
Key messages

- **Eradicating extreme poverty is achievable by 2030, through growth and reductions in inequality.** Sustained economic growth in developing countries is crucial for poverty eradication, but it is likely to be more moderate and less effective in reducing extreme poverty in the coming decades than the prior ones. Addressing growth and inequality together is far more effective. This requires building poor people's human capital (through nutrition, health and education) and assets, their access to infrastructure, services, and jobs, and their political representation.
- **Avoiding catastrophic climate change requires global emissions to peak by around 2030 and fall to near zero by 2100.** Nearly all the IPCC's mitigation scenarios indicate that the global economy must reach zero net greenhouse gas emissions before the century's end to hold the global mean temperature rise to less than 2°C, the limit beyond which the world will face 'dangerous anthropogenic interference' with the climate (UNFCCC 2009). Most of these scenarios require global emissions to peak by around 2030, the deadline of our global poverty eradication target.
- **Unchecked, climate change could draw up to 720 million people back into extreme poverty just as we approach the zero poverty goal.** This estimate factors in only the most quantifiable impacts on the world's extreme and moderately poor during the period 2030-2050 if current emissions trends continue, heading toward 3.5°C mean temperature change by the century's end.
- **Poverty eradication cannot be maintained without deep cuts from the big GHG emitters.** It is policy incoherent for big GHG emitting countries, especially industrialised ones, to support poverty eradication as a development priority, whether through domestic policy or international assistance, while failing to shift their own economy toward a zero net emissions pathway. The costs of adaptation simply become implausible beyond 2°C.
- **Low emissions development is both necessary for, and compatible with, poverty eradication.** The achievement of global zero net emissions requires action by countries across all levels of development, moving to development strategies that anticipate the need for declining emissions from 2030 toward the zero emissions goal. Evidence to date shows this is compatible with poverty eradication. In the regions of the world home to the extreme poor, studies show that most emissions reductions necessary by 2030 can enhance growth by anywhere between 1.4% and 3.9%.

Executive summary

The eradication of extreme poverty is the minimum ethical floor of the global development agenda. With projections suggesting eradication is possible by 2030, the goal of ‘zero extreme poverty¹ by 2030’ is a compelling objective. It has become a central target underpinning the Sustainable Development Goals, and is one of the few that shows strong progress based on current trends (Nicolai et al., 2015).

Progress over the past two decades has reduced the percentage of people living on less than \$1.25 a day in the developing world—the extreme poor—from 43% in 1990 to about 17% as of 2011. This is a remarkable accomplishment.

However, climate change may limit or even reverse these gains. It will hit the very poor hardest, making it tougher for those in extreme poverty to escape it, and drawing the moderately poor back into extreme poverty. Some climate change is now inevitable. Countries will need even greater ambition, and great support, to adapt and limit impacts on the poor.

But adaptation to climate extremes becomes increasingly implausible, particularly for the poorest, as we move beyond 2°C global mean temperature rise. Avoiding surpassing 2°C will require zero net greenhouse gas (GHG) emissions—deep decarbonisation, with any residual emissions offset by GHGs removed from the atmosphere—before the century’s end. This too will require prompt, global action: achieving zero net emissions before 2100 will necessitate peaking global emissions by around 2030, the same timeframe forecast for the eradication of extreme poverty.

To achieve zero emissions, and indeed to peak in the next couple of decades, all countries need to transform their economies. Developed countries must make the deepest and most urgent cuts against their current emissions: their emissions peak has passed. If they are serious about eradicating poverty, deep domestic GHG cuts are part of their obligation. But middle and low-income countries must also ensure their current investment choices reduce their forecast emissions, and that they anticipate a rapid peak and decline in emissions as part of their development path.

This presents a global challenge that some argue conflicts with the goal of eradicating extreme poverty. However, early evidence suggests low-emission economic development, although radically different from historic experience, is consistent with the combination of moderate, sustained and pro-poor growth and reductions

in inequality needed to eradicate poverty. The impact of unchecked climate change creates an insurmountable challenge for the zero poverty target, but climate change mitigation need not.

This paper finds that the goal of zero net emissions is compatible with eradicating extreme poverty and is, indeed, necessary to sustain such achievement. However, their achievement depends on the nature and quality of growth and how it is achieved over the next decades.

Pathways to zero extreme poverty: sustained, more equal and pro-poor growth

Various projections conclude that the effective eradication of extreme poverty is feasible by 2030. It is, albeit more challenging than the projections lead one to believe. These projections depend on overly optimistic assumptions about the scale of future economic growth, its uniformity across sectors and countries, and impact on poverty reduction. We face ‘diminishing returns’ in terms of poverty reduction from growth, given the location and structure of the poverty that remains, with more concentrated in states with a poorer record of growth and equity, a more fragile political environment and a less diversified and stable economic structure.

Economic growth is still crucial: a threshold of moderate and sustained economic growth over the next several decades is necessary under nearly all poverty-eradication scenarios, but it is likely to be more moderate and less effective in reducing extreme poverty in the coming decades than many projections suggest. Ensuring we achieve the goal of zero extreme poverty by 2030 will therefore require a reorientation, not simply a replication, of experience over the past two decades. It is also vital to reduce the inequality of the benefits of that growth.

Addressing growth and inequality together is far more likely to reduce poverty than a strategy reliant on attempts to maximise growth alone, based on unrealistic projections. Indeed, extreme poverty could be solved overnight if the inequality of wealth was addressed. Of course, direct redistribution of wealth, through policies like cash transfer programmes, is a partial solution limited to certain circumstances. Nevertheless, it points to the need to ensure that growth is targeted to the improvement in the consumption and productivity of poor people specifically.

1 By most measures, including here, zero extreme poverty means reaching a global rate of extreme poverty of 3% (Ravallion, 2013).

Robust poverty eradication must generate the circumstances in which the extreme poor can productively participate in the macro-economy. Drawing from the work of the Chronic Poverty Advisory Network (CPAN, 2014), we focus on five factors that ensure growth is pro-poor:

- **Boosting human capital**, investing in the nutrition, health and education of poor people.
- **Asset accumulation**, ensuring that improvements in land, livestock, physical capital and credit accumulate to poor people.
- **Improving pro-poor infrastructure and services**, ensuring that investments in infrastructure and services like energy, water and transport are designed to benefit the poor directly.
- **Increasing employment opportunities**, with economic and labour policies designed to create opportunities for the poorest.
- **Enhancing governance and political representation**, ensuring poor people have access to justice and the rule of law, along with mechanisms through which their own expressions of their interests are reflected in public policies.

Any poverty reduction strategy will need to consider growth and this broader range of factors that shape whether growth benefits poor people. Sustained, pro-poor growth, even if at more moderate but realistic rates, is likely to provide the best chance of reaching our collective goal of zero extreme poverty by 2030.

The impact of climate change on poverty: the pyrrhic victory of high-carbon growth

The above may provide a road map to poverty eradication by 2030, but sustaining poverty reduction also relies on curbing climate change. Due to historical greenhouse gas (GHG) emissions, the globe is likely committed to global warming of 1.5-2°C on average before the century's end. Poverty eradication efforts will be slowed, and maintaining them will be harder, unless development ambitions factor in adaptation and resilience-building. Adaptation to climate extremes becomes increasingly implausible, particularly for the poorest, as we move beyond a 2°C average. Avoiding these catastrophic impacts requires large structural changes to put the world on a trajectory toward global peaking emissions around 2030 and zero net emissions before 2100.

The alternative is that governments do nothing beyond current policies and the climate heads toward 2°C mean temperature change by 2050 and 3.5°C by 2100. Under this 'business-as-usual' scenario (BAU), millions of people will fall back into extreme poverty. There is copious research evidencing that climate change from this BAU scenario will impact the world's poor the hardest, but few have tried to quantify the numbers of poor people affected and its impact on poverty eradication targets. To bring home the scale of unmitigated climate change on poverty reduction, we have put together a cautious estimate, synthesising data on only the most quantifiable impacts for the period 2030-2050 on

Figure A: Up to 720 million people are at risk of facing extreme poverty from climate impacts between 2030 and 2050



Authors' calculations based on data from multiple sources (see section 3.2.b for citations and method)
 Opaque bars show main estimates; transparent bars show highly conservative estimates.

the extreme poor and those just beyond extreme poverty but at risk of being dragged back in.

Analysing only the most quantifiable impacts under business as usual, we estimate that climate impacts put up to 720 million people at risk of facing extreme poverty from 2030 to 2050 under BAU. This is about the same number of people who exited extreme poverty in the last two decades of record development progress (Povcal, 2015).

These calculations derive from pathways tracing the impact of climate change on just four factors affecting poverty that have the most robust and easily quantifiable evidence (see Figure A): the productivity of primary sectors, food prices, effects on childhood malnutrition and stunting and increased droughts. It is likely that the numbers shown would be much higher if other impact pathways were considered, such as sea-level rise, urban vulnerability, higher incidence of airborne diseases and secondary impacts on child and female education, fertility and conflict. The impacts of climate change will also reduce the underlying economic growth that supports poverty eradication, producing an indirect drag on efforts to eradicate extreme poverty.

Achieving zero extreme poverty on the path to zero net emissions

The above makes it clear that a pathway toward zero net emissions is necessary to sustain poverty eradication. This reaffirms, among other things, the clear need for domestic mitigation by the world's largest emitters and for an international agreement capable of addressing the interdependency of effective climate action. It also

positions poverty eradication as a catalyst for more ambitious action on climate change.

However, the achievement of global zero net emissions requires action by countries across all levels of development. While the actions are somewhat different, the time period over which economies must be radically redesigned is not significantly altered by a country's economic status. Even countries where extreme poverty remains will have to move to growth and development strategies anticipating the need for declining emissions from about 2030 if climate change is to be averted.

A zero net emissions pathway may be necessary to avoid exacerbating poverty, but low-carbon development must also be sufficient for poverty eradication if the zero-zero goals are to be compatible. There is mounting evidence that it is.

First, it is important to recognise that many of the most important poverty reduction measures have little to do with emissions. Literal redistribution alone could theoretically eradicate extreme income poverty nearly instantly with little effect on the global economy and equalising policies that temper income inequality may be a necessary condition for eradicating extreme poverty (Greenhill et al, 2015).

All scenarios also require sustained growth. This paper looks at each of the most methodologically robust analyses focused on the two regions that are home to most of the world's extreme poor: Sub-Saharan Africa and Asia.

A set of marginal abatement cost (MACC) analyses show at least the first 15-30% of emissions reductions compared to BAU between now and 2035 are growth enhancing. Figure B shows these growth enhancing measures would get us much of the way toward the emissions reductions compatible with a zero net emissions path based on our

Table A: Key climate mitigation actions and their impact on the livelihoods of the extreme poor

Mitigation action	Distribution related impact on the extreme poor
Climate-smart agriculture practices	Direct increase of agricultural productivity and income for those in extreme poverty. Direct increase in the value of land for poor land-owners. Increased resilience and reduced risk of large income fluctuations.
Increased public transport	Reduction in health-related costs from air pollution. Greater mobility at lower cost, which expands employment opportunities and net benefits.
Low-emissions waste management	Reduction in health-related costs from poor sanitation.
Reduced subsidies for fossil fuels and fertiliser	Increase in the income of those in extreme poverty due to better-targeted technical and cash transfers.
Distributed renewable energy (electric and household thermal)	Reduction in health-related costs from indoor pollution. Access to energy at lower cost than high-carbon alternatives.

calculations from IEA and IPCC data. However, these are ‘incremental’ analyses that look only at emissions reductions in existing sectors with no structural change to the economy.

Analysis that considers transformation of major systems, like energy, project that such measures reduce emissions by one-third compared to BAU and improve GDP by 3.9% in India, 2.4% in Indonesia, 2% for least-developed African countries, 1.4% for China and 1.6% for other ASEAN countries, although one earlier outlier study showed a 3.3% decline for India (IEA, 2012).

The above analyses do not consider economic impacts not factored in by the market but easy to estimate the economic value of, such as reduced illness and death from air pollution. Once these are included, the benefits of low carbon growth rise even higher. The recent New Climate Economy Report concluded that up to 50%, and possibly up to 90%, of the emissions reductions required by 2030 could be achieved at no cost to economic growth, when considering both co-benefits and a wider range of ‘transformational’ approaches. A recent World Bank study found India and China’s emission could be reduced by nearly a third at no or ‘negative’ costs in two sectors alone—energy efficiency and clean transport—when improved air quality was taken into account (Akbar et al., 2014).

A few studies estimate that moving to a net zero emissions pathway will have a potential negative impact on growth rates or, at best, provide a low positive impact on growth rates up to 2050 compared to BAU.² This is equivalent to the loss of only 6 to 24 months of economic growth by 2030 compared to BAU, too small a cost to place a major check on well-targeted poverty eradication efforts. In addition, these studies may overestimate the impact of slowing growth rates compared to BAU, as they ignore the economic costs of climate impacts in that period (New Climate Economy, 2014).

The compatibility of pursuing low carbon growth with eradicating poverty is reinforced when considering that poverty eradication is also crucially about the structure and equality of growth, and not merely its magnitude. Aside from their impacts on national-level economic growth, positive or negative, individual climate actions can have many direct benefits for poor people, whether improving their productivity, enhancing their access to public services or reducing their exposure to pollution. These goals are crucially about the quality of growth. If the goals of zero net emissions and zero extreme poverty are considered together by policy makers, a low-carbon pathway can support a reorientation toward the more pro-poor growth that will be required to ensure poverty eradication by 2030. Achieving this will require institutional and technical capacity, as well as financing, with a focus on programmes and investments for the poor, Table A sets out some key actions to mitigate the impact of climate change, their impacts on the poor (i.e. ‘distributional impacts’), and how to make these actions pro-poor.

Policy implications

The international development community needs concrete and discrete development priorities in order to direct a critical mass of attention and direction to the biggest global challenges. Poverty and development are complex and multidimensional, reflected in the breadth of the proposed Sustainable Development Goals. However, we are rich in nuance and poor in focus. This report emphasises lasting poverty eradication as both the moral minimum floor of our development effort and challenging to achieve, all the more so in the face of the climate crisis.

To achieve lasting zero poverty, development efforts must be more pro-poor and low-emission. In policy terms, this implies that:

- **Poverty eradication is possible by 2030, through growth and reductions in inequality.** Economic growth in developing countries is crucial for poverty eradication, but it is not enough. Addressing growth and inequality together is far more likely to reduce poverty, requiring targeted measures that focus on the building poor people’s human capital (through nutrition, health and education), their opportunity to accumulate assets, their access to infrastructure, services, and jobs, and political representation. It will also need to contend with the impacts of climate change.
- **Poverty eradication cannot be maintained without deep cuts from the big GHG emitters.** It is policy incoherent for big GHG emitting countries, especially industrialized countries, to support poverty eradication as a development priority, whether through domestic policy or international assistance, while failing to shift their own economy toward a zero net emissions pathway. Developed countries that want to show leadership in fighting extreme poverty globally need to cut domestic emissions to deliver on their ambition, and also redouble their efforts to support developing countries achieve low-carbon, resilient development.
- **Low emissions development is both necessary for, and compatible with, poverty eradication.** Emerging economies need to plan for peaking emissions and a zero net emissions target. There is an increasing body of evidence showing that many, if not most emissions reductions opportunities in developing countries are actually growth enhancing. The size and timing of emissions reductions is subject to considerable debate, often related to what constitutes a ‘fair’ division of responsibility between richer and poorer countries. The need for international support for many developing countries remains of high importance, *but this is true of BAU and low-carbon growth alike*. The issue is whether development ambitions are orientated towards a low-carbon pathway to lasting poverty eradication or a BAU pathway to poverty reduction that may be, at best, temporary.

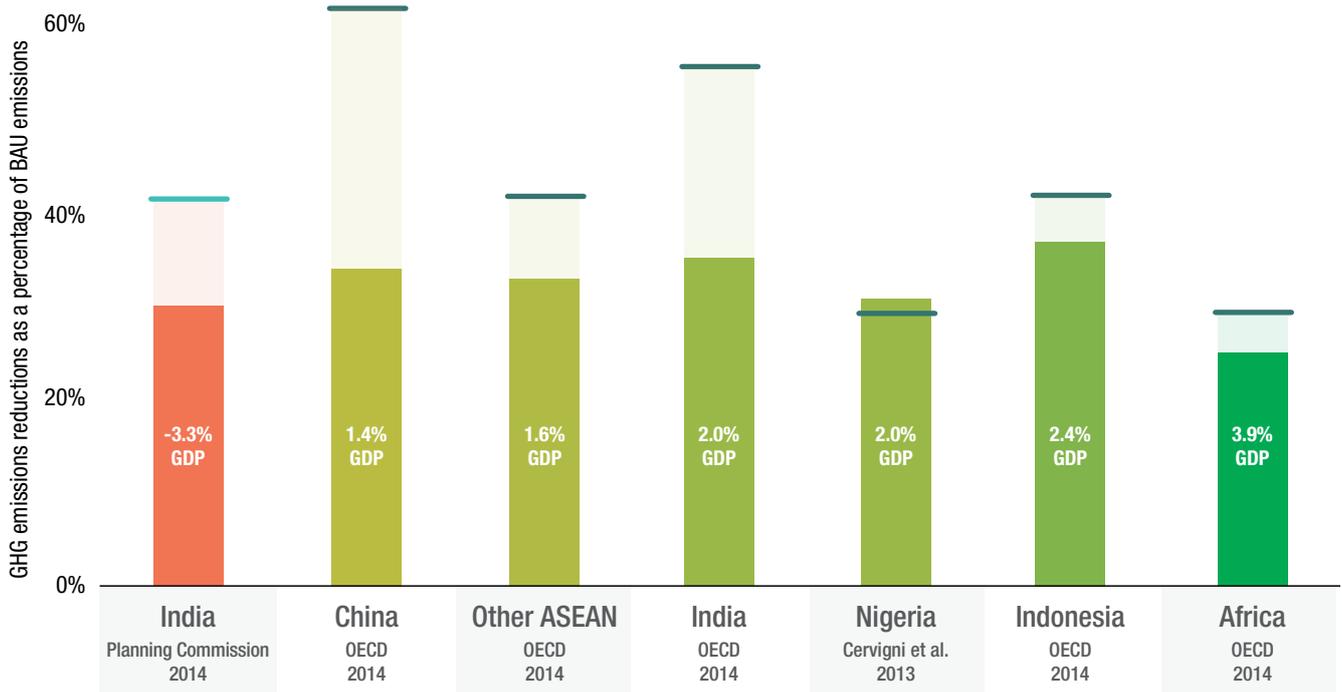
2 Some macroeconomic studies of the impact of moving to a net zero emissions pathway on growth up to 2050 tend to estimate cumulative impacts of +1% to -3% of GDP over this period compared to BAU.

Figure B: Most of the GHG emissions reductions in developing countries are growth enhancing

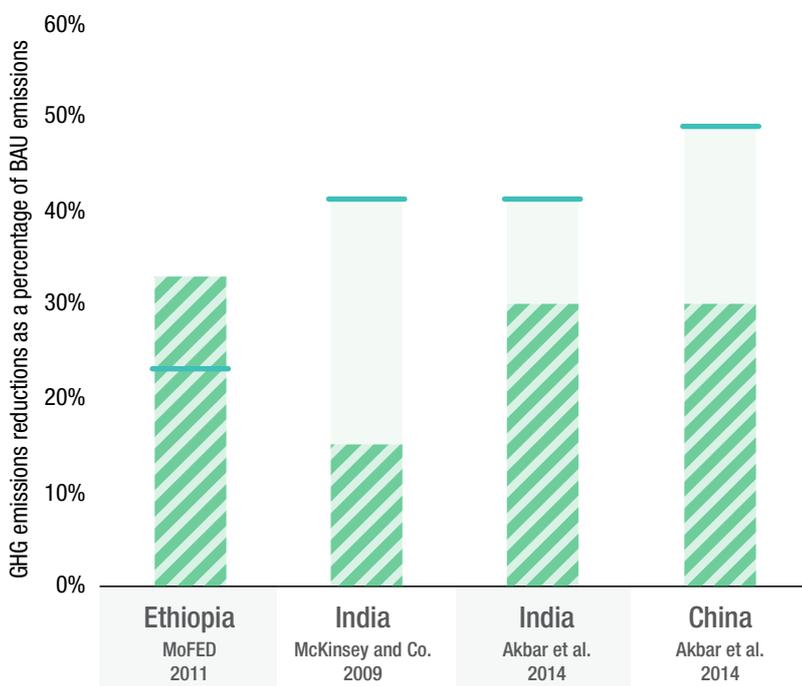
Most GHG emissions reductions in developing countries are growth enhancing

Analyses of developing Asia and Africa show that the low-emissions development necessary in the next two decades for a zero net emissions pathway is growth enhancing. The six most robust studies are shown below grouped by methodology, with estimated growth impact indicated where available.

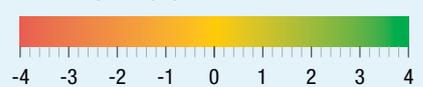
Sector and macroeconomic studies incorporating transformational change



MACC analyses of incremental changes to existing sectors with no structural change to the economy



GDP impact (%)



Positive impact (unknown value)

Target emissions reductions* (%)

2030 target

2035 target

* Based on IEA 450ppm and Current Policy Scenarios. See Section 4.1.b.



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This report builds on a discussion paper prepared for the Development & Climate Days event at COP20 in Lima, Peru, December 2014, on the theme of 'Zero poverty. Zero Emissions. Within a generation'.
Read the full report at odi.org

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Overseas Development Institute
203 Blackfriars Road
London SE1 8NJ
Tel: +44 (0)20 7922 0300
Email: developmentprogress@odi.org.uk
facebook.com/developmentprogressproject
twitter.com/dev_progress
Formatting and design: Stevie Dickie, Caroline Haywood and Sophie Hall.

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