A Story of Growth

The transition to a zero-carbon economy is the inclusive growth story of the twenty-first century. It needs to be managed with effective and cohesive policies, whilst recognizing that sustainable development, inclusive growth and climate action are interwoven and mutually supportive.

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This photograph shows a sight panelists were actually confronted with when leaving the building where the climate symposium took place.

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The latest Intergovernmental Panel on Climate Change (IPCC) Special Report regarding a 1.5°C increase in average global surface temperature (measured against the conventional benchmark, as of the end of the 19th century) re-emphasizes the urgency of strong action on climate change. The report highlights the immense dangers to lives, livelihoods, ecosystems and the global economy if there is further delay. Action is intensely urgent and must be on a large scale.

Current global greenhouse gas (GHG) emissions are around 50 GtCO2e per annum (50 billion tonnes of carbon dioxide equivalent – which includes other GHGs in addition to CO_2, including energy, industry and land use). While there have been some signs of a plateauing of annual emissions in recent years there were worrying increases recorded in 2016, 2017 and projected for 2018. Rates of increase in GHG emissions have been slowing, but the trajectory is still in the wrong direction. The slowing rate of increase is being led by a plateau in GHG emissions in China and decreases in the European Union and the United States. However, GHG emissions in other countries continue to increase, including in many developing nations.

The focus should now be on recognizing the consequences of inaction and realizing the opportunities of inclusive growth.

While we may be close to a plateau (with some "bouncing around"), the overall window for making the right choices is shrinking, and the need to peak and decline becomes ever more urgent. If the world is to have a 50% chance of meeting a 1.5°C target, the IPCC report argues that we have space for only a cumulative 500 $GtCO_2$ (approximately) of further CO_2 emissions. At current emission rates, this space would be exhausted in 10 to 12 years. After this period, the arithmetic says that the total for the world would have to be net-zero emissions; since there would likely be very few significant negatives, that would mean effectively net-zero for all countries.

If GHG emissions were to decline along a smoother downward trajectory, the world would have to reach net-zero emissions by around 2050 to remain within the allowed space. For a 2°C target temperature, the allowed space would be around 800 $GtCO_2$, or about 20 years of emissions at current rates. If emissions peak in the next few years and then steadily decline, the world would need to achieve net zero around 50 years from now. The more the world delays in reducing annual GHG emissions and uses up the remaining space, the steeper the required decline becomes later in time. Such delay would also likely require substantial negative total emissions later this century, something which may be technically infeasible or very expensive.

Decisive action is hampered by some unique elements from the science of climate change that make taking collective action difficult. First, the causes of climate change are "public," in that we all contribute to emissions; second, consequences are uncertain; third, they appear with lags; fourth, many of the consequences could be way out of human experience. People are generally not very good at handling any one of these problems, let alone all of them simultaneously. Given this circumstance, it is striking that there is a widespread readiness to act.

Current GHG concentrations in the atmosphere are already on the edge of the experience of Homo sapiens. Likely future concentrations will be at levels not seen for millions of years. The impacts could redefine where people can live and work. Poor people are likely to be hit earliest and hardest. We are currently on track for 3°C or more, temperatures not seen for three million years or more. That would likely involve hundreds of millions, or billions, of people having to move with major risk of severe and extended conflict. The stakes for lives and livelihoods are immense.

The "costs of action"

The notion of "costs of action" is being rapidly transformed by major technological advances, offering hope and optimism for the future. Action, investment and innovation across the world have rapidly lowered the costs of alternative energy sources. Solar PV and battery prices have both fallen by nearly 80% since 2010. These decreases have already made power generation with renewables (including storage) competitive with fossil fuels (without subsidy or carbon tax) in many parts of the world. The world has seen rapid

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increase in installed renewable capacity and the costs continue to fall.

Road transport is being transformed and we can see the end of the era of the internal combustion engine within the next two or three decades. Zero-carbon electricity will power the electric vehicles of the future. Hydrogen, created in a zero-carbon way, is also likely to play a strong role.

Digital advances have and will transform the efficiency and productivity of our power and other systems, including cities. The Internet of Things and the circular economy will transform efficiency across the economy.

Recent reports have also shown that it is now technically possible to cost-effectively reduce GHG emissions in sectors previously thought to be considered as difficult; including cement, steel, plastics, shipping and air transport (see the work of the Energy Transition Commission). Using a combination of existing technologies, including prioritizing energy efficiency and electrification where possible, combined with carbon capture and storage (CCS), where necessary, industrial sectors could reduce emissions across the economy to net-zero by mid to late century.

It is remarkable that so much of this progress has been made in the last 10–15 years (remember that the iPhone was released in 2007). There is so much more discovery to come. This progress has occurred with only a broad sense of direction and with fairly mediocre policies. We could do so much more, and more quickly with stronger commitment and better policies.

These new technologies and actions have also demonstrated that it is possible to de-couple economic growth and development from GHG emissions. Indeed, the story is stronger than "de-coupling." Discoveries, innovations and investment are now drivers of growth. It is a form of growth that is not only strong and sustainable but also inclusive. Evidence from the UK, EU and the USA all point in this direction (see the work of the New Climate Economy). The understanding has, in large measure, moved on from 'costs of action'; rather, focus should now be placed upon recognizing the consequences and costs of inaction, together with realizing the opportunities and benefits of the inclusive growth story of the twenty-first century.

Opportunities of coming decades

If global growth continues at around 3% a year, global output will double in 20 years or so. Alongside this growth, the urban population will approximately double in 40 years and the urban area in the next two to three decades. During the next two decades, cumulative investment in infrastructure will likely more than double the existing stock, to enable and support this growth and manage urbanization. The future of our towns and cities will be shaped in the next twenty years.

Most of the growth and investment in new infrastructure will be in developing countries. How we manage these doublings will determine the future of our world. We can either lock in high-carbon and polluting investments, putting ourselves and our descendants in great danger, or we can set off in a new and very attractive direction.

To meet the Paris climate change targets of "well-below 2°C," GHG emissions will have to decrease by 25% by 2030 and reach net zero around 50 years from now. For 1.5°C targets, GHG emissions will have to fall by around 45% by 2030, and reach net-zero by mid-century.

If our growth and investment follow the past and current models, then reaching the Paris Agreement targets will be near impossible. The choices made now, particularly on infrastructure and urban design, could make 3°C or 4°C and their terrible consequences very likely.

To reach the Paris goals, strong action in the five key sectors of energy, cities, food and land use, water and industry will be key (see the work of the New Climate Economy, 2018). In all of these sectors the main focus must be on investing in sustainable infrastructure. Sustainability means giving future generations opportunities at least as good as those we had, assuming they behave in a similar way to their successors.

That involves investing "wisely" in all the relevant forms of capital: physical, human, natural and social. Sustainable infrastructure, and investment in all these types of capital, are at the heart of reaching the whole set of Sustainable Development Goals (SDGs), including those on climate.

Sustainable development, inclusive growth and climate action are interwoven and mutually supportive. There is no horse-race between them.

Managing the transition cohesively

The deep structural and systemic change required for the zero-carbon transition will come with disruptions to some existing industries and livelihoods. This transition will also occur following, and during a period of other large changes and disruptions to economic structures, over many decades, past and future. These include: increasing shifts to service-based economies; labor-saving technologies (with robotics and artificial intelligence moving quickly); and increased globalization. At the same time we need to deal with the consequences of past economic shocks including the impacts of the recent global financial crisis. Persistent global inequality adds to the challenges.

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All of these processes have to be managed together; how they are managed will be central to building support for strong, sustainable action on climate change. The tools and finance are available now. A just and inclusive transition is, in large measure, about investing in people and bringing employment opportunities to them.

Designing public policy

The necessary urgency and scale of action make it very clear that climate policy is not about incremental initiatives that can be attached to existing development plans; it requires deep structural and systemic change, implemented over many decades, starting strongly now. Seizing this opportunity requires radical change; much of what we currently do will have to be done differently.

On policy we must recognize that there are multiple market failures that limit or distort investment and activities more generally beyond the fundamental externality associated with the emission of GHGs. To overcome these failures we must use a collection of different, but mutually reinforcing, instruments. Policies should stretch across the pricing of negative externalities, in particular GHG emissions, removal of fossil fuel subsidies, supporting research and development, managing key networks (power grids, transport…), providing increased information to consumers and producers, managing risk in capital markets and developing systems to value non-market rewards, including reduction in air pollution. The quantity and quality of investment will be determined by the soundness of policy and of government signals.

The collection of policies should both send long-term signals to all players but also be "predictably flexible." That is, policies should include clear, transparent mechanisms and processes for review and revision. The overall set of policies and strategies should provide clarity and confidence on the long-term direction. For example, policies to encourage new technologies could be phased out as diffusion and cost-reduction take place, but the criteria that guide review and revision should be set out ex ante.

Finance for these investments can come from the mobilization of domestic public revenue, private investment (both national and international), development banks, and concessional finance or overseas development assistance (ODA) (in the case of developing countries). We have to use all sources, targeted to where they are most effective. Bringing down the cost of capital, through reducing policy related risk and the management of risk, is essential.

If these policies and finance are managed well, then the consequential investments in the new economy will generate large and long-term benefits. Much of this investment will be focused on sustainable infrastructure. Such investment would, in the shorter term, boost demand and sharpen supply, create new opportunities, and contribute strongly to growth and reducing poverty. In the medium term this would unleash a wave of innovation, creativity, unlock new markets and employment opportunities, and drive growth forward. We are already seeing this process moving strongly. This new path is the only feasibly long-term option; any attempt at high-carbon growth over the longer term will self-destruct through the devastating impacts on our climate and environment.

The transition to a zero-carbon economy is the growth story of the twenty-first century. Analysis suggests (New Climate Economy, 2018) that, if this path is followed, by 2030 it is possible to generate over

65 million new jobs, and to avoid 700,000 premature deaths, as a result of reduced air pollution. This is in addition to the immense economic and social benefits of protecting lives and livelihoods in the future by avoiding the worst impacts of climate change.

Multilateral institutions are critical

We have some important favorable conditions which can help foster the change necessary. Political direction has been provided by international agreements and commitments, particularly the Paris climate agreement of December 2015 and the adoption of the Sustainable Development Goals at the UN in September 2015. Rapid technological change and falls in costs have provided the evidence that the new growth path is feasible and attractive. And the falls in costs and arrivals of technologies are likely still in the early stages. Further, we are in a period of historically low real interest rates which is likely to continue for some time. Notwithstanding these favorable conditions we are moving far too slowly.

The necessary acceleration of the transition to zero-carbon growth will require strong action at the country level and collaboration and cooperation across the world. International institutions are key players in both shaping and delivering this agenda, with the multilateral development banks (MDBs) of special importance. The MDBs are central to the generation of the necessary flows of sustainable financing, but are also key enablers of learning and cooperation between countries and can help foster the sound and credible policies necessary to incentivize investment and manage risk.

The MDBs, however, must expand and reform if they are to perform their role in delivering on this crucial challenge. This will require not only additional financial contributions from shareholders, but also reform to operations to work more cohesively and raise the priority of sustainability still further. Part of this will be the joint creation, led by countries themselves, of in-country platforms for investment and cooperation.

The bulk of the finance for the necessary investment will come from the private sector. Government-induced policy risk is the biggest deterrent to private sector investment and finance worldwide. Bringing down the cost of capital, through reducing and managing risk, is essential and can be achieved with sound policies and institutions and stronger development banks, both national and multilateral. The MDBs have a set of financial tools, including guarantees, that can help reduce risks and their involvement in a program itself reduces risk. But key to success will be the presence of a set of long-term, clear, coherent and credible public policies that guide markets and capital. The MDBs and national development institutions can play a powerful catalytic and multiplicative role. Working together national governments and MDBs could play a critical role in mobilizing the "trillions" needed.

Powerful and continuing declines in renewable energy costs, and increasing roll out, including solar PV and wind, are critical examples of how a sense of direction and public policy, combined with global collaboration, and innovative financing can support rapid change. And the strong changes we have seen have followed from modest commitment and policies; much more could be achieved with a greater sense of purpose and urgency and clearer and stronger policies.

Decisions will determine the trajectory

The current nationally determined contributions (NDCs) submitted under the Paris Agreement put us on a high-carbon growth path, likely to result in 3°C of warming or more by the end of the century. At such temperature increases the world would likely experience catastrophic impacts, ranging from extreme weather events, to desertification, to inundation, to sea-level rise, to intolerable heat and so on. Together they would redefine where people could live, work and be productive.

These impacts would damage or destroy lives, property, infrastructure, and undermine economies and societies, reversing growth and development and pushing large numbers of vulnerable people into poverty. The impacts could also lead to hundreds of millions or billions of people moving, and could lead to large-scale, severe and extended conflict.

The task of the twenty-fourth meeting of the Congress of the Parties meeting in Poland in 2018 was to set the rules for how all countries report and measure climate action and thus help in the ramping up of ambitions under the Paris climate change agreement. The actual commitments to increase ambition will be made in 2020. These two years will be a critical period. The investments in the next two decades are decisive, and the decisions of 2020, in large measure, will determine whether change on the urgency and scale necessary will be realized.

The choices made on infrastructure and capital now will either lock us in to high emissions, or set us on a path to net-zero emissions which will embody strong sustainable and inclusive growth. There is a new way to growth and development that we can now see; and it is highly attractive. We have begun; we have momentum. But the scale and rate we need requires much stronger commitment and action, starting now.

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Further reading:

Energy Transitions Commission (2018). *Mission Possible*. Available at: http://www.energy-transitions.org/mission-possible

New Climate Economy (2018). *Unlocking the Inclusive Growth Story of the 21st Century: Accelerating Climate Action in Urgent Times*. September 2018.