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Strong, sustainable and inclusive growth in a new era for China

Paper 1: Challenges and ways forward

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Policy insight

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Preface

This is the first of two 'policy insight' papers that offer an outline of strategies and policies for an innovative, sustainable and low-carbon approach to China's development. They are intended to inform decision-making for China's 14th Five-Year Plan (2021–2025). The two papers were originally prepared before the Covid-19 outbreak; the pandemic has changed the situation in many important ways, inside and outside China. The fundamentals of the medium- to long-term analyses of these papers have not changed. However, the short term is very different and it will be important to integrate, both in China and the world, the recovery from the Covid-19 crisis with the transformation of the economy embodied in the transition to a low and zero-carbon world.

The world economy is now at risk, with the prospect of a strong contraction in both demand and supply this year. Global supply chains are facing severe challenges as many countries have imposed social quarantine, lockdowns and travel bans. In response to the crisis we must ensure that lessons from the 2008 financial crash are learned: the recovery from that crash did not embody strong enough priorities for sustainability and there was a rapid relapse into austerity in a number of countries.

The Covid-19 pandemic is a crisis both for the world and for China. Unprecedented measures were taken in China to contain the virus, which reversed the escalation of cases and brought the medical emergency under control. At the time of writing China is stepping into the next phase, with lockdowns beginning to be lifted and the focus shifted to economic recovery; meanwhile, most countries around the world are still in the first two phases: managing the health crisis and preventing the collapse of the economy and deep damage to vulnerable groups.

As one of the first countries entering the recovery phase, China will lead the way. The aim should surely be to build a better and more sustainable world. As we emerge out of the Covid-19 crisis we must not deepen another, bigger and more long-lasting crisis – climate change. If a short-term stimulus were to be concentrated mainly on traditional industries and infrastructure, ramping up fossil fuel consumption and locking in decades of polluting and high-carbon development, the consequences for China and the world would be devastating.

As China leads the world out of the Covid-19 crisis, there is a great opportunity. China can show how urgent recovery measures can also accelerate the transition to the inevitable zero-carbon economy. The commitment of the world to tackling climate change will depend on what China does in the coming months and years. This influence is much more than China's size; it comes also from its technologies, its strategies and its implementation. China now has a real possibility, and arguably a responsibility, not only to make its recovery a turning point in its own path to sustainable, inclusive and resilient development but also to lead the global fight against climate change and to build a better and more sustainable world. It is a crucial moment. These ideas will be developed in the third paper of this series.

21 April 2020

Summary

Old approaches to development are coming to an end

China has transformed since its reform and opening-up strategy was launched in 1978 but now we must recognise that the old growth story is coming to an end. The phase of development driven by investment in physical capital will be increasingly supplanted by investment in assets such as knowledge and social capital as well as investment in and the preservation of natural capital.

An attempt by China at high-carbon growth over the medium or long-term is not a feasible option. It would create an environment so hostile that it would likely reverse development and lead to decline or collapse. Even before this, China would lose competitive advantage in deploying and developing the new resource-efficient technologies on which the world will increasingly depend. And it could perpetuate or aggravate the very serious problems of air, water and soil pollution.

The key challenges to be addressed in the next few decades are:

- Climate change: As one of the world's major emitters of carbon dioxide, China must play a significant role in the fight against climate change. In 30 to 50 years from now the world must have net-zero carbon emissions if it is to have a reasonable chance of achieving the Paris Agreement targets. China must also be close to net-zero-carbon for the world as a whole to meet this goal.
- New technologies: It is critical that China prioritises the right technologies and provides strong policies and the right kind of finance to support technology development. At the same time, there could be major potential disruptions and risks to labour markets and it is crucial to ensure a just transition and that vulnerable groups are not left behind.
- The Belt and Road Initiative (BRI): It is important for China to define more clearly the concept of BRI, narrowing its priorities and clarifying its scope, and to share information with BRI countries within a transparent and understanding partnership.
- Other challenges: China's changing geo-economics around the world, continued uncertainties around trade and investment, and domestic economic structural changes present further challenges and should form the focus of short- or medium-term policies. The short-term impact of the Covid-19 virus layers on additional challenges while also creating opportunities to rethink ways of working.

What should China's new growth story look like?

China's new growth story in the medium to long term should be:

i) sustainable, which means offering the next generation opportunities at least as good as those available to the current generation;

ii) inclusive, addressing emerging challenges, promoting innovations and creating opportunities for all;

iii) low-carbon, which requires actions on climate change, targeting a net zero-carbon economy within several decades;

iv) market-oriented, offering a fair and transparent investment climate for the private sector.

A new growth strategy for the new era

China's 14th Plan (2021–25) will, in large measure, chart the course for the new era in the country. China has highlighted structural reform within the new growth model and concentrated on various types of capital other than physical capital, as well as innovation and technology. As such, China will transform itself again in the next 30 to 40 years.

The new growth strategy must embrace the challenges and opportunities of new technologies, changing economic geography and sustainability. And it must tackle the challenges of its public finances – China has strong spending needs associated with urbanisation, infrastructure, education and health – and of social security and changing demography. The speed of technological change and a slowing in the overall growth rate imply that changing the composition of the economy can no longer occur simply through some sectors growing more rapidly than others: some sectors and places will decline in the coming years. Such transitions need to be well managed to ensure social cohesion and economic justice. There are many ways to achieve this, involving training, targeted finance, appropriate location of government activities, and provision of adequate social protection.

The key areas for investment and innovation in China will be: new technologies that can give high-quality growth; modern service sectors, including health, education, transport, communications and IT, finance, and logistics; the functioning of modern cities, including in their infrastructure and in relation to pollution, congestion and efficiency; and food and land-use systems. Overall resource productivity and efficiency will be crucial and there is real potential in the idea of the circular economy with its emphasis on design for re-use and recycling. Investment in the four key capitals – human, social, physical and natural – must move to centre stage in the 14th Plan.

The 14th Plan and the Belt and Road Initiative have to be understood together. China must take its decisions with careful thought over how its BRI partners will be taking theirs, and what forms the partnerships will take. China also has a real and vital opportunity to help the BRI countries to move towards a much more sustainable, more efficient and greener form of development by sharing the lessons of its recent past. And to some extent, China with its more advanced technologies will now play the role of an external partner to poorer countries, both within and outside the BRI.

Economy-wide reforms that foster and promote the new growth strategy

We set out six areas of reform, which are complementary and interwoven:

i) Price, regulation and enterprise reform. If private sector investment and innovation are to be fostered within a strong and sound investment climate, then both price signals and regulation should take account of potential market failures. An example would be a strong carbon price.

ii) Financing investment in the four forms of capital. This will require a combination of private and public finance. Wise regulation is of great importance, for avoiding both the problems of excessive risk-taking and the potential distortions and risk of directed credit.

iii) Public finance and the functioning of cities. Cities will be the focus of most of the investments, particularly infrastructure investments, of the new era and their public finances must be managed well. To do this they will need strong revenue streams from local taxation and payments for services.

iv) Internal governance. Private investment is at the heart of the growth model of the new era and it is very sensitive to the quality of governance, as well as the quality of infrastructure services. We identify three elements of the quality of governance in relation to investment: the soundness of policies; the predictability of policies; and the functioning and behaviour of institutions.

v) Management of radical change and dislocation. Key elements include: training and retraining; support and finance for local entrepreneurship; moving mobile government activities to the affected localities; help for workers in relocating; and social safety nets.

vi) Global governance. The challenges of the global commons, particularly climate change, are of great urgency. China is now in the vanguard of action and international collaboration on climate change. This presents it with great opportunities in terms of its own new model of growth but also in terms of global leadership.

Introduction

China's economy has seen rapid development ever since its reform and opening-up strategy was launched in 1978. Strong economic expansion over the past four decades has taken China from low-income to upper-middle-income status.[1] Looking back at the transformation that China has made, however, we must recognise that the old growth story is coming to an end. The phase of development driven by investment in physical capital will be increasingly supplanted by investment in assets such as knowledge and *social* capital as well as investment in and the preservation of *natural* capital.

Over the past 40 years, major investments in physical and human capital yielded a dramatic 10-fold increase in per capita output. Over the coming 40 years, major investments in natural and social capital, alongside strong but redirected investment in physical and human capital could yield dramatic advances in wellbeing.

Relationships between China and its trading partners, especially those in the Belt and Road Initiative (BRI), will evolve to reflect the changing international division of labour in a rapidly changing world (Hepburn and Stern, 2018). China will focus on the technologies with high-quality growth prospects: modern service sectors, including health, education, transport, communications and IT, artificial intelligence, finance, logistics, sustainable urban infrastructure and new food and land-use systems. With today's technologies, China can help BRI countries[2] embark on a much more sustainable, more efficient and greener form of development, avoiding historical problems of pollution and congestion, with China itself moving up the value chain at the same time.

Recognising the challenges that China is facing, with this paper we aim to offer an approach to growth and development that could spell out a new development strategy for the country as the 21st century progresses. This is not a story of some long-run model of growth: it is a plan for a transformation in the next two or three decades in a changing world. We argue that an attempt at high-carbon growth over the medium or long-term is not a feasible option. It would create an environment so hostile that it would likely reverse development and lead to decline or collapse. Even before this, China would lose competitive advantage in deploying and developing the new resource-efficient technologies on which the world will increasingly depend. And it could perpetuate or aggravate the very serious problems of air, water and soil pollution.

Plan of the paper

The plan of the paper is as follows. Section 1 reviews the economic achievement that China has made and looks forward in relation to climate and sustainability and challenges in a new era. It also outlines the desired features of the new growth story. In Section 2 we explain the reasons why the earlier approaches of development are coming to an end and set out briefly some of the central elements of the new growth strategy in a changing world. Section 3 outlines the core action areas, innovations and investments for the next phase, in particular China's 14th Plan (2021–25) and the broad policy instruments to guide these innovations and investments. More detailed studies for investment in the four capitals to manage a structural transition will be covered in the next paper in this series (Stern et al., 2020, forthcoming). The final section sets out the economy-wide reforms that can underpin the processes of transformation and growth that we describe.

[1] World Bank classifications.

[2] See OECD (2018) for information about the Belt and Road countries.

1. China's economic growth: history, trends, challenges and the future

Prior to 1978, China had maintained a central planning economy for 30 years. During this time a large share of the country's economic output was directed and controlled by the central government, which set production goals, controlled prices and allocated resources across most of the economy. In other words, it was the Government, rather than the free market, that determined what to produce, how to produce it and for whom. This economic system led to many issues, including products that were difficult to adapt to ever-changing social needs, resulting in the existence of both insufficient and excess supply; a government that worked as the sole resource mobiliser and the promoter of economic and social development, suppressing the enthusiasm and creativity of enterprises; and a lack of competition and low efficiency.

The Chinese economic reform (known as the *reform and opening-up*), led by Deng Xiaoping, started in December 1978. China developed a model described as 'crossing the river by touching the stones' to get reform done step by step. From 1978, China set up several special economic zones, such as Shenzhen and Zhuhai, to carry out pilot projects. Successful experience and practices from these were then spread more broadly. The late 1970s also saw key reforms in agricultural and household institutions; the 1980s brought support for entrepreneurship, township and village enterprises and more support for special economic zones. In the 1990s the financial sector was reformed with the growth of specialist banks and the creation of development banks, and in the 2000s the focus moved to human capital, with shifts in education and greater provision of social insurance. Throughout, there has been increasing emphasis on market mechanisms and on interaction with the world economy.

China has transitioned from low-income to upper-middle-income status in the past four decades as the result of these sequential and structured reforms – an extraordinary achievement. This outcome has been aided by each set of reforms being tailored to the next phase of China's development, taking into account lessons from the experience of earlier phases, current and likely future circumstances, and any adjustment of goals.

This rapid growth has highlighted the "high input, high consumption, high emission and low efficiency" nature of China's economy (Yang and Zhao, 2018). Chow and Li (2002) show that the average annual rate of growth was 9.7 per cent between 1978 and 1998 and suggest that 55 per cent of this growth came from the increase in physical capital. As observed by Qi et al. (2016) and others, China's rapid economic growth has been fuelled by coal, and it is unlikely that economic growth over the period 1981–2015 would have been as fast without such high levels of coal use.

China has realised that the old growth story is not sustainable. As the country moves towards the 'new normal', which features a consistently slower rate of growth, China is highlighting structural reform within the new growth model and is concentrating on various types of capital other than physical capital, as well as innovation and technology (Song et al., 2017). As such, China will transform itself again in the next 30 to 40 years, when it will move to high-income status, but the dimensions of the transformation will not be so focused on output and income. The indications are that wellbeing, social and environmental quality and sustainability will be centre stage instead. All of China's major transformations and sets of reforms have been of great importance, but such are the strengths of lessons from the past, and the magnitude of changes on the global stage, that this next set of reforms is of special significance, not only for China but also for the world.

Challenges to be addressed in the next few decades

i) Climate change

There is growing evidence suggesting that the threat of irreversible climate change must compel immediate international action to control carbon emissions. For example, Lenton et al. (2019) summarise evidence on the threat of exceeding tipping points, such as ice collapse and biosphere boundaries, arguing that we are in a state of planetary emergency. According to the United Nations Environment

Programme (UNEP) *Emissions Gap Report 2019*, the forecast gap in emissions in 2030 between where the world is likely to be and where it needs to be to have a chance of limiting global warming to 2°C is 13 to 15 gigatonnes of carbon dioxide equivalent ($GtCO_2e$), which is about 50 per cent larger than the gap in 2020 (UNEP, 2019). Ambition and action over the past decade have simply been inadequate globally; action now needs to be faster and more transformational. As one of the world's major emitters of carbon dioxide, China must play a significant role and continue to fight against climate change.

ii) New technologies

The promotion of new technologies could, on the one hand, boost demand and spur innovation, which could act as new growth drivers as old ones such as real estate[3] and globalisation fade out. It is critical to prioritise the right technologies and to provide strong policies and the right kind of finance to support technology development. On the other hand, as technologies advance, there could be major potential disruptions and risks to labour markets, in particular when accompanied with the development of artificial intelligence and automation. Therefore, it is crucial to ensure a just transition and that vulnerable groups are not left behind.

iii) The Belt and Road Initiative

The current official description[4] of the Belt and Road Initiative (BRI) is viewed by some as vague and ambiguous (e.g. Ang, 2019). This ambiguity has sometimes enabled speculative activities to be carried out under the name of BRI and is generating some distrust of BRI in some quarters. It is important for China to manage the BRI brand globally. This means defining the concept of BRI, narrowing its priorities and clarifying its scope, building corresponding datasets and sharing information with BRI countries. In addition, BRI countries have their own strategies and priorities for development: while China can be a helpful partner to cooperate with, it will not decide the future of their economies. BRI is most likely to succeed and endure as a transparent and understanding partnership among participating countries.

iv) Other challenges

Other challenges include China's changing geo-economics around the world, continued uncertainties around trade and investment, and domestic economic structural changes. These should form the focus of short- or medium-term policies. The short-term impact of the Covid-19 virus layers on additional challenges while also creating opportunities to rethink ways of working.

What should China's new growth story look like as it addresses these challenges?

China's new growth story in the medium to long term should be:

i. **sustainable**, which means offering the next generation opportunities at least as good as those available to the current generation;

ii. **inclusive**, addressing emerging challenges, promoting innovations and creating opportunities for all;

iii. **low-carbon**, which requires actions on climate change, targeting a net-zero-carbon economy within several decades;

iv. **market-oriented**, offering a fair and transparent investment climate for the private sector.

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3 See Chivakul et al. (2015) for an explanation of the role of residential real estate and how it has been a key driver of growth in China.

4 The Chinese government's online Belt and Road portal describes the BRI initiative as "a development strategy and framework, proposed by Chinese President Xi Jinping that focuses on connectivity and cooperation among countries primarily between China and the rest of Eurasia" (2016; see: What is "Belt and Road" initiative? at https://eng.yidaiyilu.gov.cn/ghsl/cjwd/2757.htm). In 2019 the concept evolved to "an initiative for peaceful development and economic cooperation, rather than a geopolitical or military alliance; a process of open, inclusive and common development, not an exclusionary bloc or a 'China club'" (see The Belt and Road Initiative Progress, Contributions and Prospects at https://eng.yidaiyilu.gov.cn/zchj/qwfb/86739.htm).

Sustainability

China's new forms of growth can and should be sustainable and this will depend on the quantity and quality of four types of capital that are central to wellbeing and wealth: human, social, physical and natural capital (Stern, 2015; Hamilton and Hepburn, 2017; Managi and Kumar, 2018; Lange et al., 2018). While the expansion of physical capital has been central to China's economic growth in the past, recent years have seen a deepening understanding of the dangers for the other three forms of capital of badly-designed, low-quality or polluting physical capital. Such capital can reduce or destroy natural capital, for example by polluting soil and water and damaging forests. Damage to natural capital can undermine human health and result in many deaths, reducing, damaging or destroying human capital. Further, damage of this kind to natural and human capital can create tensions that undermine social capital. In the meantime, technical progress, which applies to all four capitals and to their combination, has an important role to play as it is a contributor to productivity growth (Fagerberg, 2000).

Inclusivity

The new growth strategy should also be inclusive and it must embrace a world that is changing very rapidly: with new technologies taking hold, particularly artificial intelligence and automation (Adams, 2018), with the challenges of climate change, and with new threats to world trade. There will be disruptions and risks to be managed as well as great opportunities in innovation and investment. In the meantime, it must be emphasised that there are opportunities to be created for all in answering these challenges, reducing inequality and promoting social cohesion in the process.

Low-carbon

In stressing the importance of the transition to the low-carbon economy and the growth and job opportunities it presents, we should also recognise that the target within 30 to 50 years must be a net-zero-carbon economy. This target and timeframe are necessary if the world is to stabilise temperature rise "well below 2°C" above pre-industrial levels. As the recent special report on *Global Warming of 1.5°C* from the Intergovernmental Panel on Climate Change (IPCC) has shown, a rise of 2°C embodies considerably more dangers than a rise of 1.5°C (IPCC, 2018). We should recognise that taken together, current Nationally Determined Contributions to the Paris Agreement, which show how countries plan to reduce their greenhouse gas emissions, put the world on a path heading for 3°C or more of warming (Climate Action Tracker, 2019). Yet we know that going beyond 2°C would be deeply dangerous and the target in the Paris Agreement of keeping temperature rise "well below 2°C" is therefore wise; as a world, we break it at our peril.

China is so large an emitter that if the world is to be at net zero, then so too will China have to be. For this to happen, China needs to undertake an urgent review of all investments in long-lived fossil infrastructure that might outlast a 30- to 50-year time horizon (Pfeiffer et al., 2018).

Market-oriented

Private firms are a crucial source of the creativity and new ideas that higher quality, high-tech and sustainable growth require. Lardy (2014) argues that almost all of the growth in urban employment in China since 1978 was the contribution of private firms. The innovations and investments of the coming decade will also be driven in large measure by the private sector. Therefore reforms should be market-oriented in ways that encourage that initiative and creativity: in other words, public policy, public institutions and public investment should work to create an investment climate for the innovations and investments of the new era.

2. High-quality and sustainable growth in a changing world

China has always looked ahead to chart the next stage of reforms, as the economy and technology advance, as challenges appear, and as the world changes. We argue that the next set of reforms is of special significance, not only for China but also for the world.

The growth story of the coming decades will be one that progresses beyond the standard economic models in which growth is shaped largely by physical capital. That approach reflected the Harrod-Domar idea that the growth rate is the investment rate (I/Y) divided by the incremental capital–output ratio (I/ΔY) (Harrod, 1939; Domar, 1946). The growth story in the 21st century, if it is to be sustainable and capable of prospering in a changing world, must be based on a balanced and complementary accumulation of several forms of capital. In terms of outcomes, China will likely focus on *wellbeing* broadly understood, rather than narrowly on output, and, in achieving broader goals, will emphasise higher productivity and resource efficiency.

In 2005, China's State Council issued a policy paper, *Opinions of the State Council on Accelerating the Development of a Circular Economy*, which recognised the economic and environmental risks of the nation's heavy resource exploitation (State Council, 2005). In 2008, the circular economy Promotion Law was issued by China, defining the circular economy as the "reduction, reuse, and recycling (3R) activities in the production, circulation, and consumption of products" (see Global Legal Monitor, 2008). A whole chapter in the country's 11th Five-Year Plan (2006–10) was devoted to the circular economy and it was then selected and upgraded to a national development strategy in the 12th Five-Year Plan of 2011–15 (Mathews and Hao, 2016). There, environmental and economic development were linked in a single policy instrument, with an accompanying goal of improving societal wellbeing (Geng et al., 2016).

To provoke thought around high-quality and sustainable growth in a changing world, we examine three questions in this section:

i. What are the factors at work which imply that the earlier phases of and approaches to development are – or should be – coming to an end?

ii. How should the experiences of these earlier phases influence the formulation of objectives for the next phase?

iii. What should be the key features of the strategies and models for the new era?

Discussions on all these questions have begun in China and ideas are emerging.

i) Factors causing old approaches to cease

The old era or approach to development is coming to an end for a number of reasons. Threats to natural, social and human capital are being reflected in: pressures on the environment; social strains, including inequality; changing technologies and the need for new skills; and the demographic challenges of an ageing population. China faces further associated challenges that come with the country's elevation through middle-income and towards higher-income status. These include: rising wages; a shift to a service economy; changing world economic geography and interactions; and pressures on public finances.

The pressures on the environment are both local and global in origin. We know that strong global action is urgently needed to stop environmental degradation, and that China, because of the size of its economy and greenhouse gas emissions, must be a central player in climate action in particular. The world economy will double in size in the next two decades or so and within that China's economy will more than double (Hawksworth et al., 2017). In the same period, global emissions will have to be cut by at least 25 per cent if the world is to have a reasonable chance of meeting the Paris Agreement target of limiting temperature rise to well below 2°C (see Figure 2.1). World infrastructure will likely double in around 15 years, much of it associated with urban expansion and a large part of that in China (New Climate Economy, 2016). If this new additional world economy or infrastructure looks anything like the old, then cutting emissions absolutely by more than 25 per cent will be impossible, hence the need for radical and urgent change. Change of this nature and scale requires decisive action and strong leadership but the new path can be a very attractive story, with strong, sustainable and inclusive growth (as detailed in the New Climate Economy report of 2018).

Inequality has been a pressing concern in China for some time: between urban and rural areas; regionally, including in areas with declining industries; and between individuals. In the early stages of reform some rise in inequality was inevitable; as Deng Xiao Peng observed, some people get richer before others. But over the past two decades or so, inequality has become more troubling.

China's wages have risen as its economy has advanced, strong investment has taken place and its workers have become more skilled. All this is part of China's success but it also requires new strategies for the future. The era of China being the dominant world force in low-cost manufacturing is coming to a close, at least in low value-added manufacturing. Future technological change, with artificial intelligence and robotics in particular, is likely to transform investment, work, consumption and the functioning of cities.

China's demography is changing strongly. Looking ahead, the ageing population is likely to build up pressures on public finances and health systems. Pressures on public finances will also arise in relation to cities and their ability to raise revenues to finance local infrastructure.

The world's economic geography has changed and will continue to do so, as emerging market and developing countries have grown, and will grow, faster than richer ones. This implies that international trading patterns will change, with much more trade among emerging market and developing countries. This, in turn, requires stronger infrastructure linking those countries – which is the basic logic behind the Belt and Road Initiative.

The increasing strength of the emerging market and developing countries is sometimes met by negative reaction from some richer countries. Such reactions are short-sighted and damaging to the world economy as a whole, and it must be hoped that they are temporary. Nevertheless, they reinforce arguments for stronger links among emerging market and developing countries and for looking to stronger internal demand.

ii) The reformulation of objectives

The above description of the recent phases of development, and of a changing world, points us towards our second question, concerning a re-examination of objectives in light of these experiences. The pressures on natural capital and social capital we have described imply that both fostering a better environment and managing inequality and social cohesion should appear strongly in societal objectives. A rapidly changing world, the potential dislocation arising from new technologies, and pressures from an ageing population all point to the importance of social security. And all of these lead us to the centrality of sustainability in objectives.

As we describe the way in which these concerns have arisen from experience and as we think about future changes, we recognise that we have made powerful arguments for looking beyond output or income as the overwhelming objective. The recognition that output is inadequate as the dominant objective is, of course, longstanding in China and elsewhere. However, the experience of the past few decades has led us to be much more multi-dimensional, explicit and analytical about the expression of objectives. Sometimes this has been summarised under the heading of 'wellbeing'. Though useful, this term is insufficient by itself, partly because it focuses on outcomes rather than opportunities. For many, including, for example, Amartya Sen, both outcomes and opportunities should be of concern. Sen speaks of 'capabilities' and the ability to pursue a life you have reason to value (Sen, 1999). Others have provided analyses in terms of 'empowerment' (see, for example, Stern et al., 2005). The UN Sustainable Development Goals emerged from these kinds of discussions and do capture the key dimensions associated with the environment, inequalities and opportunities. The SDGs include the functioning of cities, infrastructure, the state of oceans, climate, forests, opportunities for rewarding employment and challenges of insecurity; they are a valuable framework for thinking about and setting societal objectives.

iii) Strategies for the new era

Answers to our third question on the key characteristics of strategies for the new era follow naturally from our discussions of the factors bringing the old era to an end. The strategy must embrace the challenges and opportunities of new technologies, changing economic geography and sustainability. And it must tackle the challenges of its public finances – China has strong spending needs associated with urbanisation, infrastructure, education and health – and of social security and changing demography. In summary, selective investment and innovation in all forms of capital, human, physical, natural and social, should be the central objectives.

On technological and sectoral change, it is clear that China must now shift its balance towards more advanced technologies and the provision of knowledge-led services. This follows from rising wages, the rapid technological changes that are coming through, and demand patterns that are moving, as incomes rise, towards services. Shifting the balance in this way will involve strong investment in R&D and innovation, and in skills appropriate to this new era. It will also require management of declining industries and locations.

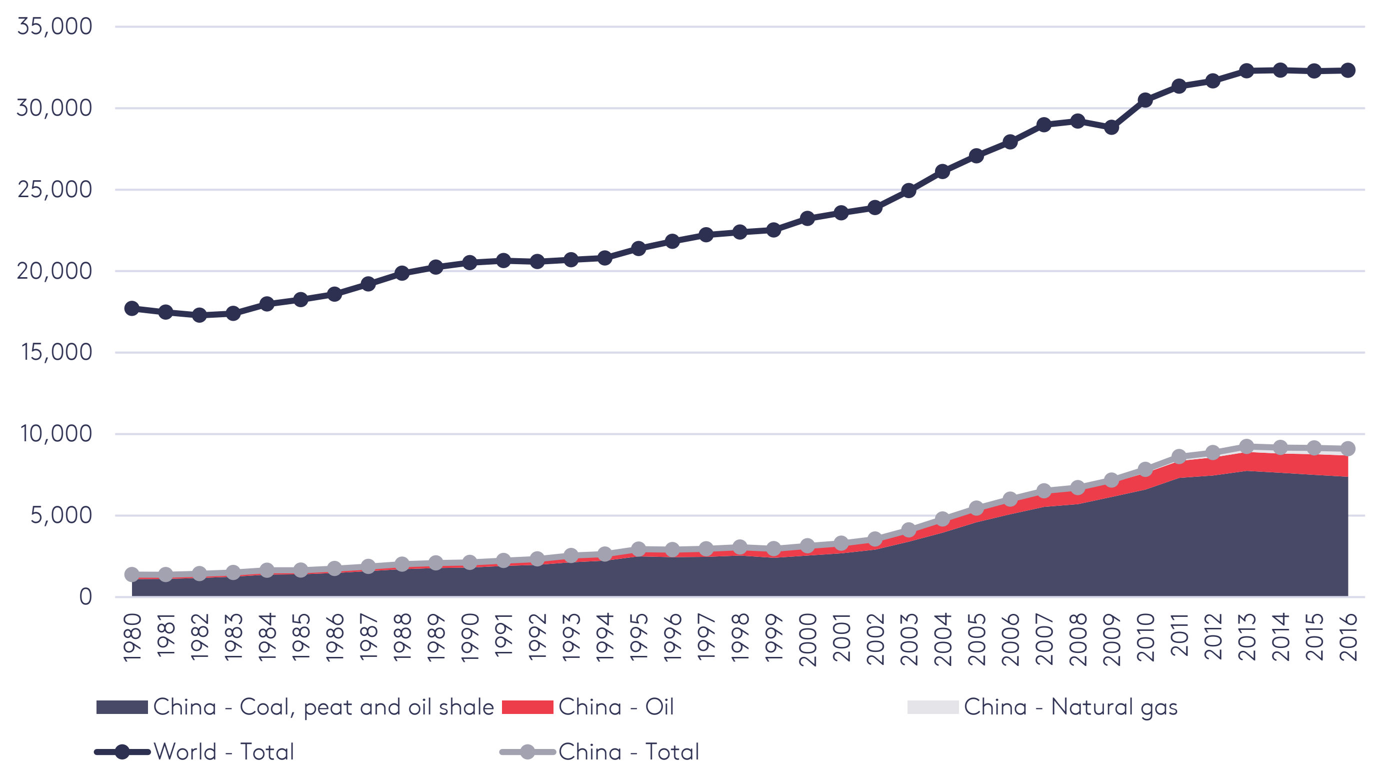
Wu (2000) examined the contribution of total factor productivity (TFP) to China's economic growth and broke down the TFP growth into two components: technological progress and efficiency change. Wu suggested that China's economic growth in the 1980s was mainly due to efficiency improvement and growth in inputs. However, technological progress has become an important factor propelling China's economic growth since the 1990s. Chen and Golley (2014) estimated the changing patterns of 'green' total factor productivity growth (GTFP), which incorporates carbon dioxide emissions as an undesirable output, and found that R&D intensity was the one factor that impacted in a highly significant and positive way, increasing both GTFP and TFP growth in China between 1980 and 2010.

The speed of technological change and a slowing in the overall growth rate imply that changing the composition of the economy can no longer occur simply through some sectors growing more rapidly than others: some sectors and places will decline in the coming years. Such transitions need to be well managed to ensure social cohesion and economic justice. There are many ways to achieve this, involving training, targeted finance, appropriate location of government activities (e.g. in areas affected by contracting industry), and provision of adequate social protection.

The changing pattern of activities within China – crudely speaking, 'moving up the value chain' – will require changing the relationship between China and its trading partners. Income per capita and wages in the countries of the Belt and Road Initiative are on average approximately half those of China. If trade and infrastructure links can be established, and technologies advanced and shared with these countries, then the countries of the BRI could play a powerful and positive role in the development of a new and changing international division of labour. This is analogous to the driver of change in China in the 1970s to 1990s being, in large measure, China advancing into the world economy through low-cost manufacturing and joint ventures. To some extent, China with its more advanced technologies will now play the role of an external partner to poorer countries.

Climate Action Tracker (2019) suggests that total greenhouse gas emissions have to reach net-zero by 2070 if the world is to have a reasonable chance of achieving the Paris Agreement targets. Carbon dioxide emissions have to reach net-zero earlier, around 2050, as suggested by the IPCC (2018). As we have already described, because of the size of China's economy and emissions, China must also be close to zero-carbon for the world as a whole to meet this goal. Figure 2.1 shows that China's carbon dioxide emissions appear to be plateauing, as a result of its past strong and impressive efforts towards efficiency and away from fossil fuels, and should start to decrease. China's Nationally Determined Contribution to the Paris Agreement involves peaking emissions by 2030. However, it is clear from the world aggregate requirements that if the Paris temperature targets are to be within reach, global emissions must fall by more than 25 per cent in the next 20 years (UNEP, 2016). This cannot conceivably happen unless China's emissions peak and start to fall strongly in the years from now.

Figure 2.1. China's carbon dioxide emissions (million tonnes) from fuel combustion, 1980–2016



Source: Authors using data from the International Energy Agency

The changes to investment required to achieve a strong fall in emissions, particularly changes to sustainable infrastructure investment, are discussed in Section 3 below and will be covered in more detail by our follow-up paper (Stern et al., 2020). If carried out well, the investments, innovations and reforms could yield a sustainable and inclusive growth path that could be very attractive. The public finance and demographic elements of the plan will be of great importance and we touch on these briefly in Section 4.

3. Innovation, investment and policies for the 14th Plan

China's 14th Plan (2021–25) will, in large measure, chart the course for the new era in the country. This section provides a framework for our overview of the possibilities for the 14th Plan, building on the discussion in Section 2. We focus on two questions:

i. What will be the core action areas, innovations and investments for the next phase, in particular in the 14th Plan?

ii. What will be the broad policy instruments that can guide these innovations and investments?

Our follow-up paper (Stern et al., 2020) will extend this discussion and provide more detailed analyses of investments in the four forms of capital, with a particular focus on the 14th Plan.

i) Innovation and investment for the 14th Plan

Many economists provide theoretical background that justifies intervention when there are clear market failures (e.g. see Nelson, 1959; Arrow, 1962; Krugman, 1987; Romer, 1990; Grossman and Helpman, 1991). Because private enterprises cannot fully recoup their investment in R&D that is intended for public value, the private market lacks the incentive to invest in these areas, and there is little active role for public financing of innovation. As a result, it is important to identify the areas that policymakers should give particular attention.

The key areas for investment and innovation in China will be:

- New technologies that can give high-quality growth
- Modern service sectors, including health, education, transport, communications and IT, finance, and logistics
- The functioning of modern cities, including in their infrastructure and in relation to pollution, congestion and efficiency
- Food and land-use systems.

In the new era, overall resource productivity and efficiency will be crucial and there is real potential in the idea of the circular economy with its emphasis on design for re-use and recycling. Resource efficiency and productivity are not only powerful forces for growth but also crucial elements for the protection of natural and human capital.

Investment in the four key capitals – human, social, physical and natural – must move to centre stage in the 14th Plan, as a natural evolution of the direction that China has taken in recent years. China has already begun to embrace an approach to growth and development that embodies a focus on the quality and quantity of these four types of capital, as it reflects on its experience and deepens its understanding of wellbeing. Recent years have also seen increasing emphasis on, and growing understanding of, the close connections between these different capitals.

ii) Policy measures for the 14th Plan

Policy will need to be designed to further strengthen the role of the market in the allocation of resources. For markets to work well in guiding investment and innovation, governments must analyse and act on market failures. Key areas of potential intervention for the Chinese government, which would support innovation and strong and sustainable investment, include:

- Greenhouse gas emissions and pollution
- Under-provision of R&D
- Capital market failures
- Network externalities in grids, public transport, broadband/ICT
- Information on opportunities, including technologies, in a changing world.

Further, government policies must have the predictability and institutional strength to provide the necessary confidence for investment. There may be increasing challenges in China of monopolistic or oligopolistic positions in both the public and private sectors, which could hinder innovation and growth.

Lessons for BRI countries and the world

One final point on overall strategy involves China's lessons for the world. The reform period of the past four decades has brought remarkable success in raising incomes and reducing poverty. It is unique in human history. But it has also brought stresses and problems. If China had been able to look ahead more clearly to the problems of congested and polluted cities, it might have made policy and investments differently.

Many of the Belt and Road Initiative countries are now where China was two decades ago in terms of income per capita. If in two decades' time they have similar income per capita to China now, and if their economic structure of fossil fuel use looks like China's now, the world would be headed for temperature increases well beyond 3°C and the catastrophic consequences that would involve. The 126 BRI countries (as of April 2019)[5] excluding China together accounted for 28 per cent of global emissions in 2015. However, this share could grow to 66 per cent by 2050 if BRI countries maintain growth trajectories while the rest of the world follows a 2°C mitigation pathway (Ma et al., 2019).

Given China's role in the BRI, it has a real and vital opportunity to help these countries move towards a much more sustainable, more efficient and greener form of development. China can share its experience and lessons, employ its technological and financial strengths, and help invest beyond its borders in the new models of growth and development, to the great benefit of all.

All this emphasises very strongly that the 14th Plan and the BRI have to be understood together. Of course, China can and will shape the 14th Plan directly but it does not determine the development strategies of these countries or other countries that may become part of the BRI in the future. Each country will shape and decide on its own strategy, but China can be a source of guidance and investment as well as a supportive partner. This is an interesting and important feature of the new era. China must work on its 14th Plan and take its decisions with careful thought over how its BRI partners will be taking theirs, and what forms the partnerships will take.

[5] www.chinese-embassy.org.uk/eng//zgyw/t1657223.htm

4. Driving change through systemic reforms

We have described the reasons why China's current phase of development and reform is coming to an end and a new era of growth and development is beginning. The reasons include the successes (such as rising wages and skills) of earlier periods, the problems or pressures of those periods (including in relation to the environment, to inequality and to its public finances), and a changing world in terms of technology, economic geography and international economic relations. The way forward is shaped by an understanding of those reasons and by a deeper approach to development objectives, going beyond the primacy of the growth of income.

The new growth path will embody higher quality, cleaner, more efficient and more sustainable consumption and production, and more inclusive and cohesive economies and societies; and lead towards a stronger 'ecocivilisation' with economic activities that are more in harmony with the natural environment. All of this will require innovation and investment in four types of capital: human, physical, natural and social.

Six areas for reform

In the preceding section we emphasised innovation, investment and policies for the 14th Plan. In this concluding section we describe some economy-wide reforms that foster and promote the new growth strategy as a whole. While we discuss elements of the systemic reform package separately, the reforms we set out are complementary and interwoven. Taken together, they describe a Chinese model of institutions and policies for the passage to a high-income country and a harmonious and cohesive society.

We examine six areas in turn: price, regulation and enterprise reform; financing investment in the four forms of capital; public finance and the functioning of cities; internal governance including the quality of institutions; the management of radical change and dislocation; and global governance of trade, the international financial institutions and the global commons.

i) Price, regulation and enterprise reform

Rapid and efficient change towards growth that embodies high quality, high-tech, service-orientated sustainability will require clear price signals. If private sector investment and innovation are to be fostered within a strong and sound investment climate, then both price signals and regulation should take account of the potential market failures discussed in Section 3.

An example would be a strong carbon price, and thus it is important to make sure the new carbon markets work well. This could include possible consideration of carbon price floors and carbon taxes. But carbon prices do not by themselves re-design cities, reduce congestion or promote compactness. Nor do they by themselves ensure that products, systems and buildings are designed in a way that the components can be re-used or recycled. These key features will require direct public action for the design and reform of cities, including regulation and standards. Further, reform is also likely required for state-owned enterprises so that they are not sites of inefficiency or kept alive artificially when their activities or methods of work are obsolete. China will be dependent on creativity and entrepreneurship in the new era and a clear, sound, transparent and supportive investment climate is crucial.

ii) Financing investment in the four forms of capital

Investment in all four forms of capital will require a combination of private and public finance. The nature and combination of these finances will be a vital part of systemic reform and will range from bank loans, angel investments and crowd-funding for small enterprises, to capital markets for major private sector firms to raise debt and equity finance, and to large-scale finance, including development banks, for large-scale infrastructure projects. Sustainability and green finance can be an important part of the story. So too will be major mortgage, insurance and pension institutions as Chinese individuals and households buy houses and plan for old age.

Transparency, sound banking standards and regulation of individual institutions and the system as a whole will be of increasing importance in the financial sector. As the sophistication of the economy and financial system grows, the danger of financial crises increases. Crises cannot be wholly avoided but their probability, intensity and impact can be reduced by sound investment decisions, coherent policy and strong institutions. Investment, and especially overinvestment, in unproductive infrastructure carries severe risks to economic and financial stability. This can be alleviated by careful assessment of infrastructure costs, their financing structure and the actual benefits they generate. Sound, sustainable investment criteria can be strengthened and their use mandated. Their widespread application could help avoid the problem of 'building more' instead of 'building right'. Wise regulation is of great importance, for both avoiding the problems of excessive risk-taking and of the potential distortions and risk of directed credit.

iii) Public finance and the functioning of cities

Public finances can also be a source of instability and crisis. China has managed the national public finances responsibly over the years but serious problems could emerge, and arguably have emerged, at lower levels, particularly in cities. Cities will be the focus of most of the investments, particularly infrastructure investments, of the new era. They are home to the majority of the population and account for the big majority of output, pollution and greenhouse gas emissions and their relative importance will grow. How cities are managed in physical, human, social, environmental and financial terms will therefore be critical to China's future.

For cities to create a stable investment climate and to carry through the infrastructure and other investments necessary to function in a clean, efficient and sustainable way, their public finances must be managed well. To do this they will need strong revenue streams from local taxation and payments for services. Local taxation can take a number of forms, including taxation of land and property, pollution or carbon taxes, local additions to income tax and so on. It is important that these taxation powers are clear and well-executed, and are not contradictory or confusing relative to taxation by national authorities. Transparency and efficiency of local taxation, as well as expenditures, will be crucial to the delivery of the next stages of China's development.

It is also important that the design, taxation and infrastructure of cities foster compactness. At present, China's cities are sprawling, creating severe problems of congestion, pollution and waste (NCE, 2018).

iv) Internal governance

The functioning of cities constitutes a major part of the investment climate but good governance, particularly in relation to investment, goes beyond cities. Private investment is at the heart of the growth model of the new era and it is very sensitive to the quality of governance, as well as the quality of infrastructure services. The quality of governance has a profound influence on how easy it is to get things done and the confidence of the investor in the returns to investment.

We identify three elements of the quality of governance in relation to investment: the soundness of policies; the predictability of policies; and the functioning and behaviour of institutions. We have already discussed in Section 3 the meaning of sound policy in the new era, particularly as regards getting markets to give better signals, by overcoming market failures. Predictability reduces government-induced policy risk. Such risk is a major deterrent to investment round the world. We do, of course, learn over time about new possibilities; new evidence appears; experience teaches lessons: thus policy cannot be set in stone. But if investor uncertainty is to be managed, the criteria for policy change must be understood and, as far as possible, be set out in advance. Government policy should be 'predictably flexible'.

Another source of both cost and uncertainty in China lies in the functioning and behaviours of institutions. Sometimes institutions and officials can be bureaucratically heavy or obstructive; sometimes they are corrupt. The more licences and permissions that are required, the greater the likelihood that these problems or obstacles can arise. In creating a good investment climate, it is important that bad or unnecessary intervention is reduced. That does not mean, of course, abandoning regulation and standards, for example on pollution or safety. The argument here is that government should focus on the important and make the application of the regulation and standards as user-friendly as possible.

v) Management of radical change and dislocation

Major change inevitably involves some dislocation. Such issues arise more strongly now that China is an established producer in many sectors. Some of these sectors will contract in the future, such as coal-mining, steel and some of low-cost manufacturing. The impact might be particularly large in specific geographical locations. This type of change, if badly managed, can damage social cohesion and create lack of hope or a sense of injustice.

There are a number of actions that both national and local government can take. Key elements include: training and retraining; support and finance for local entrepreneurship; moving mobile government activities to the affected localities; help for workers in relocating; and social safety nets. Local dialogue (i.e. involving stakeholders including citizens locally) can contribute strongly to the effective working of these policies.

Certainly, the changing nature of technologies and of the world economy will involve some future dislocations. We can be sure that financial shocks will occur round the world and probably in China too. Rich countries have managed these kinds of changes badly on the whole, and the political consequences have been very damaging. China can learn from their mistakes.

vi) Global governance

Our final subject on systemic reform concerns global governance. As the world's largest economy (in purchasing power parity terms), China is already a major influence on the world stage (even though its per capita income is still considerably lower than many rich countries'). China not only acts on the world stage: inevitably, it also shapes that stage. What happens to world trade and investment, to the global commons and to the future of the international financial institutions is of vital importance for China and the world. On all these, the world as a whole, including China, will benefit greatly from a well-functioning, rules-based and equitable world order.

On trade and investment, the extraordinary growth and development of the past 70 years globally has demonstrated the great benefits of collaborative and open international systems. Since such systems began to be created in the late 1940s, global output per head has gone up by a factor of four and global life expectancy at birth has increased by around 30 years, from around 40 to 70 years. This has been a unique period for development in world history.

It is vital that these international systems are maintained and enhanced (see, for example, Stern, 2018) and China has a crucial role to play here. Moving from a world with one dominant power, the United States, to a bipolar world with the United States and China in tension or antagonism would be damaging. It is unsurprising, therefore, that we see public discussion of the Thucydides Trap[6] (see, for example, Allison 2017). An open and international order with all countries participating will be much more productive than a system dominated by quarrelling between two major powers. An open, rules-based order would allow the world to tackle much more effectively the new problems of the 21st century while continuing to lift people out of poverty. Working on further opening of trade within the World Trade Organization and supporting the UN organisations are vital.

The challenges of the global commons, particularly climate change, are of great urgency, as we have argued. China played a leading role in creating the Paris Agreement, at COP21, in 2015. China has begun to stabilise its carbon emissions and has committed to peak its emissions around 2030 or earlier. At the 2019 UN Climate Action Summit, China's Ministry of Ecology and Environment (MEE) released a review on the effect of policies addressing climate change and strengthened China's position on reducing emissions (MEE, 2019). It will likely begin to reduce them under the 14th Plan. China is now, inevitably, in the vanguard of action and international collaboration on climate change and this presents it with great opportunities, not only in terms of its own new model of growth and its technological advances but also in terms of global leadership.

Finally, the world's international institutions – the United Nations, the International Monetary Fund, the World Bank, the regional development banks, the WTO and so on – will increasingly look to China for leadership. China's role in the G20 will be crucial – it exemplified this through its Presidency in 2015 and

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[6] Where a rising power threatens to displace a ruling one and the fear of this happening leads to war.

the Hangzhou Summit. As the report of the G20 Eminent Persons Group argued, the IMF is in urgent need of more resources if future financial crises are to be better managed and their frequency is to be reduced (G20 Eminent Persons Group on Financial Governance, 2018). The multilateral development banks (MDBs) could be still more effective if they functioned better as a group. That would involve the creation of country platforms for better coordination of action in support of a country's development programme. China, which is increasingly important as a supporter of development in other countries, could play an important role here. It would also involve countries and MDBs working together for the management of risk to get stronger multipliers for private investment. And it would involve bringing sustainable infrastructure to the core of all the work of the MDBs.

The combined value of these reforms

This brief discussion of systemic reforms has covered: policy and sustainable infrastructure to create an investment climate to foster private sector innovation and investment; strengthening the financial system for strong, productive and stable financing; better functioning cities, including their public finances; local governance and global governance. Together, these systemic reforms could generate the investments in physical, human, national and social capital which will drive forward China's new era of high-quality, sustainable and inclusive growth and development.

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