McKinsey Global Institute

From poverty to empowerment

Raising the bar for sustainable and inclusive growth

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Key findings

- **This research considers growth, inclusion, and sustainability as parts of a connected system.** It assesses the extent to which accelerated growth can further the two defining societal aspirations of our time: raising minimum living standards and limiting global warming. It also frames the choices countries face in a decisive decade that will determine the state of the world in 2050.
- **Beyond ending poverty, the next challenge is progressing toward economic empowerment,** which enables people to realize more of their potential. Economic growth has fueled tremendous poverty reduction in the past half century. Many have argued that the $2.15 per day extreme poverty line needs a complementary benchmark to gauge progress beyond that point. We frame this higher bar as the empowerment line, the level at which people can afford to meet essential needs such as nutrition, housing, healthcare, and education; they also gain a modest sense of security and have reduced risk of slipping back into poverty. Empowerment starts at $12 per day in purchasing power parity terms globally, with regional variations to account for different norms and costs. As of 2020, some 730 million people lived in extreme poverty, while 4.7 billion were below the empowerment line.
- **The pursuit of economic empowerment must be viewed in conjunction with global net-zero commitments.** Addressing the causes of climate change is a pressing economic and social challenge—and at today's emissions levels, the carbon budget to limit warming to 1.5°C is trending toward being exhausted by 2030. Achieving net-zero emissions, as many countries have pledged to do, would require a major increase in investment and in the capacity of energy and resource systems.
- **The dual goals pose tensions that need to be managed.** Rapid improvement in living standards could raise demand for energy- and emissions-intensive products and services (although historical patterns could change if new consumers shift behaviors). A disorderly net-zero transition could increase energy and other costs for consumers and cause labor market frictions, creating a disproportionate burden for low-income households; if people feel it is crowding prospects for their lives to improve, support could waver. At the same time, not acting to curb temperature rise could harm economies, and the poorest populations are most heavily exposed to physical risks.
- **The combined empowerment and net-zero investment gaps amount to an enormous 8 percent of global GDP annually over the decade.** We quantify the cumulative spending boost that would close both gaps by 2030. Lifting everyone above the empowerment threshold implies that the people currently below it would need 40 percent more spending power on average by 2030 (even more in sub-Saharan Africa and India). To get on a net-zero trajectory, the world would need to muster an additional $41 trillion in low-emissions investment (above continued 2020 spending levels, cumulatively through 2030). These are shifts in income, consumption, and investment of an unprecedented magnitude.
- **Businesses and the market economy can generate half the combined resources through growth and innovation.** This involves not only maintaining baseline growth but also boosting productivity even further through investment in technology, new businesses, and human capital. Accelerated growth and better-paying jobs could close almost two-thirds of the global empowerment gap. On the climate transition, even with current policies, we see potential for almost $10 trillion of low-emissions alternatives to become viable for private

actors, especially in power and mobility. All told, growth and innovation, even without policy changes, could unlock just over a third of the step-up needed in net-zero spending.

— **Beyond what market forces can address under current policies, substantial gaps remain—and so do hard choices about whether and how to fill them.** Growth and innovation alone could generate progress that would be historic in and of itself. Yet closing both gaps in full would take even more than what they can deliver without new policies and incentives. We estimate the unfilled economic gap at 4 percent of GDP per year globally, or $40 trillion, cumulatively through the decade. Developing countries account for nearly two-thirds of this.

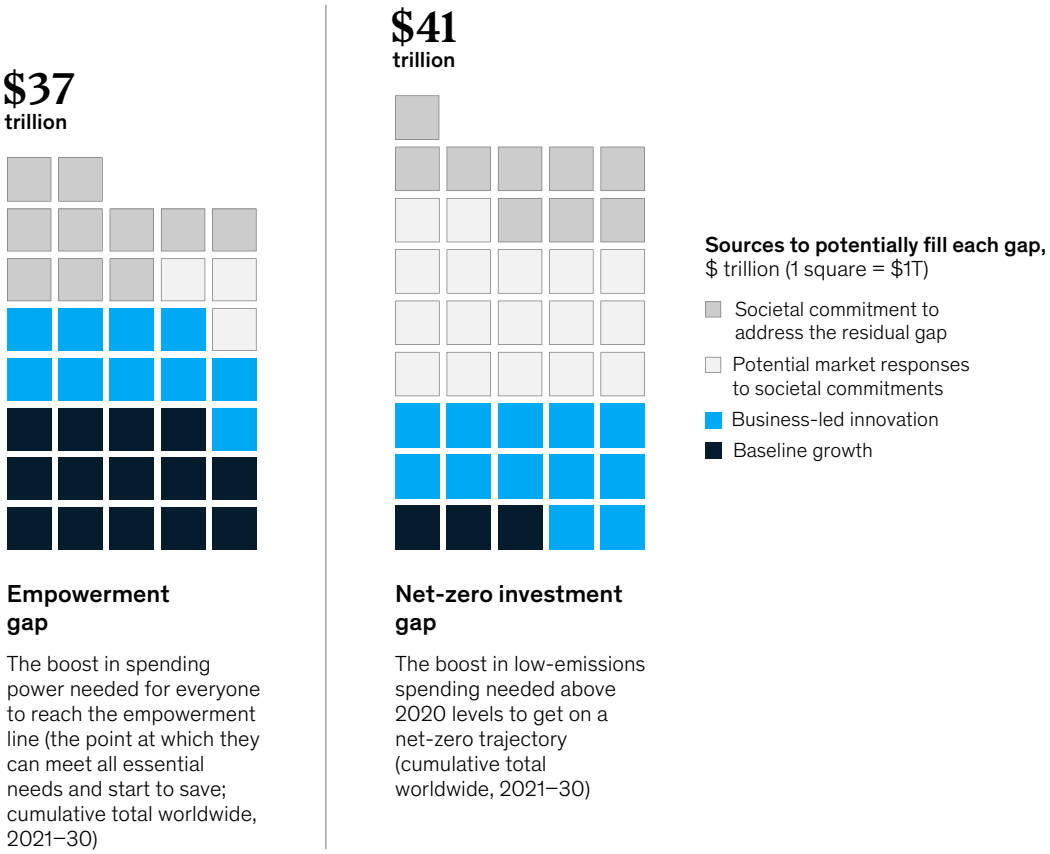
— **Additional societal commitments could accelerate progress but come with their own risks.** Combined public and private action could deliver housing, healthcare, education, and food that is more affordable and leads to better outcomes, potentially unlocking $3 trillion of benefits to those below the empowerment line. Public finance support could change the risk and cost profiles of net-zero investments, unlocking a further $17 trillion from private actors over the decade. However, such extensive commitments could distort the baseline economy. In a scenario where high-income economies choose to shoulder both gaps for the world, it would amount to 3.5 percent of their own GDP annually; the global financial system would need to accommodate higher cross-border flows.

— **Empowering large populations while getting on a net-zero trajectory would take a global push for growth, innovation, and collaboration. Growth boosts economic empowerment and creates the financing capacity for net zero.** The upside is compelling: some 2.1 billion people could move above the empowerment line and 600 million people out of poverty, taking significant steps on their journey toward full economic empowerment. Yet addressing residual gaps would take bolder innovation in finance, technology, industry, and policy. The possibilities include creating new multilateral financing vehicles; integrating low-income countries into global trade in a way that lifts local communities and small businesses; developing sustainable cities with affordable housing; and designing effective carbon markets. Private actors, governments, and nonprofits would need to combine their capabilities and expertise—and think without limits about how they can contribute to meeting this moment.

Exhibit

What would it take for the world to raise everyone to minimum living standards while also getting on a net-zero pathway by 2030?

Growth and innovation can deliver half the combined gap; additional societal commitments could fill the rest in tandem with market responses.



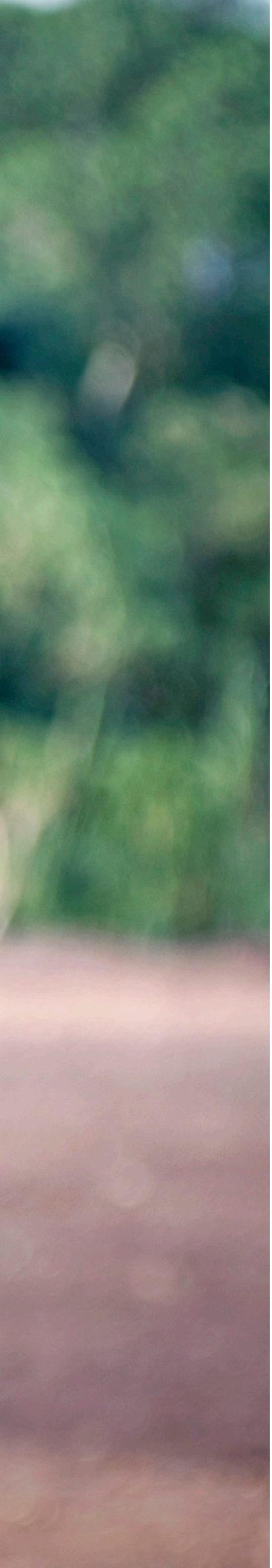
Empowerment gap

The boost in spending power needed for everyone to reach the empowerment line (the point at which they can meet all essential needs and start to save; cumulative total worldwide, 2021–30)

Net-zero investment gap

The boost in low-emissions spending needed above 2020 levels to get on a net-zero trajectory (cumulative total worldwide, 2021–30)

Source: McKinsey Global Institute analysis



Executive summary

Growth, inclusion, and sustainability are connected, often complementing one another but sometimes pulling in different directions.[1] This research explores how growth can contribute to higher living standards and a greener world, building on the tremendous progress of the past half century. Specifically, it looks at the economics of addressing both poverty and climate change in a decisive way—as well as the trade-offs involved.

We focus on established global aspirations without imposing constraints on the ambitions. On the sustainability side, the Paris Agreement laid out a framework to limit temperature rise to well below 2.0°C (and preferably to 1.5°C) relative to preindustrial levels. In response, many countries have committed to **reaching net-zero emissions**. On inclusion, while the world has made historic strides against extreme poverty, development experts and economists have discussed setting a higher bar for living standards. The UN Sustainable Development Goals (SDGs) propose achieving adequate nutrition, health, education, clean water, energy, and living conditions for all. The concept of **economic empowerment** used in this research captures these aspirations. For each country, we estimate the point at which individuals can meet their essential needs and begin to have some security. This does not undermine the goal of eliminating extreme poverty; it explores how to move further toward a world in which people realize more of their own potential.

The actions taken (or not) in this decade will determine what kind of world the next generation will inherit. This research therefore considers how much progress could be feasible by 2030.[2] The time frame is intentional. At today's level of emissions, the world's carbon budget for holding to a 1.5°C path is expected to run out around the end of the decade. In addition, 2030 is the target for the SDGs. Without faster progress on empowerment, the next generation could enter adulthood ill-equipped for the jobs of the future, putting many at risk of falling further behind.

Since these are urgent, simultaneous challenges, we bring them together to offer a more holistic view, considering the interactions between growth, economic inclusion, and the net-zero transition (Exhibit E1). Productivity-driven growth lifts incomes and raises living standards while unlocking the financing capacity needed for a low-emissions future. Meanwhile, innovation that goes hand in hand with growth can bring down the costs of low-emissions technologies. This could lower the spending needed for the transition and reduce the risk of households facing higher costs as a result.

Yet tensions exist in the system. Global economic empowerment implies billions of people with growing demand for energy, while a disorderly net-zero transition could create challenges of affordability. Some may view investment in the transition as a project that crowds out prospects for their lives to improve—but since the poorest populations are most exposed to the physical risks of climate change, reducing those risks is part of ensuring general well-being.

This research **sizes the empowerment and net-zero gaps and explores scenarios of how they could theoretically be closed**. The empowerment gap is the cumulative boost in consumption needed to meet everyone's essential needs by 2030, while the net-zero investment gap is the cumulative spending on low-emissions technologies needed over the decade, above what is

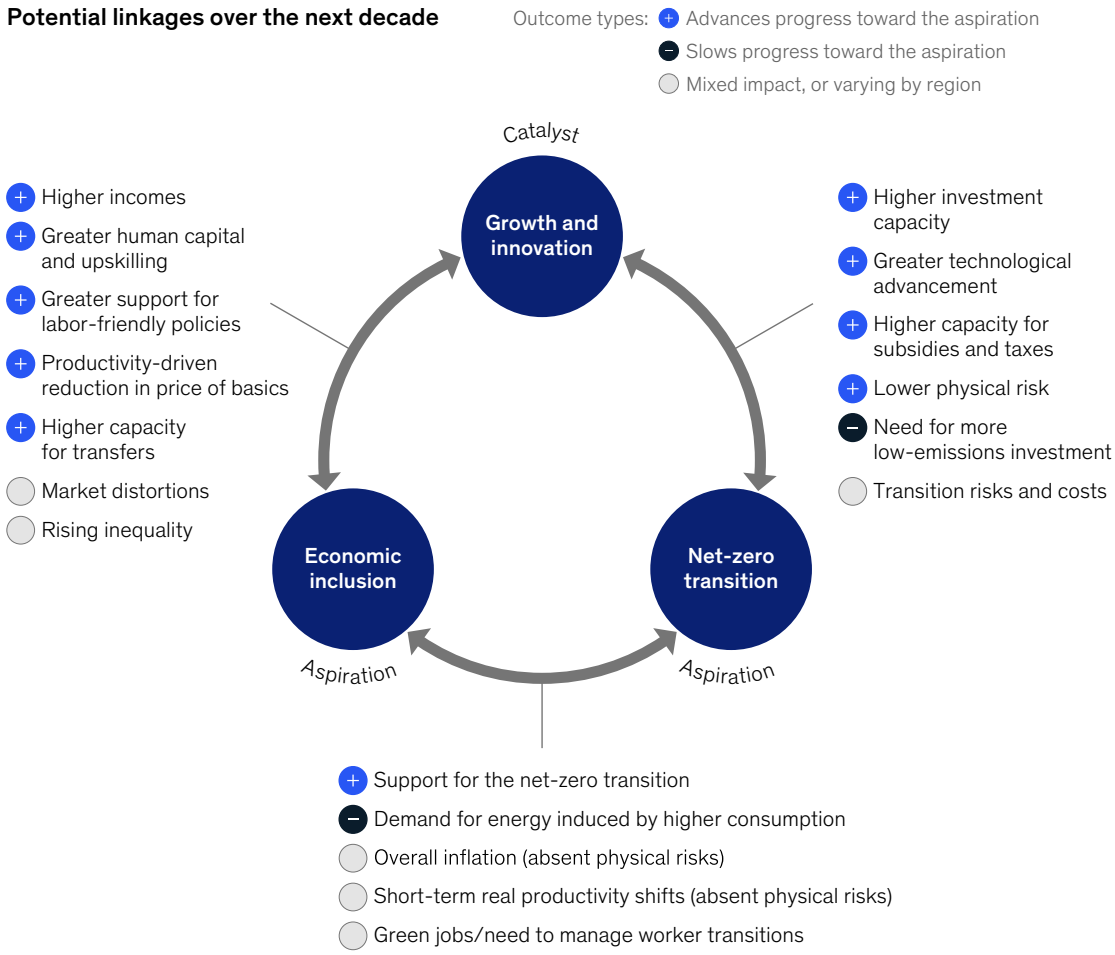
[1] While inclusion intersects with issues of race and gender, this report focuses on economic inclusion for the population as a whole. MGI and McKinsey have a large body of research examining inclusion from racial and gender perspectives. Similarly, while sustainability encompasses many priorities, this research focuses specifically on the net-zero transition.

[2] We use a 2020 starting point to give a clear decade-long view of potential progress. Scenarios from the Network for Greening the Financial System (NGFS), the basis for our sustainability analysis, use 2020 as their starting point. Based on investment in low-emissions assets and increases in empowerment in 2021 and 2022, the scale of spending needed this decade has not dramatically shifted.

Exhibit E1

Growth and innovation are essential to making progress toward bold goals.

Potential linkages over the next decade



Note: In this analysis, we directly quantify the impact of growth on economic inclusion and the net zero-transition. We do not model second- and third-order effects (eg, economic inclusion's subsequent impact on GDP growth).
Source: McKinsey Global Institute analysis

happening at present. Since neither could be addressed instantaneously, we assume steadily upward progress over the decade. This hypothetical would require the equivalent of **8 percent of global GDP annually**, with significant variations by region.

This is obviously a massive sum, and its scale leads us to explore **how much market forces could deliver**. We find that accelerated growth and business innovation could take the world halfway to closing the combined gaps. Companies can make major contributions and benefit from new opportunities, even under current policy frameworks.

Beyond this point, the remaining economic gaps leave societies with choices about whether to address both challenges in full, in part, or not at all. Countries might prioritize one of these transformations over the other, or leave both unaddressed beyond what market forces can do. They might also attempt to make partial progress on both fronts. Closing the gaps would require protecting

baseline growth against headwinds, boosting productivity and innovation to maximum levels, and potentially making societal commitments equivalent to 2 percent of global GDP, as an annual average, over the decade ($20 trillion cumulatively). Importantly, societal commitments would activate more innovation and investment by private actors. But actions on this scale would also take economies into uncharted territory, demanding more attention to maintaining economic growth and stability.

Societies are already spending on the twin priorities. In 2020, some 90 percent of the $1.4 trillion of global net-zero spending was either made by the public sector or subsidized in some way. About 20 percent of the consumption of people below the empowerment line was supported by public and social spending on in-kind transfers in 2020, by our estimates.

Are there further opportunities to close gaps without risking growth? All economies have constraints on fiscal resources. They would need to weigh those constraints against the implications of leaving urgent needs unaddressed—and against the potential longer-term payoff of an economically empowered population and a stable climate. Our research aims to provide ambition, provocation, and a fact base to inform these debates.

Economic empowerment raises living standards

More than a billion people have exited extreme poverty in recent decades. Yet large populations above this line lack adequate healthcare, quality education for their children, or decent housing. The SDGs incorporate higher aspirations, while the UN Development Programme calls to "expand the sense of possibility in people's lives."[3] When people have health, education, and stability, they are equipped to improve their own circumstances.

$2.15

extreme poverty line

$12

global floor of the empowerment line

Continuing to raise the bar everywhere in the world

The World Bank's extreme poverty line was recently updated from $1.90 to $2.15 per person per day (in purchasing power parity, or PPP, terms).[4] But as more people exceed it, the world needs a complementary benchmark to track progress toward a higher living standard.

The concept of economic empowerment described in this research ensures that everyone has the means to access the full range of basics (Exhibit E2). Empowerment still implies living in frugal circumstances. But people can begin to build a modest buffer for weathering emergencies and can invest in themselves to become more productive.[5]

When people rise meaningfully above poverty, many outcomes improve, including childhood mortality, life expectancy, years of schooling, and digital and financial inclusion. Life satisfaction increases when people shed the stress of not being able to make ends meet and can fulfill more of their material desires.[6]

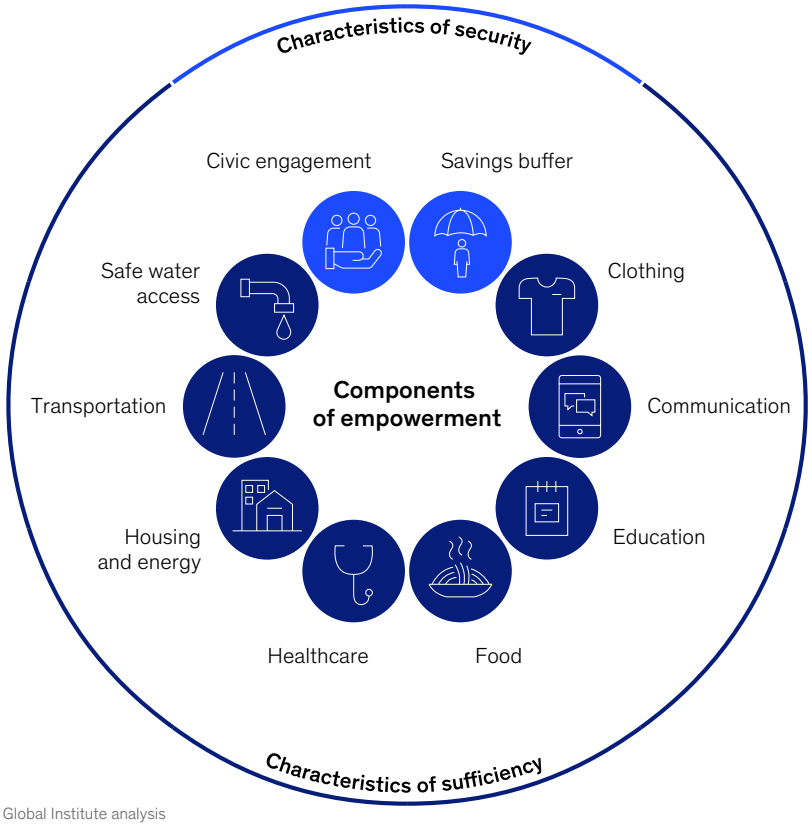
How we quantify the higher bar

We start with consumption of $12 per person per day in PPP terms as a global floor, in line with other research (see Box E1, "Measuring economic inclusion"). For countries at higher income levels,

[3] *Human development report 2021–22: Uncertain times, unsettled lives: Shaping our future in a transforming world*, UN Development Programme, September 2022.
[4] This 2022 update in the global poverty line also involved changing from 2011 PPP terms to 2017 PPP terms.
[5] This concept is rooted in earlier MGI research that quantified the cost of a basket of essential goods and services for households in India. See *From poverty to empowerment: India's imperative for jobs, growth, and effective basic services*, McKinsey Global Institute, February 2014.
[6] Daniel Kahneman and Angus Deaton, "High income improves evaluation of life but not emotional well-being," *Proceedings of the National Academy of Sciences*, volume 107, issue 38, September 2010. Andrew T. Jebb et al., "Happiness, income satiation and turning points around the world," *Nature Human Behaviour*, volume 2, 2018, found a similar relationship between life satisfaction and prosperity globally.

Exhibit E2

The empowerment line is the point at which individuals can meet their essential needs and begin to achieve security.



Source: McKinsey Global Institute analysis

we raise the line to account for local norms and the costs of food, housing and energy, safe water access, transportation, healthcare, education, clothing, and communication, using WageIndicator data as of 2022 and 2023. Purchasing power is consistently set to obtain that basket of goods plus a small margin for social activities and savings.[7] The housing may be a modest apartment; the transportation could be a transit pass, a used car, or perhaps a motorbike in some contexts.

We then convert from PPP terms to 2020 US dollars. Expressed that way, the empowerment threshold ranges between $3 and $50 per capita per day across the countries in our data set.[8] To give some examples, the line is about $3 per capita in Afghanistan and Sudan; $4 to $5 in India, Indonesia, and Nigeria; $8 to $11 in China, Mexico, South Africa, and Thailand; $15 to $45 in Australia, Denmark, Italy, Japan, and Poland; and $50 in the United States. Establishing each country's threshold makes it possible to size its empowerment gap—the share of the population that falls short of sufficiency as well as the dollar amount that would bridge this gap.

[7] We note that having one empowerment threshold for a given country does not reflect how housing and other costs vary from region to region within the country; it costs more to live an empowered life in an expensive major city than in a poorer rural area.
[8] Iceland and Switzerland are outliers on the upper end of the empowerment line range and above $50.

Box E1

Measuring economic inclusion

It's been said that you can't improve what you can't measure. In the case of poverty, the challenge is not a lack of metrics but rather a proliferation of them.[1] Starting with the holistic SDGs, economic inclusion can be framed as moving everyone toward health and well-being, education, affordable essentials, and sustainable communities.

Poverty can be more specifically expressed in monetary or nonmonetary terms.[2] It is often calculated monetarily by looking at income or consumption, using both absolute and relative terms or a hybrid of the two (exhibit). The World Bank, for example, sets its global extreme poverty line at $2.15 per person per day in 2017 purchasing power parity terms. This is the median of national poverty lines in more than two dozen of the world's poorest countries.[3] To account for higher living standards as countries move up the development curve, the World Bank introduced poverty lines specific to lower-middle- and upper-middle-income economies.[4]

Another approach uses the extreme poverty threshold as a floor, combined with lines that rise with countries' income levels.[5] Others have proposed an entirely relative line based on median income or consumption.[6]

Another set of literature uses the aspiration for everyone globally to reach a higher living standard. Development economist Lant Pritchett, for example, proposes using the high-income poverty threshold universally, arguing that there is basic unfairness in setting a line with lower living standards in developing countries.[7] The lower bound of a high-income poverty threshold has inspired definitions of a global middle class, a topic of debate. Abhijit Banerjee and Esther Duflo have explored the consumption patterns that point to someone exiting poverty and entering the global middle class.[8]

The concept of economic empowerment in this research defines a minimum acceptable standard of living as having the means to afford nutrition, education, healthcare, housing, water and sanitation, and energy. Many of these aspirations are embodied in the SDGs; they are essential to enabling people to realize more of their potential. Empowerment starts with an absolute floor that lifts people past the point at which they are no longer at extreme risk of falling back into poverty.[9] Research from Brookings economist Homi Kharas (cofounder of World Data Lab, one of the main sources of data for this analysis) suggests that this level is $12 per person per day in PPP terms.[10]

Since we aim to use a common definition of basic needs and security worldwide, why not an absolute PPP threshold? First, the data set from the WageIndicator Foundation that we use for setting thresholds above the global floor prices a consistent basket of essential goods and services, not the economy-wide basket used in PPP measures.[11] Second, some costs vary due to differing norms for the type or amount of a good or service related to empowerment (for example, the type of transportation required to secure a job or the minimum quantity of healthcare available to consumers). Our approach therefore gradually scales up empowerment lines for countries with progressively higher levels of income.[12]

Our approach is consistent with economist Martin Ravallion's view: "Any absolute line you choose will not adjust over time or across countries for differences in the costs of avoiding social exclusion and relative deprivation. . . . Where and when you live matters as to whether you should be considered poor at any given level of real consumption."[13] Nobel laureate Amartya

1 Anthony B. Atkinson, *Measuring poverty around the world*, Princeton University Press, 2019.
2 Nonmonetary approaches include the Multidimensional Poverty Index developed by Sabina Alkire and James Foster, and the UN Development Programme's Human Development Index. See *Global multidimensional poverty index 2023*, Oxford Poverty & Human Development Initiative and UNDP, 2023.
3 Updated from $1.90 in 2011 PPP. See Dean Jolliffe et al., *Assessing the impact of the 2017 PPPs on the international poverty line and global poverty*, World Bank policy research working paper number 9941, February 2022.
4 R. Andres Castaneda Aguilar et al., "September 2022 global poverty update from the World Bank: 2017 PPPs and new data for India," World Bank Data Blog, September 14, 2022.
5 See, for example, Martin Ravallion and Shaohua Chen, "A proposal for truly global poverty measures," *Global Policy*, volume 4, issue 3, September 2013.
6 Christopher Garroway and Juan R. de Laiglesia, *On the relevance of relative poverty for developing countries*, OECD Development Centre, working paper number 314, September 2012.
7 Lant Pritchett, "Monitoring progress on poverty: The case for a high global poverty line," in *Eradicating global poverty: A noble goal, but how do we measure it?* Emma Samman, ed., Overseas Development Institute working paper, 2013.
8 Abhijit V. Banerjee and Esther Duflo, "What is middle class about the middle classes around the world?" *Journal of Economic Perspectives*, volume 22, number 2, spring 2008; and William Easterly, "The middle class consensus and economic development," *Journal of Economic Growth*, volume 6, 2001.
9 *Latin American economic outlook 2019: Development in transition*, OECD, Economic Commission for Latin America and the Caribbean, CAF Development Bank of Latin America, and the European Union, 2019. Middle-class households have also been defined as "comfortably clear of the risk of poverty" in Anthony B. Atkinson and Andrea Brandolini, "On the identification of the middle class," in *Income inequality: Economic disparities and the middle class in affluent countries*, Janet C. Gornick and Markus Jantti, eds., Stanford University Press, 2013.
10 Homi Kharas, *The emerging middle class in developing countries*, OECD Development Centre, working paper number 285, January 2010, defines the global middle-class line as $10 in 2005 PPP, since raised to $12 in 2017 PPP. Also using this general level are Surjit Singh Bhalla, *Second among equals: The middle-class kingdoms of India and China*, 2007; Nancy Birdsall, Nora Lustig, and Christian Meyer, *The strugglers: The new poor in Latin America?* Center for Global Development working paper number 337, 2013; and Rakesh Kochhar, "The pandemic stalls growth in the global middle class, pushes poverty up sharply," Pew Research Center, March 2021. See also worlddata.io.
11 This data set compiles costs of essential goods (rather than the whole economy, which PPP indices measure). See Martin Guzi et al., *Living wages and income worldwide*, WageIndicator Foundation, 2023, and wageindicator.org.
12 The combination of a floor with a gradual scaling-up approach is used by Dean Jolliffe and Espen Beer Prydz, "Societal poverty: A relative and relevant measure," *World Bank Economic Review*, volume 35, issue 1, February 2021.

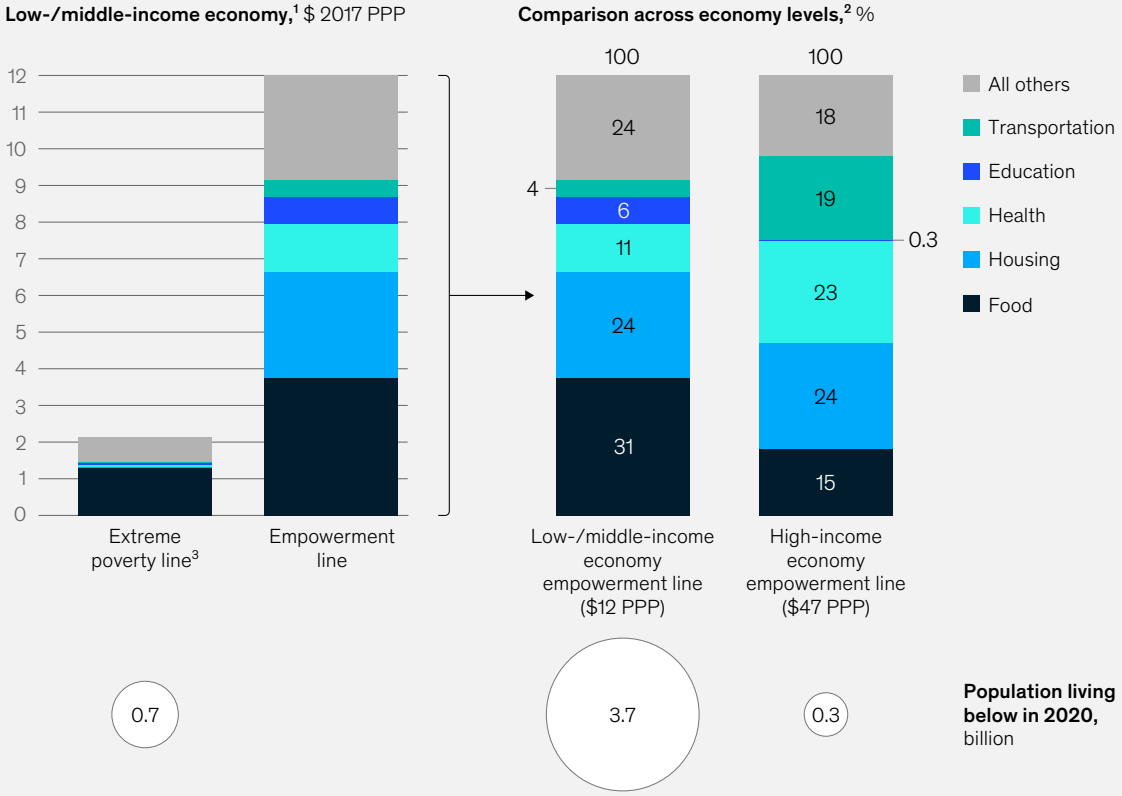
Box E1
(continued)

Measuring economic inclusion

Exhibit

The means required to achieve sufficiency in basic needs vary by stage of development.

Illustrative examples of daily spending patterns



[1]The extreme poverty spending distribution is based on India's first decile of household expenditure in the 2011–12 National Sample Survey of Household Consumer Expenditure. The empowerment distribution is based on spending required to meet basic needs, derived from WageIndicator Foundation data for India. The empowerment line of $12 in 2017 PPP terms is our global floor. It is informed by academic literature, including Kharas (2010) and Bhalla (2007), establishing the global middle-class threshold as $10 in 2005 PPP (since raised to $12 in 2017 PPP).
[2]The empowerment line and distribution are based on spending required to meet basic needs, derived from WageIndicator Foundation data from 2022 and 2023 for the United States.
[3]Based on the World Bank's definition of extreme poverty, which is $2.15 per person per day in 2017 PPP terms.
Source: World Data Lab; WageIndicator Foundation; World Bank; Ministry of Statistics and Programme Implementation (India); McKinsey Global Institute analysis

Sen also notes that what is needed for daily life may differ across societies.[14]

Empowerment is related to the "living wage" concept that has gained traction for employers and workers to evaluate wages against living costs. It has been broadly defined as the amount individuals need to earn to cover their basic household expenses plus taxes.[15] The empowerment line is a consumption-based counterpart that complements this income-based metric.

In both high- and low-income countries, we view empowerment as the point at which people can begin to invest in themselves and have a fuller range of choices about shaping their lives. This echoes Sen's assertions that income alone does not reflect well-being. Economic empowerment conveys the ability to participate in society, the freedom to enjoy life, and individual agency.

Finally, economic inclusion raises the larger topics of inequality and redistribution.

In this research, we determine what it would take to lift the poorest population segments, a goal that has widespread support. We explicitly do not model redistribution from the wealthiest segments as the means to achieve this. We also recognize that poverty intersects with issues of race and gender, but this analysis does not incorporate demographics.

[13] Martin Ravallion, "Two goals for fighting poverty," in *Eradicating global poverty: A noble goal, but how do we measure it?* Emma Samman, ed., Overseas Development Institute working paper, 2013.
[14] Amartya Sen, *Development as freedom*, Oxford University Press, 1999.
[15] See, for example, Amy K. Glasmeier, Living Wage Calculator, livingwage.mit.edu.

Because we use a consumption-based metric, taxes and direct transfers are already taken into account. Cost-of-living thresholds are then adjusted for the estimated in-kind transfers provided in each country. Universal healthcare, for example, lowers out-of-pocket healthcare costs for individuals. We note, however, the challenges of accurately tracking how public services reach the targeted recipients. Indeed, one way for countries to advance empowerment is through logistical and operational improvements to ensure that social benefit programs can be accessed by their intended beneficiaries.

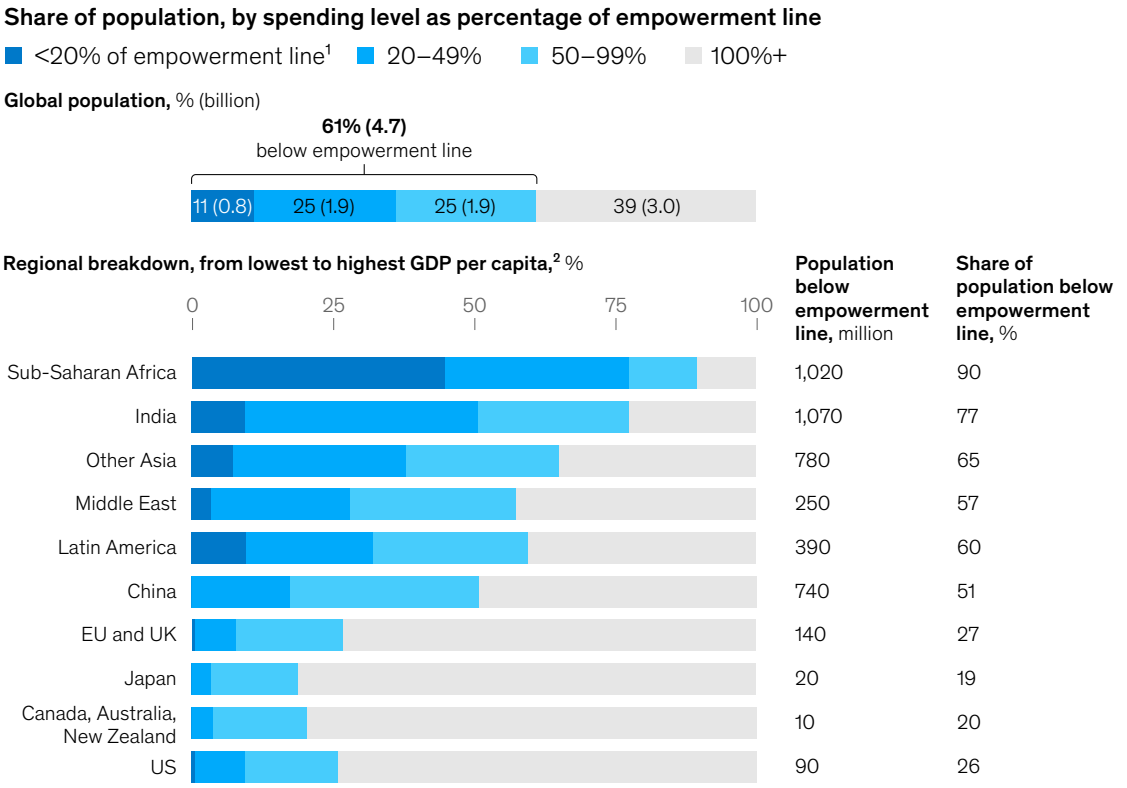
Finally, we note that empowerment is a per-person metric. Families that combine their resources would have better prospects for meeting their basic needs than individuals below this line living alone.

Who is not fully economically empowered?

About 4.7 billion people worldwide (approximately 60 percent of the global population) are not yet fully economically empowered by this benchmark (Exhibit E3).[9] Some 4.4 billion of them live in

Exhibit E3

Worldwide, 4.7 billion people live below the empowerment line, with poverty levels that vary across regions.



[1]A spending level threshold just above the international poverty line for countries where the empowerment line is the global floor of $12 PPP. Based on 2020 population figures.
[2]Geographies represent 95% of global GDP.
Source: World Data Lab; WageIndicator Foundation; Oxford Economics; World Bank; IMF; OECD; McKinsey Global Institute analysis

[9] For both empowerment and sustainability analyses, we use regional groupings that follow NGFS conventions.

For many people below the empowerment line, especially in the world's major cities, the high cost of housing eats into other priorities.

low- and middle-income countries; nearly half are in sub-Saharan Africa and India. Some may live in rural villages far from the nearest medical clinic; others are in crowded urban tenements.

Yet more than 300 million people in high-income countries also fall into this category, including just over a quarter of the population in the United States and in the European Union and United Kingdom. While even high-income countries have some degree of homelessness and deprivation, most of the population below the empowerment line in these regions does not experience such severe poverty. Yet some of their essential needs are not sufficiently met. In many cases, the high cost of housing eats into other priorities. People may not be able to invest in better education or training for themselves or their children. Closer to the threshold, a person may rent a basic apartment with a decently equipped kitchen; he may even own a TV, a mobile phone, or a used car. But living paycheck to paycheck means there is little savings to handle emergencies, move, or retire comfortably. Someone whose family members have disabilities may have limited prospects for employment without caregiving support, for example.

The family of four squeezed into a small studio apartment in Los Angeles is not fully empowered. Neither is the street vendor in Lima nor the subsistence farmer in Laos.

The magnitude of lifting everyone to empowerment

Our analysis assumes that people below the line gain a bit more spending power each year through 2030. Because we adopt a common time frame for the world, this ramp-up to full empowerment would be steeper for the poorest deciles and more gradual for deciles closer to the line.

Using these parameters, achieving universal empowerment by 2030 would involve boosting the *cumulative* consumption of 4.7 billion people worldwide over the decade by just over $37 trillion (the empowerment gap). This boost is equivalent to 40 percent of this cohort's continued spending at 2020 levels.[10] We note that the gap is the product of how the threshold and the timeline are set. Lowering the threshold or allowing this trajectory to play out over a longer time frame would produce different results.

Making progress toward closing the empowerment gap matters. For billions of people, achieving minimum living standards is *the* foremost existential issue. Their hopes involve getting out of unsustainably high debt, securing healthcare for their children, or moving in search of a better job. Leaving so many people in vulnerable circumstances imposes limits on growth and risks destabilizing societies.

[10] The empowerment gap refers exclusively to the boost in spending power over 2020 levels. The current consumption of people below empowerment thresholds would amount to some $94 trillion over ten years, if extended at current levels.

Empowerment could yield long-term benefits—and not only for the individuals whose lives improve. It would eventually create a virtuous cycle. Many more people would have the skills and agency to participate in a knowledge-intensive and digital economy. They would also become consumers, fueling future growth.

The net-zero investment gap is the incremental low-emissions spending needed by 2030 to change the climate trajectory

Alongside the aspiration to raise living standards, countries and companies worldwide have committed to reducing emissions to net zero, aiming to limit global warming to 1.5°C relative to preindustrial levels in the current century. This research builds on scenarios from the Network for Greening the Financial System to quantify the low-emissions spending needed to get on this pathway by 2030 (see Box E2, "Measuring the net-zero investment need"). Across seven sectors globally, our analysis finds the biggest needs in power and mobility (Exhibit E4).

This research looks at scenarios of baseline economic growth (2.7 percent globally) and accelerated growth (3.4 percent globally).[11] Given the critical importance of growth to economic

[11] Baseline growth relies on projections from Oxford Economics (aggregating different growth rates across countries). Accelerated growth is an adjusted scenario in which productivity gains add another 0.7 percentage point.

Box E2

Measuring the net-zero investment need

We build on scenarios from the Network for Greening the Financial System (NGFS), adjusting for baseline and accelerated growth. NGFS scenarios are frequently used in risk analysis, provide regional granularity, and include a holistic view of emissions. This analysis is performed for approximately 50 key low-emissions technologies and 12 regions, addressing 85 percent of global greenhouse gas emissions. In some cases, NGFS variables were downscaled for more granular quantification. Our "investment" need includes both capital investment and consumer spending on items such as electric vehicles. We include only low-emissions investments such as solar and wind power, while excluding high-emissions investments in areas such as fossil fuels.

We build on the NGFS Net Zero 2050 scenario (with warming of 1.5°C by 2100) to estimate the incremental low-emissions investment that would be needed (the net-zero investment gap). The NGFS Current Policies scenario enables us to estimate how much spending is likely under current policy frameworks (with warming of about 3.0°C by 2100). Other "current policy" scenarios may produce slightly different warming outcomes, though all would find a gap with a net-zero trajectory.

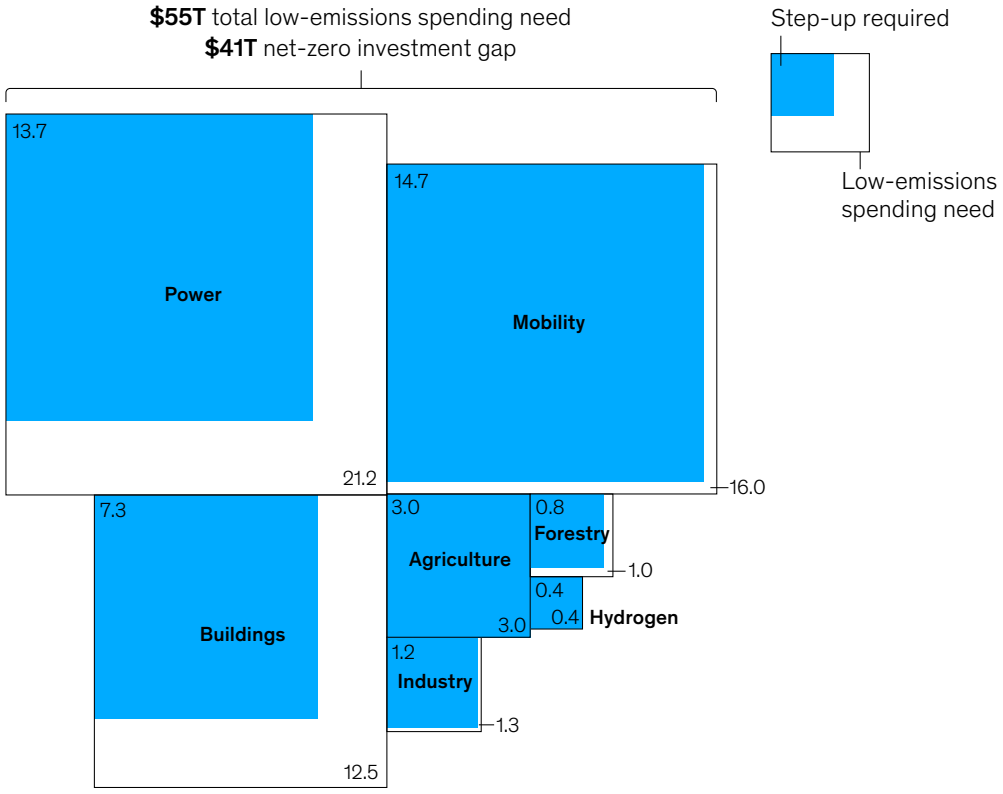
We also employ the McKinsey Transition Finance Model to answer the question of who pays. First we determine, for each lever and region combination, the share of grant and concessional spending required to make low-emissions technologies cost competitive with high-emissions alternatives based on their total cost of ownership, and to compensate consumers and companies for the technological and market risks associated with them. We rely on this modeling even for 2020, due to limited data on present-day subsidies; however, where available, we have triangulated our results with actual data. The rest of the spending need is then split between private actors (corporations and consumers) and public actors (governments, state-owned enterprises, multilaterals, and philanthropies) based on historical patterns and expert input. We acknowledge the many uncertainties in both this allocation and the size of the investment gap.[1]

[1] See *The net-zero transition: What it would cost, what it could bring*, McKinsey Global Institute, January 2022.

Exhibit E4

The net-zero investment need in this decade differs across seven major energy and land-use sectors.

Global low-emissions spending need and net-zero investment gap,[1] 2021–30, $ trillion



[1]Includes investment in assets with low-emissions footprints (not all necessarily carbon neutral) and in enabling infrastructure. Hydrogen includes low-emissions hydrogen production using biomass or electricity, as well as CCS-equipped production from fossil fuels. Forestry includes afforestation and avoided deforestation. Industry includes biofuel production, steel production with electric furnaces using scrap or hydrogen-fueled DRI, CCS-equipped steel production, and cement production using CCS-equipped or biomass-fueled kilns. Agriculture includes low-emissions production methods for crops and dairy and for livestock management (including use of biofertilizers, anaerobic digesters, nitrogen inhibitors, and feed additives). Buildings includes heating equipment for buildings run on electricity or biomass, district heating exchangers and connections, cooking technology not relying on fossil fuels, and building insulation. Mobility includes zero-emissions cars, buses, and commercial vehicles, as well as enabling infrastructure. Power includes electricity generation using wind, solar, hydro, nuclear, and geothermal power, generation relying on biomass and gas with CCS, electricity transmission and distribution, storage infrastructure, and heat production from low-emissions sources such as biomass.
Note: This is not a projection or prediction but rather a scenario analyzing how specific sustainability goals could be financed. Our starting point is the Network for Greening the Financial System (NGFS) Net Zero 2050 scenario using REMIND-MAgPIE (phase 2), modified for a higher-growth scenario. Our estimates exclude high-emissions spending.
Source: McKinsey proprietary models; NGFS; Oxford Economics; World Bank; Climate Policy Initiative; FAOSTAT; IEA; Damodaran data; McKinsey Global Institute analysis

inclusion, we use the higher assumption for net zero, a scenario that could add an estimated 3 gigatons (Gt) of energy-related CO_2 emissions in 2030 if historical relations of growth and emissions hold. This means that low-emissions spending would correspondingly need to scale up almost $5 trillion globally beyond what would be needed in a baseline scenario. In this high-growth world, getting on track for net zero would take cumulative investment and spending of $55 trillion on low-emissions assets over the decade—a step-up of $41 trillion as compared with

simply extending 2020 levels. We refer to this step-up as the net-zero investment gap.[12] At the same time, higher growth would expand the world's financing capacity.

It is important to note that this $41 trillion figure does not reflect the world's full energy and land-use investment; it excludes spending on high-emissions assets. Some high-emissions spending would continue, particularly in developing economies that are still expanding energy access, but overall global levels would fall. Some of the step-up in low-emissions spending could be captured as capital is reallocated away from high-emissions assets, provided that low-emissions alternatives become viable and cost competitive.

Our analysis assumes that providing incentives for low-emissions spending through subsidies would produce the same outcome as discouraging high-emissions spending through taxes. In practice, however, more policy mechanisms are needed to limit high-emissions spending. Some scholars have pointed to carbon taxes and subsidies as complements rather than a binary choice, especially at early stages of the net-zero transition.[13]

Empowerment and the net-zero transition affect each other—and some tensions would need to be managed

As people move toward empowerment, their consumption rises. As mentioned earlier, our analysis builds in the assumption that higher economic growth increases the net-zero financing need, relying on the historical relationship of growth to the production and consumption of energy- and emissions-intensive products. Going further to achieve full empowerment by 2030 could push these needs—and therefore emissions—even higher than what is accounted for in this adjustment.

Using data from India, South Africa, the United Kingdom, and the United States, we estimate that moving everyone to the empowerment line could raise demand for energy-intensive products and services, and in turn emissions, by as much as an additional 15 percent above the effects of accelerated growth alone.[14] However, significant uncertainties surround the effects of growth and empowerment on emissions. Historical patterns could change, for example, if consumers shift behaviors.

Just as empowerment affects the net-zero transition, the reverse is also true. If interventions such as carbon taxes increase the costs of energy and other goods for consumers, they could create a disproportionate burden for people below the empowerment line.[15] Actions such as recycling carbon tax revenue into transfers or subsidies could protect low-income households and provide economic development for distressed communities.[16]

[12] These figures differ from those in our 2022 report *The net-zero transition: What it would cost, what it could bring*. Here we focus only on low-emissions spending rather than total high- and low-emissions spending, and we use a 2030 rather than a 2050 time frame. This research also includes updated data and refined assumptions.

[13] For example, see Daron Acemoglu et al., "The environmental and directed technical change," *American Economic Review*, volume 102, number 1, February 2012.

[14] Data on household energy expenditures from the UK Office for National Statistics, US Consumer Expenditure Survey, Statistics South Africa, and India 68th Round of National Sample Survey. Energy expenditures are uplifted for each decile under the empowerment line, then used to estimate the relative increase in emissions per capita for each country (based on World Bank CO_2 energy-related emissions data for each country's direct emissions). Does not include non-energy and non-CO_2 emissions, which could change the estimate.

[15] Energy prices could rise in the near term, for example, if carbon prices are imposed before low-emissions energy sources are widely available and cost competitive. But they could also decline over the longer term (for example, due to the lower operating costs of renewable energy sources and through energy efficiency).

[16] See, for example, Jonathan L. Ramseur and Jane A. Leggett, *Attaching a price to greenhouse gas emissions with a carbon tax or emissions fee: Considerations and potential impacts*, US Congressional Research Service, 2019; Frederick van der Ploeg and Maria Chiara Paoli, "Recycling revenue to improve political feasibility of carbon pricing in the UK," VoxEU, October 2021; and Baoping Shang, *The poverty and distributional impacts of carbon pricing: Channels and policy implications*, IMF working paper, 2021.

The net-zero transition could produce a surge of jobs in construction, certain types of manufacturing, and operations. Previous MGI research found that job gains could slightly outweigh job losses globally.[17] However, the small net impact disguises the possibility of substantial churn as jobs are redistributed across industries and regions. In addition, the jobs being added may require different skills.

These potential impacts on households and labor markets make it crucial to manage the transition effectively and support consumers and workers in the most affected regions and sectors.

The two aspirations also have complementary aspects. *Not* acting to curb temperature rise could harm growth—and empowerment—substantially through effects such as impairing the ability to work outdoors, agricultural losses, and damage to capital stock. Lower-income people would become even more exposed to hazards if climate change is not convincingly addressed. And research has shown that as households become more empowered, they are more likely to be aware of the risks of climate change and, in turn, lend support to net-zero policies.[18]

The gaps vary widely across regions

The empowerment and net-zero investment gaps vary in magnitude across different parts of the world, not only in absolute dollar terms but also relative to GDP.

In the timeline we have set to 2030, the global empowerment gap would be equivalent to about 4 percent of world GDP on average annually. However, it is only 1 percent of annual GDP in high-income regions, including Australia, Canada, the European Union and the United Kingdom, Japan, New Zealand, and the United States (Exhibit E5).

In developing regions, the starting point is harder. The total empowerment gap is the equivalent of 4 percent of GDP on average annually in the Middle East, 6 percent in Asia (not including China, India, or Japan), 7 percent in Latin America, 13 percent in India, and a daunting 45 percent in sub-Saharan Africa.

The net-zero investment gap is also equivalent to about 4 percent of global GDP each year. It ranges from about 2 percent of GDP in Japan to 14 percent on average annually in India (Exhibit E6).

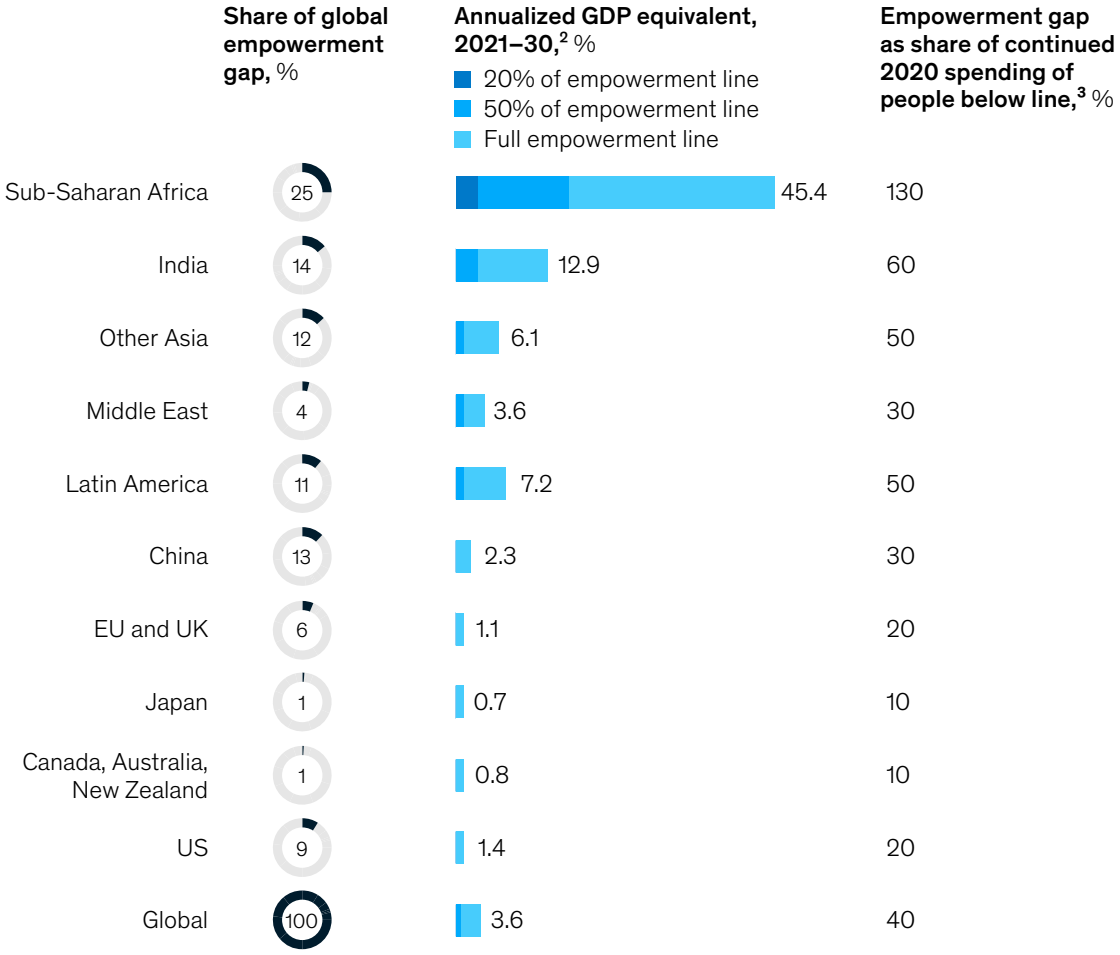
High-income regions have an annual net-zero investment gap on the order of about 3 percent of annual GDP on average, about four to five times higher than their 2020 levels of investment. Most developing regions have a larger net-zero investment gap relative to GDP. They face the twin challenges of replacing fossil fuel generation while substantially broadening energy access and meeting the energy needs of growing economies—and doing so in a low-emissions way.[19]

[17] *The net-zero transition: What it would cost, what it could bring*, McKinsey Global Institute, January 2022. See also *World Employment and Social Outlook 2018: Greening with jobs*, International Labour Organization, 2018.
[18] Higher-income households are more likely to buy products with sustainability-related claims; see "Consumers care about sustainability—and back it up with their wallets," McKinsey & Company, February 2023.
[19] NGFS scenarios account for differences in likely emissions reduction trajectories across developed and developing economies. Developed countries typically reach net zero earlier than developing countries.

Exhibit E5

Lower-income regions generally have larger shares of the $37 trillion empowerment gap.

Empowerment gaps by region, from lowest to highest GDP per capita[1]

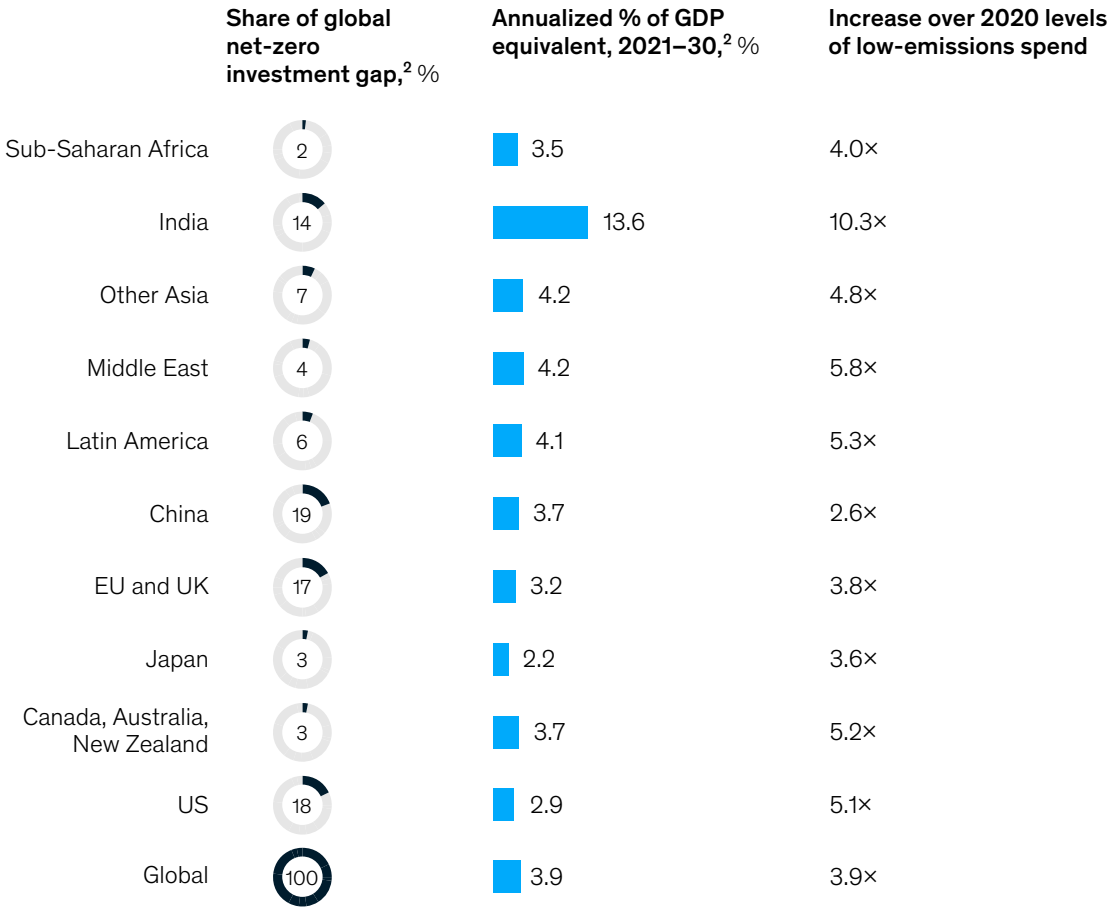


[1]Regions listed represent 95% of global GDP.
[2]In a high-growth scenario (3.4% global growth annually, 2021–30).
[3]Reflects target spending for populations below the empowerment line, 2021–30 divided by a continuation of their 2020 spending and in-kind transfers. Figure based on a linear ramp-up of spending each year, 2021–30, with full empowerment reached in 2030. The global step-up from 2020 to full empowerment in 2030 is ~80%.
Note: This is not a projection or prediction but rather a scenario analyzing how specific empowerment goals could be financed. For the empowerment line, our starting point is a global floor of $12 PPP of consumption per person per day, based on academic research.
Source: World Data Lab; WageIndicator Foundation; Oxford Economics; World Bank; IMF; OECD; McKinsey Global Institute analysis

Exhibit E6

Each region has a unique share of the $41 trillion net-zero investment gap.

Net-zero investment gaps by region, from lowest to highest GDP per capita[1]



[1]Regions listed represent 95% of global GDP.
[2]This reflects a high-growth scenario (3.4% annual global growth, 2021–30). In a baseline scenario of 2.7% global growth, the net-zero investment gap would be $37 trillion (cumulative, 2021–30).
Note: This is not a projection or prediction but rather a scenario analyzing how specific sustainability goals could be financed. Our starting point is the NGFS Net Zero 2050 scenario using REMIND-MAgPIE (phase 2), modified for a higher-growth scenario. Our estimates include the necessary low-emissions spending on energy- and land-use systems and exclude high-emissions spending.
Source: McKinsey proprietary models; NGFS; Oxford Economics; World Bank; Climate Policy Initiative; FAOSTAT; IEA; Damodaran data; McKinsey Global Institute analysis

Growth and business-led innovation could be the biggest drivers of economic empowerment

How could populations below the empowerment line gain more spending power? Our scenario starts with growth. By our estimates, aggregate baseline growth of 2.7 percent per year globally could generate enough income to give our target population the ability to meet some $14 trillion

more of their needs over ten years.[20] This could help lift 830 million people into empowerment by 2030 and bring some 160 million people out of poverty, reducing the share of the global population in poverty from 11 to 8 percent.[21]

On top of this, businesses can improve productivity to accelerate global growth. Farm and non-farm sectors have the potential to raise productivity, in aggregate, by at least 0.5 to 1.0 percent each year across regions, as outlined in many prior MGI research efforts.[22] This is not only about cost-saving efficiencies; it is also about innovation and new business creation, new types of work, and products and services that address new markets. If global growth could reach 3.4 percent annually by harnessing such opportunities, more resources would also become available for public goods and social spending.

Increasing investment and technology adoption will be key to these efforts. This creates the challenge—and the opportunity—to upskill workers to use those technologies and make successful job transitions into more productive sectors and better-paying occupations. Previous MGI research has explored the scale of the skill shifts and occupational transitions that will likely be needed in the years ahead.[23] Our analysis here suggests that roughly 10 percent of lower- and mid-skill workers could see their wages rise if they are equipped to take on higher-skill jobs by 2030 in response to technology, sector-specific growth opportunities, and other trends.

Businesses have a critical role here. About half of workers' lifetime earnings is due to skill building through work experience and learning on the job; this dynamic is especially important for those without educational credentials who start out in low-wage work.[24] Businesses can become more productive by accelerating this process: during the pandemic, for example, US workers moved into different occupations, including better-paying ones, at a rate 50 percent higher than in the past.[25] But upskilling does not happen without intentional effort. It will be a heavy lift for businesses to improve this dynamic, especially where the process involves bringing people from subsistence farming into more productive work.

All told, higher growth combined with creating and filling more productive jobs could close an additional $10 trillion of the global empowerment gap beyond what baseline growth can deliver, by our estimates. This includes the impact of social and public transfers rising in line with higher growth. This could raise living standards and transform lives on a massive scale, lifting 2.1 billion people into empowerment and 600 million more out of poverty. In this scenario, the share of the global population below the empowerment line drops from 60 percent to 30 percent and the share in poverty shrinks to 3 percent over the decade.

Lower-income countries would take longer to achieve full empowerment. But accelerated economic growth could eliminate the most severe forms of poverty in much of the world by 2030 (although we note the unique difficulties in places where conflicts are ongoing, among other deep-rooted structural issues).

[20] The lift required for global empowerment is based on 2020 empowerment thresholds. We do not adjust annually, although the line may in fact rise due to increasing per capita income, changes in input costs, and other factors. Conversely, we also do not model the potential positive GDP implications of having many more empowered and productive workers.
[21] We use 20 percent of the empowerment line as a proxy for poverty. For countries at the floor of $12 PPP per day, this is slightly higher than the World Bank's $2.15 line.
[22] Recent research includes *The future of wealth and growth hangs in the balance* (May 2023) and *Rekindling US productivity for a new era* (February 2023).
[23] See, for example, *Jobs lost, jobs gained: What the future of work will mean for jobs, skills, and wages*, McKinsey Global Institute, November 2017.
[24] *Human capital at work: The value of experience*, McKinsey Global Institute, June 2022.
[25] *Generative AI and the future of work in America*, McKinsey Global Institute, July 2023.

The toughest challenge is in sub-Saharan Africa. If economic growth remains at the baseline, the absolute numbers of those experiencing the most extreme deprivation might actually tick up as the population rises. But accelerated productivity-driven growth could cut that population in half, which translates to 250 million people exiting poverty. The gap remaining to fully erase poverty in this scenario amounts to $120 billion over a decade, equivalent to about 5 percent of total public spending in these countries, projected at historical rates. At the same time, living standards would continue to improve for the rest of the population. In a high-growth scenario, the population above 50 percent of the empowerment standard would rise from 260 million in 2020 to 550 million in 2030. Transforming so many lives would expand the continent's possibilities (see Box E3, "The empowerment opportunity for Africa").

Some $15 trillion of new low-emissions spending could be unlocked this decade through growth and innovation

How much low-emissions spending can be spurred by growth and innovation? And what role will private actors play? This depends on whether each low-emissions investment opportunity is "in the money"—that is, competitive in total cost of ownership relative to traditional alternatives. We have analyzed these by technology, sector, and region.

Only about 10 percent of the $1.4 trillion low-emissions investment in 2020 was fully private. Our model starts by assuming these levels continue over the decade. This would mean an additional $14 trillion coming on stream by 2030.[26]

On top of that, an additional $15 trillion in investment could occur, even without changes to the policy frameworks that existed in 2020.[27] Of this, $3 trillion could come from current investment simply rising in line with baseline growth (assuming that spending levels stay consistent as a share of GDP). The remaining $12 trillion could occur with accelerated economic growth and, more importantly, with technological advances on the horizon making low-emissions alternatives more cost competitive.

While some of this $15 trillion step-up would continue to be financed or subsidized by public budgets, the majority could consist of "in the money" spending by the private sector. Combined with continued spending at 2020 levels, some $10 trillion in low-emissions spending could become viable for private actors by 2030.

Where exactly are these "in the money" opportunities? The power and mobility sectors in China, Europe, India, and the United States collectively make up about 70 percent of this category—and these are precisely the areas with the biggest needs for investment. Action is already building in these areas. With new supply chains turning out batteries and a wider array of models hitting the market, electric vehicles are poised to become more affordable. Meanwhile, technology advances and continued cost reductions could create almost $700 billion of new viable investment opportunities across solar and wind generation in these regions.

[26] Our breakdown of spending across public and private actors is based on a granular bottom-up modeled assessment across technologies and regions. For the public sector, we include grants and concessional financing and direct public spending. We have triangulated our results from 2020 with external estimates and find them broadly in line. Any discrepancies are likely due to differences in how subsidies are accounted for.

[27] This includes, for example, carbon taxes in place as of 2020 in the EU.

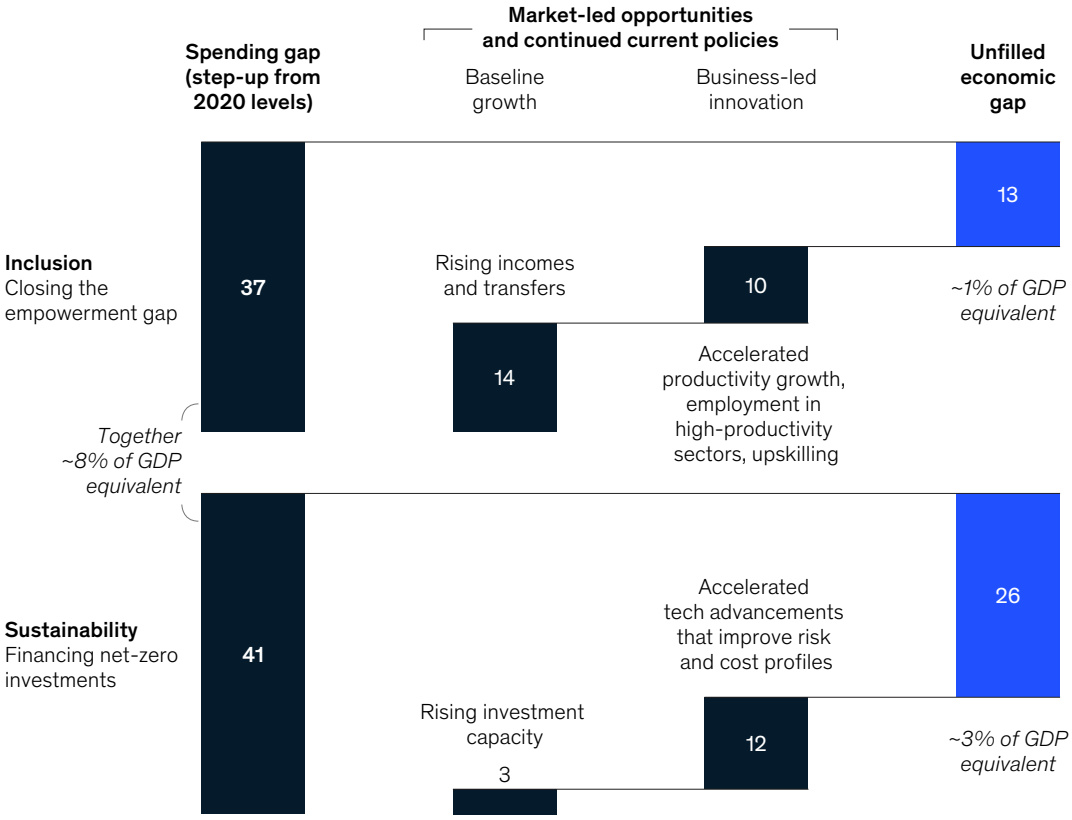
The extent to which growth, innovation, and continued current policies could close the combined gaps varies by region

Market forces—the combination of higher productivity-driven growth, business innovation, and technology advances—plus the continuation of current policies and public commitments could move the world much further on both fronts. At the global level, these forces could close roughly half of the combined empowerment and net-zero investment gaps (Exhibit E7). By our estimates,

Exhibit E7

Market-led opportunities and continued current policies could potentially get the world halfway toward the combined goals.

Avenues for filling each gap, cumulative, 2021–30, $ trillion[1]



Note: This is not a projection or prediction but rather a scenario analyzing how specific empowerment levels and net-zero investments could occur. For the empowerment line, our starting point is a global floor of $12 PPP of consumption per capita per day, based on academic research. For net-zero investments, our starting point is the Network for Greening the Financial System (NGFS) Net Zero 2050 scenario using REMIND-MAgPIE (phase 2), modified for a higher-growth scenario. Our estimates include the necessary low-emissions spending on energy- and land-use systems and exclude high-emissions spending. Assumptions about policies and current commitments are as of 2021, reflecting the NGFS scenario.
[1]2020 $.
Source: McKinsey proprietary models; NGFS; Climate Policy Initiative; FAOSTAT; IEA; Damodaran data; World Data Lab; WageIndicator Foundation; Oxford Economics; World Bank; IMF; OECD; Conference Board; McKinsey Global Institute analysis

just under one extra percentage point of growth reduces the unfilled empowerment gap by more than one percentage point of GDP.[28]

But growth and business-led innovation have uneven potential across countries (Exhibit E8).

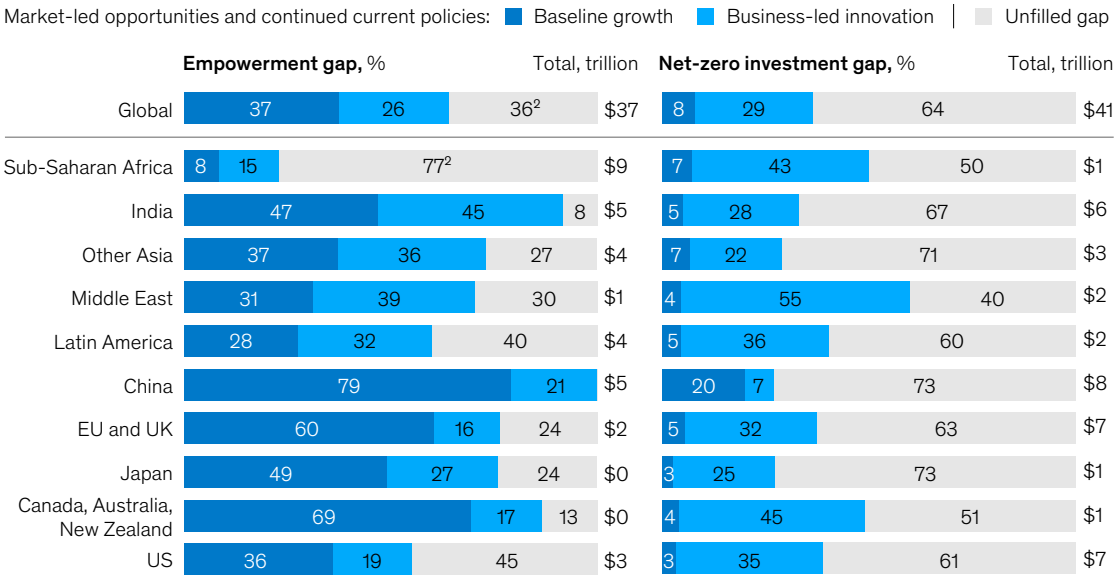
By 2030, these two forces could fill roughly 55 to 85 percent of the empowerment gap in high-income regions. Across the rest of the world, the picture varies widely. The greatest potential lift could occur in India and China. Accelerated growth and business innovation could erase more than 90 percent of the empowerment gaps in both countries, lifting about 700 million people in India and over 730 million in China above the threshold by 2030. But these two forces may have lower impact by 2030 in many other developing countries.

For net zero, the potential impact of growth is less, as discussed previously. Growth and business-led innovation plus continued current policies could together fill about 30 to 60 percent of the gap, with economies in Asia (apart from India) at the lower end.

Exhibit E8

The portion of the economic gaps that can be filled by growth and business-led innovation varies by region.

Potential of each avenue to fill gaps by region, from lowest to highest GDP per capita[1]



[1]Regions listed represent 95% of global GDP.
[2]Getting the full population to 50% of the empowerment line would decrease the unfilled gap to 23% globally and to 56% for sub-Saharan Africa specifically.
Note: Numbers may not sum to 100% due to rounding. This is not a projection or prediction but rather a scenario analyzing how specific empowerment spending levels and net-zero investments could occur. For the empowerment line, our starting point is a global floor of $12 PPP of consumption per capita per day, based on academic research. For sustainability, our starting point is the Network for Greening the Financial System (NGFS) Net Zero 2050 scenario using REMIND-MAgPIE (phase 2), modified for a higher-growth scenario. Our estimates include the necessary low-emissions spending on energy- and land-use systems and exclude high-emissions spending.
Source: McKinsey proprietary models; NGFS; Climate Policy Initiative; FAOSTAT; IEA; Damodaran data; World Data Lab; WageIndicator Foundation; Oxford Economics; World Bank; IMF; OECD; Conference Board; McKinsey Global Institute analysis

[28] While economic growth increases the low-emissions spending need to reach a net-zero trajectory, the unfilled gap remains largely constant as a share of GDP.

The residual gaps raise fundamental questions

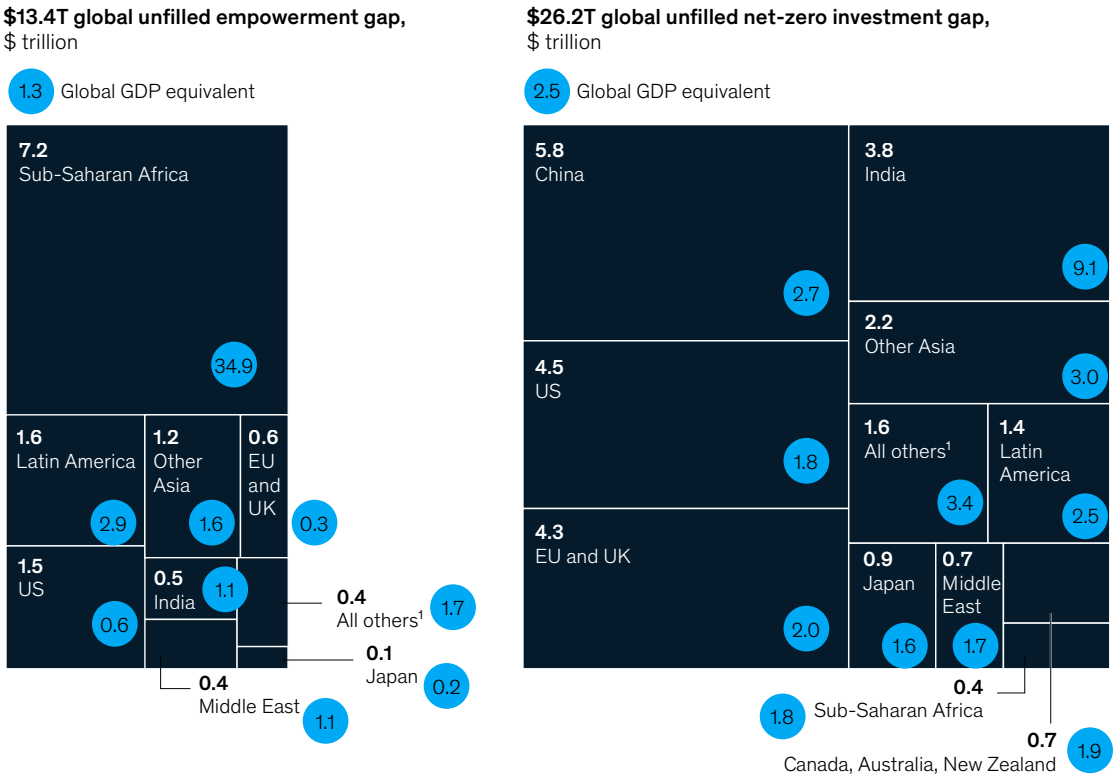
After accounting for growth, business innovation, and continued current policies, the unfilled gaps amount to $40 trillion across both empowerment and net zero. This is the global total, cumulative through the decade, with roughly $13 trillion on the empowerment side and $26 trillion for net-zero investments through 2030. Each country and region has a unique share of this residual gap, depending on its current development challenges, its growth prospects, and how carbon-intensive its economy currently is (Exhibit E9). Developing countries account for nearly two-thirds of the residual gap globally.

Exhibit E9

Sub-Saharan Africa has the highest unfilled economic gap, followed by the United States and China.

Regional breakdown of unfilled empowerment and net-zero economic gaps, cumulative, 2021–30

XX GDP equivalent for each region, annual average 2021–30, %



[1]Includes Canada, Australia, and New Zealand.
Note: Regions listed represent 95% of global GDP. This is not a projection or prediction but rather a scenario analyzing how specific empowerment spending levels and net-zero investments could occur. For the empowerment line, our starting point is a global floor of $12 PPP of consumption per capita per day, based on academic research. For sustainability, our starting point is the Network for Greening the Financial System (NGFS) Net Zero 2050 scenario using REMIND-MAgPIE (phase 2), modified for a higher-growth scenario. Our estimates include the necessary low-emissions spending on energy- and land-use systems and exclude high-emissions spending. Figures in 2020 US dollars.
Source: McKinsey proprietary models; NGFS; Climate Policy Initiative; FAOSTAT; IEA; Damodaran data; World Data Lab; WageIndicator Foundation; Oxford Economics; World Bank; IMF; OECD; Conference Board; McKinsey Global Institute analysis

Different outcomes are possible depending on the extent of growth, innovation, and public-private action

The choices societies make about prioritizing these aspirations and putting resources into them can produce a broad range of outcomes.

If economic growth stays at the baseline, but innovation does not bring down the cost of low-emissions technologies as much as expected and no additional commitments are made, some 830 million people would cross the empowerment line by 2030. But some 3.9 billion would remain below it, and the world would be on a trajectory for over 3.0°C of warming in 2100.[29]

[29] Drawing on expected warming under the NGFS Current Policies scenario as of 2100.

Box E3

The empowerment opportunity for Africa

This report builds on NGFS scenarios for its net-zero analyses. We therefore use NGFS regional groupings for our economic empowerment analysis to make the two goals more comparable. Yet the African continent is bigger and more diverse than the focus on sub-Saharan countries implies.

Looking at the entirety of Africa adds in other major economies, including Algeria, Egypt, and Morocco. While 90 percent of the population in sub-Saharan Africa alone is below the empowerment line, that share shrinks to 85 percent for the entire continent. Africa's gap to reach full empowerment is equivalent to 33 percent of GDP, down from 45 percent of regional GDP for sub-Saharan Africa alone.

Yet economic empowerment is not a binary condition, and what matters is progress along the continuum. Some 70 percent of the entire continent's population was below 50 percent of full empowerment in 2020. Getting them above this intermediate benchmark would be a major stride in development. This would require a boost in spending power equivalent to 11 percent of GDP, roughly in line with India's full empowerment gap—and significant progress is achievable through faster growth and business-led innovation.

Just as the story changes while zooming out to the full continent, it also becomes more nuanced when zooming in to individual countries. Beneath the regional aggregates are some economies that have stronger recent growth momentum and others with large populations closer to full empowerment. In Algeria, Botswana, Egypt, and Morocco, for example, market-led opportunities could close at least 70 percent of the full empowerment gaps—and get the entirety of these countries' populations above the 50 percent benchmark. Meanwhile, countries such as Benin, Cote d'Ivoire, Ghana, Kenya, Senegal, and Tanzania could rely on market forces to get more than half of their populations to 50 percent of full empowerment.

In our scenario of accelerated growth, some 770 million people across the continent could be above 50 percent of the empowerment line by 2030—almost doubling the number in 2020 (exhibit). At the same time, the number of people living in extreme poverty would drop by just under 270 million over the decade. As noted in recent MGI research, African economies can accelerate these outcomes through digitization, talent development, regional collaboration, and industry champions.[1] These strategies could attract more international investment, creating self-sustaining momentum that transforms millions of lives.

[1] *Reimagining economic growth in Africa: Turning diversity into opportunity*, McKinsey Global Institute, June 2023.

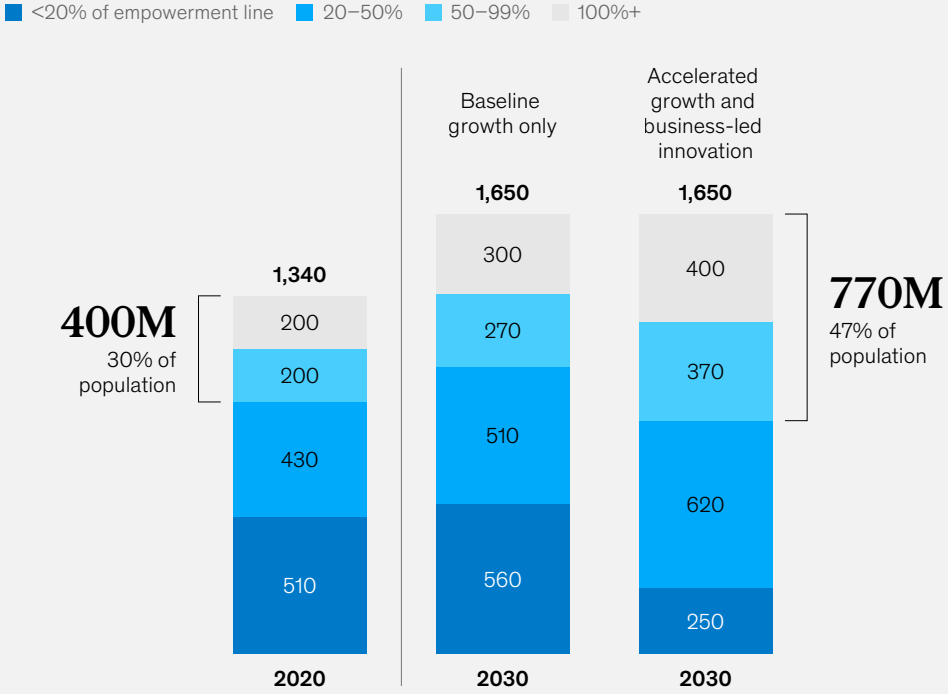
Box E3
(continued)

The empowerment opportunity for Africa

Exhibit

In Africa, growth and innovation could reduce poverty and lift almost another 400 million above 50 percent of the empowerment line.

Africa's population, by spending level as a percentage of empowerment line, million



Source: World Data Lab; WageIndicator Foundation; World Bank; Oxford Economics; McKinsey Global Institute analysis

Exhibit E10 shows the degrees of progress that could be achieved in line with higher growth, innovation, and commitments. While these are global results, the trade-offs differ across countries and regions.

— **Innovation-led accelerated growth.** Countries could choose to rely solely on maximizing what market forces can do. With higher economic growth and innovation delivering the anticipated productivity improvements and reductions in the price of low-emissions technologies, 2.1 billion people could move above the empowerment threshold, but the world would be on a 3.0°C warming path. This would produce much more progress, especially on the empowerment side, than the current trajectory, although it would be far from closing the gaps.

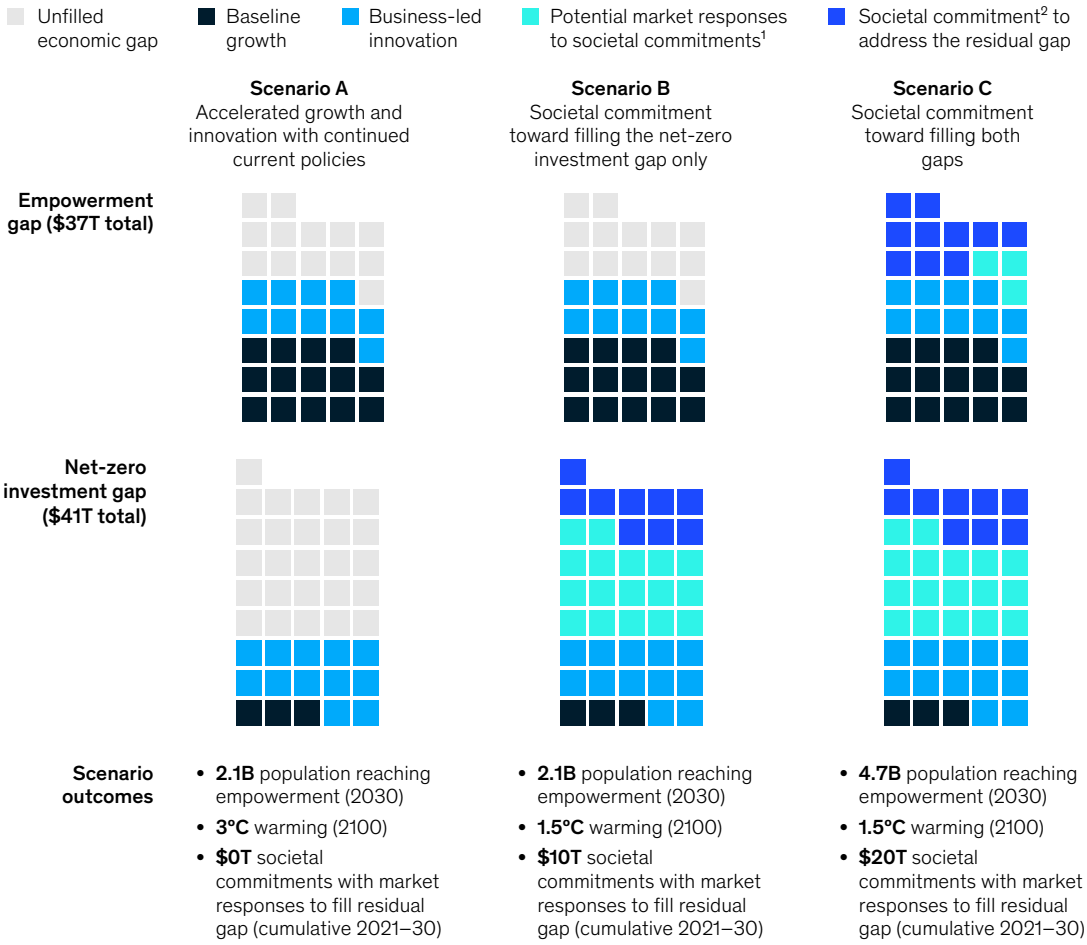
— **Commitment to partially address either gap.** Assuming high growth and innovation, societies could choose to address one of the residual gaps, leaving the other to be addressed by market forces alone. The exhibit illustrates societies choosing to tackle net zero completely but not empowerment. The choice is not binary, of course. Many combinations could yield partial progress on both challenges in tandem.

— **Commitment to fully close both gaps.** In this scenario, the global population would be fully empowered with a higher standard of living, and the world would be on track to achieve net zero by mid-century, hopefully limiting warming to 1.5°C by 2100. This would take a best-

Exhibit E10

Scenarios show a range of outcomes that depend on commitments to go beyond what growth and innovation can do.

Gaps by scenario, $ trillion (1 square = $1T)



[1]These include providing more affordable essentials, labor-friendly work arrangements, crowded-in capital, and faster learning rates (decreasing unit capex for low-emissions technologies, which occurs through R&D expenditure, learning by doing, and broader economies of scale).
[2]Societal commitment to address the residual gaps can come from a range of sources, including more efficient use of public funds, reprioritized government spending, taxes, debt, multilateral agencies, or philanthropic entities.
Note: These are not projections or predictions but rather scenarios analyzing how specific empowerment spending levels and net-zero investments could occur. For the empowerment line, our starting point is a global floor of $12 PPP of consumption per capita per day, based on academic research. For net-zero investments, our starting point is the Network for Greening the Financial System (NGFS) Net Zero 2050 scenario using REMIND-MAgPIE (phase 2), modified for a higher-growth scenario. Our estimates include the necessary low-emissions spending on energy- and land-use systems and exclude high-emissions spending.
Source: McKinsey proprietary models; NGFS; Climate Policy Initiative; FAOSTAT; IEA; Damodaran data; World Data Lab; WageIndicator Foundation; Oxford Economics; World Bank; IMF; OECD; Conference Board; McKinsey Global Institute analysis

case scenario of global growth and innovation along with commitments that wholly—and effectively—address the combined $40 trillion residual gap over the decade.

The important assumption in the final two scenarios is that public commitments on such a scale would spur additional private activity and investment. However, it is possible that such extensive commitments could distort the baseline economy.

These scenarios lead us to three questions about how additional commitments could theoretically close the last-mile gaps as well as the implications for countries that lack the economic resources.

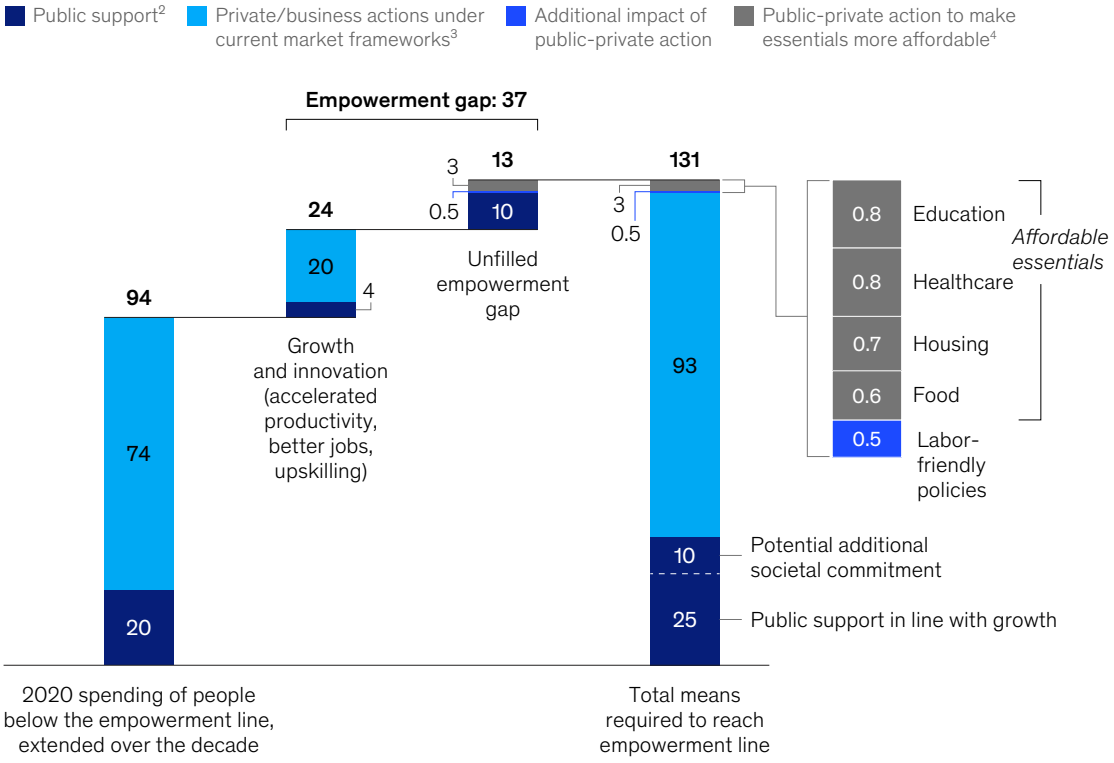
Question 1: How could societies get closer to full empowerment beyond what current market forces can do?

The options for closing the residual $13 trillion economic gap for universal empowerment involve delivering essential goods and services more affordably and effectively, improving work arrangements and pay, and injecting more direct support. As a thought experiment, we quantify some of these avenues, cautioning that the effects of intervention on this scale are not known (Exhibit E11).

Exhibit E11

To address residual empowerment gaps, societies could increase their commitments and make essentials more affordable.

Scenario for potentially closing the empowerment gap, cumulative, 2021–30, $ trillion[1]



Note: This is not a projection or prediction but rather a scenario analyzing how specific empowerment spending levels could occur.
[1]2020 $.
[2]Additional societal commitment can come from a range of sources, including more efficient use of public funds, reprioritized government spending, taxes, debt, multilateral agencies, or philanthropic entities.
[3]Economically viable under current policies.
[4]Based on matching productivity benchmarks.
Source: World Data Lab; WageIndicator Foundation; Oxford Economics; World Bank; IMF; OECD; Conference Board; McKinsey Global Institute analysis

First, beyond incomes, one of the biggest factors determining empowerment is the price of essential goods and services. Multiple efficiencies could bring down these costs. Benchmarking against the productivity gains and outcome improvements that some countries have achieved in past decades, we estimate the potential to improve capacity and productivity in housing, healthcare, education, and nutrition. If these are passed on to consumers, they could yield some $3 trillion of benefits to those below the empowerment line (cumulatively through 2030). In effect, this would lower the empowerment threshold. In places where the public sector provides essential services, looking for operational efficiencies and raising the bar for quality can ensure that public funds are well spent. Beyond the financial savings, these could yield immense benefits in terms of well-being and human potential.

For instance, we estimate that improved construction productivity could lower housing expenditures by 11 percent globally if all countries emulated their best-performing peers and these gains reached consumers. Health outcomes (expressed in healthy life expectancies) could improve by 36 percent globally, even keeping current levels of healthcare spending constant, if each country matched its best-performing peer over the next decade. Globally, we find an opportunity to improve learning outcomes (expressed as both years of schooling and test performance) by 42 percent, with the greatest potential gains in low- and middle-income countries.

Policies and incentives could spur more business attention and innovation in the affordable segments of the housing, healthcare, food, and education markets. In housing, for example, local governments can change regulations related to land use, density, and permitting to lower costs for private developers. They can also require a percentage of affordable units in larger multifamily projects or offer concessional finance to buyers and developers of affordable housing.

On a different front, more labor-friendly policies and business decisions to offer higher wages or benefits could address labor's declining share of national incomes, particularly in high-income economies. This could occur alongside structural factors we have accounted for as part of economic growth, such as changing employment mixes.

For the remaining unfilled $10 trillion global gap, one option could be well-administered transfers to households. While better-paying jobs are the biggest driver of higher living standards, transfers can be targeted to those who do not benefit from these opportunities, especially the very poorest, those living in remote communities, children, the elderly, and people unable to work. In many places, there is room to make subsidy programs more transparent. Digital tools can spot leakages while streamlining eligibility processes and delivering benefits more efficiently. In addition, governments, philanthropies, social investors, development finance institutions, and multilateral agencies could consider increased direct funding for affordable housing, health, and quality education.

A $10 trillion incremental commitment to achieve full empowerment would be equivalent to about 3 percent of total global government budgets over the decade (assuming both accelerated growth and government spending held constant at its current share of GDP). But the regional differences are stark. The amount needed to close the gap in the United States, for example, equals about 1 percent of government spending, while in sub-Saharan Africa, it would take 1.3 *times* the region's government spending. Even if the region's gap could be closed through international transfers, uncertainties remain about the potential size and duration of such aid. Large capital flows could affect prices, labor markets, savings, and ultimately growth.

Question 2: What would it take to get on a true net-zero trajectory beyond what current market forces can do?

After accounting for market forces, technological advances, and the continuation of current policies, the residual unfilled net-zero investment gap is $26 trillion, cumulative through the decade. This is equivalent to 3 percent of global GDP annually.

Fully addressing this unfilled economic gap would require a combined public–private effort. Higher public commitments could activate even more private capital and create even faster learning effects (that is, the lowering of costs as technologies mature and are deployed widely). For example, the vast majority of wind and solar will come on stream only if there is sufficient investment in transmission and distribution, which is largely a public-sector effort today in many parts of the world. All of this rests on the unproven assumption that these shifts do not damage the base economy.

We present a scenario illustrating how such commitments could play out if countries choose to make them. Beyond the levels of public funding suggested by growth and the continuation of current policies, we estimate that an injection of just under $10 trillion in public funding could potentially unlock almost $17 trillion in additional positive impact collectively to 2030. Public support could take the form of concessional finance (that is, lending below market rates), subsidies, and projects undertaken by state-owned enterprises and development finance institutions.

One-quarter of the total $55 trillion needed through 2030 could be private in-the-money spending (plus avoided spending), up from 10 percent in 2020. All told, some $31 trillion could potentially come from private actors (Exhibit E12), including what is expected to become cost competitive as well as what could be unlocked through additional policies and public finance. Public support alone makes up some 36 percent of the total in this scenario, down from half in 2020.

About 70 percent of crowded-in private spending could occur in the building and mobility sectors, based on our bottom-up modeling. Public support would be critical for building decarbonization, since heat pumps, a key technology, are not yet cost competitive relative to gas boilers. Similarly, there are significant opportunities in mobility, but public-sector support may still be needed, especially for heavy-duty electric vehicles, which are expected to take longer than battery electric passenger vehicles (BEVs) to become cost competitive.[30]

Such levels of public and private action could also yield up to $4 trillion in avoided investment, thanks to additional R&D, economies of scale, and learning by doing.

As with the empowerment gap, the $10 trillion of public commitment to be on track for net zero represents about 3 percent of total global government budgets over the decade (assuming both accelerated growth and government spending remain constant as a share of GDP). This ranges from less than 1 percent of current government budgets in the European Union and United Kingdom to 14 percent in India. The consequences of scaling up public commitments and international capital flows to this extent would be uncharted territory.

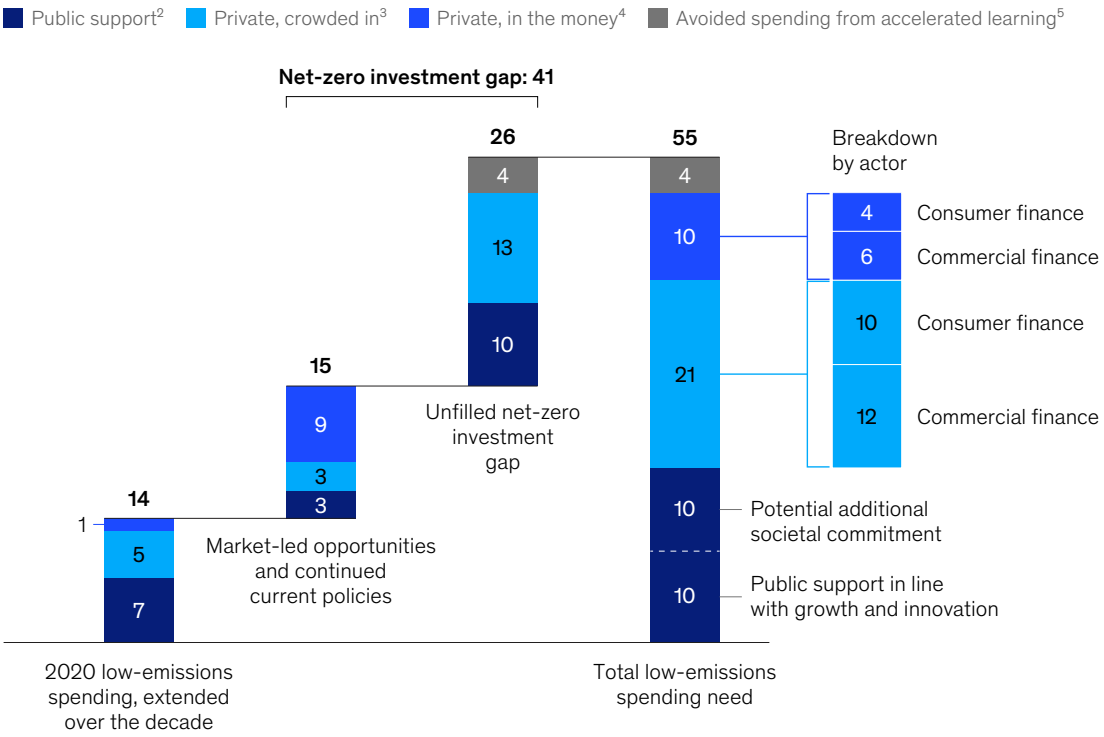
Even if the residual gap for net zero is not fully addressed, pursuing everything that market forces can do would already be a tremendous ramp-up in spending and progress. At this scale, and with this additional momentum, the environment becomes more fertile for breakthroughs

[30] "Preparing the world for zero-emission trucks," McKinsey & Company, November 2022.

Exhibit E12

Fully closing the net-zero investment gap relies on the assumption that higher public commitments can activate more private capital.

Scenario for potentially closing the net-zero investment gap, cumulative, 2021–30, $ trillion[1]



Note: This is not a projection or prediction but rather a scenario analyzing how specific sustainability goals could be financed. Our starting point is the Network for Greening the Financial System (NGFS) Net Zero 2050 scenario using REMIND-MAgPIE (phase 2), modified for a higher-growth scenario. Our estimates exclude high-emissions spending. This analysis covers sectors accounting for 85% of global emissions.
[1]2020 $.
[2]Additional societal commitment can come from a range of sources, including more efficient use of public funds, reprioritized government spending, taxes, debt, multilateral agencies, or philanthropic entities; when provided by state-owned enterprises and development finance institutions, could be at market rates.
[3]Crowding in is a phenomenon that occurs when higher public commitments lead to increased private investment (for example, through subsidies or guarantees).
[4]A low-emissions technology is "in the money" if it is cost-competitive with its high-emissions alternative (that is, its total cost of ownership is lower).
[5]Learning rates refer to the annual rate of decrease in unit capex for a given technology, which occurs through R&D expenditure, learning by doing, and broader economies of scale.
Source: McKinsey proprietary models; NGFS; Oxford Economics; World Bank; Climate Policy Initiative; FAOSTAT; IEA; Damodaran data; McKinsey Global Institute analysis

and societal shifts that we cannot foresee today. This argues for a continued focus on growth and innovation.

Question 3: Will societies have the capacity and willingness for higher public and private commitments?

If governments choose to address some or all of the residual gaps, they could explore making their spending more efficient, reallocating existing spending, issuing new debt, or raising taxes. Capital could also come from philanthropies, multilateral agencies, or social investors.

Carbon pricing can play a role in spurring the switch from away from high-carbon assets. We model how the need for public support to achieve both empowerment and net zero would change

if carbon taxes, rather than subsidies, were the primary vehicle to shift incentives toward low-emissions spending.[31] We found that they reduce the need for additional public support to reach net zero by 0.4 percentage point of GDP. At the same time, the residual empowerment gap would rise by 0.2 percentage point of GDP (on average annually) unless this effect is mitigated by revenue recycling.[32]

Most high-income countries theoretically have the resources to make higher commitments if they choose to, although how much debt countries can carry is the subject of ongoing debate.[33] Yet the choice to aim for full empowerment, net zero, or both would involve difficult trade-offs with other national priorities.

Achieving full empowerment and a net-zero trajectory in the current decade appears more challenging for lower- and middle-income countries. Allocating large amounts to the net-zero transition could eat into existing social welfare programs, potentially worsening the empowerment gap. India's need for incremental public support to get on a net-zero pathway is more than 50 percent higher than the share of GDP that currently goes to social protection spending, for example. Debt, too, is problematic for the developing world: the IMF estimates that 60 percent of low-income countries are already in debt distress or approaching it.[34]

Yet sustainability and inclusion are global projects, with ramifications that do not stop at national borders. For context, if high-income countries were to take on the combined residual gaps in the entire world, it would require an amount equivalent to about 3.5 percent of their GDP on an average annual basis (up from less than 1 percent of GDP to bridge only their own residual gaps). Even if high-income societies were willing to bear that cost, the world would need a mix of mechanisms for cross-border flows that could include international aid, cross-border debt, assistance from multilateral institutions, and debt relief (including creative debt-for-nature or debt-for-climate swaps). New financial vehicles might need to be designed.

We are reaching a fork in the road

We undertook this exercise to show what is theoretically possible and inform the debate. Regardless of whether countries decide to increase public commitments, this research leads to two important takeaways.

The importance of productivity-driven growth cannot be overstated

Faster growth propels inclusion. Almost 40 percent of the empowerment gap can be closed by baseline growth—and, as noted earlier, just under one extra percentage point of growth reduces the unfilled empowerment gap by more than one percentage point of GDP.

Additionally, growth can give governments more fiscal flexibility. The incremental GDP growth from higher productivity would allow for more than $30 trillion in additional public debt to be incurred globally without raising the 2020 global public debt–to-GDP ratio. At a global level,

[31] We use carbon prices estimated by NGFS that range from about $78 per ton of emissions in emerging economies like India to about $300 in the United States.

[32] Based on changes in private consumption seen in the National Institute of Economic and Social Research's NiGEM model when shifting from a no-transition, no-physical-risk baseline to a net-zero scenario, looking forward to 2030. NiGEM incorporates NGFS carbon prices as taxes, as well as NGFS energy prices.

[33] See, for example, Christina D. Romer and David H. Romer, *Fiscal space and the aftermath of financial crises: How it matters and why*, Brookings Papers on Economic Activity, Spring 2019; and Oliver Blanchard, "Public debt and low interest rates," *American Economic Review*, volume 109, number 4, April 2019.

[34] "Debt dynamics," in *Crisis upon crisis: IMF annual report 2022*, International Monetary Fund, September 2022. See also *The human cost of inaction: Poverty, social protection and debt servicing, 2020–2023*, UNDO Global Policy Network Brief, July 2023.

Higher growth and innovation could bring 600 million more people out of poverty, taking steps on a longer journey toward empowerment.

and specifically for high-income regions, this additional debt capacity exceeds the incremental public support needed to fill the empowerment and net-zero investment gaps. It is a question of whether or not those countries choose to assume that kind of debt, and where to allocate it.

Visionary agendas are more likely to be pursued when the pie is growing and put aside when it is shrinking.[35] While growth can't overcome every structural challenge, it can create space for new solutions to take root. Although growth in its current form has increased both emissions and inequality in the past, businesses, institutions, and governments can address these externalities more directly.

For developing economies, the prospects for more people to exit poverty are inextricably linked to their ability to grow. These countries would need to double down on productivity, skill development, and technological leapfrogging.[36] They may also need institutional reforms, from clearer legal frameworks for property rights to stronger oversight that prevents leakages of public spending.[37] New collaborations may be needed to integrate low-income countries more fully into global flows of trade, finance, technology, and knowledge.

The upside is compelling: higher growth and innovation could lead to some 600 million people moving out of poverty, taking significant steps on their journey toward full economic empowerment. Even in the absence of greater commitments and international transfers, growth and the actions of businesses can unlock real progress that changes lives.

Innovation at scale is critical

Relentlessly focusing on technology development is one of the keys to getting to net zero and lowering the price tag associated with doing so. The significant recent drops in the costs of wind and solar power offer reason for hope. R&D, learning by doing, and scaling up eventually drive costs down. The faster this happens, the lower the risk of households facing higher energy costs.

On the inclusion side, innovation and technology adoption generate demand for higher skills and better jobs. Innovation is also needed to tap efficiency-boosting opportunities and bring down the costs (and prices) of basic needs, from housing and food to education and healthcare.

Innovation is also needed in a broader sense. Lifting minimum living standards and containing climate change would involve sweeping transformations, requiring bold approaches in policy, finance, technology, and industry. The possibilities could include creating new multilateral financing vehicles; integrating low-income countries into global flows of capital and trade in a way that lifts local communities and small businesses; developing sustainable cities with

[35] Benjamin M. Friedman, *The moral consequences of economic growth*, Knopf, 2005.
[36] See, for example, *Reimagining growth in Africa: Turning diversity into opportunity*, McKinsey Global Institute, June 2023.
[37] *Realizing property rights*, Hernando de Soto and Francis Cheneval, eds., Frank/Wynkin de Worde, 2006.

affordable housing; strengthening education and healthcare systems worldwide; and designing effective carbon markets, including incentives for countries to preserve biodiversity and critical carbon sinks.

Progress toward empowerment and net zero would depend on private actors, governments, and NGOs and nonprofits combining their capabilities and expertise—and thinking without limits about how they can contribute to meeting this moment. Regardless of whether countries fully close the gaps, they have real opportunities to build a more stable, prosperous future.

We recognize the scope of these challenges as well as the political realities and the gravitational pull of the status quo. Financing is only one aspect of what would need to be done; achieving consensus and moving toward implementation would be incredibly complex. Countries that decide to take on these generational transformations would need an entirely different magnitude of public–private cooperation. The size of the challenge is not a reason for resignation; it is a call for everyone to roll up their sleeves on what can be done today. Every incremental step forward advances the continuum of progress.

A note on data sources

The net-zero modeling used in this research relied on several proprietary McKinsey assets, including McKinsey Net Zero Analytics, McKinsey Hydrogen Insights (data as of end 2021), the McKinsey Center for Future Mobility, and McKinsey Power Solutions.

Among the external sources of data in this report, we acknowledge the International Energy Agency (Paris). We specifically relied on three IEA sources: *Net zero by 2050*, 2021, https://www.iea.org/reports/net-zero-by-2050; *World energy outlook 2021*, https://www.iea.org/reports/world-energy-outlook-2021; and *Energy technology perspectives 2017*, https://www.iea.org/reports/energy-technology-perspectives-2017. All are license CC BY 4.0.

We note that some analysis in this research was derived from IEA material, and MGI is solely liable and responsible for it; it is not endorsed by the IEA in any manner. This holds true for all providers of the data that went into our analysis. We gratefully acknowledge their assistance and input, but the conclusions and any errors are our own.

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