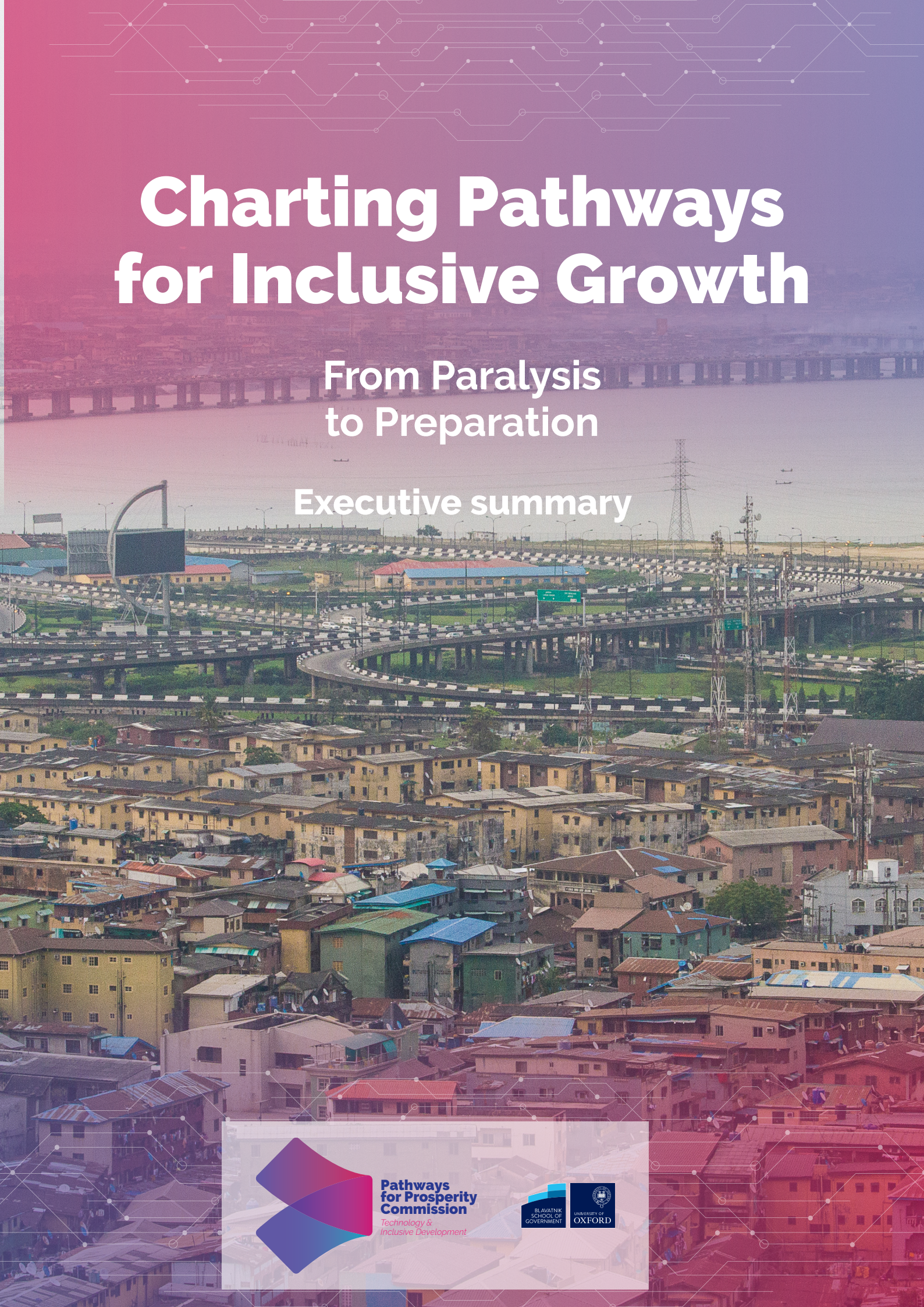
Charting Pathways for Inclusive Growth

From Paralysis to Preparation

Executive summary



Pathways for Prosperity Commission
Technology & Inclusive Development

Blavatnik School of Government
University of Oxford

Cover Image, Abuja, Nigeria. Photograph by AbayomiAkande, Pathways for Prosperity Commission, 2018

Inforgraphics by Click Consult | www.click.co.uk

Report design by Soapbox | www.soapbox.co.uk

FOREWORD

We are living through a moment in which new technologies are radically transforming lives across the world in ways that would have been difficult to imagine even a few years ago. The actions we take today will determine whether these technologies are ultimately an asset or a liability for people and economies in developing countries.

As co-chairs of the Pathways for Prosperity Commission on Technology and Inclusive Development, we are proud to be working with a talented and diverse group of global leaders in government, the private sector and academia who are advancing a practical set of policies designed to ensure that digital technology is inclusive, transformative, and widely accessible.

The Commission's new report, *Charting Pathways for Inclusive Growth: From Paralysis to Preparation*, examines the impact of technological innovation on growth, jobs and livelihoods in developing economies. We believe it makes a persuasive case that emerging technologies – when coupled with sound policy choices – have the potential to open new pathways for prosperity by reducing the costs of production, trade and innovation. Most importantly, this report explains why dialogue and co-operation between governments, technologists, citizens and business leaders will be essential to delivering inclusive growth in the digital age. The onus must be on ensuring that these new pathways are truly inclusive.

Ultimately, the Commission's findings leave us optimistic. Technological progress by its very nature is disruptive, and anxiety about the future is understandable. That said, history has demonstrated that technology can, and most often does, enhance human prosperity and well-being while unlocking enormous individual and social potential. This report explains why we believe that progress will continue.

Melinda Gates **Sri Mulyani Indrawati** **Strive Masiyiwa**

ACKNOWLEDGEMENTS

The co-chairs and commissioners would like to extend their thanks and acknowledge the dedicated people that made this report possible. It was drafted by a team led by Commission academic directors Professor Stefan Dercon and Professor Benno Ndulu, and the secretariat's head of research and policy, Toby Phillips. Invaluable contributions to this report were made by the Pathways secretariat headed by Rafat Al-Akhali, with research and policy officers Tebello Qhotsokoane and Sophie Ochmann, and head of communications and events, Meena Bhandari. The report's production was supported by the communications and events team Philippa King and Assistant Emily Cracknell. A team of researchers also supported the process: Sakhe Mkosi, Lena Anayi, Christopher Eleftheriades, Brendan Kilpatrick, Fairoz Ahmed, and Pieter Sayer. Special thanks go to Eleanor Shawcross Wolfson. The team greatly benefited from the advice of Dean Ngaire Woods, of the Blavatnik School of Government, University of Oxford, together with the faculty and staff.

For their helpful and stimulating conversations, the team would particularly like to thank Stephan Malherbe, Shankar Maruwada, Pramod Varma, John Norris, Gargee Ghosh, Mary Hallward-Driemeier, and the people who participated in our workshops on fintech (Nairobi), digital ID (New Delhi), e-government (Oxford and Abuja), ed-tech (New Delhi), structural transformation (Dar Es Salaam and Jakarta) and agriculture (Kigali).

The depth of the report is thanks in part to independent research and analysis conducted for the Commission by Dani Rodrik, Douglas Gollin, Jenny Aker, Raphael Kaplinsky, Karishma Banga, Dirk Willem te Velde, Olly Buston, Matthew Fenech, Nika Strukelj, Jonathan Greenacre, Sigfried Eisenmeier, Nicolas Lippolis, Stevan Lee, Umar Salam, Vanessa Fullerton, Yasmina Yusuf, Mark Henstridge, Priya Jaisinghani Vora, Kay McGowan, Matthew Homer, Jonathan Dolan, Bernard Naughton, Chris Paton, Naomi Muinga, Prakhar Misra, Dario Guiliani and Michael Green.

Finally, Box 3 of the report explores the aspirations and livelihoods of young people. This was made possible through a collaboration with U-Report (run by UNICEF and partners), who polled 100,000 youth around the world for the Pathways for Prosperity Commission. More detailed results from this exercise will be published separately.

ABOUT THE PATHWAYS COMMISSION

The Pathways for Prosperity Commission on Technology and Inclusive Development is proud to work with a talented and diverse group of commissioners who are global leaders from government, the private sector and academia.

Hosted and managed by Oxford University's Blavatnik School of Government, the Commission collaborates with international development partners, developing country governments, private sector leaders, emerging entrepreneurs and civil society.

The Commission aims to catalyse new conversations and to encourage the co-design of country-level solutions aimed at making frontier technologies work for the benefit of the world's poorest and most marginalised men and women.

Pathways Commissioners:

- Melinda Gates – Co-chair of the Bill & Melinda Gates Foundation
- Sri Mulyani Indrawati – Minister of Finance in Indonesia
- Strive Masiyiwa – Founder and Executive Chairman of Econet Group
- Professor Stefan Dercon – Professor of Economic Policy at the Blavatnik School of Government and the Economics Department, and a Fellow of Jesus College. Director of the Centre for the Study of African Economies
- Professor Benno Ndulu – former Governor of the Central Bank of Tanzania
- Dr Kamal Bhattacharya – CEO of Mojochat
- Shanta Devarajan – Senior Director for Development Economics and Acting Chief Economist at the World Bank
- Sigrid Kaag – Minister for Foreign Trade and Development Cooperation in the Netherlands
- Nadiem Makarim – CEO and Founder of GO-JEK
- Maria Ramos – Chief Executive Officer of Absa Group Limited
- Daniela Rus – Andrew (1956) and Erna Viterbi Professor of Electrical Engineering and Computer Science, and Director of the Computer Science and Artificial Intelligence Laboratory (CSAIL) at MIT
- Shivani Siroya – Founder and CEO of TALA

EXECUTIVE SUMMARY

Today the world is witnessing the rise of many new frontier technologies. Some of these innovations, such as advancements in robotics and machine learning, are affecting production processes of goods and services. Others, such as improved communications through virtual reality and the internet of things, affect not only the wider systems of production but also how goods, services, and ideas are exchanged.

The current global debate on technology and inclusive growth is narrowly focused on 'job destruction' from accelerating automation, suggesting that up to 47%[1] of all jobs in OECD (the Organisation for Economic Co-operation and Development) countries and two-thirds of all jobs in developing countries[2] are already at risk. **The first key finding of this report is that such numbers are deeply misleading and have created policy paralysis.** Most are based on technically flawed methodologies, but more fundamentally, these forecasts typically ignore the upsides of technological progress in creating new economic opportunities for workers, firms and consumers alike.[3] Fear is a poor guide for policy. Instead of scaremongering, this report identifies the opportunities and carefully articulates the challenges. It argues that national policymakers, business, and citizens in developing countries, as well as the international community, can and should act to grab opportunities for growth and better jobs and livelihoods, and to minimise disruption.

Instead of adding to the noise with further estimates, the first half of this report combines economic analysis with historical and contemporary evidence to analyse how innovation affects prospects for inclusive growth. **We show that technological progress reduces one or more of three cost drivers, generating growth by allowing economies to create more value from the available resources.** Emerging technologies are further reducing these types of costs across sectors, driving productivity, boosting efficiency, breeding further innovation, and, ultimately, accelerating economic growth. The 18th century spinning jenny reduced the cost of production, by making it possible for one worker to weave as much cloth as eight workers did prior to its invention.[4] This drove the first Industrial Revolution, and started a wave of automation that continues today with robotics, machine learning and 3D printing. Standardised shipping containers and better phones and fax machines reduced the cost of exchanging goods, services and information, underpinning the Asian growth miracles; data and digital communication technologies and platforms bring further efficiencies to exchanges of goods, services and information.[5] Mobile phones now allow two-thirds of the world's population to communicate verbally at the touch of a button,[6] drastically reducing the cost of networking; new communication technologies create further proximity, meaning ideas and knowledge can go global instantly and at close to zero cost.

Fundamentals such as stability, infrastructure, rule of law, education and economic policies will always matter in determining whether innovation is profitable. These go a long way toward understanding ***why* certain countries benefit from new technologies more (and more quickly) than others: the local economic and social ecosystem matters.** Understanding why England managed to take advantage of new technologies in the Industrial Revolution, and why Tanzania could not replicate the economic vitality Vietnam has known over the last 30 years, remains relevant today.[7] This also tells us, just as in history, that there will not be many shortcuts or easy 'leapfrogs'. Nevertheless, given the nature and speed of technological change, there is real opportunity: countries that may have lost out in the past can prepare themselves to take advantage this time around.

The impact of new technologies on economies or jobs cannot be understood by just looking at, say, the labour savings of a new robot. **How technological change and growth in particular sectors 'works through' the sector and the economy are essential for an understanding of the impact of technological change, especially on jobs and living standards.**[8] The agricultural revolution, as part of the Industrial Revolution, brought considerable labour savings, just as the green revolution's mechanisation did in Asia. While agricultural jobs were no doubt disrupted, and some were lost, how this technological change impacted on the *overall* economy in jobs, livelihoods and purchasing power is key. There are echoes today. Whether it is ATMs in the US or textile cutters in Tanzania, evidence shows that overall growth emerged in jobs within firms and sectors.[9] The manufacturing boom in Asia, no doubt a key driver of growth was, in fact, overshadowed in its impact on employment by simultaneous but larger growth in jobs in the services sector, as evidence in this report from Vietnam, Indonesia and Bangladesh shows. Discussions today would do well to focus more on how to foster better linkages between sectors benefiting from productivity growth and the rest of the economy.

Historical experience also shows that, **while technological innovation does not typically 'destroy jobs' in aggregate, it certainly does disrupt jobs and lives.** During the Industrial Revolution, working-class labourers experienced a decline in living standards for the first 60 years of this period, while the income of the top 5% more than doubled.[10] During the Asian boom, job opportunities emerged in urban areas, driving large-scale migration; in many countries as well as globally, this period of shifting global value chains (GVCs) also led to concerns about exclusion and inequality.[11] If change is poorly managed, socially and politically, now, just as in history, disruption will feed resistance to change, and the result is likely to be missed opportunities for inclusive growth.

Much like their predecessors, current crops of technological innovation are rapidly creating new and often unforeseen economic opportunities and disruptions. The pace, direction and magnitude of these changes are hard to predict. Outcomes will depend on local conditions and actions. The second half of this report offers a set of five possible pathways for inclusive growth in a digital age. We do not provide a manual for policymakers; rather, we offer a vision for what is attainable in different contexts, and then develop a set

of priorities which business, civil society, national governments, and international partners will jointly and urgently need to address.

The five possible pathways for prosperity being unlocked right now by technological innovations are:

1. **Raising value from agriculture –** Advancements in data analytics, biotechnology and communications will drive growth by improving yields on the farm, and by enabling more efficient services and logistics. Agriculture will likely be a key pillar of any inclusive development strategy for some time, as most tasks are not easily automated, meaning both continued demand for low-skilled workers and improved terms of trade for farmers as costs, and so prices in other (more easily automated) parts of the economy, fall more quickly.
2. **New GVCs in manufacturing –** Robotics will spread, but it will take time as non-factory floor costs of labour will remain lower in developing countries.[12] But there is much more: frontier communication technologies will drastically reduce the cost of information exchange and networking, making it possible to perform more complex, higher-skilled manufacturing tasks remotely, including from developing countries, where wage cost advantages across the skill distribution are still present. This next generation of manufacturing growth seems likely to remain inclusive, as the lowest-skilled jobs (such as cleaning and catering) within manufacturing firms, but also those in complementary services (such as sales and customer care), seem relatively resilient to automation.
3. **Creating new global trade in services –** Advances in artificial intelligence may disrupt outsourcing of easily codified business processes (such as simple call centres offering basic customer support), seemingly affecting jobs. However, fast-improving communication technologies, including advances in virtual reality, will unlock international trade in complex and integrated services that used to require more face-to-face contact. The result is new opportunities in integrated business services, management advisory services, and even remote healthcare support and other services requiring empathy and judgment, which bots are not going to easily supply at levels required. Relatively low wage costs mean developing countries stand ideally placed to begin exporting these relatively labour-intensive services, which already employ a disproportionate number of women.
4. **Linking the informal sector to the formal economy –** Digital platforms (such as those for mobile money and taxi-hailing) will reduce the cost of exchange within the informal economy, boosting its productivity. The informal sector comprises many rural workers, smallholder farmers, casual labourers and petty enterprises – that is, those groups already facing the most social and economic disadvantage. In some regions, this accounts for over 80% of employment. Linking informal workers to potential markets and the formal economy will likely be highly inclusive, but these links will also provide a route for progression into more formal parts of the economy for previously excluded workers and entrepreneurs, better connecting

them to the potential opportunities of not just the formal economy but also the opportunities that stem from better social protection and social benefits.

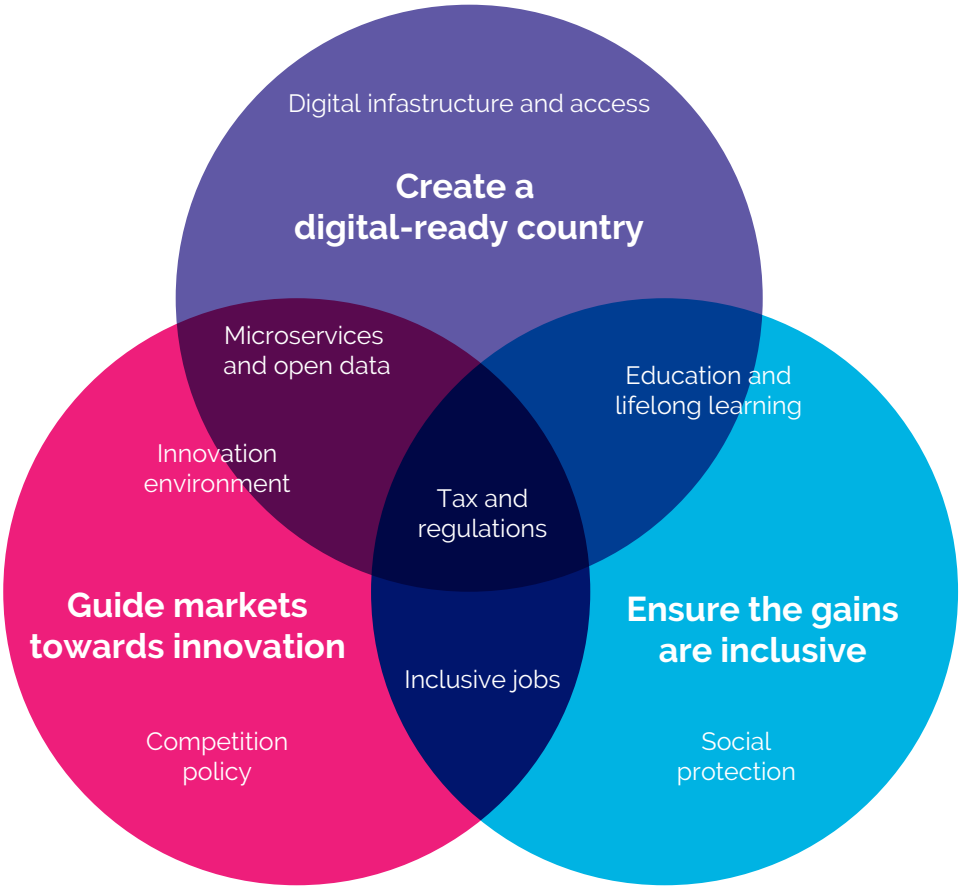
5. **Diverse, connected domestic economies –** Digital platforms and advances in logistics and supply-chain data management will drive growth by reducing the cost of moving information and goods around an economy. Furthermore, better communication technologies and the internet are reducing the cost of networking, bringing new ideas into a developing economy, often at zero marginal cost, opening the scope for making developing economies themselves increasingly innovative. This pathway reduces the need for a country to enter into GVCs by approximating some of the benefits of export-orientation: new technologies can foster competition, complex (domestic) value chain integration, and even learning and knowledge transfer to catch up to the global frontier of production capability.

But, none of these positive growth and inclusion impacts are inevitable. Policymakers, business leaders and citizens have real agency, but also real responsibility and accountability. To capitalise now on the potential of the pathways set out here (and others), and to avoid economic, social and political dislocation, policymakers and businesses need to create the right environment for these pathways to emerge. This means action now to:

- **Create a digital-ready country**, by investing in hard connectivity infrastructure, 'soft' infrastructure such as digital identification and standards for interoperability, redoubling efforts on education, and expanding new digital capabilities (including both technical skills and basic digital literacy).
- **Guide markets towards innovation,** through broad support for entrepreneurs willing to take risks on new products and business models, better access to existing and new financial services needed to take innovations to scale, and carefully calibrated regulatory and tax regimes that balance the needs of society without dampening innovation or competition.
- **Maximise inclusiveness,** by ensuring a level playing field in digital readiness, accelerating transitions for workers in disrupted markets, providing innovative social protection, and above all ensuring that growth creates broad-based prosperity in the first place.

Responding positively and swiftly to technological change requires, first vision, purpose and strategy. Clearly new technologies will create winners and losers; as will government policies and private sector business decisions. Some of these policy priorities are in tension with each other: pro-competitive regulation can stifle (some) investments; public education will be funded by taxes, partly raised from creative entrepreneurs. The solution, we think, is to escape policy paralysis by co-designing a national strategy for inclusive growth through concerted and broad-based dialogue between government, the private sector and civil society. This dialogue should provide a voice for young people, the 'digital natives', allowing them to express their aspirations and to contribute their unique perspective and skills as the first generation born in the digital age.

FIGURE 1. **Policy priorities for inclusive growth**



Delivering such a national strategy and capitalising on technological progress are not just questions of domestic policy; achieving these aims will also require international co-operation. Most of the pathways and policies depend in part on international frameworks: the rules that govern intellectual property, cross-border taxation, trade, and competition. In these areas, international co-ordination will be the only way to fully grasp the opportunities from technological advances. Some countries also suffer from basic resource constraints that prevent investment and implementation. Where developing countries have a clear and feasible strategy to navigate technological disruption, donor agencies should look for opportunities to provide support, including through financial assistance. The time is ripe for concerted international co-operation.

National policymakers, businesses and citizens in developing countries have real agency over how technological progress will impact on their economies and their societies. They must act, domestically and internationally, to chart a course for inclusive growth in a digital age.

Pathways for Prosperity Commission

Technology & Inclusive Development

BLAVATNIK SCHOOL OF GOVERNMENT

UNIVERSITY OF OXFORD