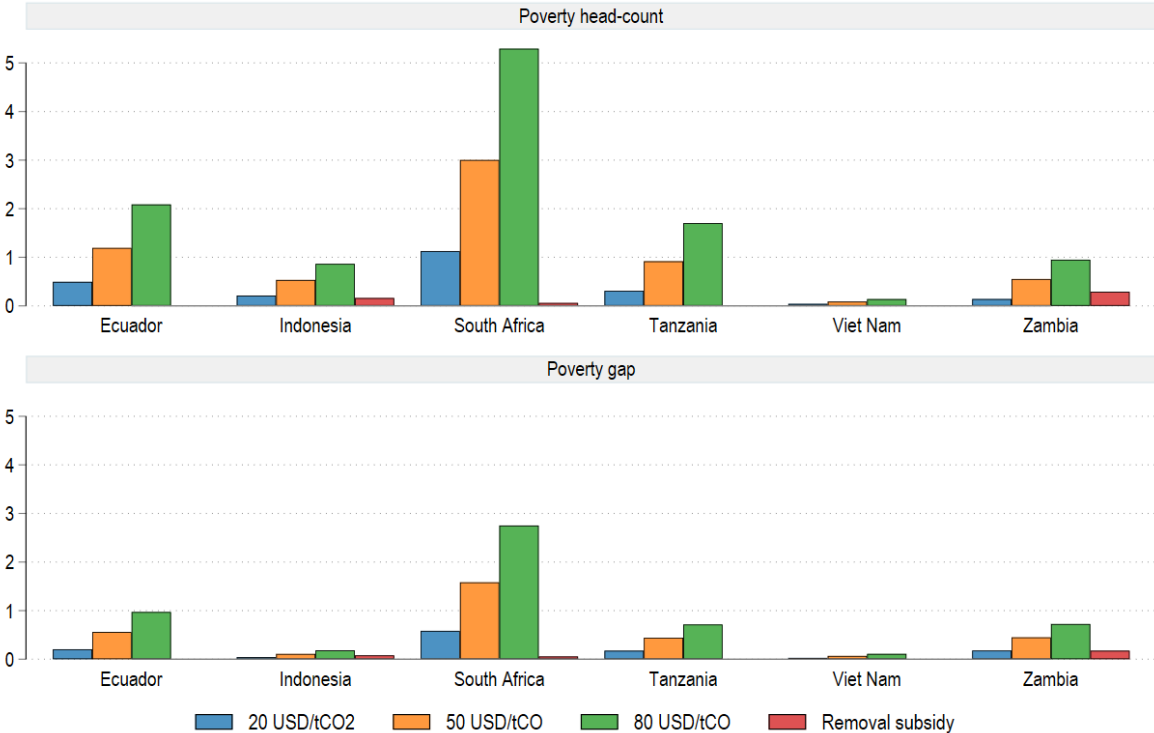
As with ESR, studies suggest that impacts vary across groups within a society according to a range of socio-economic characteristics. Gender, age, rural or urban location, employment status (formal vs informal), income source and household composition have all been found to affect the impact of ESR on poverty, although there is no consistent cross-country pattern linking specific characteristics to more or less regressive outcomes (Gasior, et al., 2023). As with ESR, the distribution of impacts is highly context specific.

3.1.3. Carbon Price Impacts Conclusion

The objective of a carbon tax or ESR is to create a disincentive to continued consumption to mitigate climate change (Andersson and Atkinson, 2020). As such, these policies must necessarily affect the price of goods where production entails CO2 emissions, including fuel, transport fuel, food, heating, and electricity. The policies will result in welfare losses among the poor due to a price increase of the household consumption basket, and the effect is, in many, although not all, cases broadly regressive. The distributional effect of both direct and indirect CPI depends largely on poor household expenditure patterns on energy and fuels, and the share of poor household expenditure on fuels tends to be higher in higher income contexts. As a result, these measures may be more regressive in middle and high-income countries where energy makes up a larger share of poor household expenditure. However, overall, impacts are contingent on a range of country-specific social and economic factors (Gasior et al., 2023). Even where carbon taxes, ESR, and other CPIs are progressive, they can still result in welfare losses which adversely affect poor and vulnerable households.

The magnitude of the impacts on poverty is directly influenced by the pricing structure adopted for the instrument, with higher pricing having a greater impact on poverty rates. This is illustrated in Figure 8 drawn from Gasior et al., 2023, which considers different pricing scenarios across six LMICs. For example, a tax of US\$20/tonne CO₂ was modelled to increase the poverty headcount by one percentage point in South Africa compared to an increase of over five percentage points with a tax of US\$80/tonne CO₂. The figure also illustrates how the impact is greater in MICs than LICs due to the consumption of more goods entailing CO₂ emissions.

Figure 8: The poverty impact of climate change mitigation policies by scenario, change in percentage points



Source: Gasior et al., 2023

Evidence from the recent six-country study, illustrated in Figure 8, indicates that direct CPIs have significantly greater impacts than subsidy removal. Because ESR is limited to specific energy goods, its effect will likely be more muted than that of direct CPI.

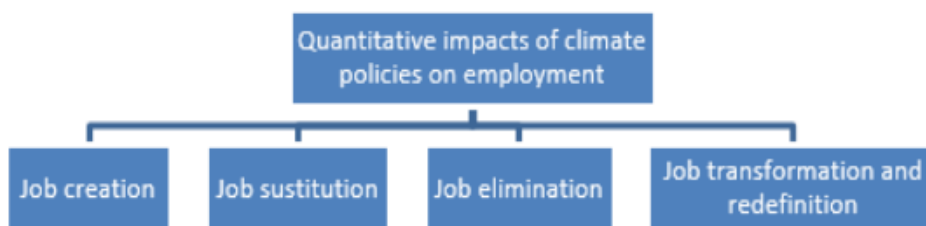
Price impacts affect all consumers and may reduce public support for critical climate change reforms, rendering their acceptability politically problematic, a significant issue which is well documented in the literature (Vogt-Schilb et al., 2019); (Malerba, 2022). Subsidy reform has been implemented for several decades to achieve fiscal objectives (that is, not to reduce CO₂ emissions), and the introduction of reforms repeatedly resulted in social and political instability where it was not associated with adequate compensatory measures (Yemtsov and Moubarak, 2019). In many instances, opposition to these measures resulted in the blocking of the proposed reforms (Rentschler & Bazilian, 2017). The importance of implementing compensatory measures to ensure acceptability of necessary reforms is not discussed in detail in this study but it is critical for the success of climate change mitigation policy implementation (Gasior et al., 2023; (Malerba, 2022).

3.2. Green Structural Change

Green structural change¹⁰ will engender profound transformations in the structure of global and national economies with significant employment impacts. There is no single definition of the green transition. However, it is broadly taken to include the process of decarbonisation through a shift from ‘brown’ carbon-intensive to ‘green’ renewable-based economic activity, brought about through a package of interventions focused on green investment and carbon pricing. These interventions will affect jobs, livelihoods, working conditions, skills and job prospects (ILO, 2018b).

The transition will have a range of impacts on employment (Figure 9) which will include the creation of ‘green jobs’ in existing and new occupations, such as sustainable agriculture, forestry, renewable energy, construction and manufacturing; the elimination of jobs in the ‘brown’ sector (jobs that are linked to fossil fuel industries and animal-based food production); and with the substitution and transformation of others ((Bohlmann et al., 2022) (Van der Ree, 2019) (Saget et al, 2020).

Figure 9: Impacts of the green transition on employment



Source: Van der Ree, K. (2019)

The labour market effects will not be monolithic but are likely to vary spatially, temporally and by skill and socio-economic status as well as gender, with particular regions or segments of the labour force adversely affected. The challenge for LMICs include (Malerba, 2021):

- temporal misalignments: with job losses preceding job gains; new jobs may not occur simultaneously with the disappearance of the old, as there may be a lag in green sector development
- spatial misalignment: with the creation of new jobs in a different region or area to where old jobs have been lost
- educational and skills misalignments: where the skills required for new jobs do not match the ones of the current workforce.

In this way, the shift from a high- to low-carbon economy will have different implications for different jobs and skills depending on the misalignments. Certain jobs may be phased out, and new jobs may not be available; for some ‘brown sector’ workers (such as the elderly, low-skilled- or migrant workers), acquiring the skills required for employment in a green economy may be difficult. The result is likely to be an increase in unemployment.

¹⁰ . . This study uses the terms green transition and green structural change are used interchangeably.

Green structural change is likely to lead to job loss in specific geographic areas and for particular segments of the work force. In South Africa, for example, coal mining and electricity and gas industries employed only 200,000 out of a workforce of 26 million in 2019, but the employment is highly spatially concentrated, with 75% being in just one state (Bohlmann et al., 2022). Policies that seek to phase out such industries are particularly challenging when they reduce employment in a sector offering a large share of employment for a particular region. The potential impacts of these types of measures on agricultural, forest and other land-use-based employments are not examined in this study but will be increasingly important as the process of agricultural and wider sectoral decarbonisation is taken forward.

Green structural change may also result in much employment churning, with low-skill occupations experiencing the highest proportion of job gain and loss (Saget et al., 2020). Workers with low skills or brown sector skills may be less valuable in a decarbonising world (Malerba and Wiebe, 2020), and these workers may also face difficulties in taking up new opportunities due to limited labour mobility (Bohlmann et al., 2022). Workers' vulnerability (including their capacity to find alternative work) will be determined by their financial, physical and human and social capital, with the poorest being least able to adapt in this context (Makgetla et al., 2019). Overall, men are more affected by shrinkage in the extractive industries. However, they are also more likely to find equivalent green industry employment than women, who are more likely to benefit from increased employment in emerging organic horticulture or waste management sectors (van der Ree, 2019).

There is some optimism that moving to a low-carbon economy has the potential to bring net job gains through creating green jobs (ILO, 2015). The green transition concept is predicated on the successful creation of a significant number of 'green jobs' in the 'green economy' (UNEP, 2011) that entail low greenhouse gas emissions, make efficient use of resources, maintain biodiversity and ecosystems and enhance social inclusion, see Box 3 (ILO, 2016).

Box 3: Green jobs

Green jobs are decent jobs that contribute to preserve or restore the environment, be they in traditional sectors such as manufacturing and construction, or in new, emerging green sectors such as renewable energy and energy efficiency.

Green jobs contribute to:

- Improving energy and raw materials efficiency
- Limiting greenhouse gas emissions
- Minimising waste and pollution
- Protecting and restoring ecosystems
- Adapting to the effects of climate change

Source: (ILO, 2016)

However, this optimism is contingent on the implementation of integrated climate change mitigation, industrial, labour and social policies, along with national investment in the development of renewable-based 'green' industries and associated skills development. Without such complementary policy interventions, green structural change policies will result in job and income losses among those working in less sustainable industries. Workers in carbon-intensive sectors will need support to make the transition and not be left behind and employment creation

and compensation schemes will be necessary for the poorest households, displaced workers or disadvantaged regions to make the transition politically feasible (ILO, 2018b).

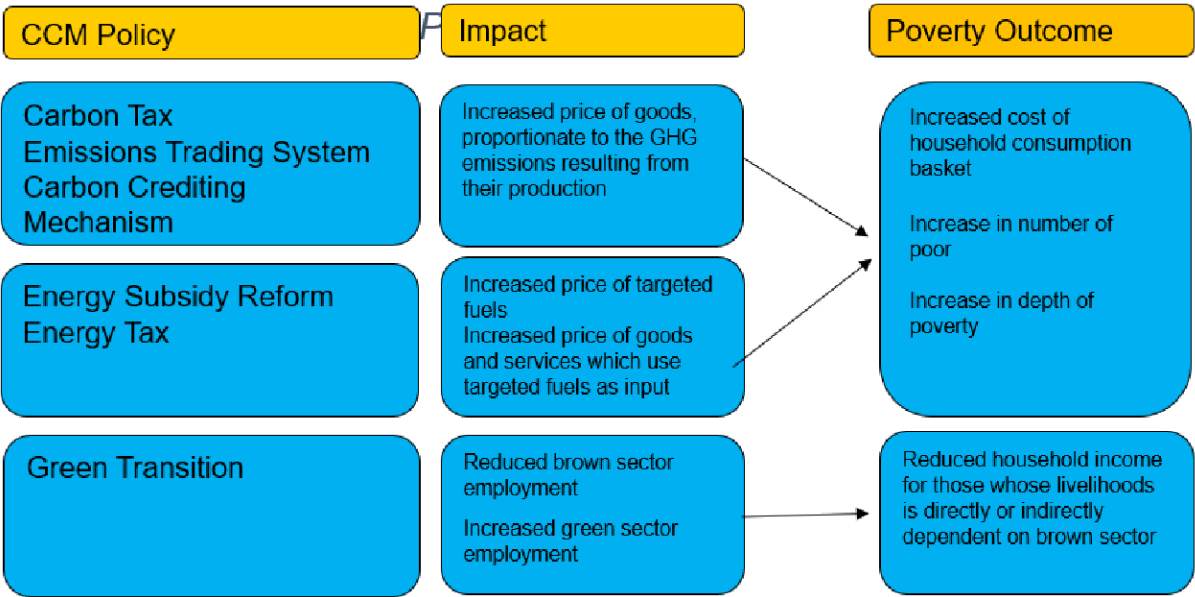
3.3. Poverty and Distributional Impacts: Conclusion

ESR and direct carbon pricing have similar effects in terms of their impacts on poverty and inequality, although the impacts of ESR are more muted as they directly shift a more limited set of prices. However, subsidy reforms are not inherently more progressive than carbon pricing (Ohlendorf et al. (2021). Overall, both are likely to be regressive where they entail increases in the price of goods which are typically necessities for the poor and make up a greater proportion share of the total expenditures of the poor than the wealthy (Anderssen and Atkinson, 2020). However, even when they are not regressive, these policies negatively impact the welfare of the poor and can lead to significant drops in living standards, resulting in increases in both poverty headcount and poverty depth (Yemtsov and Moubarak, 2019); (Dorband, et al., 2018). The scale and distribution of impacts may vary within and between countries due to policy and socio-economic differences, but the broad pattern of impacts is clear.

Similarly, while there is uncertainty about the overall impact of the green transition on employment and household income, it is likely to result in concentrated employment losses in certain sectors of the economy and geographical locations, which will be particularly significant for low-skilled workers with limited social, human and economic capital to find alternative employment.

Figure 10 summarises the poverty outcomes of these three climate change mitigation instruments.

Figure 10: Impacts of climate change mitigation on poverty



Source: Authors

4. The Role of Social Protection in Carbon Pricing and Green Structural Change

Earlier sections of this study have illustrated the negative impact of carbon pricing and green structural change on the poor. This section now outlines how an extension of social protection, funded in part or in whole through additional carbon tax revenues, could be used to compensate for welfare losses, supporting households throughout the green transition.

Social protection has been widely identified as one of the key policy instruments to protect the poor against the adverse distributional impacts of climate change mitigation policies (Gyori, Diekmann and Kuhne, 2021), with its role being described thus:

Social protection is concerned with reducing poverty and providing income security to individuals throughout their lifecycle. It can, therefore, address the negative side-effects of the overall desirable process of climate change mitigation and has an enormous potential to shape green transformation processes in a socially-just and acceptable manner.[...] Indeed, social protection systems are designed to address a whole range of risks, from individual-level shocks (e.g., sickness, disability, old-age) to macro-level shocks (e.g., economic crises, natural disasters). The adverse social impacts of climate change mitigation policies can be considered to be just one additional risk that could be systematically covered by social protection programmes, based on existing institutions and systems (Gyori et al., 2021)

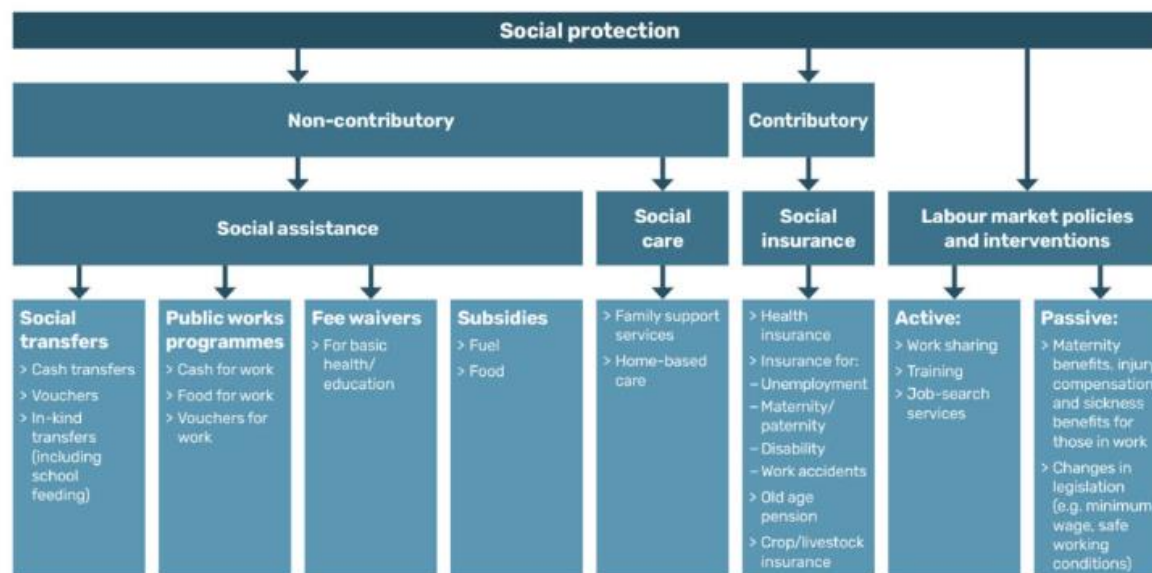
Social protection has a role to play in compensating for i) the price impacts of CPIs and ii) the employment impacts of the green transition. Social protection offers a mechanism for governments to compensate households for adverse impacts of carbon pricing by redistributing (often referred to as ‘recycling’ in the CCM literature) part of the revenue generated. It has been estimated that in LACs, only an average of 30% of national carbon price revenues would be needed to compensate for adverse impacts on the poor and vulnerable (Vogt-Schilb et al., 2019). A similar share of government savings from subsidy removal or tax increases on natural gas and LPG would compensate the two bottom quintiles (Feng et al., 2018). In this way, the redistribution of carbon revenues through social protection can render carbon pricing progressive (Vogt-Schilb et al., 2019).

In addition, social protection has been identified as a key policy intervention to address the adverse employment effects of the green transition and a prerequisite for enabling the Just Transition process. The UN’s ‘Just Transition Guidelines to support the green transition process at country level’ call for fiscal revenue to be ‘directed towards social protection and active labour market policies to foster job creation and help workers to adjust to environmental sustainability policies’ (ILO, 2018).

Social protection includes a range of instruments in two groups: social insurance and social assistance. Social insurance includes pensions and unemployment benefits for which beneficiaries must contribute before receiving support. Social assistance includes child grants, disability grants and social pensions and is provided without any contribution and is often poverty targeted. Social protection also includes social care (such as the provision of services) and labour market policies subdivided into ‘active’ and ‘passive’. Figure 11 summarises this range of instruments. Implementing nationally appropriate social protection systems and

achieving substantial coverage of the poor and vulnerable is included as target 1.3 of the first Sustainable Development Goal which calls for an end to poverty (UN, 2015).

Figure 11: Taxonomy of social protection instruments



Source: Carter, Roelen, Enfield and Avis, 2019, adapted from O’Brien et al., (2018)

Various social protection instruments will play a role in responding to the range of socio-economic impacts that climate change will likely create (see Costella et al., 2021) and can be used to address the negative impacts of CCM policies. The main social protection options to compensate for the price impacts are those that increase household income: cash transfers (social assistance and social insurance); lump sum payments; subsidies, service provision and reducing existing taxation (negative taxation). The options for responding to the labour market impacts of the green transition are those that compensate for the wage loss and those that enhance employment; cash transfers for income replacement, and Active Labour Market Policies (ALMP) to improve labour supply, job search and job creation. Box 4 illustrates some response options to the price and employment effects. Each is discussed in turn below.

Box 4: Social protection response options

- Price Effects
 - Cash transfers
 - Lump sum transfers
 - Targeted subsidies or reduced taxation
 - Complementary Subsidies and Service Provision
 - Energy Price Modification
- Employment Effects
 - Income replacement (pension, unemployment insurance)
 - Active Labour Market Policies
 - Skills training/Technical Vocational Education & Training (TVET)
 - Job matching/employment services
 - Job subsidies, labour intensification

- Job creation
- Market Regulation

4.1. Social Protection as a Response to Price Effects

4.1.1. Cash Transfers

Social assistance instruments in the form of cash transfers – already operational in LMICs – can be extended to compensate for increased household consumption costs due to direct and indirect carbon pricing.

Cash-based social assistance instruments already exist in some form in most developing countries as part of social protection systems, and most offer poverty-targeted provision. Coverage can be extended in two ways to support those affected by the price effects of carbon instruments: providing additional coverage to existing beneficiaries of social cash transfer programmes (described in the social protection literature as vertical extension) or extending coverage to provide support to additional households (horizontal extension). Horizontal extension can be done in several ways, including to those already eligible but not yet accommodated in the scheme or extended eligibility criteria, such as a raised poverty target cut-off to accommodate those newly rendered poor due to the price shock. These approaches were used to respond to the increased household income needs during Covid 19 (see Bastagli and Lowe, 2021). This approach is potentially progressive as cash transfers are better targeted at poor households than subsidies ((Vogt-Schilb and Hallegatte, 2017)) (Malerba, 2021) and would reduce the impact of carbon pricing for those affected.

However, there are two significant challenges in using existing social assistance transfers in LMICs to address the poverty and distributional effects of carbon pricing policies: low overall coverage levels and high exclusion rates of the poor (exclusion errors). These factors mean that many of the poor are not included in existing social protection systems or registries of potential beneficiaries. Currently, over 50% of the global population is not covered by any form of social protection benefit, rising to over 80% in Africa (ILO, 2021). These factors result in the exclusion of a large share of the poor from existing provision (ILO, 2021), limiting the viability of using existing cash transfer programmes and social protection systems as compensatory mechanisms.

Simulations in LACs suggest that poorest households most impacted by carbon pricing have low levels of access to cash transfer programmes, with programmes reaching only half the poorest 20% (Missbach, Steckel and Vogt-Schilb, 2022), and that governments looking to compensate through pre-existing cash transfer programmes would have to significantly improve existing transfer programmes by expanding transfer coverage and adding new programme components for this approach to work effectively (Missbach et al, 2022); (Yemtsov and Moubarak, 2019). It has been estimated, for example, that targeting and exclusion errors in the PROSPERA cash transfer programme in Mexico mean that it would not be a viable option for CCM policy compensation as the programme does not provide benefits to every poor household and is especially poor at reaching households close to the poverty line and poor urban households. The programme would only be an option if targeting outcomes were significantly improved (Renner, 2016).

The main constraints cash transfer programmes face are underdeveloped operational systems for registration, identification, payment systems (see for example Lindert et al., 2020); governance constraints and politico-ideological constraints. The way that operational systems constraints limit programme expansion has been explored in relation to the Covid-19 pandemic (see, for example, Lowe, McCord and Beazley, 2021). While the pandemic response did lead to some vertical and horizontal extension of provision, much was temporary and did not result in the institutionalisation of extended coverage. Political economy and ideological issues relating to political demand for social protection systems development and large-scale provision, on the one hand, and limited financing also limit provision at scale. The revenue generation components of CPIs would lift financial barriers to provision but not necessarily operational systems constraints unless it was coupled with deliberate investment in systems development and advocacy.

The limitations of existing social protection systems have stimulated the development of new social protection programmes (both temporary and ongoing) as a complement to many ESR interventions over the last decade (Yemtsov and Moubarak, 2019). However, even these extended programmes still experience limited coverage and significant exclusion errors, compromising their performance as compensatory mechanisms for reaching the poor.

So, although social protection has been used successfully to counter the effects of ESR on the poor and has the potential to play a significant compensatory role as carbon pricing is extended, it does not in all cases offer a ‘silver bullet’, and needs to be combined with other measures, along with investment in social protection systems strengthening to ensure the poor are adequately protected.

4.1.2. Lump-Sum transfers

The provision of a one-off universal lump sum payment, sometimes referred to as a universal rebate, has been proposed as an alternative to targeted cash transfers to provide compensation due to the approach’s seeming administrative simplicity (see, for example, Vogt-Schilb et al., 2019; Shang, 2021). This would entail providing a fixed amount, calculated as a per capita share of carbon pricing revenue, to all households. The approach is progressive as it would represent a higher share of income for low-income households, although the per capita transfer per capita would be smaller if shared across a larger population. It would also benefit from including middle- and high-income households, which could potentially enhance acceptability and avoid the social and political challenges associated with supporting only a subset of the population (Vogt-Schilb et al., 2019).

However, while in theory, the payment of a lump sum transfer seems a viable option for mitigating the impacts of carbon pricing, delivering a universal rebate in most LMICs, which lack foundational ID systems, comprehensive social registries and effective delivery systems to reach the poor, is problematic. The provision of universal rebates is subject to the same operational systems constraints which limit existing social protection programme performance. These challenges are well documented regarding attempts to extend provision for one-off provision in response to Covid-19 (Lowe et al., 2021). Developing the necessary operational systems for effective social protection systems is key for facilitating either targeted provision through existing social protection programmes or universal rebate-style transfers.

4.1.3. Targeted Subsidies or Reduced Taxation

Given the challenges associated with effectively targeting compensation through existing social protection systems and instruments, an alternative approach is to compensate for the impact of direct and indirect fuel price rises on household expenditure by reducing the cost of basic household consumption goods. These goods make up a significant component of the food basket of the poor, particularly when they are affected directly or indirectly by carbon pricing.

Options for achieving these price reductions include providing subsidies for or reducing taxation on basic goods consumed by the poor; both would reduce the price paid at the point of consumption. The optimal way of designing tax-based compensation would depend on the nature of the existing tax structure. VAT, for example, is regressive, and the exemption of certain food and other basic commodities typically consumed by the poor from this tax would reduce the price of the household consumption basket. This would reduce the fuel tax burden for the poorest and hence the regressive effects of climate policies. This could be complemented by increasing tax rates on goods more often consumed by higher-income households with high CO₂ emissions, such as airline tickets. Given the concentration of the poor in the informal labour market in many LMICs, lowering labour and income taxes would not, in many instances, represent an effective option for poverty reduction.

4.1.4. Complementary Subsidies and Service Provision

The provision of subsidised services has been identified as a critical set of complementary social policy measures to compensate for the adverse price effects of carbon pricing on poverty (Gough et al., 2008). The redistribution of CPI revenue (often referred to as ‘recycling’ in the literature) to fund increased investment in human capital in the form of subsidised health or education provision can reduce household consumption costs and contribute to reduced poverty headcount and depth if targeted to low-income households or poor regions (Shang, 2021). Investment in subsidised public transport services can mitigate the impact of one of the largest indirect price rises induced by carbon taxes and energy subsidy reform and reduce household consumption costs. However, how far this would assist the poor and reduce welfare losses would depend on the mobility patterns of the poorest and is highly context specific.

4.1.5. Energy Price Modification

Three options for targeted energy price modification – differential tariffs, subsidies for clean fuel alternatives and phased fossil fuel taxation (not viable in direct CPI contexts) – are outlined below.

Differential pricing (fuel subsidy)

A differential pricing system aims to provide energy at a reduced price for those consuming less than given social minima. One option is that customers pay a lower price per unit of consumption below a certain threshold, or the poor can be granted a free energy allocation up to a certain minimum. In this way, the introduction of differential tariffs for energy supplies can protect poor consumers from the impact of fuel price rises (see Angel-Urdinola et al., 2006; ESMAP, 2019 for discussion of these policies in relation to Rwanda and Zhang et al., 2023 in relation to China).

Differential pricing has the advantage of not requiring complex poverty targeting and hence is more easily operationalised than targeted compensation but can only support those connected

to formal supply networks and have individual metered services. Consequently, the approach excludes those not included in formal distribution systems and will potentially result in significant exclusion errors, depending on the structure of energy usage and distribution in any given context.

Subsidisation of Clean Alternatives

Another option is to subsidise access to clean or low-carbon fuels primarily used by the poor. This includes, for instance, the distribution of vouchers or subsidies for fuels such as liquid petroleum gas (LPG), which takes the form of propane or butane. If the poor have access to the infrastructure required to use cleaner fuel, this approach can encourage a switch to lower carbon emissions and limit the price increase. The main challenge, however, is that unless it is carefully targeted, the provision of subsidised LPG may result in regressive outcomes. For instance, 40% of the Indian LPG subsidy introduced to offset ESR benefitted the richest 20% of the population (Yemtsov et al., 2019).

Phased Energy Subsidy Reform

The third option, specific to ESR, is to structure energy subsidy reform in a way that prioritises reform on fuels consumed primarily by the rich and delays the lifting of subsidies on fuels consumed by the poor. ESR on the fuels most typically consumed by the poor could be carried out later, when the capacity of the social protection system to deliver resources equitably to those most affected has improved (Yemtsov and Moubarak, 2019). However, given that the major drivers of household cost increases for the poor resulting from ESR arise from secondary impacts on the prices of food and public transportation, the effectiveness of this approach will be highly context specific. It could vary across population groups based on factors such as rural urban-location, labour market profile and degree of dependence on own production.

Finally, it is worth noting that the price modification strategies discussed could undermine the primary objective of the carbon pricing intervention, that is, to reduce consumption of high CO₂-emitting fuels and goods, potentially undermining the overall climate change mitigation effectiveness of the policy. However, this approach can prevent the resulting energy poverty, and the associated welfare losses that a carbon pricing measure would entail. This is particularly important because poor households have limited capacity to switch to alternative cleaner fuels for heating and cooking in the short term due to the lack of access to clean alternatives, and when they exist, their costs.

4.1.6. Examples of Social Protection to Compensate Impacts of Specific CCM Measures

The extent to which each of the approaches above limit the cost of fuel and other commodities consumed by the poor and will be effective in managing the negative effects of CCM on poverty and inequality, will be highly dependent on the national policy context, local markets and household socio-economic characteristics. Table 1 gives examples of the use of the social protection interventions outlined above based on Yemtsov and Moubarak, 2019.

Table 1: Examples of social protection compensation for negative welfare impacts of ESR

Type of Intervention	Country	Date	Description
One-off lump sum payment	Indonesia	2005, 2008, 2013, 2014	Temporary provision of limited number of unconditional cash transfer payments for poor households at point of subsidy reform (19 million households – 1/3 of all) <i>Bantuan Langsung Tunai (BLT) / Bantuan Langsung Sementara Masyarakat, or BLSM) programme</i>
Increased existing social protection programme coverage	Ghana	2013	Expansion of coverage of existing targeted cash transfer programme from 100,000 to 150,000 households <i>Livelihood Empowerment Against Poverty Programme (LEAP)</i>
	Yemen	2010	Expansion by 50% of coverage of existing Social Welfare Fund cash transfer scheme
	Indonesia	2008	Expansion of three existing social protection programmes <i>Conditional cash transfer programme (PKH), scholarship programme (BSM), and the Rice for the Poor Programme (RASKIN)</i>
New Social Protection Programme	Armenia	1995–6	Introduction of means-tested cash transfer programme <i>Poverty Family Benefit Programme</i>
	Brazil	2002–3	Introduction of means tested cash transfer programmes <i>Bolsa Escola and Bolsa Familia</i>
	Jordan	2012	Introduction of means-tested cash transfer, reaching reached 70% of population – discontinued.
	Pakistan	2009–10	Introduction of targeted cash transfer programme <i>Benazir Income Support Programme (BISP)</i>
	Nigeria	2012	Introduction of targeted cash transfer programme <i>SURE-P MCH – as part of Subsidy Reinvestment and Empowerment (SURE) Programme</i>
Provision of free energy	China	2010	Means tested provision of 10–15 kWh of free electricity per month
Reduced energy tariff	Tunisia	2012–13	Lifeline electricity tariff for households consuming fewer than 100 kWh per month, plus provision of new social housing
	Uganda	2012	Lifeline tariff for low-income consumers consuming up to 15 kWh a month
Energy subsidy	India	2014	Introduction of LPG subsidies paid directly into consumer bank accounts <i>Direct Benefit Transfer for LPG (DBTL)</i>

Strengthen existing social protection system	Morocco	2012–15	Strengthening of existing social protection system by investing in operational systems and procedures, including targeting
Public service subsidies	Philippines	When ESR	Increase subsidised health insurance coverage Temporary public transport subsidies <i>Pantawid Pasada</i>
Food subsidies	Egypt	2016/17	Increase generosity of food subsidies with food ration cards, covering 2/3 households Introduction of cash transfers
Subsidy, wage and tax package	Ukraine	2015–6	Expansion of programmes providing support for utilities payments for low-income households and specific categories – spending nearly doubled to cover 36% of households <i>Housing Utility Subsidy Programme (HUS) and Energy Privileges Programme</i> Increased minimum wage Eliminate tax on pensions below threshold

Source: Authors, based on Yemtsov and Moubarak, 2019

4.2. Social Protection as a Response to Employment Effects

4.2.1. Social Protection for Income Replacement: Cash Transfers

Income replacement through cash transfers is necessary to respond to the loss of wage which unemployment can engender. The main instruments used in this scenario are unemployment provision and pensions. Unemployment provision is typically dependent on prior contributions and can provide income replacement to compensate for periods of frictional unemployment (when workers are between jobs), structural unemployment (when workers are displaced from the brown economy) and pending them gaining the additional skills or training required for absorption into new green economy or more sustained periods of unemployment.

Pension provision can be either non-contributory or contributory, meaning that workers have to contribute to a scheme during their working life to benefit. Pensions can have their terms altered to reduce the qualifying period and allow for early draw for those displaced from brown sector employment. The terms of provision can be revised to expand coverage, for example, by reducing the eligibility age or reducing mandatory contribution periods to enable early take up (often known as ‘anticipatory’ pensions) as a response to the phase-out of employment in high emissions sectors under the green transition. This approach was adopted in China in response to the closure of mining industries (van der Ree, K. (2019).

Other forms of cash transfer provision may be provided to support workers experiencing in-work poverty because of the reduction of demand and falling remuneration for low-skilled brown sector labour. These might be targeted transfer benefits for workers in particular sectors or reduced employment taxation for certain groups or those falling below a certain income threshold.

4.2.2. Active Labour Market Policies

Changes in the structure of the economy as it transitions from green to brown will entail significant changes in labour demand. In this context, there will be a need for a range of ALMP interventions spanning skills development, job search, subsidies to promote market-based employment, direct job creation in the form of public works and labour market regulation. This vision for the ALMP package required to facilitate a just transition is set out in the ILO ‘*Guidelines for a just transition towards environmentally sustainable economies and societies for all*’ (ILO, 2015), which propose that governments should actively develop a set of labour market responses. (See Box 5 below.)

Box 5: ALMP recommendations set out in the ILO Guidelines for a just transition

Governments in consultation with social partners should:

- (a) encourage sound labour market policies that help enterprises and workers in the anticipation of changing labour market demands in the context of the transition to environmentally sustainable economies by facilitating access to jobs, strengthening employability and training;
- (b) give particular attention to unemployed workers and workers at risk of unemployment in communities and industries affected by climate change, resource degradation or structural change including those in the informal economy;
- (c) promote an efficient and effective delivery of employment services that respond to the needs of enterprises and workers in the transition to environmentally sustainable economies and extends outreach to those outside of the formal labour market;
- (d) develop and support, through public and private employment service providers, tailor-made courses directly linked to specific occupations and entrepreneurship opportunities in the green economy;
- (e) adapt and strengthen public employment services to further develop their role as transition agents. They should provide information, guidance, matching services and training.

These services can be improved by expanding innovative ways of reaching out to jobseekers;

- (f) consider supporting public works and employment programmes, including initiatives linking poverty eradication and ecosystem protection, as well as those for workers affected by the transitioning to environmentally sustainable economies, including climate change, who have been laid off due to structural or technological change;
- (g) consider introducing active employment policies including, among others, well-targeted subsidies that allow workers to access education and acquire skills that improve their employability through work experience and on-the-job training.

Source: (ILO, 2015)

The main ALMP that could be adopted to address the green transition challenges are:

Promoting skills in the labour supply: The provision of training and skills development interventions for workers exiting the brown economy can improve their ability to take up job opportunities in the new green economy.

Facilitating the transition into new jobs: Support for job search and matching workers with new opportunities through the provision of employment services can play a role in reducing ‘frictional’ unemployment for workers exiting the brown economy who already have skills in demand for employment for the new green economy.

Promoting employment: A range of measures can be introduced to stimulate employment and the creation of ‘green jobs’ in traditional sectors such as manufacturing and construction, or in new, emerging green sectors such as renewable energy or energy efficiency (ILO, 2020). ALMP that can encourage employment creation include incentives for green business development and green job subsidies to encourage employment by reducing the cost of labour and promoting the use of labour-intensive technologies (ILO, 2020).

Direct job creation: Direct public employment creation through the implementation of Public Works Programmes (PWPs) can be used to provide large-scale state-sponsored employment at times and in places when market-based employment opportunities are insufficient. PWPs have been adopted during other periods of international economic dislocation such as the industrial revolution and during the great depression of the 1930s (McCord et al., 2022). This approach can support those unable to find alternative employment and can be spatially targeted to areas previously reliant on brown sector employment. PWPs could be designed to contribute to CCM objectives, including carbon capture and storage (CCS) (for example, through afforestation) or ecosystem restoration and the promotion of Nature-Based Solutions (NBS), and be linked to Payment for Environmental Services initiatives which do not have social protection objectives but could be integrated into PWP design (ILO, 2020).

Labour market regulation: Labour market regulation can also play a role in ensuring that appropriate terms and conditions and minimum wage provisions are in place for low-skilled workers in formal employment who may be particularly vulnerable to displacement during the dislocation the transition will bring about. This is important given the high level of churn and the surplus supply of low-skilled labour the transition is likely to generate.

4.2.3. Example of Labour Market Interventions to Support the Just Transition

A new initiative by G7 aims to provide practical support for the development and implementation of labour market interventions to national governments to support progress on the Just Transition. Just Energy Transition Partnerships (JETPs) aim to support emerging economies and fast-growing developing countries whose energy policies are critically important for global climate action. The first partnership was agreed with South Africa at COP 26 in 2021 and discussions with India, Indonesia, Senegal and Vietnam are ongoing (BMZ, 2022). Box 6 outlines the South African JETP.

Box 6: South Africa’s Just Energy Transition Partnership (JETP)

Under a JETP signed in 2021, South Africa is being supported by a coalition of donors – including Germany, France, the United Kingdom, the US and the European Union – to accelerate its exit from coal and substantially expand its renewable energies sector. The JETP will mobilise an initial commitment of US\$ 8.5 billion, including a German contribution of 700 million euros to enable South Africa to prevent up to 1.5 gigatonnes of greenhouse gas emissions over the next 20 years.

To ensure an equitable exit from coal, some of the funds will be invested in ALMP including:

The creation of employment opportunities for women and young people

The development and support of small and medium-sized enterprises,

The development of locations for innovative technologies such as green hydrogen and electric vehicles.

Training for 90,000 mine workers to develop new employment prospects.

Source: BMZ, 2022

4.3 Summary of Main Social Protection Options

The main social protection instruments which could be used to compensate for identified impacts on prices and employment have been outlined. Table 2 summarises these findings, setting out the main CCM impacts on poverty through ESR, direct CPI and the green transition, and the social protection response options available to compensate for these adverse effects on income and employment.

Table 2: Summary of CCM policy impacts and social protection response options

CCM Approach	Direct Effect	Indirect Effect	Poverty Impact on Households	Inequality Impact	Compensatory Response	Social Protection Option
ESR	Increase price of energy (primary effect)	Increase price of goods and services using energy where subsidy is removed (Secondary effect)	Increase price of household consumption basket (universal)	Mixed	Increase household income Reduce cost of items in household consumption basket	Cash transfer (targeted or universal) Lump sum rebate (universal) Subsidies for low carbon energy Variable energy tariffs/free energy for social minima Food subsidies Public transport subsidies Subsidised basic service provision (health/education) Tax reduction (for example, VAT on basic commodities consumed by the poor)
Direct CPI	Increase price of all goods and services whose production emits CO2		Increase price of household consumption basket	Mixed	Increase household income Reduce cost of items in household consumption basket	Cash transfer (targeted or universal) Lump sum rebate (universal) Subsidies for low carbon energy Variable energy tariffs/free energy for social minima Food subsidies Public transport subsidies Subsidised basic service provision (health/education) Tax reduction (for example, VAT on basic commodities consumed by the poor)

Green Transition	Reduced employment in 'brown' sector (industries with high CO2 emissions)	Reduction in returns to low-skilled labour in certain sectors	Reduced household income for those whose employment is directly or indirectly dependent on brown sector due to unemployment or reduced returns to labour	Greater impact on unskilled labour and low-paid labour in fossil fuel and related sectors, and potentially also agriculture, forest and other land-use based employment if policies include non-carbon GHG Spatially concentrated impacts	Replace lost income Enable workers to access alternative employment by addressing labour supply (skills) and demand (increased aggregate employment) factors Improve terms of employment	Cash transfer (social or contributory pension, unemployment benefit) Active Labour Market Policies Skills training/vocational education Job search assistance Employment creation (public works schemes, payment for environmental services) Employment stimulation (job subsidies, promotion of labour-intensive approaches) Labour regulation to enhance terms of employment (wage and conditions)
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Source: Authors

5. Discussion of Social Protection Options

5.1. Challenges in the Use of Social Protection Systems for Climate Change Mitigation Policy Response

Although social protection is generally presented as a theoretically viable instrument for redistributing CPI revenue and compensating for adverse and even regressive impacts on the poor, many programmes suffer from two major constraints limiting their capacity to play this role:

- low coverage
- high exclusion error

To address these challenges there is a need to overcome the systems constraints relating to identification, registration, delivery, governance, as well as the finance and politico-ideological constraints discussed in this study. Overcoming these constraints requires significant investment of financial resources and national administrative capacity over a number of years. In cases where existing operational systems are not strong enough; social protection may not be a viable base for alleviating the poverty and distributional impacts of CCM policies. Box 7 gives examples of programme extension options adopted during ERS reform and the Covid-19 pandemic.

Box 7: Alternative social protection choices for extension

A range of approaches have been adopted to expand social protection provision to provide responses to ESR and COVID-19. Some ESR compensation programmes have been implemented by supporting the expansion of existing programmes: in the Dominican Republic a pre-existing cash transfer programme was expanded to mitigate the impact of electricity and LPG subsidy reform on the poor. However, in Jordan and Tunisia, the expansion of existing targeted social protection programmes (the PNAFN (National Program of Assistance to Needy Families) and NAF, respectively) was not considered a viable option to provide ESR compensation. New programmes were introduced to support ESR in Indonesia and LPG subsidies reform in India as no existing programmes were considered viable options for provision. Social Protection responses to the Covid-19 pandemic also took a variety of forms across these three approaches, with choices being driven by the quality and performance of the pre-existing system and its capacity to scale up.

Sources: (Yemtsov and Moubarak, 2019), (Lowe et al., 2021)

While the main challenges limiting the potential use of existing social protection systems for CCM compensation are systems constraints, fiscal and political economy constraints are also significant barriers to extended provision. First, fiscal constraints remain a concern in LMICs with high poverty rates where existing social protection provision does not fully cushion the poor. While CPI revenue redistribution is proposed as one solution to financing extension, it does not provide sufficient fiscal space in contexts where CO₂ emissions are low, and poverty is high. For instance, in Tanzania, a large share of the population lives below the international extreme poverty threshold, and existing social protection coverage is low. Modelling suggests a carbon tax of US\$20/tCO₂ would raise a revenue equivalent to only 0.2% of GDP (Gasior et

al., 2023). As such, additional resources may be required in addition to the revenues from CPIs, particularly in low-carbon usage countries, to finance social protection compensation.

In addition, although political economy issues are not widely discussed in the literature on CCM policies and social protection, apart from the need for compensatory measures to ensure public acceptability, there remains ideological opposition to extending social protection provision in some LMICs, due to a range of concerns including that it represents consumption rather than investment expenditure or that it may induce dependency, rather than a perception of social protection as a right and a key component of the state citizen contract key component (see for example Hickey et al., 2020). This opposition may constrain support at national level for extended provision unless fully integrated as part of a package of broader CCM implementation.

5.2. Assessing Impacts and Role of Social Protection in Different Contexts

The discussion above leads to the conclusion that, as currently established, social protection systems may be more appropriate and effective as a compensatory mechanism for the adverse impacts of CCM policies in some contexts. Critical to deciding the most appropriate and viable approach to compensation and the potential role of social protection in any given context is a detailed appraisal of i) the likely distributional impacts of CCM, ii) the capacity of the existing social protection system, and iii) the functionality and inclusivity of other national systems (such as the national registry, or identification system, digital networks etc.). In some cases, measures such as taxation reform or shifts in energy pricing may need to be adopted instead, pending investment in systems development and programme expansion.

The Energy Subsidy Reform Assessment Framework (ESRAF), developed by the World Bank to support ESR, provides a practical methodology for assessing how social protection can be used to provide a compensatory function, through a series of Guidance Notes which provide narrative, along with qualitative methods and quantitative analysis approaches to inform the appraisal of ESR reform impacts and potential social protection responses.¹¹ The fifth note, sets out a process for assessing the viability of using existing social protection programmes to play this role, based around three fundamental questions (Yemtsov and Moubarak, 2019):

- Are adequate financial resources allocated to social protection to compensate the poor for CCM losses?
- What programmes and mechanisms can be used to transfer the resources to the poor? And how can exclusion errors be resolved?
- How can timely benefits be implemented to avoid drastic changes to the living conditions for the poor?

These questions apply to both ESR and direct CPI. An approach for answering each question is outlined in a series of ‘Energy Subsidy Reform Assessment Framework (ESRAF) Good Practice Notes’. These notes are based on experience from several decades of ESR programming within the World Bank and provide practical guidance and a mix of qualitative and quantitative methodologies for analysing existing energy subsidies, the impacts of subsidies

¹¹ The set of ten guidance notes are listed in Appendix 9 and are available online. They may accessed through <https://www.esmap.org/esraf-goodpracticenote4>.

and their reforms, and the political context for reform in developing countries, including identifying and quantifying energy subsidies, appraising their fiscal cost and impacts on household consumptions as well as the distributional aspects of reform and also approaches for assessing the readiness of existing social protection systems to mitigate the impact of reform to assessing the fiscal cost of outline, as well as associated political economy issues.

The notes highlight the critical importance of timing and the development of social protection capacity prior to ESR implementation, and the need to formally appraise ESR impacts to inform coordinated policy development and implementation between the CCM and Social Protection sectors:

International experience shows that many countries introduce SSN [social safety net] programs during subsidy reform in hopes of seeing SSNs as a panacea for the political economy challenges and welfare implications of the proposed reform. However, when ESR is retroactively used to as a trigger to implement SSNs, little planning is possible. Instead, planning to utilize SSNs to compensate the poor for the impact of ESRs, and making the preparations to do so, should predate ESR going into effect. (Yemtsov and Moubarak, 2018)

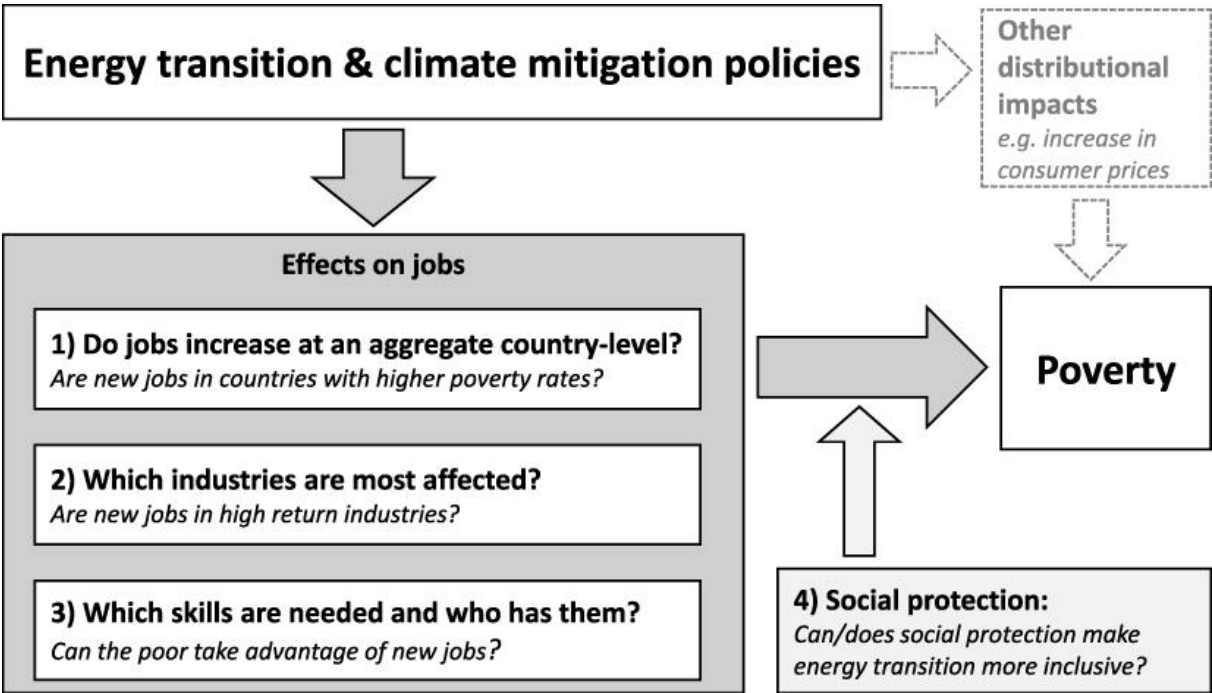
This analysis highlights the fact that energy subsidy reform (or some other crisis) may serve to catalyse initiatives to extend provision, as illustrated in Table 2, but that these initiatives need to be planned as part of an integrated package of interventions in advance of ESR implementation.

The authors go on to recommend that the following checks should be made:

- i)) ascertain whether increased social protection provision is needed, given the proposed subsidy reform,
- ii) if the expansion of the social protection system is necessary, it must fit into the fiscal space available,
- iii) introduction of the new large-scale programme (or expansion of an existing one) must be administratively feasible, and consistent with the principles of good programme design, including outreach, in-take, and registration, assessment of conditions and needs, enrolment, payments and ensure that institutions and robust information systems are there to support the expansion of the social protection (Yemtsov and Moubarak, 2019).

A similar analytical approach is required to support and inform green transition programming, as the impact of the transition will be highly context specific and may vary significantly within countries. Hence, to develop appropriate labour market responses it is necessary to carry out an analysis of the likely impact of the transition. A schema of the key issues to be explored in developing such an analysis has been developed by Malerba and Wiebe and is set out in Figure 12.

Figure 12: Schema for analysis required to develop effective ALMP response to the green transition



Source: Malerba and Wiebe, 2021

5.3. Policy Integration

Providing social protection to cushion the impacts of CCM on poverty is essential to ensure the acceptability and successful implementation of decarbonisation policies. However, these policies will only be successful if they are part of an integrated set of interventions. Policy integration is key for attaining the just transition and the effective implementation of CCM policies. The Just Transition guidelines state that:

“coherent policies across the economic, environmental, social, education/training and labour portfolios need to provide an enabling environment for enterprises, workers, investors and consumers to embrace and drive the transition towards environmentally sustainable and inclusive economies and societies. These coherent policies also need to provide a just transition framework for all to promote the creation of more decent jobs, including as appropriate: anticipating impacts on employment, adequate and sustainable social protection for job losses and displacement, skills development and social dialogue, including the effective exercise of the right to organize and bargain collectively” (ILO, 2015)

Without deliberate and targeted investment in ALMP, the job creation impact of a green transition will be muted. To ensure the successful attainment of both CCM and employment and poverty objectives will also require coordination with industrial, labour, education, environmental and fiscal policy frameworks. Addressing skills development in the absence of matching investment in the restructuring of the economy towards creating new jobs in renewables and green production will be of limited value in managing the poverty impacts of CCM. The current Pakistan-German Climate and Energy Initiative, agreed in 2021 illustrates this integrated planning approach, with BMZ assisting in the implementation of the just

transition by supporting not only the restructuring of the economy and energy supply but also the development and expansion of social protection (BMZ, 2022).

6. Key insights and Recommendations

6.1. Key Insights

The key insights from this study are set out below:

- CCM policies entail welfare losses, increasing both headcount poverty and the depth of poverty.
- The distributional impacts of CCM policies are heterogenous across and within countries and are highly contingent on a range of contextual factors such as the prior distribution of poverty, GDP, energy consumption patterns and household characteristics as well as the structure of the national economy.
- CPIs (carbon taxation and ESR) tend to affect the poorest mostly through rises in non-fuel commodity prices, notably transportation and food, although the relative impact of different price channels is driven by consumption patterns among the poor.
- Green structural change will also affect high carbon ‘brown’ segments of the labour market, resulting in localised loss of employment as low-skilled workers may not be able to shift into new ‘green’ employment due to human, physical and financial capital constraints. Workers in agricultural sectors with high emissions may also be adversely affected.
- Together these policies will impact on household consumption through increased prices and reduced income.
- The revenue gained from CCM policies (through reduced expenditure on subsidies and income from carbon taxation) has the potential to compensate for adverse policy impacts on poverty, although this revenue is limited in LICs with low-carbon footprints.
- Social protection can be an effective mechanism for reallocating this revenue to provide additional income at household level, making social protection a key component of the just transition to a sustainable, zero-carbon economy.
- However, the potential of social protection to play a compensatory role is compromised in many LMICs by limited coverage and weak operational systems
- Extending social protection coverage requires significant horizontal and vertical expansion of benefits. In most LMICs, this will require investment in core operational systems – administrative and delivery systems relating to the development of national identification, registry development, payment systems, financing and governance.
- Universal one-off lump sum rebates have been proposed as an alternative compensatory mechanism, but this approach is compromised by the same administrative and delivery systems constraints which limit the use of targeted social protection programmes.

- Complementary instruments can be adopted pending the development of more effective national social protection systems, including poverty-targeted subsidies on energy, food, public transportation and basic services such as health and education; as well as revision of the tax regime to reduce the incidence of regressive taxes such as VAT.
- Active labour market policies can be used to address unemployment arising from the green transition, such as skills development, job search support, job subsidies and the direct creation of employment through public works programmes. Their effectiveness will depend on matching investment in green sector development.
- Given the limitations of existing compensatory mechanisms, and the significant impacts of climate change mitigation policies on poverty headcount and depth, a pro-poor CCM policy implementation approach is required pending the development of effective compensatory systems.
- Some form of effective compensation is a prerequisite for ensuring public support for the implementation of climate change mitigation policies. In the absence of compensation, there is a significant risk of creating political and social instability, which may limit successful policy implementation.

7. Recommendations

Based on the analysis presented in this study, a number of general recommendations can be drawn which can guide CCM implementation and the use of social protection for compensation. These are presented below and apply to both national governments and development partners supporting the process of CCM policy implementation.

In addition, specific recommendations of relevance to German Development Cooperation, KfW and GIZ, are provided. These set out investment and policy inputs to support national governments in effectively using social protection to facilitate effective CCM implementation.

1.1 General Recommendations

Based on the analysis presented in this study, general recommendations may be derived from the international experience, which can guide CCM implementation and the use of social protection for compensation.

- Before implementing a national CCM programme ensure that it has been informed by an analysis of the distributional impacts the policy options under consideration.
- Prior to implementation, also assess the capacity of the existing social protection system to provide compensation, taking into consideration: coverage and incidence; the performance of operational systems (identification, registration and delivery); governance; and the potential to implement complementary measures, including taxation, subsidies and service provision.

- Carry out a fiscal incidence analysis to assess the potential domestic revenue gains from subsidy reform and carbon pricing and their adequacy in relation to the cost of social protection compensation options.
- Ensure that the labour market impacts of the green transition are appraised across spatial, temporal, and socio-economic dimensions and that the skills development implications are identified.
- Include compensatory social protection provision as an explicit component of CCM policy and implementation plans.
- Promote joint planning between CCM and social protection policymakers to facilitate policy coherence and complementarity.
- Ensure that social protection policy design is informed by CCM, industrial, education and labour policy to ensure a coherent social protection response.
- Use the existing social protection programmes as the basis for compensation where coverage and inclusion are adequate, extending existing transfer programmes instruments vertically and horizontally as necessary.
- Where the coverage and inclusion of existing social protection programmes are not adequate to provide compensation to those most affected, but core operational systems are in place (a national ID, comprehensive registries, delivery mechanisms), develop new social assistance programmes such as temporary new transfer schemes or lump sum payments.
- If the core operational systems required for large-scale inclusive social protection provision are not in place, invest in systems development which will facilitate not only the delivery of effective CCM policy compensation but also the creation of an effective national social protection system.
- Introduce social protection measures such as subsidised service delivery or tax reform, such as targeted energy, food, or public transport subsidies; subsidised service provision (such as health and education); and revise tax incidence to reduce regressive taxation such as VAT, to complement social assistance provision
- Implement CCM policies in a pro-poor way, for example:
 - a. only implement CCM policies that will have significant adverse effects on the poor and vulnerable after basic compensatory interventions are in place;
 - b. prioritise the least regressive components of CCM policy, phasing implementation to start with the decarbonisation of sectors with lower impacts on the poor;
 - c. initiate ESR on fuels primarily used by the rich (such as aviation fuel) prior to those which directly or indirectly affect the poor.
- Explore supranational financing options where the revenue generated from carbon pricing is insufficient to fund adequate compensation

- Promote international debate around supranational financing options for the provision of social protection compensation in LMICs as part of a just and green transition.

1.2 Recommendations for German Development Cooperation

This section sets out specific recommendations for German support for country-level interventions to promote equitable CCM policy implementation in line with the Just Transition. These recommendations require complementary inputs, which combine technical assistance (TA), policy advice and financing. The recommendations cover support for analysis of CCM policy price and labour market impacts and the associated distributional and poverty effects, the appraisal and development of viable compensatory interventions, and the promotion of policy coherence and integrated policy development between the social protection sector and other sectors engaged in CCM policy implementation. The recommendations entail a package of measures to support governments in carrying out a full analysis of CCM and social protection policy options.

Critically they also cover investment in the operational systems necessary for social protection sector development and the effective delivery of targeted provision, and in targeted employment and training.

These recommendations primarily relate to country-level support but also entail the promotion of a global dialogue around social protection and CCM policy alignment and the development of technical guidance materials to support governments to carry out the quantitative and qualitative analysis required to inform the development of appropriate social protection measures, building on the range of relevant materials already produced.

Country-Level Impact Analysis

1. Support a quantitative analysis of the distributional impacts the CCM policy options under consideration at country level, using a microsimulation approach.
2. Support the appraisal of the labour market impacts of the green transition at country and regional levels, considering the spatial, temporal, sectoral, socio-economic and skills distribution of impacts.
3. Support country-level fiscal analysis of CCM options, examining the revenue implications of different carbon pricing approaches and the cost of different compensatory social protection interventions, together with a review of domestic or external financing options.

Country-Level Social Protection Capacity Analysis and Design

4. Support country-level **analysis of the capacity of the national social protection system to respond to the identified price and labour market impacts** through existing programmes, and complementary measures relating to tax and subsidy interventions.
5. Support the identification, development and implementation of a fiscally, administratively and politically appropriate package of interventions, including social

assistance, social insurance, subsidies, tax instruments and active labour market policies, as appropriate.

Country-Level CCM Policy implementation

6. Provide assistance to support pro-poor CCM policy design and implementation, consistent with the availability of compensatory instruments.

Country-Level National Policy Alignment

7. Promote the integration of social protection into national CCM policy discussions to ensure policy coherence.
8. Support intersectoral dialogue to ensure that compensatory social protection design is informed by and consistent with labour market and economic policy.
9. Promote the **integration of social protection into green structural change planning**, explicitly linking it with education, skills development and industrial policy to ensure coherence.

Country-Level Investment

10. Invest in strengthening and building the key operational systems required for the implementation of CCM policy compensation measures, which are also necessary for the effective operation and growth of national social protection systems, notably: national identification systems, registries, delivery systems, and digital management and information systems.
11. Invest in employment and training initiatives, considering both public and market-based employment options, informed by an analysis of the spatial and sectoral focus of CCM policy impacts.

Global Dialogue and Capacity Building

12. Promote global dialogue with national governments and development partners to promote understanding of the role of social protection in the equitable implementation of CCM policies and increasing policy acceptability and political stability during the economic transition.
13. Develop technical guidance material to support national governments to complete the quantitative and qualitative analysis required to inform the development appropriate social protection measures to compensate for the adverse effects of CCM policies.

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9. Appendix: World Bank ESRAF Good Practice Notes

LIST OF GOOD PRACTICE NOTES

- NOTE 1** Identifying and Quantifying Energy Subsidies
- NOTE 2** Assessing the Fiscal Cost of Subsidies and Fiscal Impact of Reform
- NOTE 3** Analyzing the Incidence of Consumer Price Subsidies and the Impact of Reform on Households – Quantitative Analysis
- NOTE 4** Incidence of Price Subsidies on Households, and Distributional Impact of Reform – Qualitative Methods
- NOTE 5** Assessing the readiness of Social Safety Nets to Mitigate the Impact of Reform
- NOTE 6** Identifying the Impacts of Higher Energy Prices on Firms and Industrial Competitiveness
- NOTE 7** Modeling Macroeconomic Impacts and Global externalities
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- NOTE 9** Assessing the Political Economy of Energy Subsidies to Support Policy Reform Operations
- NOTE 10** Designing Communications Campaigns for Energy Subsidy Reform

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KfW Group

KfW Development Bank
Palmengartenstrasse 5–9
60325 Frankfurt am Main, Germany
Tel. +49 69 7431-0

www.kfw-entwicklungsbank.de

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