WHITESHIELD PARTNERS
STRATEGY & PUBLIC POLICY ADVISORY

GLOBAL LABOUR RESILIENCE
INDEX 2019

UNLOCKING THE FULL POTENTIAL OF WORK

IN COLLABORATION WITH

ManpowerGroup

UNIVERSITY OF OXFORD Saïd Business School

HSBC

IFOW

Whiteshield Partners
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DISCLAIMER

The analysis and drafting of the Global Labour Resilience Index 2019 (hereafter: "Report") was conducted by Whiteshield Partners with the support from its main partners, HSBC, ManpowerGroup, Oxford University Saïd Business School, and the Institute for the Future of Work based on a methodology integrating statistics from international organizations and interviews with the Advisory Board members.

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FOREWORD

By Sir Christopher A. Pissarides, Regius Professor of Labour Economics at the London School of Economics and recipient of the Nobel Prize in Economics

Labour markets are in a continuous state of flux. A large number of jobs are destroyed every year for all kinds of reasons and on average an as large number of new jobs are created to take their place. Large numbers of workers are regularly in a state of transition from one job to another, new firms are being created and new technologies are being adopted to raise productivity and wages. Economists are not very good at understanding the reasons for this dynamic. Thorough studies of its causes usually attribute the biggest cause to "idiosyncratic" factors – a fancy word for our ignorance.

When I first embarked on my study of labour markets in the 1970s, the big problem that my senior colleagues at the LSE were trying to grapple with was the productivity slowdown and the different responses that it brought to economies across the industrial world. Wage declines in the United States, unemployment hikes in Europe and "stagflation" – inflation combined with stagnation, a new word to describe a new problem. Now we know that the causes of stagflation were largely due to monumental mistakes by governments, which interpreted the new trends in labour markets as a repeat of the decade before, the heyday of Keynesian economics. They essentially confused supply with demand, with disastrous consequences.

We did not have indices of anything in the 1970s. Since then the World Bank, the World Economic Forum and other international organizations have developed a variety of indices about the business environment, to inform policy makers, employers and workers. The Whiteshield Partners Global Labour Resilience Index 2019 is new and addresses an important issue neglected by previous indices, but one that currently is at least as important as any other: how well prepared are labour markets to take on new technologies for the benefit of all?

About a decade after the productivity slowdown of the 1970s, when economists finally realised the importance of technology in driving the dynamics of labour markets (with exceptions of course, like Greece in the last decade), some of us began systematic research programmes on the impact of new technology on jobs. Our results surprised many, even ourselves. We discovered the extent to which labour markets across the world have diverse institutional structures, and how these institutional structures, combined with government policies, determine the fate of jobs and productivity growth when new technology arrives. There is no single metric that can tell us structure A is better than structure B. Politics matters too, as well as the electoral cycle and the legal framework. The future of work is still a mystery but one whose understanding can bring enormous rewards. This is why so much research and public discourse are directed to it.

In London, the Institute for the Future of Work was established to research more deeply the impact of new technology on labour markets and inform the public and governments about good labour market policies. We are collaborating with Whiteshield Partners because we think that their Global Labour Resilience Index is a well-researched tool that will be of enormous help in our understanding of labour markets and their responses to new

technology. Labour market reform is necessary on a continual basis. It will not be easy to accept the necessary changes to our set ways but we have to do it – just like generations of people before us did when the motor car replaced the horse and electricity destroyed the jobs of candle makers.

Memories are short, we forget how much the human race had to go through in the past to reach the standard of living that we are enjoying today. The new technology embodied in robots and artificial intelligence is the latest shock to hit jobs. I have no doubt that we can make it work for us. The shock is big but we know more about technology and the dynamics of jobs now than at any time in history and we have big data that we can make it tell us what to avoid and where to go. We do not know as much we would like to know but we know enough to move forward. We know that collaboration between the "social partners," government, managers and workers can produce innovative solutions in strengthening the resilience of work. At the Institute for the Future of Work we are connecting the dots to inform the government and the public. The Whiteshield Partners Global Labour Resilience Index is a novel and invaluable tool grounded in a rigorous set of relevant indicators that can help guide us on this difficult road. We look forward to our future collaboration.

FOREWORD

By Jonas Prising, Chairman and CEO, ManpowerGroup

The disruption of labour markets through globalization and advances in technology is by no means a new phenomenon, yet today it is happening at an unprecedented pace. Many industries are being transformed, not only traditional manufacturing, but also service industries and white-collar professions like law and medicine --- once considered immune from automation. Tech is here to stay, in-demand skills will be the passport to growth and resilience for individuals, organizations and labour markets alike. It's our responsibility as leaders to work out how we upskill people to integrate humans with machines.

The Global Labour Resilience Index highlights how business and governments can strengthen the resilience of their labour markets, together with case studies demonstrating innovative solutions to close the skills gap. At ManpowerGroup one of the ways we are doing this is upskilling and reskilling people from declining industries like textiles for high-growth jobs in the motorsport industry including CAD designers, aerodynamic engineers, vehicle performance analysts and IT specialists. This innovative project – The Experis Tech Academy - started with a three-way partnership between the Emilia Romagna region of Italy, local universities and a specialist industry player and is now being scaled to additional industries, including autonomous driving, cyber security and advanced manufacturing in the UK, Poland, Spain, Germany, Czech Republic, Sweden and Norway.

Government policy undoubtedly has an important role to play in ensuring the resilience of labour markets and in preparing citizens to be part of the workforce of the future. Business also has a role to play. With the right policy priorities, a partnership approach and a focus on practical steps to upskill people at speed and at scale, I am convinced we can make a real difference in shaping a future in which everyone has access to meaningful and productive employment. It is how organizations and individuals really can drive growth, build resilience to create a stronger, better society. I look forward to continuing the conversation together with Whiteshield Partners and other stakeholders at the World Economic Forum Annual Meeting in Davos.

FOREWORD

By Dr Andrew White, Associate Dean for Executive Education and Corporate Relations; Dr Eleanor Murray, Fellow in Management Practice, and Dr Marc Ventresca, Professor of Strategy and Innovation, Saïd Business School, University of Oxford

Few efforts to quantify resilience in any sphere of work exist and Whiteshield Partners have made an important first step on this journey, with the development of the Whiteshield Partners Global Labour Resilience Index (GLRI) 2019. The GLRI ranks over 120 countries on institutional capacity to foster resilient labour markets and points to policy choices and collaborations needed in this effort. In this Foreword, we recognize the pioneering work of Whiteshield Partners and signal the importance of efforts to engage resilience across broad policy sectors in these days of global and national institutional change.

Our research work at the Saïd Business School, University of Oxford, on global opportunities and threats intends to make visible and actionable 'what's next' in terms of global and local solutions. We pioneer learning programmes that address complex global challenges, with a focus on resilience and scenarios thinking. We partner with clients to facilitate robust action in response to systemic change, on issues of policy and practice such as the future of work. We build this expertise into our degree programmes, to ensure that next generation leaders come with relevant skills and sensibilities.

'Resilience' is a new and critical approach that reframes how a range of intermediaries' agencies anticipate and respond to disruption, whether from technologies, income inequalities, environmental changes or geopolitical movements. Our research on resilience points to the value for these diverse actors to develop the organisational and policy capacity and capability to rapidly adapt and innovate ahead of these macro trends. The Report introduces conceptions of resilience and the institutional configurations required to operationalize these ideas.

One of the core GLRI insights is that public, private and civil society actors will need to collaborate in new ways. Moreover, alternative conceptions of resilience at the level of specific firms and industries, the labour market, and the national economy each pose new ways to understand changes in the nature of work, employment, and well-being. In these times of disruptive global change, forecasts suggest labour markets face significant threats and extensive opportunities, which vary by country and industry sector. Hence the policy value of this pioneering labour market resilience index, that provides a first-cut specification of institutions, variables, and policy interventions.

Make no mistake: these set the terms of the debates and are a first step in continued analysis and experimentation. This Report is a first step, not a final step, in defining a more substantial research agenda and policy actions to consider. Together with Whiteshield Partners we welcome you into this conversation on this important global challenge.

ADVISORY BOARD TO THE GLOBAL LABOUR RESILIENCE INDEX

The GLRI Advisory Board was formed to provide guidance on the methodology and research applied to the Global Labour Resilience Index, ensure consistency of the findings and support in the dissemination of results. The Advisory Board is a select group of leading international practitioners and experts with unique knowledge and skills in the areas of labour policy and technological disruption. Its members, while coming from diverse geographical and institutional backgrounds (international organizations, the public sector, non-governmental organizations, business and academia), participate in their personal capacity. Whiteshield Partners is grateful for the time and support provided by the Advisory Board members.

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The report was completed by Whiteshield Partners. Anthony O'Sullivan, Partner and Director, Whiteshield Partners, led the overall GLRI 2019 project and drafting of the report. Fadi Farra, Co-Founder and Director, Whiteshield Partners, provided strategic direction and led the quality review process. Whiteshield Partners team members that contributed to the GLRI 2019 report were: Elena Balter, Senior Economist; Amira Bensebaa, Senior Associate; Inna Bisovetska, Associate; Alexander Crean, Young Policy Leader; Tom Flynn, Manager and Nadia Klos, Senior Associate. The Report benefited from Whiteshield Partners proprietary Global Labour Resilience Index model and Knowledge Mapping intellectual property.

Whiteshield Partners would like to extend a special thank you to GLRI 2019 Partners HSBC, ManpowerGroup, Oxford University Saïd Business School and the Institute for the Future of Work for their outstanding support to the Global Labour Resilience Index 2019.

We would also like to thank the members of the GLRI Advisory Board for their invaluable inputs into the GLRI 2019, including Sir Christopher A. Pissarides, Regius Professor of Labour Economics at the London School of Economics (LSE), and recipient of the Nobel Prize in Economics; Erik Berglof, Director, Whiteshield Partners and Director, Institute of Global Affairs, London School of Economics (LSE); Alison Coates, Global Head of Future Skills, HSBC; Ruth Harper, Vice President, Global Strategic Communications, ManpowerGroup; Bernard Hugonnier, Director, Whiteshield Partners; Dr Eleanor Murray, Fellow in Management Practice, Saïd Business School, University of Oxford; Jonas Prising, Chief Executive Officer, ManpowerGroup; Anna Thomas, Director, Institute for the Future of Work; Professor Peter Tufano, Dean, Saïd Business School, University of Oxford; Dr Marc Ventresca, Professor of Strategy and Innovation, Saïd Business School, University of Oxford; Dr Andrew White, Associate Dean for Executive Education and Corporate Relations, Saïd Business School, University of Oxford; Pawel Wojciechowski, Director, Whiteshield Partners.

The report also benefited from inputs and comments from Hannah Frost, Head of Communications, Corporate Sustainability, HSBC; Emma Kirby, Global Public Relations and Communications Lead, ManpowerGroup; David Morris, Global Head of Learning, HSBC; Birgit Neu, Global Head of Diversity and Inclusion, HSBC; Paul Raddon, Head of Operations, Global Service Centres, HSBC; Kirsty Roth, Global Head of Operations, HSBC; and Hollie Wells, Employability Manager, Future Skills, HSBC.

INTRODUCTION

Background and Conceptual Framework for the Global Labour Resilience Index 2019

The Global Labour Resilience Index: a new tool to measure labour resilience

The Global Labour Resilience Index (GLRI) grew out of an event on the Future of Work organized by Whiteshield Partners in Davos in January 2018 (see Illustration 1).

Illustration 1. Future of Work Event by Whiteshield Partners in Davos, 2018

The event focused on the impact of technology on work and how best to respond. After an analysis of the impact of technology on different occupations, participants highlighted a number of differences between countries in their approach to labour markets and level of preparedness for the future of work. For instance, the emphasis in Germany on building excellence in vocational training contributed to bringing unemployment down to a remarkable 37 year low of 3.6% at the end of 2017. Singapore and Ireland have introduced analytical approaches to anticipate skill needs at the occupational level and adapt educational programs accordingly. The United States has emphasized the development of an attractive ecosystem for entrepreneurs and the self-employed. The Nordic countries, for their part, have been leveraging their institutional mechanisms for dialogue between public, private and other stakeholders to inform the debate on the future of work and propose innovative policy directions, such as the pioneering Youth Guarantee[1].

The consensus among public and private sector participants in the January 2018 Davos event was that many national institutions and legacy policies are not adapted to supporting the workforce of the future. Furthermore, there is no consolidated vision of what the policies and institutions should be to unlock the full potential of work and where countries stand relative to good practice.

In this context, the key question addressed by this report is as follows:

Which countries are best prepared for the future of work in terms of their vision, strategy, policies and institutions and how can they unlock the full potential of work going forward?

The GLRI measures which countries are best prepared for the future of work

Taking a comprehensive view of drivers affecting the availability, quality and sustainability of work, the

[1] After being pioneered by the Nordic Countries, the Youth Guarantee is now a commitment adopted by many EU countries that all young people under the age of 25 years receive a good offer of an apprenticeship, training, continued education or employment that is suited to their abilities and experience within four months of becoming unemployed or leaving education.

report highlights the level of future unemployment risk countries face based on structural, policy and technological shifts.

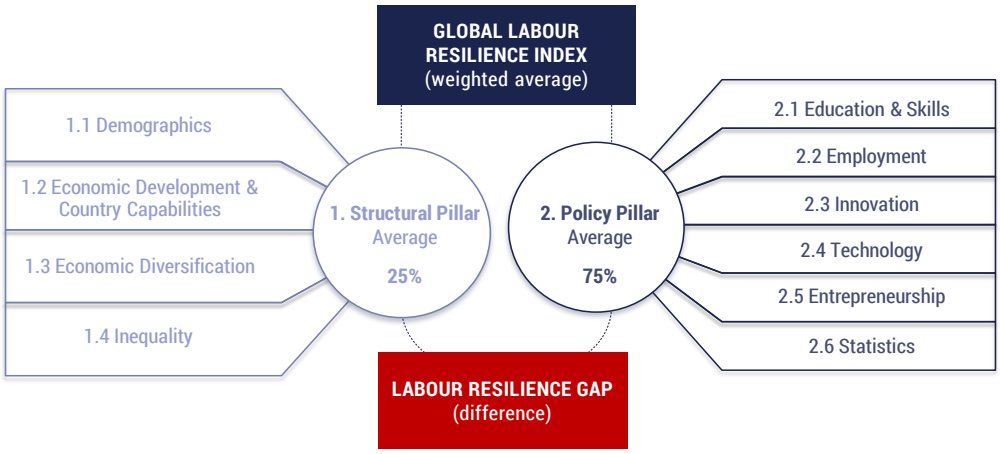
The Global Labour Resilience Index fills an important gap by expanding the definition of workforce resilience, and introducing a comparative assessment of countries that are best prepared for the future of work with a view to identifying areas that must be addressed to boost the resilience of their labour markets.[2]

A resilient labour market is defined as one that generates sustainable demand for a wide range of occupations for the majority of the workforce and supplies workers with the relevant skills to fill those occupations. Resilient labour markets are able to withstand external shocks because of their flexibility and adaptability.[3]

The Global Labour Resilience Index assesses 123 countries and economies on the resilience of their labour markets based on a total of 10 dimensions and 66 indicators from a wide range of international sources – including some indicators constructed specifically for Index by Whiteshield Partners. Taking into account both longer-term structural factors – such as demographics, level of economic development, economic diversification and inequality – as well as shorter-term policy factors – including education and skills, labour policy, innovation, entrepreneurship, technology and statistics – the GLRI identifies gaps to address in order to boost the resilience of labour markets and adapt to the changing world of work. By measuring the gap between structural and policy factors, the Index also highlights the *labour resilience gap*: identifying the countries that have the greatest potential to improve the resilience of their labour markets in the shorter-term (see Figure 1).

GLRI results have a strong overall positive correlation with productivity (0.70). Moreover, there is a negative correlation with unemployment for most geographic regions and other country groups analysed (greater than -0.5).

Figure 1. The Global Labour Resilience Index Framework



Source: Whiteshield Partners

[2] The GLRI framework is structured around a wide range of structural and policy dimensions that directly impact the resilience of labour markets. Some factors which have an indirect impact on labour market resilience, such as monetary policy, have not been included.

[3] Traditional definitions of labour market resilience are more restrictive than the one adopted by the Global Labour Resilience Index. The OECD, for example, defines resilient labour markets as "labour markets that weather economic downturns with limited losses in worker welfare." The definition focuses on workers, but the firm perspective is also integral to the resilience of labour markets. Moreover, the disruptive role of technological evolution is not directly addressed in this definition. See "What Makes Labour Markets Resilient during Recessions," OECD Employment Outlook 2012."

The overall aim of the GLRI is to provide governments, business and the tertiary sector with the tools to assess the resilience of their labour markets, identify priority areas for improvement and design appropriate policy responses to boost and sustain work for all.

The GLRI report is structured as follows:

Chapter 1, "Overview of Global Labour Resilience Index (GRLI) 2019 Results - Unlocking the Full Potential of Work" provides an assessment of the GLRI 2019 rankings, including a focus on the top 10 countries, the labour resilience gap, and a breakdown of results by geographic region.

Chapter 2, sector focus on "The Future of Work in the Banking Sector" addresses the drivers of disruption in the banking sector and the implications for banks in managing the future of work. The chapter concludes with a set of 21 actions for the banking industry to consider in strengthening the resilience of its workforce.

Chapter 3, "The Global Labour Resilience Index 2019 - A Call for Action" concludes with a proposed set of policy recommendations, broken down into four resilience segments. A dynamic view of the GLRI results also provides insights into three different paths to enhance labour market resilience. The chapter ends with a proposed agenda for action to strengthen the resilience of labour markets through collaboration between governments, business and the tertiary sector.

The appendices of the report provide an overview of the GLRI methodology, a summary of the GLRI results by country and additional relevant statistics, including analysis of correlations between the GLRI 2019, unemployment and productivity.

GLRI 2019 RANKINGS

GLOBAL LABOUR RESILIENCE INDEX 2019 RANKING

Table 1. GLRI 2019 Ranking

Country	GLRI Rank	GLRI Score (1-100)	1. Structural Pillar Rank	1. Structural Pillar Score (1-100)	2. Policy Pillar Rank	2. Policy Pillar Score (1-100)
Singapore	1	96	4	90	2	98
Switzerland	2	93	34	74	1	100
United States	3	92	31	76	3	97
Denmark	4	92	18	79	5	96
Finland	5	91	24	77	4	96
Sweden	6	91	16	81	6	94
Iceland	7	89	27	77	8	93
Luxembourg	8	88	2	97	13	85
Netherlands	9	88	15	81	10	90
Norway	10	87	48	68	7	94
Belgium	11	85	9	84	12	85
United Kingdom	12	83	22	78	14	85
New Zealand	13	83	63	59	9	90
Germany	14	82	32	75	16	84
Korea, Rep.	15	81	29	76	18	83
Israel	16	81	47	68	15	85
Austria	17	80	11	83	20	79
France	18	77	38	73	21	79
Canada	19	77	57	63	19	82
Ireland	20	76	78	55	17	83
United Arab Emirates	21	76	1	100	27	68
Australia	22	76	95	47	11	86
Estonia	23	75	51	66	22	79
Czech Republic	24	74	13	82	24	71
Malaysia	25	72	5	86	28	68
Qatar	26	72	3	92	31	66
China	27	72	25	77	25	70
Slovenia	28	70	12	82	30	66
Slovak Republic	29	69	8	84	34	64
Japan	30	69	99	43	23	77
Portugal	31	67	67	58	26	70
Poland	32	66	28	76	37	63
Lithuania	33	64	75	56	29	67
Malta	34	64	69	58	32	66
Bahrain	35	64	10	84	42	57
Cyprus	36	63	39	72	40	60
Latvia	37	63	65	59	33	65
Spain	38	63	58	62	36	63
Hungary	39	63	33	74	41	59
Italy	40	62	56	63	38	61
Thailand	41	60	21	79	45	54
India	42	59	20	79	47	52

Country	GLRI Rank	GLRI Score (1-100)	1. Structural Pillar Rank	1. Structural Pillar Score (1-100)	2. Policy Pillar Rank	2. Policy Pillar Score (1-100)
Turkey	43	58	35	73	48	52
Russian Federation	44	58	91	48	39	61
Romania	45	57	36	73	49	52
Chile	46	56	110	36	35	63
Jordan	47	56	7	85	64	46
Mexico	48	56	30	76	53	49
Mauritius	49	56	60	61	46	54
Indonesia	50	55	23	78	58	48
Moldova	51	54	19	79	65	46
Georgia	52	54	87	50	43	55
Ukraine	53	54	42	70	56	48
Serbia	54	54	44	70	59	48
Panama	55	53	64	59	50	51
Costa Rica	56	53	96	47	44	55
Kazakhstan	57	51	55	63	61	47
Macedonia, FYR	58	51	86	51	51	51
Oman	59	50	80	54	54	49
Kenya	60	50	40	72	72	42
Lebanon	61	49	6	86	82	37
Montenegro	62	49	70	57	63	47
Croatia	63	49	53	65	69	44
Vietnam	64	49	41	70	76	41
Greece	65	48	102	42	52	50
Armenia	66	48	72	57	66	46
Philippines	67	48	45	70	79	40
Uruguay	68	47	90	48	62	47
Rwanda	69	46	71	57	70	43
Bulgaria	70	46	89	49	67	45
Saudi Arabia	71	46	82	52	68	44
Kyrgyz Republic	72	46	14	82	93	33
Morocco	73	45	54	65	81	39
South Africa	74	45	107	38	60	48
Kuwait	75	45	73	56	77	41
Jamaica	76	45	113	35	57	48
Trinidad and Tobago	77	45	81	53	74	42
Tunisia	78	44	50	66	83	37
Senegal	79	43	37	73	92	34
Brunei Darussalam	80	43	94	47	73	42
Sri Lanka	81	43	76	55	80	39
Egypt, Arab Rep.	82	43	26	77	101	31
Albania	83	42	105	39	71	43
Iran, Islamic Rep.	84	41	98	44	78	41
Guatemala	85	41	61	61	87	35
Namibia	86	41	43	70	97	32
Colombia	87	41	104	40	75	41
Brazil	88	40	84	52	84	36
Pakistan	89	40	49	68	100	31
El Salvador	90	40	59	62	95	33
Nepal	91	40	46	69	102	30
Dominican Republic	92	40	74	56	89	34
Uganda	93	40	17	80	103	26
Peru	94	38	93	47	85	35
Tajikistan	95	38	62	59	99	31
Mongolia	96	38	85	51	91	34
Argentina	97	38	88	50	90	34
Azerbaijan	98	38	121	6	55	48

Country	GLRI Rank	GLRI Score (1-100)	1. Structural Pillar Rank	1. Structural Pillar Score (1-100)	2. Policy Pillar Rank	2. Policy Pillar Score (1-100)
Honduras	99	37	92	48	94	33
Bosnia and Herzegovina	100	35	52	66	105	25
Guinea	101	35	114	34	86	35
Bangladesh	102	33	66	58	108	25
Paraguay	103	33	111	35	96	32
Ecuador	104	33	109	37	98	32
Cambodia	105	31	79	54	110	24
Ethiopia	106	30	83	52	113	22
Benin	107	30	100	43	106	25
Zimbabwe	108	28	77	55	117	18
Mozambique	109	27	112	35	107	25
Botswana	110	27	120	6	88	34
Bolivia	111	27	106	39	111	24
Malawi	112	27	97	45	114	21
Cameroon	113	25	108	38	115	21
Algeria	114	25	115	31	112	23
Cote d'Ivoire	115	24	101	42	118	18
Nigeria	116	22	119	12	109	25
Madagascar	117	22	68	58	120	9
Zambia	118	20	122	1	104	26
Mali	119	19	118	15	116	21
Burundi	120	18	117	22	119	17
Burkina Faso	121	14	116	30	121	8
Yemen, Rep.	122	11	103	42	122	1
Hong Kong SAR, China[4]	-	-	-	-	-	-

Source: Whiteshield Partners

[4] While Hong Kong has been included in the GLRI model and analysis, it has not been included in the overall GLRI ranking given that it is under the sovereignty of China. Additional countries were not included due to lack of available statistics for the 66 indicators used in the GLRI model.

GLRI 2019: KEY FINDINGS AND RECOMMENDATIONS

New technologies are rapidly transforming the way we work and generating the need for greater resilience of labour markets

As new technologies and other forces transform the way work is organized and delivered, so policy makers are looking for ways to bolster the resilience of their labour markets. Taking a holistic view of drivers affecting the availability, quality and sustainability of work, the Global Labour Resilience Index (GLRI) 2019 report highlights the level of future unemployment risk countries face based on structural, policy and technological shifts.

Labour markets are defined as resilient by the GLRI if they generate a sustainable demand for a wide range of occupations for the majority of the workforce and are able to supply workers with the relevant skills to fill those occupations. The most resilient labour markets are able to withstand external shocks - such as the 2008 financial crisis - through flexibility and adaptability.

The Global Labour Resilience Index measures which countries are most prepared for the future of work

Resilient labour markets depend both on longer-term structural factors and shorter-term policy considerations. Structural factors affecting a country's labour market include demographics, economic development and capabilities, economic diversification and the level of inequality; shorter-term policy factors are comprised of education and skills, employment, innovation, technology, entrepreneurship and access to relevant statistics.

Combining both longer-term structural factors and shorter-term policy considerations, the GLRI gauges which countries are most prepared for the future of work. Based on 66 indicators applied to 123 countries and economies from a wide range of international sources, the GLRI assesses the resilience of labour markets and highlights priority areas to address both for individual countries and broader country segments.

Singapore, Switzerland and the United States have the most resilient labour markets in the world

Based the GLRI 2019 results, Singapore, Switzerland and the United States have the most resilient labour markets in the world. These top three countries are followed by five Nordic countries in the top 10 – Denmark (4th), Finland (5th), Sweden (6th), Iceland (7th) and Norway (10th). The Netherlands (9th) and Luxembourg (8th) complete the top 10.

Uganda, Lebanon and Egypt are among the countries with the most potential to strengthen the resilience of their labour markets in the shorter-term

Uganda, Lebanon and Egypt are among the top 5 countries with the greatest resilience gap – that is countries with the most potential to strengthen the resilience of their labour markets in the shorter-term. Building on relatively attractive structural characteristics, in particular economic diversification and populations, these countries can reap the greatest labour market resilience rewards through targeted policy reforms in areas such as education, labour, and the development of an entrepreneurship ecosystem.

Based on the GLRI results, countries can be placed into four labour market resilience segments, with each segment benefiting from a common set of actions

Four different labour market segments are identified in the GLRI:

Resilience Leaders: countries with high scores in both the structural and policy pillars. These countries must sustain their labour resilience by focusing on targeted policy and structural measures, including putting in place the right institutional mechanisms and policies to upskill, reskill and promote lifelong learning at all levels of the employee lifecycle. Examples of Resilience Leaders include Singapore, Denmark, Switzerland, Malaysia, China and the United States.

Policy Leaders: countries with lower scores for the structural pillar and relatively higher scores for the policy pillar. These countries must typically "go structural", focusing on longer-term policies, aimed at upgrading economic capabilities, diversifying the economy, reducing inequalities and addressing demographic imbalances. Policy Leaders include Japan, Australia, Chile, Ireland and Georgia.

Policy Potentials: countries with a high score for the structural pillar and a relatively low score for the policy pillar. This segment must "shake the policy tree" and undergo reforms on a number of policy dimensions impacting labour market resilience: education, labour, innovation, technology and entrepreneurship. Tunisia, Ukraine and Mexico are examples of Policy Potential countries.

Resilience Potentials: countries with low scores in both structural and policy pillars that face a number of constraints to improve their labour market resilience. These countries must address longer-term structural factors as well as undertaking short-term policy actions. Examples of Resilience Potentials are Greece, Brazil and Algeria.

Countries follow three different paths to achieving labour market resilience

An analysis of GLRI dynamics over time reveals three different paths to labour market resilience:

The *structural path:* countries following the structural path focus first on building an economic foundation based on greater economic diversity and complexity before investing further in short-term policies related to skills, labour, technology, innovation and entrepreneurship. Examples include India, China, and the United Arab Emirates.

The *policy path*: these countries place an emphasis on shorter-term policies to boost labour market resilience before building longer-term capabilities, improving economic diversification and addressing rising inequality. Georgia and Costa Rica are examples of countries taking the policy path.

The *equilibrium path*: in this case, countries strike a balance between structural and policy improvements to shift progressively towards greater resilience of labour markets. Examples of countries on the equilibrium path are Rwanda and Saudi Arabia.

Each country should define its own path to labour market resilience

Countries looking to improve their labour market resilience in the future can learn from the above examples in order to chart their own path to labour market resilience. However, each country must define its own direction, one that is most adapted to its structural characteristics and strategic priorities.

An important insight from the GLRI analysis is that countries starting with lower levels of income– such as Rwanda or Georgia – can move towards the Resilience Leader segment by focusing on the right policy priorities.

Countries that have attained resilience leadership must sustain their position through continuous policy refinements

Resilience Leaders such as Singapore – which went from 6th to 1st place from 2007 to 2012 and then remained in 1st place over the next 5 years by strengthening its entrepreneurial ecosystem –

underscore how a methodical approach to continuous improvement in priority policy areas can bolster and sustain labour market resilience.

By contrast, more scattered approaches such as those adopted by France, which fell from 12th to 20th place from 2007 to 2012, and has remained at a similar rank since, or Portugal, which fell from 25th to 31st place over that same period, are in danger of falling behind their peers.

Achieving higher levels of resilience for labour markets requires a combination of seven complementary and cross-cutting approaches

1. Governments and corporations must define a longer-term *vision* of the impact of technology and how people will remain fundamental to sustaining robust and productive economies and businesses.

2. The cross-cutting challenges highlighted in the Global Labour Resilience Index 2019 require a *whole-of government* approach, bridging across different ministries of Education, Labour, Industry, Digitalisation, Economy and Finance.

3. Moreover, beyond pure government action, the *public, private and tertiary sector* must collaborate further around innovative solutions to strengthen and sustain the resilience of labour markets around the world.
4. In order to define the appropriate strategy and pathway to labour market and workforce resilience, both governments and corporations will need to develop more sophisticated approaches to measuring their unique *capabilities.*[5]

5. Countries must ensure that labour market resilience is assessed at both the national and *subnational level* to identify regions that are in danger of being left behind. This type of assessment will require the production of statistics at a more granular level than is available today.

6. *Big data* must be leveraged more effectively to assess labour market evolutions in terms of sectors, occupations, tasks and the impact of public policy.

7. Finally, beyond policies to strengthen the resilience of the native workforce, targeted *migration policy* is a key (and under-utilised) lever to overcome skill gaps and rebalance labour supply and demand.

Beyond these cross-cutting recommendations, most countries can improve their labour market resilience by adopting policies in the following areas

Education and skills

Expand *early childhood education* to better prepare youth to develop their human advantage in the face of technological disruption. A number of studies confirm that early childhood education can make a significant difference to the later development of adult capabilities.

Adopt different forms of *partnerships* between the public, private and tertiary sector to close widening *skills gaps* for adults in all economic sectors, reskilling, upskilling and piloting new models of learning-while-earning (not just apprenticeships).

"Train the trainers" to better leverage digital technologies in course preparation and delivery in primary, secondary and tertiary education.

Teach *transversal social and creative skills* as a priority alongside the adoption of digital tools.

[5] For more information on how to measure capabilities see *www.whiteshieldpartners.com*

Expand the reach and enhance the skills of *trained professional student counsellors* in high schools, supporting them with technology (such as decision-making algorithms) to help them better orient students early on towards their academic and career pathway.

Encourage universities, business and other institutions to develop and promote *lifelong learning approaches* in consultation and collaboration with each other.

Invest in upgrading the range and quality of *vocational training courses* to help meet growing demand and skill gaps in this area. Ensure that the IT dimension of vocational training courses is reinforced to reflect market evolutions.

Labour policy

Expand *Active Labour Market* (ALM) policies to support the training and reorientation of workers in sectors and regions that have been most disrupted by the forces of global competition and technology.

Ensure that part-time employees, *independent and "gig economy" workers* have access to basic workplace rights and are treated equally with full-time employees in terms of taxation and access to social security.

Reduce the *tax wedge* on employment to make the cost of quality work more attractive to business.

Technology

Introduce further *competition,* and consider selective government subsidies, to ensure universal and affordable access to broadband digital networks, particularly in the most remote regions.

Identify ways to better leverage *big data* in order to refine labour market analysis (see cross-cutting recommendation 6).

Entrepreneurship

In partnership with the best incubators and accelerators, develop comprehensive *start-up programs* that combine regulatory streamlining for entrepreneurship, coaching and advice, training, access to finance, access to technology, and preferential tax treatment.

Facilitate the development of *alternative sources of financing* such as P2P lending, crowdfunding and invoice trading.

Measurement and statistics

Fill national *statistical gaps* to strengthen the assessment of labour resilience and develop better policy responses at the national and sub-national level.

Increase the level of *granularity and timeliness* of public sector databases on the evolution of the labour market by sector, occupation, skills, tasks and region, by combining more precise household surveys with data from digital platforms such as Burning Glass Technologies, LinkedIn or Indeed.

Define a *standard nomenclature* of occupations, skills and tasks for all countries in order to facilitate comparison in the evolution of labour markets by sector and occupation with a sufficient level of granularity.[6] Update the nomenclature on a periodic basis as careers, skills and occupations evolve.

Closely *monitor* the different dimensions of labour market resilience to identify priority areas for action and ensure continuous improvement.

Companies are just as important as governments in strengthening the resilience of their workers

[6] The definition of these standards will require the support of institutions such as the European Commission and Organization for Economic Cooperation and Development.

As highlighted in the chapter on the sector focus on "The Future of Work in Banking," companies can implement a number of actions to boost the resilience of their workers, many of which are relevant across a number of industries.

These actions can be summarized as follows:

Streamline

- Simplify roles and develop a consistent nomenclature of occupations and skills with an evolving set of capabilities.
- Introduce agile working methods and train staff accordingly.

Build

- Create and empower new leadership positions that help address the horizontal challenges faced in the future of work.
- Foster a culture of continuous learning through skill assessments, individualized learning plans and learning credits.
- Empower and recognise employees who commit to coaching and training others.
- Invest in developing soft skills such as communication, creativity, coaching, curiosity and connectivity.
- Reskill and redeploy talented employees that may become technically redundant.

Bridge

- Develop partnerships with the public and tertiary sector to support the resilience of the workforce.
- Accelerate B2B partnerships with specialized companies to access expertise not available internally.
- Leverage CSR programs to further promote labour resilience in the wider community.
- Develop and share ethical frameworks and standards for the fair, transparent and accountable use of Artificial Intelligence and other technology.

Stretch

- Develop mid-career opportunities for workforce rotation.
- Provide data on skills that are most in demand and give staff the tools to develop and expand their skills to capture new opportunities.

Promote

- Adjust recruitment and retention strategies to adapt to the new, more diverse candidate profiles needed.
- Develop and instill in employees a greater sense of purpose.
- Set up internal incubators to enable staff to develop their own innovative ideas and to attract external talent.

Measure

- Develop more sophisticated HR systems to enable systematic capturing of data on skills in the organization and the projection of future skills needs.
- Monitor and share date on changes to occupations, skills, and tasks
- Monitor and share data on diversity and put in place programs to ensure diversity across the organization.

Disruption does not mean the end of work. As highlighted by Sir Christopher Pissarides in his Foreword to this report: "The shock is big but we know more about technology and the dynamics of jobs now than at any time in history and we have big data that we can make tell us what to avoid and where to go." There are many reasons to believe that technology can be a positive force for economic development and job creation if it is used in the right manner.

Governments, companies and other actors from the non-profit sector should combine forces in proposing innovative solutions to strengthen and sustain the resilience of labour markets around the world.

The key findings and recommendations of the GLRI 2019 are intended to provide some guidance to the public, private and third sectors to help them secure a future of gainful and sustainable employment for all.

CHAPTERS

CHAPTER 1: OVERVIEW OF GLOBAL LABOUR RESILIENCE INDEX 2019 RESULTS - UNLOCKING THE FULL POTENTIAL OF WORK

GLRI 2019: Top 10 countries

The countries at the top of the GLRI 2019 ranking excel on most of the dimensions and indicators of Global Labour Resilience Index and offer insight on the characteristics of countries with the most resilient labour markets. A summary of the GLRI 2019 results for the top 10 countries is provided in the table below.[7]

Table 2. Overview of GLRI 2019 Results for Top 10 Countries

Country	GLRI Rank	GLRI Score (1-100)	1. Structural Pillar Rank	1. Structural Pillar Score (1-100)	2. Policy Pillar Rank	2. Policy Pillar Score (1-100)
Singapore	1	96	4	90	2	98
Switzerland	2	93	34	74	1	100
United States	3	92	31	76	3	97
Denmark	4	92	18	79	5	96
Finland	5	91	24	77	4	96
Sweden	6	91	16	81	6	94
Iceland	7	89	27	77	8	93
Luxembourg	8	88	2	97	13	85
Netherlands	9	88	15	81	10	90
Norway	10	87	48	68	7	94

Source: Whiteshield Partners

Singapore is the labour market resilience leader

Singapore is clearly ahead of the pack in achieving labour market resilience, ranking first in the overall GLRI index, 4th in the structural pillar and 2nd in the policy pillar. It is particularly strong in the level of economic capabilities, education and labour market policy. Moreover, it has made great strides in the last few years to support entrepreneurship.

Structural areas for improvement are an aging population and economic diversification. Policy weaknesses include the comparatively low rate of female labour force participation, difficulty in hiring foreign labour, worker's rights, ICT affordability and comprehensiveness of labour resilience statistics.

Europe dominates the top 10

The 2019 GLRI top 10 is dominated by high-income European countries with 8 out of the top 10 slots going to Switzerland, Denmark, Finland, Sweden, Iceland, Luxembourg, the Netherlands and Norway.

Switzerland's leads the policy pillar

Switzerland is the best ranked country in terms of labour resilience policy, buoyed by investment in education, innovation and effective active labour market policies. However, more could be done to address economic diversification and inequality, reduce barriers to doing business for entrepreneurs, increase ICT affordability and trade, and to promote greater gender equality in the workforce.

Five Nordic countries are in the top 10

Five Nordic countries are in the top 10 of GLRI 2019: Denmark (4th), Finland (5th), Sweden (6th) Iceland (7th) and Norway (10th). The combination of attractive business climates, significant investment in education and technology, effective labour market policies – in

[7] A summary of GLRI results for each country can be found in Appendix 2.

particular supporting youth employment – makes these countries stand out in terms of the resilience of their labour markets. These countries also enjoy lower levels of inequality and greater gender balance in the workforce compared to their peers.

As with other countries in Europe, however, Nordic countries face ageing populations, which weakens their labour market resilience. Moreover, policies to support labour market, entrepreneurship and innovation in most of these countries could be enhanced.

The Netherlands presents similar characteristics to the Nordic countries

The Netherlands, ranking 9th in the GLRI, presents similar characteristics to the Nordic countries and has the most balanced performance among European countries in the top 10 across the two pillars (ranking 15th on structural pillar and 10th on policy pillar). High levels of economic development, economic diversification and relatively low levels of inequality offset to some extent the demographic challenge. As in the case of the Nordic countries, the Netherlands could further strengthen its ecosystem for entrepreneurship and innovation.

The United States of America is 3rd overall in labour market resilience

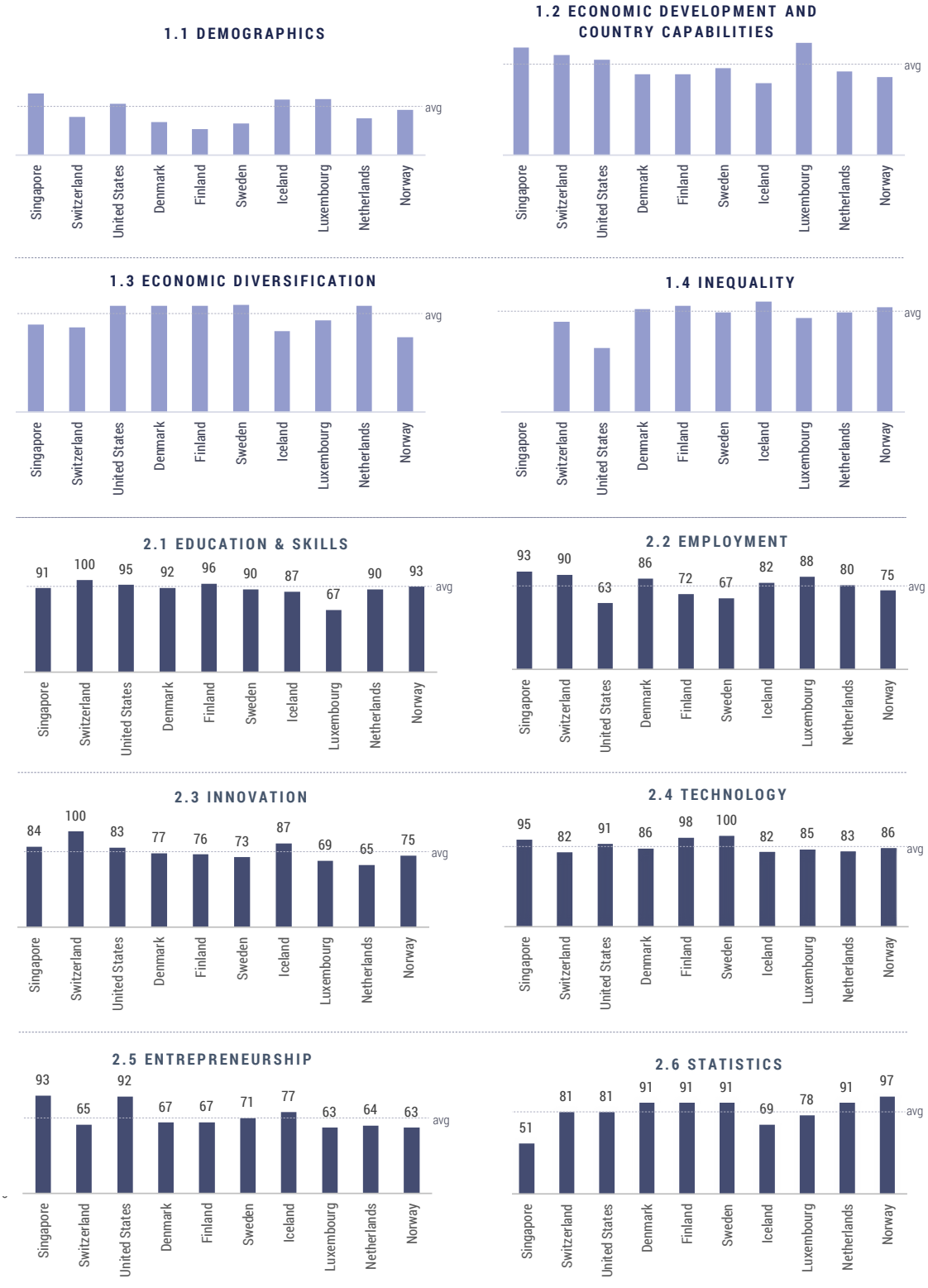
The United States of America is 3rd overall in the GLRI ranking. The USA performs comparatively well in terms of education and skills, technology, innovation and entrepreneurship. However, workers' rights and gender inequality could be improved. Moreover, despite a strong and diversified economy, the USA is comparatively weaker on inequality and demographics.

Luxembourg is the only country in the top 10 with a higher rank in the structural pillar than in the policy pillar

Luxembourg (8th) is the only country of the GLRI 2019 top 10, which has a higher score in the structural pillar than in the policy pillar. Strong performance in the structural pillar (2nd overall) is driven by its high levels of GDP per capita and the healthy performance of its services industries. However, in common with most European countries, Luxembourg has an ageing population and, like Switzerland, has comparatively high levels of inequality. Luxembourg has a lower score in the policy pillar compared to other top 10 countries (13th overall) due in part to its performance in education (e.g., relatively low levels of government expenditure on education and enrollment in STEM courses). Greater investment in education will be essential to strengthen Luxembourg's labour market resilience.

The breakdown of top 10 GLRI results by sub-pillar is provided in Figure 2.

Figure 2. GLRI 2019 Top 10 Countries: Breakdown of Results by Sub-Pillar Score (1-100)

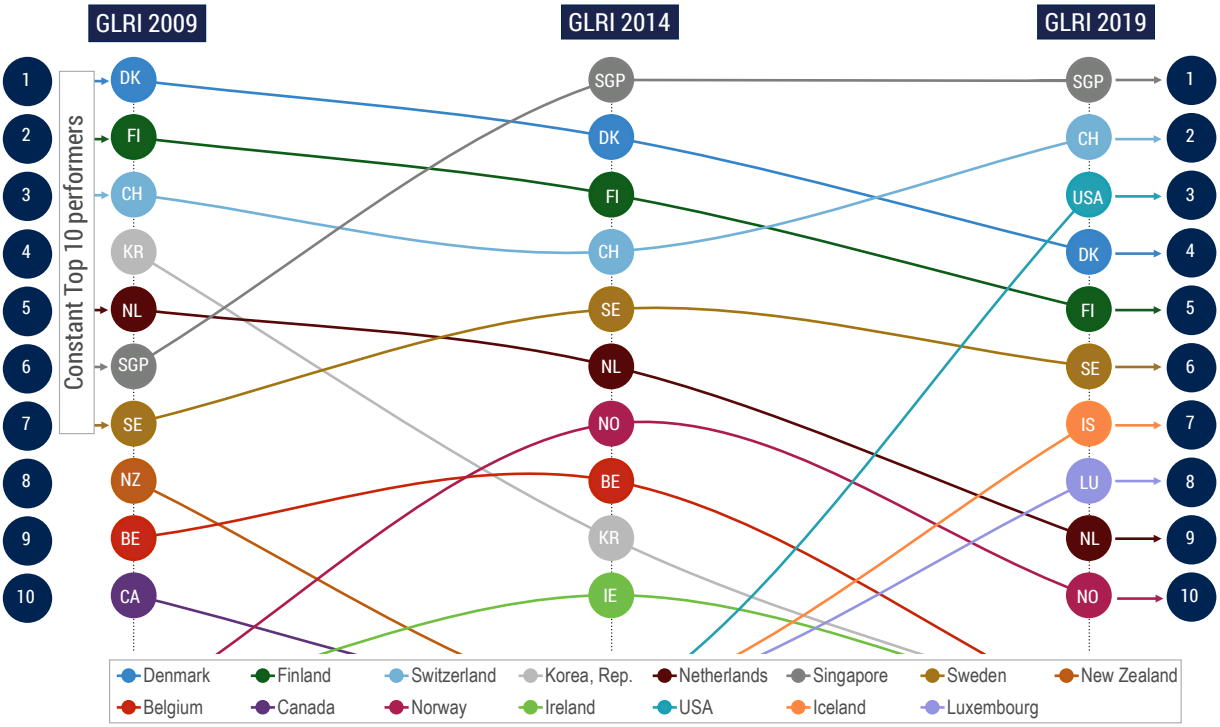


Source: Whiteshield Partners

Countries that remain at the top of the GLRI differentiate themselves through continuous policy improvements

An analysis of top 10 GLRI country dynamics over a decade reveals that almost half (4 out of 10) maintained their top 10 ranking over that period (see Figure 3): South Korea, New Zealand, Belgium and Canada all dropped out of top 10. South Korea went from 4th to 15th, New Zealand dropped from 8th to 13th, Belgium went down from 9th to 11th, Canada from 10th to 19th. South Korea's drop of 11 ranks is partly explained by newly available indicators in which it has relatively low scores (e.g. critical thinking, staff training, worker rights). The country also experienced a decline in secondary enrollment, STEM graduates and share in services relative to GDP. Canada likewise dropped 9 ranks due to availability of new indicators with lower scores (e.g., critical thinking, staff training, hiring and firing practices) and a decline in other areas such as expenditure in R&D.

Figure 3. Evolution of Top 10 GLRI Ranking GLRI 2009, GLRI 2014, GLRI 2019



Source: Whiteshield Partners

The consistent top 10 performers are all European countries with the exception of Singapore. They have maintained their strong position through continuous policy progress (in employment and education for Switzerland, for instance, and in technology and entrepreneurship for Sweden).

Labour market resilience in EU countries also clearly benefits from convergence of policies in areas such as the common trade area, free movement of labour and active labour market policies (e.g., Youth Guarantee Scheme).

This European policy convergence combined with continuous policy improvements on GLRI dimensions,

has helped countries such as Denmark, Finland, Sweden, the Netherlands and Switzerland remain in the GLRI top 10 over a decade.

Some countries such as Singapore, Switzerland, and the United States have reinforced their top 10 position over time through a series of targeted reforms.

The rise of the United States to 3rd position in the GLRI ranking was achieved in part through availability of new statistics in which it performs well – such as digital skills – but also through policy improvements in areas such as access to finance and ease of doing business for entrepreneurs.

Even the countries in the top of the GLRI ranking must find ways to continuously improve and innovate in their policies in order to sustain their leadership position.

GLRI 2019: Countries with the highest short-term labour market resilience potential

Countries with the highest labour resilience gap have the most potential to improve in the shorter-term

Countries with the widest gap between the structural and policy pillar score – the so-called *labour resilience gap* – have the greatest potential to strengthen the resilience of their labour markets in the shorter-term through targeted policy reforms (see Table 3).

Table 3. Top 30 Countries with the Highest Labour Resilience Gap in the Global Labour Resilience Index 2019

Country names	Rank	Labour Resilience Gap
Uganda	1	53
Madagascar	2	49
Lebanon	3	48
Kyrgyz Republic	4	48
Egypt, Arab Rep.	5	46
Yemen, Rep.	6	41
Bosnia and Herzegovina	7	41
Senegal	8	40
Nepal	9	39
Jordan	10	39
Namibia	11	39
Zimbabwe	12	37
Pakistan	13	36
Bangladesh	14	33
Moldova	15	33
United Arab Emirates	16	32
Cambodia	17	31
Kenya	18	30
Ethiopia	19	30
Tunisia	20	30
Indonesia	21	30
Philippines	22	29

Country names	Rank	Labour Resilience Gap
Vietnam	23	29
El Salvador	24	29
Tajikistan	25	28
Bahrain	26	27
Mexico	27	27
Guatemala	28	27
Morocco	29	26
India	30	26

Source: Whiteshield Partners

Egypt, Lebanon and Uganda are among countries with the most potential to strengthen the resilience of their labour markets in the shorter-term

Egypt, Lebanon and Uganda Egypt among the countries with the most potential to strengthen the resilience of their labour markets in the shorter-term. Building on relatively attractive structural characteristics – economic diversification, lower levels of inequality, younger demographics – countries with the high labour resilience gaps can reap the greatest rewards in strengthening the resilience of their labour markets through targeted policy reforms in areas such as education, labour, entrepreneurship and innovation policy.

GLRI results by region

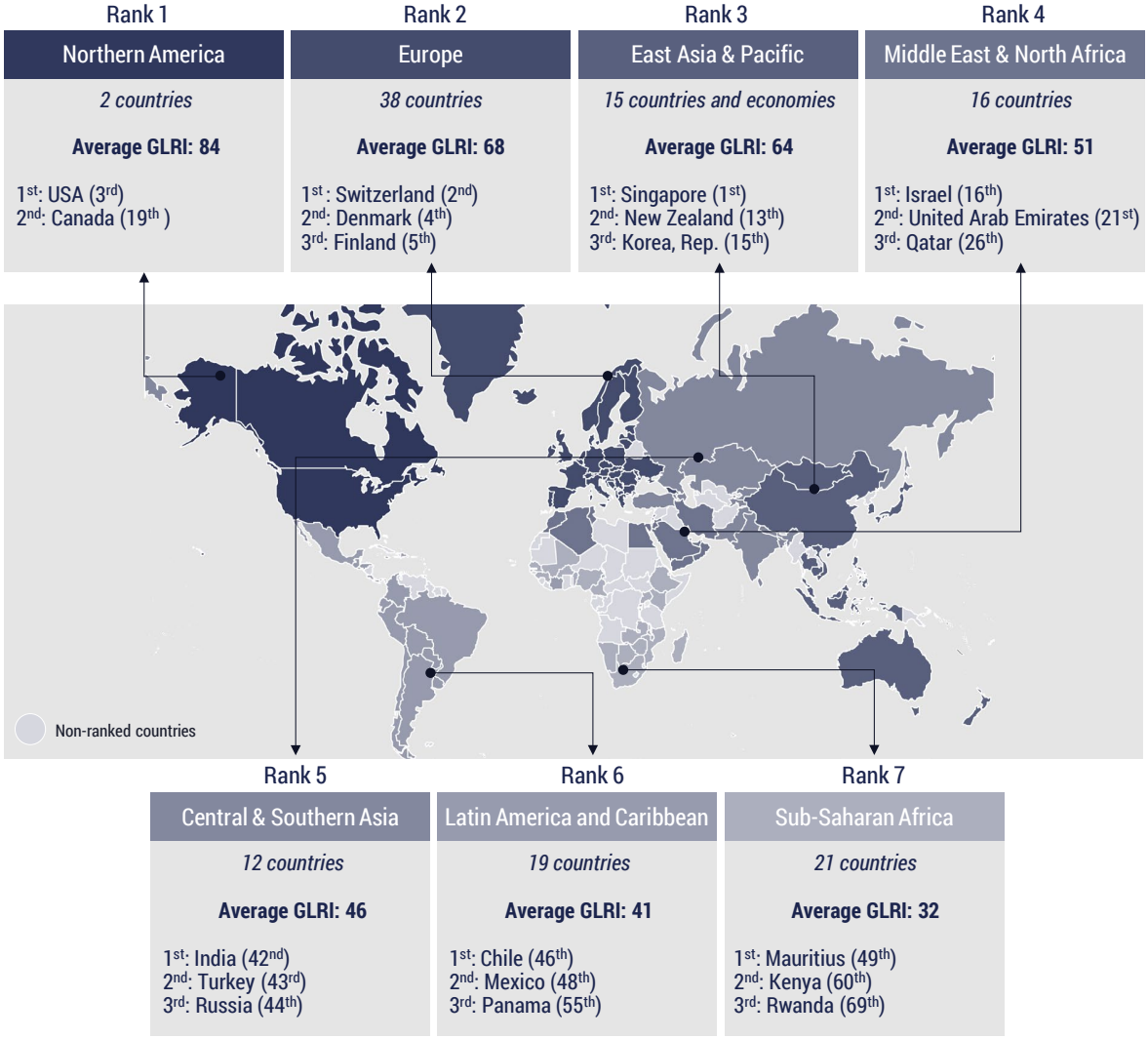
This section assesses the GLRI 2019 results by region. Table 4 shows performance by region with average scores for each region in the 4 main GLRI measures while Figure 4 shows the top three performing countries in each region. A further analysis of GLRI regional performance is provided below.

Table 4. Average GLRI 2019 Performance by Region

Region	GRLI Regional Rank	Number of Countries and Economies	Average GLRI	Average Structural Score	Average Policy Score	Average Labour Resilience Gap
Northern America	1	2	84	69	89	-20
Europe	2	38	68	69	68	1
East Asia & Pacific	3	15	64	66	63	3
Middle East & North Africa	4	16	51	66	46	21
Latin America & Caribbean	5	19	41	49	39	9
Central & Southern Asia	6	12	46	60	41	18
Sub-Saharan Africa	7	21	32	43	28	15
Overall		123	53	60	51	9

Source: Whiteshield Partners

Figure 4. GLRI 2019 Regional Ranking[8]



Source: Whiteshield Partners

Northern America (2 countries)

North America's strong GLRI performance is driven mainly by the USA

North America tops the regional league tables with two high-income countries displaying strong policy performance and above average structural performance. Canada's rank, at 19th overall, is lower than the USA, which is 3rd. As with the USA, Canada has relatively a strong performance in education and skills and entrepreneurship. However, policies to support technology, statistical completeness, equality and demography balance, could be further improved.

[8] Average GLRI score of the region is a simple average of GLRI scores for all countries included to the region. Regions are ranked according to the average GLRI scores: region with the highest average GLRI score is ranked 1st.

Europe (38 countries)

Europe's strong performance is driven by high policy scores in Western and Northern Europe

Europe is the 2nd highest ranked region of the GLRI 2019. Its performance is driven by the policy scores of the high-income countries of Western and Northern Europe.

On the policy front, Europe scores well overall on average in education (2nd), employment (2nd), innovation (3rd), entrepreneurship (3rd) and technology (2nd). Moreover, investment in social security and active support for workers has generally kept inequality at relatively lower levels compared to other regions.

In Southern and Eastern Europe, structural and policy weaknesses pull down the average GLRI score

The GLRI score in Southern and Eastern Europe is pulled down by a combination of gaps in the education systems, labour market rigidities and red tape for entrepreneurs, which need to be addressed.

Croatia stands out as a high-income country with relatively weaker labour resilience policies

Croatia stands out as a high-income country performing well in the structural pillar (thanks to economic diversification and high levels of income equality) but exhibiting some of the policy gaps present in other Southern and Eastern European economies.

Georgia can provide a model for peers in the region in terms of policies

Georgia has made tremendous strides towards improving the resilience of its labour market by boosting the entrepreneurial ecosystem, streamlining business regulation and increasing labour market flexibility. Some of its policies – in particular related to streamlining business regulations – offer a model for other countries with a similar economic structure to close the labour resilience gap. In the longer-term Georgia will need to invest further in building a more sophisticated and diversified economy to move up the labour market resilience ladder.

East Asia and the Pacific (15 countries and economies)

The East Asia and Pacific region has four distinct groups of countries and economies within the GLRI

Four distinctive groups of Asian countries and economies emerge in the GLRI results: the Asian Tigers, the Ageing Tigers, the Emerging Tigers and the Future Tigers.

The Asian Tigers are Resilience Leaders with diversified economies

The Asian Tigers, which include Singapore, Hong Kong, Korea, Malaysia, China and Thailand, have relatively diversified economies, solid education systems for the most part, substantial investments in technology and innovation, and favourable entrepreneurial ecosystems, which all contribute to enhancing labour market resilience.

Malaysia has the strongest ranking in the GLRI for an upper middle-income country (25th), with notable strengths in education (including strong STEM programs, quality vocational education, graduate skills, labour supply and digital skills). It could further improve labour market resilience by streamlining red tape for entrepreneurship, boosting trade, improving the ecosystem for innovation and technology (increasing of ICT affordability) and implementing policies to improve gender equity in the workforce and worker's rights.

Ageing Tigers stand out on policy but must address demographic deficits

Ageing Tigers, such as New Zealand, Australia and Japan, all have highly developed economies but also rapidly ageing populations which bring down their structural pillar scores. Addressing their demographic imbalances – partly through more flexible immigration policy – will be important to ensuring long-term labour resilience.

From a policy point of view, all three highlighted above have strong educational outcomes and innovative economies. Australia and New Zealand also benefit from a favourable entrepreneurial environment.

Japan, in particular, would benefit, from increased labour market flexibility (including hiring non-nationals) and more favourable policies to support entrepreneurship - reduced time, procedures and cost to start a business.

Emerging Tigers must focus further on education and labour reforms

Indonesia, Vietnam and the Philippines have the solid structural foundations of rising incomes, diversified economies and youthful populations.

In order to strengthen their labour market resilience, they should invest some of the gains from their higher levels of economic development into education and labour market reform.

The Future Tigers can use their demographic dividend and technological competence to boost labour market resilience

Brunei, Mongolia and Cambodia all have large, young populations and relatively attractive technology infrastructure. These assets could be further leveraged with more and better investment in education, economic development and diversification, as well as innovation and entrepreneurship.

Middle-East and North Africa (16 countries)

Several high-income countries have highly resilient labour markets

The UAE, Qatar and Bahrain, with young populations, high levels of GDP per capita and strong scores in entrepreneurship and employment are stronger performers in the GLRI 2019. The UAE stands out as the MENA country with the best score on the structural pillar due to its greater economic diversification.

Most GCC countries could invest further in education, innovation, technology and economic diversification, however, to boost their labour market resilience, however.

Jordan and Lebanon have comparatively well diversified economies but also have important policy gaps

Lebanon and Jordan both rank strongly in the structural pillar thanks to comparatively young populations (especially Jordan) and enjoy relatively diversified economies, with a high share of services in GDP.

Policy gaps to address for both countries include freeing up labour markets, investing further in technology and innovation, as well as reducing red tape for entrepreneurs.

Egypt and Morocco also demonstrate an imbalance between attractive structural characteristics and weaker policies

Young populations, rather high levels of economic diversification and low levels of inequality strengthen present labour markets in countries like Egypt and Morocco with some structural advantages to be further exploited.[9] At the same time, rigid labour

[9] It should be noted, that poor statistical reporting of Gini coefficients in MENA countries hides the full extent of potential inequality.

markets, and inadequate education systems that do not prepare young people for the labour market hamper job creation in these countries.

The MENA region remains vulnerable to external shocks

The MENA region as a whole remains vulnerable to external shocks, in particular oil prices. Statistics must also be improved to draw a more accurate picture of labour market resilience.

Latin America and the Caribbean (19 countries)

The Latin America and the Caribbean region is among the weaker regions in the world in terms of labour market resilience

Despite having a number of high-income countries in the region, Latin America and the Caribbean is second before last among the seven GLRI 2019 regions assessed.

Chile and Costa Rica, two countries ahead of their regional peers in the GLRI 2019, perform relatively well in education and employment. Further long-term efforts are needed to boost economic diversification, demographics and equality. Investments in entrepreneurship, innovation and technology should over time help to address these structural gaps.

Many countries in Latin America and the Caribbean could build further on their diversified economies to invest in better policy outcomes

Countries such as Mexico, Guatemala and El Salvador enjoy relatively well diversified economies but should invest further in education, free up rigid labour markets and create better ecosystems for entrepreneurship.

Other counties in Latin America and the Caribbean must address both structural and policy factors, including some higher income countries

High-income countries such as Argentina, Panama, and Uruguay must focus on reducing inequality. Rigid labour markets and a difficult environment for entrepreneurship are other areas for these countries to address on the policy front. Lower-middle countries of the region like Bolivia and Honduras should focus on boosting their level of economic development and diversification on the structural front; on the policy front, they should increase flexibility of the labour market and improve the fundamentals of innovation, technology and entrepreneurship policy.

Central and Southern Asia (12 countries)

Two countries are labour market resilience leaders in the Central and Southern Asia region

India and Turkey are the two countries in the region that have emerged as regional leaders in labour market resilience. Both countries stand out for their level of economic diversification, innovation and technology.

These countries will need to invest further in education, entrepreneurship, innovation and labour market flexibility to sustain their positions.

The resource-rich countries must further diversify and increase the sophistication of their economies

Resource-rich countries like Kazakhstan and Azerbaijan, must further diversify their economies, and increase their sophistication of their economies through greater investment in technology and innovation.

Investments in education at all levels and will pay dividends in labour resilience for the broader region

For most of the countries in Central and Southern Asia, improvement of educational outcomes is a critical step to enhancing the resilience of their labour markets.

Sub-Saharan Africa (21 countries)

Several Sub-Saharan African countries perform well on the structural pillar of the GLRI and can close the labour resilience gap with better policies

Uganda, Senegal, Kenya and Namibia are four countries in the region that have managed to diversify their economies and have strong potential to move up the labour market resilience ladder by focusing more actively on the fundamentals of innovation, technology and entrepreneurship policy.

Rwanda, in particular, is charting a labour resilience path for others to follow

Rwanda, in particular offers significant hope for the future, with just below average scores on both the policy and structural pillars and a significant improvement over the last five years in technology, labour policy and innovation. The country has managed to make its labour markets more flexible while strengthening workers' rights. Rwanda appears to be on a labour resilience path, which other countries might consider to emulate.

Other countries in Sub-Saharan Africa must invest significantly on both the structural and policy fronts to transform labour resilience potential into reality

More than three quarters of countries in Sub-Saharan African fall into the bottom quartile of the GLRI 2019 ranking, implying that they must address both longer-term structural and shorter-term policy factors in order to achieve their labour resilience potential. Boosting economic development and diversity through foreign direct investment (FDI) is one of priorities for these countries together with more significant investment in education at all levels.

Several points can be highlighted from the GLRI 2019 regional analysis.

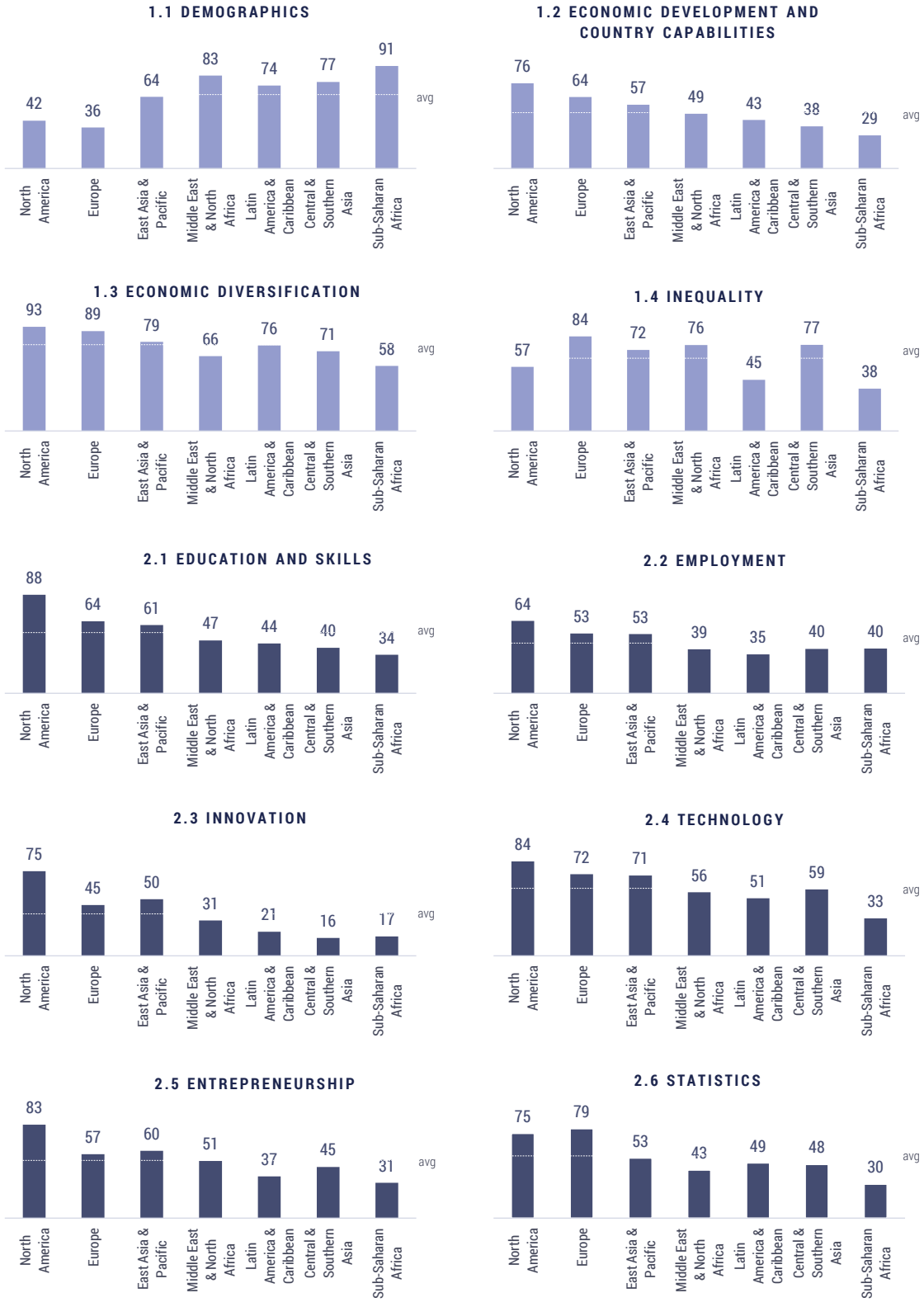
First, despite some structural weaknesses related to ageing populations and inequality, European countries are global leaders in labour market resilience.

Second, Asia presents the greatest diversity of labour market resilience, between resilience leading Asian tigers such as Singapore, Korea and Malaysia; emerging tigers such as Indonesia, Vietnam and the Philippines; future tigers such as Cambodia and Mongolia; and ageing tigers like Japan and Australia.

Finally, in less developed regions such as Sub-Saharan Africa, several countries have among the greatest short-term opportunities for resilience improvement, namely Uganda, Kenya, Senegal, Namibia and Rwanda.

A comparative summary of regional results by sub-pillar for the GLRI regional is provided in Figure 5.

Figure 5. GLRI 2019 Regional Ranking by Sub-Pillar (scale of 1-100)



Source: Whiteshield Partners

CHAPTER 2: THE FUTURE OF WORK IN BANKING – 21 ACTIONS FOR THE INDUSTRY

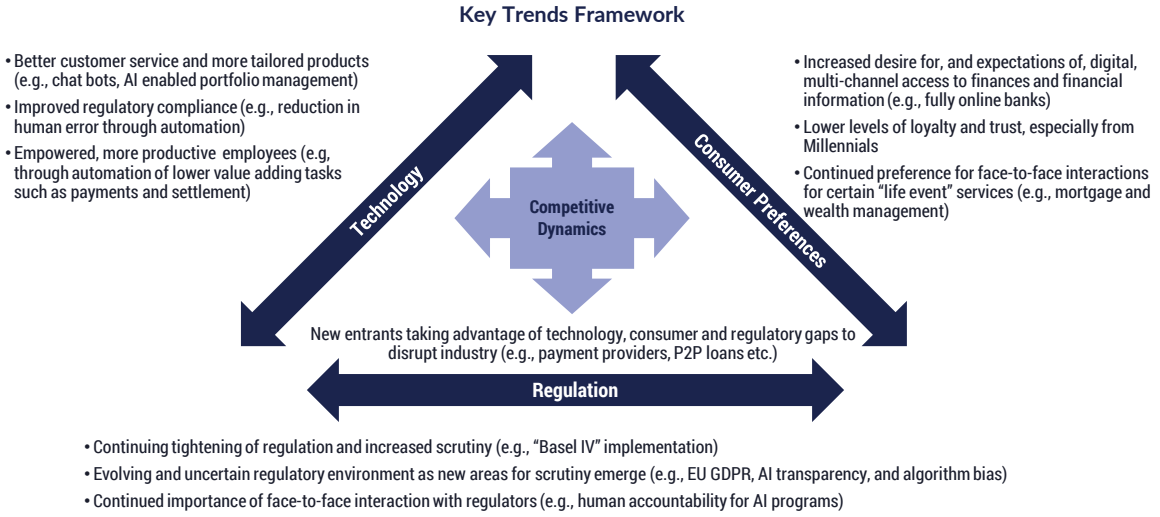
GLRI 2019 SECTOR FOCUS[10]

[10] This GLRI focus on the banking sector was prepared in collaboration with HSBC. The chapter benefited from contributions involving several HSBC experts, including Alison Coates, Global Head of Future Skills, Birgit Neu, Global Head of Diversity and Inclusion, David Morris, Global Head of Learning, Kirsty Roth, Global Head of Operations, and Paul Raddon, Head of Operations, Global Service Centres.

Introduction: Banks are under pressure from four key forces to transform their business

Traditional banks are under pressure to evolve into more agile, operationally efficient and tech savvy entities that deliver a unique experience for all customer segments. The combination of rapid technological evolution, expanding regulatory compliance, shifting customer requirements and intense competition from new players is disrupting where and how banks compete (see Figure 6).

Figure 6. Key Trends Affecting the Future of Work in Banking



Source: Whiteshield Partners

Technological evolutions such as intelligent automation and machine learning provide an opportunity to automate a number of processes in the back-end while offering a smoother, quicker, more secure and more personalised customer experience.

Consumer preferences for more mobile, multi-channel and rapid service across a wide number of functionalities are pushing the boundaries of customer expectations. Continuing tighter regulation and scrutiny around the implementation of Basel 4, network security and consumer protection are raising the bar in expertise required. Furthermore, increased competition from new market entrants – including both fintech start-ups and big tech firms – is expanding the boundaries of the financial service industry and the intensity of competition. These different forces are compelling the banking industry to transform and adapt to new ways of working with profound implications for the future of work.

The Impact of Automation

Technology is likely to take over a number of tasks in banking and many roles will need to be redefined

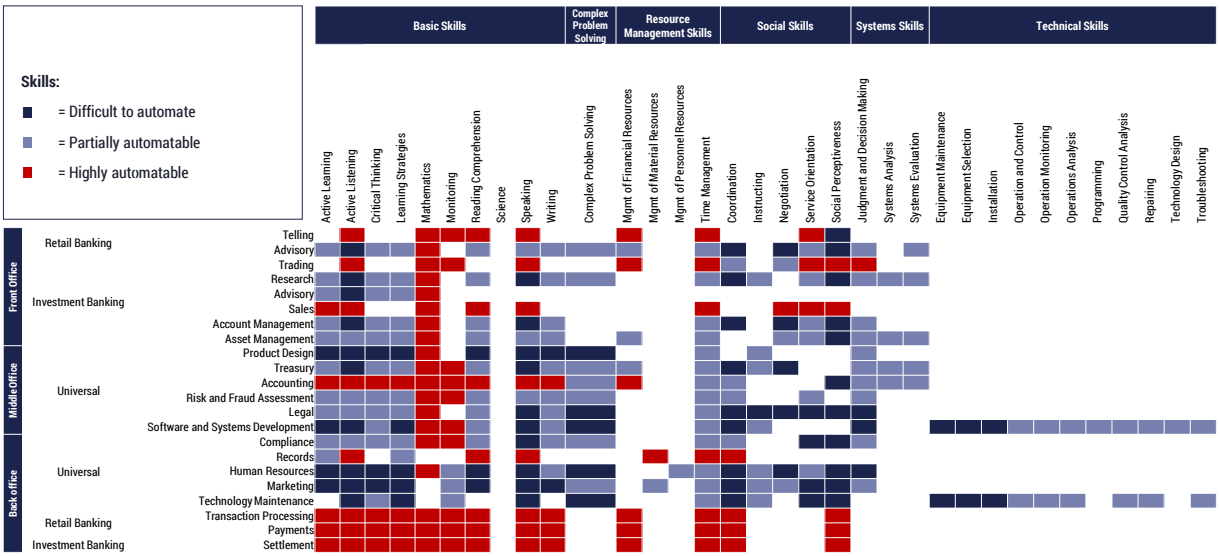
Tasks that can be broken down and systematized are most susceptible to technological substitution, while those that involve truly human skills, such as empathy and creativity, should thrive

A number of tasks will disappear over the next decade in both the front and back office of banks.

Occupations that involve tasks that are repetitive, predictable, systematizable, and include large amounts of data are particularly susceptible to digitalization. Some of these tasks have already been automated. Consider the progressive introduction of automated trading using algorithms from the 1980s which has displaced a significant number of human traders into other occupations and tasks. More recently, with advances in machine learning, companies such as JP Morgan have been able to automate the reading and analysis of credit agreements, reducing processing time for each agreement from several hours down to seconds.

On the other hand, banking activities that require social interaction, decision-making, flexibility, creativity, and innovation will remain the prerogative of people. People will want to continue to discuss big "life events" such as mortgages and retirement planning with other people. Likewise, creative functions such as product design and software development will continue to depend on human ingenuity.

Figure 7. Banking Skills and Susceptibility to Automation



Source: Whiteshield Partners; Data: Onet, Retail Banking Academy, expert interviews

As it can be seen from Figure 7, occupations involve a combination of tasks and skills, some of which are susceptible to automation and others that are not. Thus, while the content of occupations will evolve significantly, many occupations should continue to exist for some time.

Some banks are anticipating the shifting emphasis towards demand for soft skills. Alison Coates, Global Head of Future Skills at HSBC, summarized it as follows: "Key future skills we see are ones like curiosity, creativity, connectivity and communication." She then added that learning the skill to learn will be another fundamental skill for all to acquire, especially for employees in mid-career.[11]

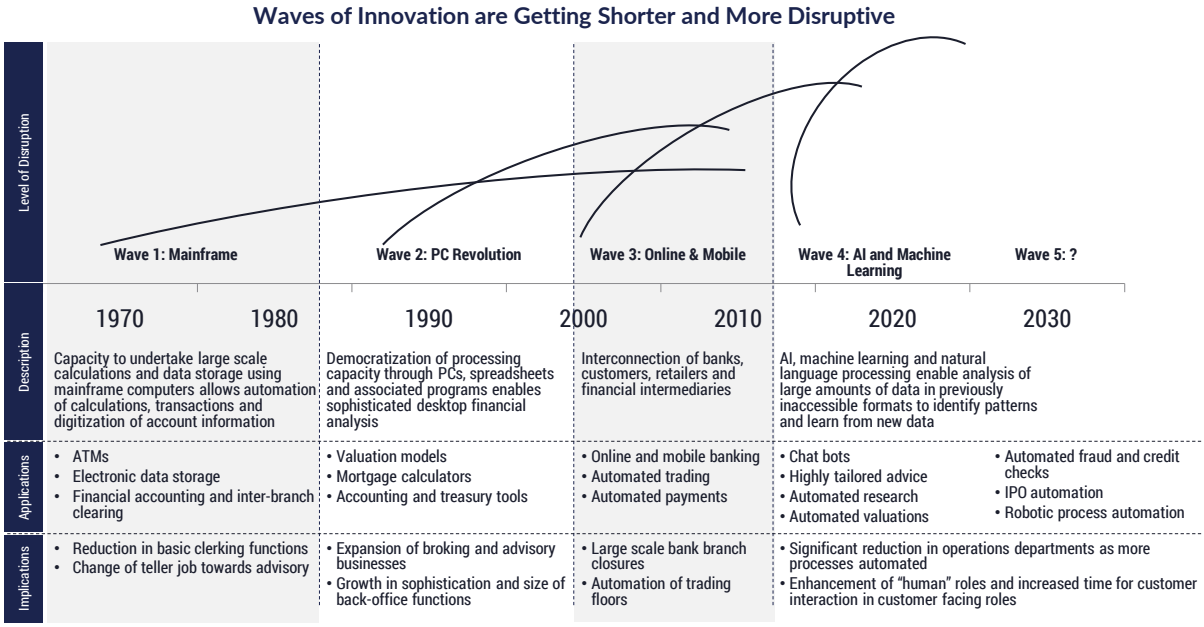
Automation in banking has been progressing for decades and the full impact on work may take time to materialize

Automation in the banking sector is not a new phenomenon and has been going on for decades (see Figure 8). A first wave starting before the 1970's saw the introduction of mainframe computers, which laid the foundation for the introduction of ATM machines.

In the 1980's and 1990's, a second wave of technological evolution with the introduction of PCs put more powerful tools in the hands of individual staff members, supporting the expansion of brokering and advisory businesses and increasing the sophistication and size of back office functions. The third wave of innovation from the late 1990's included the evolution of online and digital services and the automation of processes such as transfers, payments and trading.

The next wave of technology will see AI, machine learning and natural language processing enable automation of a greater number of complex tasks across front and back offices, from IPO preparation to automated fraud and credit checks.

Figure 8. Waves of Innovation in Banking Technology



Source: Whiteshield Partners

Yet neither the introduction of ATMs from the 1970's onwards nor increasingly sophisticated online banking has completely replaced bank branches and bank tellers. Numbers of bank branches and bank tellers have been falling over time, but progress is slow, unevenly spread across countries, and both branches and tellers are unlikely to disappear completely.

[11] Whiteshield Partners interview with Alison Coates, Global Head of Future Skills, HSBC.

Investment banks have been leading efforts to accelerate automation

Investment banks have been at the forefront of automation in recent years. Much trading activity has already been automated and traders partly replaced by software engineers. In 2000, the US cash equities trading desk at Goldman Sachs' New York headquarters employed 600 traders. There are two equity traders left today and 200 computer engineers supporting automated trading programs.[12] Banks such as HSBC have already progressively reduced headcount in investment banking operations over the last decade.

The acceleration of technological progress is now generating new opportunities for operational efficiency and improved customer experience across all banking divisions

The impact of technological progress is particularly felt in the back office as efficiencies found in investment banking move on to commercial and retail banking. Many of the mid and back office functions in banks can now be automated, leading to significant improvements in efficiency and consequent improvements in customer service.

Improvements in risk management and "Know Your Customer" efforts (with AI able to perform background checks, check credit ratings and spot suspicious transactions), data processing and onsite robotics mean that HSBC can now open a student account for a new customer while they are in the branch, with the customer able to walk out with their bank card already activated. Previously it would have taken up to 10 days.[13] Other banks such as Singapore-based DBS have launched "disrupter" banks in India and Indonesia in which clients can open accounts almost instantly using fingerprint technology and scans of their national identity cards.

JP Morgan has introduced an AI program that is able to scan contracts and other legal documents and extract relevant details from them, scanning 12,000 documents in a matter of seconds which would have taken as many as 360,000 hours to be done manually. As Matt Zames, JP Morgan's COO wrote in a letter to shareholders: "This capability has far-reaching implications considering that approximately 80% of loan servicing errors today are due to contract interpretation errors".[14]

There are significant opportunities to boost operational efficiency through technology in the front office as well. Consider that Goldman Sachs has succeeded in automating about half of an IPO process (including many of the legal and compliance tasks involved).[15] The implications of automated research and analysis programs such as Kensho are not just significant efficiency savings in analyst time, but also improvements in client service as account managers can suggest real time investment strategies based on unfolding events rather than having to wait hours or days to get tailored analysis.

Banks have started to reduce headcount, but the results so far have been less than predicted

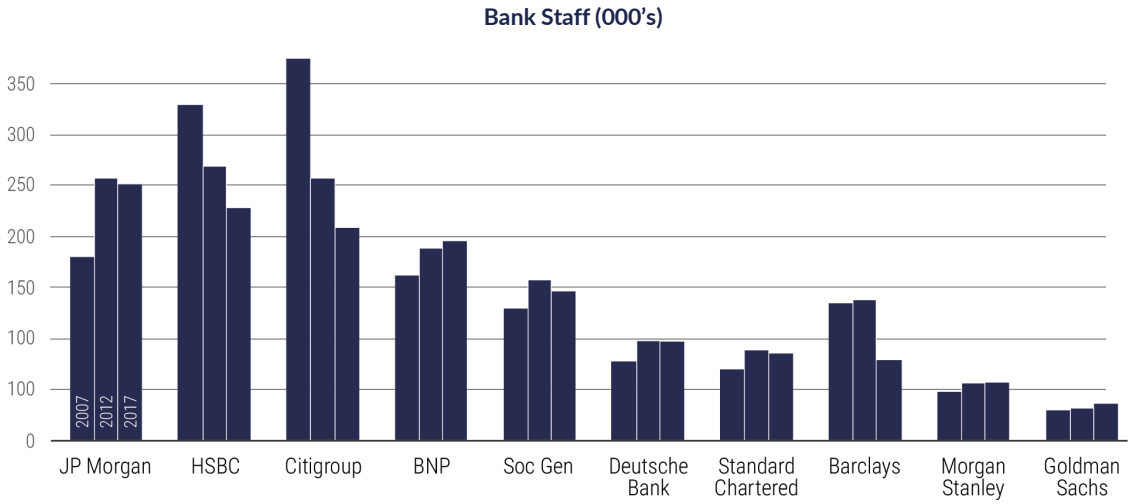
Many major banks have seen a decline in staffing numbers over the past five years and higher levels of efficiency (see Figure 9).

Much of this staff reduction has been driven by operational improvements mainly coming from the back office. Citigroup and Barclays have been among the most aggressive: Citigroup reduced headcount by 45% between 2007 and 2012 while Barclays reduced

[12] Nannette Byrnes, "As Goldman Embraces Automation, Even the Masters of the Universe Are Threatened," MIT Technology Review, 7 February 2017.
[13] Whiteshield Partners interview with Kirsty Roth, Global Head of Operations, HSBC.
[14] Matt Zames, Chief Operating Officer, 2016 J.P. Morgan Chase letter to shareholders.
[15] Dakin Campbell, "Goldman Set Out to Automate IPOs and It Has Come Far, Really Fast," Bloomberg, 13 June 2017.

staff by over 40% just in the last five years. Yet other banks such as the BNP Paribas, Deutsche Bank and Goldman Sachs have remained steady or even increased their headcount over this period.

Figure 9. Evolution of Bank Overall Headcount, 2007-2017



Notes: JP Morgan acquired Bear Stearns and Washington Financial in 2008, Barclays spun off its African business in 2017, Morgan Stanley spun off its Discover Card business in 2007 and acquired Smith Barney from Citigroup in 2009, Citigroup exited 11 consumer markets in 2014, HSBC exited from 20 countries between 2010 and 2013 and reduced US footprint, BNP acquired Fortis in 2008, Standard Chartered acquired Amex Bank and Cazenove Asia in 2008, Barclays acquired African custody business in 2010
FX rate EUR/USD 2007 - 1.37, 2012 - 1.29, 2017 - 1.13, GBP/USD 2007 - 2.00 , 2012 - 1.58 , 2017 - 1.29

Source: Whiteshield Partners; Company Annual Reports

The impact of automation on the workforce in banking should be slowed down by a number of factors

Taking into account research by David Autor (2014, 2015) and the OECD (2016) which note that studies of automatability in jobs typically overestimate the effect of automation, as well as primary and secondary research conducted by Whiteshield Partners for this report, there are four main reasons we believe that the effects of automation on workers will not necessarily be as severe as many analysts have predicted.

1. Adoption of new technologies is slowed by legal, societal and cultural barriers.

- Regulators will slow the adoption of any technologies affecting compliance with bank regulations until they are fully convinced of their safety and reliability and will likely still require human oversight to reduce risk.
- In some countries such as France and Germany, cultural and regulatory barriers have slowed the adoption of digital technologies in banking and insurance (compared to the USA, UK and China).
- Strong institutions actively invest in their staff and need to provide alternatives to redundancies.
- Policy pressure and unions are likely to resist alterations to workers' terms of service and block mass redundancies.

2. Although parts of a role may be automatable, other parts are usually difficult to automate due to heterogeneity of tasks or the difficulty of codifying and automating implicit knowledge.

As our analysis above shows, while some jobs are particularly susceptible to automation, most jobs have elements that are difficult to automate and will still require people to do them, in particular jobs which require "human" skills that are difficult to automate (creativity, empathy, negotiation, coordinating and motivating a team, etc.).

3. When new technologies are introduced, employees can switch to other value-added tasks.

The introduction of technology will make the human elements of jobs more valuable rather than less valuable. For example, as machine learning software develops improved investment advice, investment advisors will be able to concentrate more on hard-to-automate human engagement and customer service elements of their role.

4. Technological change generates new markets and demand for new jobs.

Technological change is already creating new jobs in the banking and finance industry, from the burgeoning fintech sector to banks themselves. According to one estimate, 1,400 fintechs and neo banks have been launched in Europe since 2015, reaching approximately 60 billion euros in revenue or 6-7% of the industry total.[16] In the UK alone, fintech employs 60,000 people or 5% of the workforce in the finance sector.[17]

New jobs will also be created. HSBC's "Human Advantage Report" provides some examples, including Mixed Reality Experience Designer, Algorithm Mechanic, Digital Process Engineer, Conversational Interface Designer, Universal Service Advisor and Partnership Gateway Enabler.[18]

There is an attractive business case for banks to invest in both technology and people to work closely together

Technology has traditionally excelled at repetition, precision and the ability to work continuously. Tasks that can be codified into routine steps with little variation, such as producing consolidated accounting reports or counting and distributing money, are relatively easy to automate – as ATMs and electronic payments have already proven.

However, as noted in Figure 8, technology is rapidly evolving into a fourth wave where robotic process automation, machine learning, and artificial intelligence allow automation of more value-added tasks. Machine learning approaches apply statistics and inductive reasoning based on vast sets of data to "learn" how to do tasks, allowing them to tackle far more complex and varied tasks progressively over time and to continuously improve their performance based on the new data they generate. For instance, Kensho, a program that undertakes sophisticated financial analysis, is able to scan thousands of sources, news reports, stock prices, and other financial data to show how markets have reacted to past events, how they are likely to react to current events and suggest trading strategies to profit from them. Its machine learning algorithms continuously search for links between events and asset prices, improving accuracy and relevance of outputs through systematic feedback loops generated from the results of each recommendation.

Yet, even with this next wave of more advanced technology, the best results are achieved when there is close collaboration between man and machine. For instance, robo investment advisors from the likes of Vanguard and Betterment can take care of processing vast amounts of data and generating the most

[16] "Five ways banks are responding to the fintech threat," Financial Times, 12 November 2018.
[17] https://www.gov.uk/government/news/fintech-sector-strategy-launched-at-international-fintech-conference.

[18] HSBC "Human-Advantage-Report" 2018, https://www.hsbc.com/-/files/hsbc/news-and-insight/2018/pdfs/180705-human-advantage-report.pdf.

attractive investment options that match market opportunities with the client's risk profile. However, with the raw analysis conducted by powerful software, more time can be allocated by traditional investment advisors to help clients interpret the results of the analysis, the implications for their investment strategy and, ultimately, the decisions they need to make. This additional time devoted to customers is all the more important when critical life decisions need to be made that involve human emotions.

In this context, nothing can replace the power of social interaction between people. People and machines are most complementary when combining their unique areas of comparative advantage: in this case, machines provide the raw processing power and humans interpret and translate the outputs into advice and decisions impacting human lives. As can be seen from the robo investment advisors example, the main impact of technology on private banking advisors is not to eliminate the occupation but to free up time for more value-added tasks to ultimately deliver better and more profitable advice.

HSBC has deployed over 300 robots across Global Service Centres to work hand in hand with people in areas such as payment processing, account opening, mortgages, loan processing and Know Your Customer (KYC) tasks. The robots have taken on the most mundane and repetitive tasks while staff are able to concentrate on more complex problem solving, such as when different inputs do not match, or multiple actors are involved. Overall, HSBC has increased throughput and quality while shifting greater value-added and more motivating tasks to employees.[19]

For all its benefits, technology will remain a commodity accessible to all banks that have the capability to identify, acquire and integrate it. Talent – the ingenuity, creativity, and social interaction of employees and how well they work together – will be a differentiating factor between the banks that are considered to be good and those that are great.

The consequences for the future of work in the banking sector will be profound

People make the difference between good and great banks

People will be more important than ever in the bank of the future. As a higher proportion of tasks are automated, the remaining tasks will be the things that only humans can do, increasing the importance and value of these activities. Skills that are particularly difficult to automate and which will be increasingly in demand include:

- Creativity – innovate and develop new solutions
- Communication – interact with and persuade customers, partners and colleagues
- Coaching – train and develop colleagues
- Empathy – understand and influence others
- Leadership – lead oneself and others to create change
- Teamwork – work with others in collaborative groups both within and beyond the organization as partnerships are developed

Human interactions will also remain important for customers. A recent survey in the US revealed that 87% of US consumers believe they will use bank branches in the future and want to see human beings there when they go.[20] Given that most mundane banking transactions will be automated (deposits, withdrawals, etc.), the value of these interactions will increase.

In a world in which technology is relatively commoditized and available to all, it will be the quality

[19] Whiteshield Partners interview with Paul Raddon, Head of Operations, Global Service Centres, HSBC.

[20] Accenture "Amplify You - Banking Technology Vision 2017."

of a bank's people – including tech skills – that will differentiate it from its competitors.

Of course, banks will still need to move fast in adopting new technologies and make important investments along the way to stay ahead of the curve. Consider that J.P. Morgan Chase invested $11 billion in 2018 to keep pace with technology.[21]

Skills will become more important than occupations

The banking job for life will no longer exist. In the future, most people will likely shift to a number of different occupations, within and outside the bank. People will be hired more for their skill sets and flexibility rather than for a specific occupation which is likely to change over time. David Morris, Global Head of Learning at HSBC, underscored this point as follows: "We don't know what the exact future roles will be but can be quite certain that skills such as curiosity, adaptability, creativity and teamwork will be in high demand. People with those skills should be able to move from one function to another relatively seamlessly."[22] Flexibility, resilience, and a growth mind-set with a commitment to learning, will be key to success of future workers in the banking sector.

The bar will be raised for technology skills, with most employees expected to have a minimum training on the fundamentals. In an early example of this, JP Morgan's incoming class of new investment bankers and asset managers will have to take a compulsory course in coding from this year.[23]

Banks will adopt more agile working models

Banking institutions will move away from vertical structures and teams to more horizontal and flexible models, bringing together agile teams from a pool of available resources. This, in turn, will require employees to embrace more flexible working styles, involving more frequent collaboration and communication. ING and ANZ have both adapted agile models in which significant portions of the banks' staff (excluding branch staff and risk teams) are now organized into agile, cross-functional teams focused on a particular project to develop a product or service. ANZ has created 150 "squads" of up to 10 people focusing on individual projects, loosely organized into 18 "tribes" focused on similar customer challenges.

There will be more data scientists, agile developers, "scrum masters", software engineers and customer service-focused individuals working in collaboration with machines. Many of these individuals may not even be full-time employees of the bank but part-time freelancers or employees of fintech companies with whom the bank has a strategic alliance.

Banking institutions that are able to develop a more flexible workforce working hand in hand with technology in agile teams drawing on individual and collective creativity will build a sustainable competitive advantage.

The manager of the future

Traditional managers who mainly supervise others, provide instructions and who have power through the control of information, are an endangered species. The success of the future bank manager will come through coaching people and empowering them to find solutions for themselves. In agile teams where speed to market and creativity are key, command and control models no longer work. In this environment, a manager's role is not to tell people what to do but to help and facilitate and to unite their team around a common vision. As Shayne Elliot CEO of ANZ bank has said "A big chunk of agile is taking away some of that hierarchy; that role of middle-manager who traditionally sourced their value by controlling the flow

[21] "Why Barclays and Standard Chartered should merge," The Economist, 29 November 2018.
[22] Whiteshield Partners interview with David Morris, Global Head of Learning, HSBC.
[23] Nonan, Laura, "JPMorgan's requirement for new staff: coding lessons," Financial Times, 8 October 2018.

of information up and down the organisation. That need disappears in a new way of working world."[24]

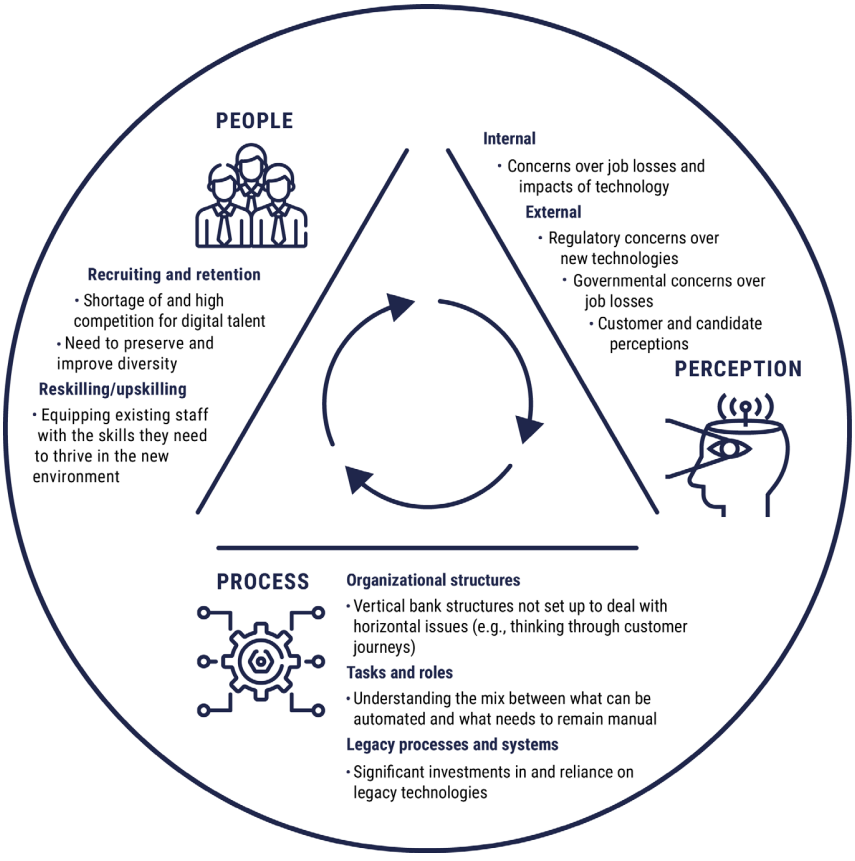
Banks with greater diversity are stronger

Banks that embrace diversity, encouraging the advancement of women and other under-represented groups will be more successful as diversity encourages innovation and different ways of thinking. A recent study found that companies that embrace diversity and inclusion consistently outperform competitors, with a 42% higher return on sales, a 66% higher return on invested capital.[25] Other studies have correlated gender and ethnic diversity with superior financial performance.[26] Birgit Neu, Global Head of Diversity and Inclusion at HSBC, summarised it as follows: "Diversity and inclusion need to be woven through everything we do. Ultimately our staff should mirror the diversity in our customer base."[27]

In order to prepare for the future of work, banks must address a number of challenges

Banks must address a number of challenges to fully unleash their talent potential in the face of technological transformation. We see three main areas of challenge – processes, people, and perceptions (see Figure 10).

Figure 10. Challenges for Banks to Address in Promoting Labour Resilience



Source: Whiteshield Partners

[24] Sally Warhaft "Q&A: Elliott on the healthy chaos of agile" Bluenotes, ANZ in-house magazine.

[25] Women on Board and Firm Performance, Mijntje Lückerath-Rovers, Erasmus University Rotterdam, 2010.

[26] See for example: "Delivering through Diversity", McKinsey, January 2018.

[27] Whiteshield Partners interview with Birgit Neu, Global Head of Diversity and Inclusion, HSBC.

Processes: legacy structures not adapted to horizontal challenges

Banks are typically organized in a vertical manner but increasingly need to address horizontal challenges such as the future of work. Departments of strategy, human resources, training, corporate social responsibility and information technology must find ways to collaborate and move forward on issues which sometimes involve partial information, unclear decision structures and even conflicting incentives. Adjusting these legacy structures to respond to horizontal challenges thus requires significant energy and a relentless focus from senior management. It can also involve rethinking the fundamental principles of the organization and how work is conducted, following the models of ING and ANZ.

Working out the demarcation lines and interfaces between individuals and technology will need to address some key questions: What is the right mix between people and technology? Who is responsible for what? How to evolve from an occupational focus to a skills focus? How to facilitate staff shifting between departments? What adjustments to training content and delivery are required to best prepare workers for the future? Many of these questions are difficult to address within existing organizational structures and processes and require a cross cutting strategy coming from the top level of management.

People: significant upskilling and reskilling of staff required

Implementing new technologies, processes and systems will require a different set of skills and expertise. Such large-scale transformations require an alternative mind-set and approach to "business as usual", which can be difficult to instil in legacy teams.

Responding to this challenge requires significant upskilling and reskilling of staff with the hard and soft skills needed to adapt and pivot with market requirements. The challenge is particularly acute for older staff that may be less comfortable with technology and more resistant to change.

The technology imperative also means competing for scarce talent with the right digital and software skills and adapting bank offices and cultures to accommodate them. The poor perception and limited trust of traditional banks among Millennials makes recruiting and retaining this talent a potential additional challenge.[28]

Fostering the right levels of diversity at all levels in banks is another challenge to address. This challenge is exacerbated by the fact that women and some minorities are disproportionately represented in occupations involving repetitive tasks which may be automated more rapidly, creating additional pressure on the diversity of talent pipeline.

Perception: employees need to trust that the banks are truly making their people a priority

Internal and external perceptions about the impact of technology on the banking sector will need to be better managed to maintain morale, facilitate recruiting, and continue focusing on excellence in delivery of customer service. According to one survey, almost half of all bank employees believe that their job is at risk because of technology. This was the highest share among all sectors surveyed.[29]

External perceptions will need to be managed as well. For instance, regulators need to be made comfortable with new technologies, convinced of their safety and security and satisfied with back-up plans in place to accommodate system failure.

[28] Scratch Millennial Disruption Index, a 2013 survey of 10,000 millennials in the US.

[29] Emolument.com "How is technology putting jobs at risk?" 2016.

Addressing these barriers and creating a resilient workforce will require systematic, strategic approach to preparing for the future

We have seen a number of key principles that will be critical to success in managing the future of work, among which:

- People are a key differentiating factor for banks
- The human-machine combination provides greatest impact: people are augmented by technology to deliver better overall performance
- A focus on skills rather than occupations will help ensure that workforces are better able to adapt to shifting market requirements and new challenges
- People with a continuous learning and growth-oriented mind-set will thrive in the new world of work
- The implementation of agile working models and teams will be necessary to deliver on key projects
- More diversity across the workforce can drive innovation and improve resilience.

To navigate their way through the future, banks will need a clear strategic roadmap that embraces such principles and charts a path to the future. For instance, HSBC's Operations function, which is at the forefront of many of the automation changes happening in the bank, has already begun to develop such a roadmap through a "Vision 2030" which includes a comprehensive internal perspective on which bank processes will disappear, which will change fundamentally and which new ones are likely to appear.[30] The visioning exercise has been translated into concrete actions related to the development of its people and a commitment to have industry-leading learning and development. Ten key capabilities including change management, commercial awareness, managing risk, driving innovation and digital literacy, are built into training and development resources in the HSBC University and a dedicated "Think Careers" website to equip its people with the skills for the future. Moreover, managers are being trained on how to better coach their teams, use a data-led approach to performance, hire for the right capabilities and support individuals to fulfil their full potential.

Developing a robust roadmap to address the future of work in the banking sector requires a comprehensive framework as outlined in the following section.

A framework for promoting labour force resilience in the banking sector

Leveraging Whiteshield Partners' Global Labour Resilience Index (GLRI) methodology, the proposed framework to promote labour force resilience in the banking sector includes six key areas (see Figure 11):

1. Streamline – simplify job descriptions and associated skills and tasks and develop agile teams.
2. Build – invest internally in lifelong learning to build and maintain relevant skill sets of tomorrow.
3. Bridge – develop external partnerships with public, private and voluntary sector actors to access capabilities not available internally.
4. Stretch – identify new market opportunities for the skills and capabilities of staff.
5. Promote – improve the positioning of banks with the public and with potential recruits to make them more attractive places to work.
6. Map – continuously monitor skills evolution of employees, market and institutional needs while assessing and planning for future needs.

[30] Whiteshield Partners interview with Kirsty Roth, Global Head of Operations at HSBC.

Figure 11. Framework for Promoting Labour Resilience in the Banking Sector

	Description	Challenges Addressed
A **Streamline**	• Simplify job descriptions and associated skills and tasks • Develop and constantly refine the "skill sets of tomorrow"	• Complexity of legacy processes and systems
B **Build**	• Invest in lifelong learning to build and keep relevant the skill sets of employees • Enhancing institutional capacity for collaboration and coordination	• Development of skills for the future
C **Bridge**	• Develop external partnerships with public, private and voluntary sector actors to access capabilities and build shared value	• Collaboration with multiple stakeholders
D **Stretch**	• Identify new market opportunities for the skills and capabilities of staff	• Innovation
E **Promote**	• Improve the positioning of banks with potential recruits and wider society to make them more attractive places to work	• Image
F **Map**	• Monitor skills evolution of employees, market and institutional needs • Assess and plan for likely future needs	• Data and monitoring

Source: Whiteshield Partners

Banks and other financial services players are already investing in strengthening the resilience of their workforce by investing in training and lifelong learning efforts, actively seeking external partnerships to access new skills, as well as implementing tools and organizational innovations to enhance collaboration (see Table 5).

Table 5. Selected Initiatives by Banks to Prepare for the Future of Work

	Streamline	Build		Bridge	Stretch	Promote	Measure
		Organizational	Skills				
HSBC	• Reduced a large number of job roles into streamlined job families	• Global Head of Learning • Global Head of Future Skills	• Committed to industry leading L&D • HSBC corporate university • Graduate development programs & global internship scheme • UK/FR/HK apprenticeships	• HSBC's *Partnership for Skills* to reach 1 million by 2020	• Online internal talent profiles and Exploring My Career tool	• Emphasis on increasing digital and technology hires (e.g. Move of operations campus to South Bank to attract tech talent)	• Assessing organisational learning maturity
J.P. Morgan			• Introduction of mandatory coding training for all new investment bank and asset management staff in 2018	• Extensive Fintech partnerships to access expertise (e.g, OnDeck Capital, TrueCar, Roostify, Zelle) • *New Skills at Work* program - $250MM program to support job seekers with skills training	• *Talent reassignment* program to find new opportunities • Upskilling of BPO staff in Philippines to higher value task as lower value tasks automated	• Major investments in tech and focus on recruiting tech talent • *TechConnect* program to bring in non-traditional tech hires	• *Insight360* tool will allow for real time feedback and assessment of skills
CITI		• Citi Learning Advisors • Citi Global Head of Digital Learning and Talent for Technology	• Upskilling and professional reconversion program • IBF-accredited core consumer banking training • Digital learning with Udemy and Degreed platforms	• Sponsor of Cornell tech initiative and Laboratoria for gender equality in tech • P2P online payments with Zello			• Citi GPS annual report on technological disruptions in finance
Barclays		• BI Head of Learning • BI Head of Digital Learning	• Graduate development program • Technology development program • *Mycareer* platform	• *LifeSkills* platform • *Code playground & digital eagle labs* • UK digital apprenticeship fund • Partnerships with MarketInvoice for SMEs lending & Paypal for digital wallets			• UK digital development index
Santander	• Standardized product & operating models across all markets	• Head of Future Work appointed in the UK	• E-learning platform *Learning at Santander*	• £1MM enterprise and entrepreneurship fund to support university entrepreneurship			
BNP Paribas		• Head of Learning, Change and Digital Transformation	• My campus • BNP asset management investment academy • BICI academy in Africa • Digital learning with Eureka Agency	• l'Echangeur tech innovation center • Flagships			
Societe Generale		• Global Head of Learning and Talent Management	• SoGe corporate university • *My job 2020* reconversion & upskilling program • *Digital for all* program	• Partnership with Tagpay for innovative payment methods			
RBC			• Learning management system incorporating e-learning platform • "Career Launch" one year internship	• RBC *Future Launch* program to support upskilling of youth in partnership with education and charity partners		• Brought in former tech executive as VP of Global Talent Acquisition	• *Humans Wanted* report on future of work in Canada • *RBC Upskill* identifies career options based on skills and jobs data
N26 Ally		• Flat hierarchy and cross-team sharing culture	• Learning centers • Talent programs • Personal development funds	• Mentoring programs • Incubators			

Source: Whiteshield Partners

Much more can be done by banks, however, to strengthen the resilience of their workforces and capture the full potential of their talent.

We suggest a comprehensive set of actions to help banks better prepare their workforces for the future as summarized below.

Streamline

Simplify roles and develop a consistent nomenclature of occupations and skills with an evolving set of capabilities

Action 1: Simplify roles within the company, cut out unnecessary complexity, and provide both management and staff with a rigorous nomenclature of occupations that highlights key expected capabilities and is updated annually to incorporate new capabilities.

The streamlined set of roles and associated capabilities should help clarify expectations and learning requirements with existing staff and focus recruiting efforts on profiles that can better adapt to the needs of tomorrow. It will also help prepare banks and their staff to a focus on capabilities rather than specific occupations (which are likely to change over time).

Action 2: Develop a "Capability Map" prioritising the most relevant capabilities and connecting these capabilities to the different streamlined positions.

The "Capability Map" should highlight in a transparent manner which are the priority capabilities that the bank and its employees are striving for as well as opportunities for employees to pivot from one position to another based on their existing capabilities.

Action 3: Assess capabilities of all staff relative to the "Capability Map".

The assessment of employees based on a common set of criteria should help establish the foundation of existing capabilities across the bank and identify gaps to be filled both across the bank and at the individual level.

Implement agile methods and train staff in agile ways of working

Action 4: Implement agile methods in project management, not only for IT projects but also more broadly within the bank.

Implementation of agile methods - which involve small teams working in incremental and iterative sequences - should help banks progressively transform from vertical, hierarchical structures to more horizontal and agile entities, capable of adapting to rapidly evolving demands and unpredictability.

Agile methods should influence the "Capability Map" and help enable new ways of working by championing those with the right mind-set and attitude to thrive in an agile organization.

ANZ's transformation towards a more agile workforce provides a good starting reference for other banks looking to follow this path (see Figure 12).

Figure 12. Agile Workforce Transformation at ANZ Bank

AGILE WORKFORCE TRANSFORMATION AT ANZ BANK

CONTEXT & OBJECTIVES

- ANZ preparing for future of increased disruption with faster pace of speed to market through restructuring and streamlining of the organization around agile, multidisciplinary teams that build a growth mindset.
- Agile restructuring announced in May 2017 with goal that by the end of 2018, ~30% of the bank's workforce (13K of 46K employees) will have switched to agile teams.

DESCRIPTION / APPROACH

- Streamlining of hierarchies and management structures (8 management layers reduced to 4).
- Reorganization (excluding branch staff and legal, risk and treasury) to focus on customer needs and customer journeys rather than traditional banking structures - 18 "tribes" (focused on similar customer challenges) split into 150 squads of up to 10 people, each focused on a single project.
  - ✓ Squads are multi-disciplinary teams with no hierarchy, coordinated by a product owner who is responsible for the customer outcome.
  - ✓ Additional training and coaching provided to employees on agile methods and computer coding.
- Reinforcement of a culture of learning, ownership, empowerment and customer centricity.
- Learning from other banks (ING) and tech companies (Google, Spotify etc.).

KEY INSIGHTS

- Creates much more flexible and adaptable workforce with more transferrable skills – flexibility and learning mindset key to success.
- Cultural change is vital – requires reinforcing learning culture, ownership, empowerment and customer centricity and hiring for those attributes.
- Requires coaching in new ways of working and additional training investment to be successful.
- Challenge of evaluating and rewarding individuals in a team environment.

MEASURES / OUTCOMES

- Increased speed to market for the bank:
  - Bank app rating from 1 star to 4.8 stars in weeks
  - Apple pay launched in 10 weeks
- Increased employee satisfaction, higher productivity and greater employee flexibility.

Source: Whiteshield Partners; McKinsey Quarterly, ANZ Bank, Financial Review

Build

Create and empower new leadership positions that help address the horizontal challenges faced in the future of work

Action 5: Create leadership roles that focus on the future of work and the need for new skills similar to HSBC's positions of "Global Head of Future Skills" and "Global Head of Learning."

The creation of such leadership positions underscores the commitment at the top level of management to equip staff with all the skills necessary to face the future of work throughout their career, within or outside the bank.

It is important that these leaders are empowered to bring together the relevant parts of the bank needed to design and implement a comprehensive strategy for resilience of the workforce. Among the departments that must be involved in the design and implementation of a strategy to address the future of work are Human Resources, Strategy, Diversity, Information Technology, Communications and Corporate Social Responsibility.

Foster a culture of continuous learning through skill assessments, individualized learning plans and learning credits

Action 6: Build individual lifelong learning systems that support employees through skills assessments, identification of learning needs and individualized learning plans.

Banks should consider providing all employees with a digitally enabled "Learning Compass" that positions them relative to priority skill sets, suggests learning priorities and options to fulfil those priorities.

The primary objective of a "Learning Compass" is to shift from a compulsory to a voluntary training model in which employees actively seek out learning opportunities and take ownership of their learning path while at the same time emphasizing the bank's priorities.

HSBC has rolled out two tools that can provide a first basis for the "Learning Compass": a Talent Profile tool in which employees can record their personal skills and experience and an Exploring My Career tool which lets employees assess their skills against potential future roles and outline their areas for development.

Action 7: Provide all employees with learning credits that can be redeemed for training within or outside the bank.

Inspired by Singapore's Skills Future initiative, a system of learning credits reinforces the principle of individual ownership in learning and sends a strong message of the bank's investment in learning at all levels. It is also a recognition that certain types of training are best done externally.

Action 8: Consider launching a corporate university that brings together the best internal and external expertise for both in-person and digital training.

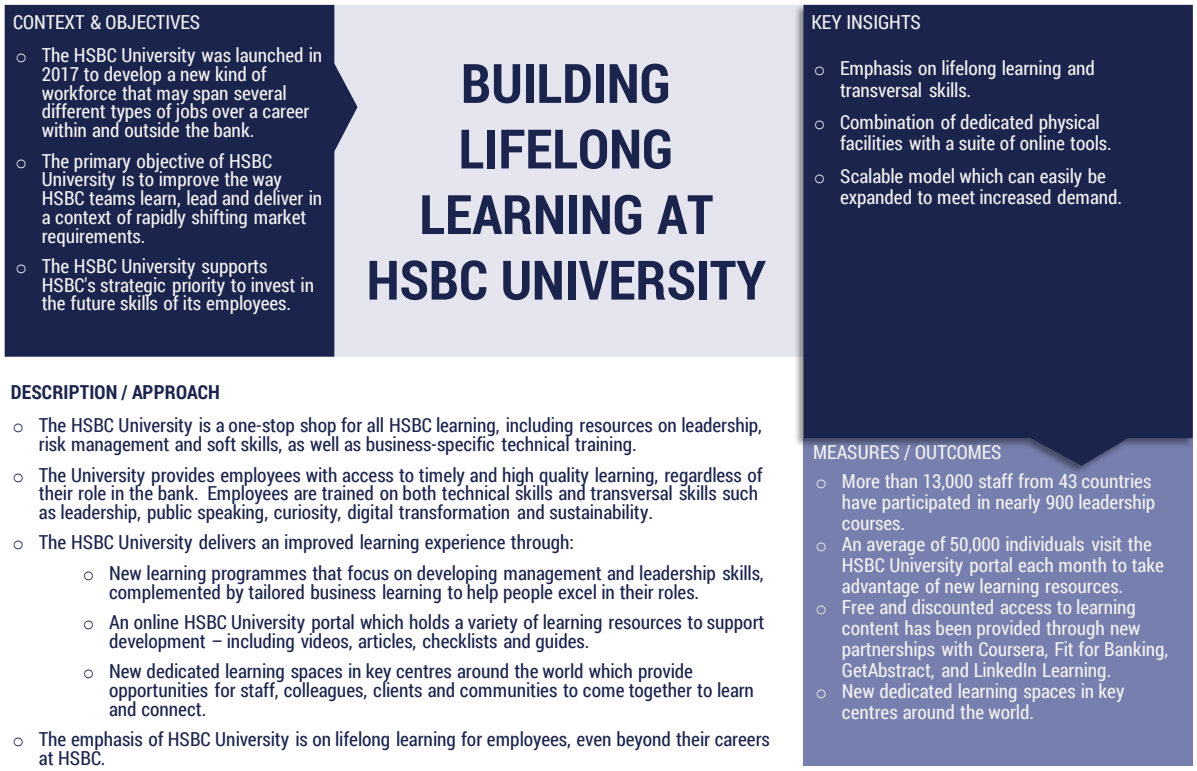
Building on other actions already mentioned, a corporate university brings together all training content and tools in a comprehensive offering available to all staff.

The corporate university should have a broad mandate to deliver state-of-the-art training that is cutting edge, including developing partnerships where necessary with specialist external providers.

Technology can be used to deliver training across the globe through state-of-the-art facilities such as Oxford University's The Hive.

HSBC's recently launched multi-modal university represents a relevant case study in learning transformation for the future workforce (see Figure 13).

Figure 13 Building Lifelong Learning at HSBC University



Source: Whiteshield Partners; https://www.hsbc.com/our-approach/culture-and-people/hsbc-university

Empower and recognise employees who commit to coaching and training others

Action 9: Launch an internal coaching program in which talented employees commit time and resources to coaching others.

Certified coaches can be given a special recognition in the bank akin to the Six Sigma belt system. Most importantly these employees should be recognised for their contributions through the annual performance and bonus system as well as awards.

The internal coaching program aims to maximise the impact of individual talent while demonstrating corporate commitment to learning and development. Coaching "superstars" can be further incentivized to capture and codify their knowledge in addition to coaching and developing those around them.

Invest in developing cross-cutting soft skills

Action 10: Invest in broader and deeper development of soft skills such as communication, creativity, teamwork, and empathy that cut across bank positions.

Mastering cross-cutting "soft skills" will further increase the effectiveness of teams in the age of digital disruption and get the most out of man-machine collaboration.

Reskill and redeploy talented employees who may become technically redundant

Action 11: Introduce programs to help reskill and redeploy talented employees whose roles have been fully automated.

Such reskilling programs should also be accompanied by exit programs for those who cannot be redeployed effectively (potentially in partnership with the public sector or the not-for-profit sector) to help them reskill externally and find alternative employment.

Reskilling programs are important for banks to help mitigate staff fears about automation. It is important to send a strong message that banks are focused more on retaining and nurturing talent rather than filling specific positions.

Bridge

Develop partnerships with the tertiary and public sectors to support workforce resilience

Action 12: Build partnerships with the government and tertiary sector to deliver more and better training.

Public and tertiary sector partnerships can help increase the scale and impact of training while accessing public funding. Most banks in the UK have already developed successful apprenticeship schemes with partial public funding. These types of partnerships can be expanded to other areas, such as reskilling redundant workers (see Action 11) to work in other functions or sectors.

Use B2B partnerships to access specialist expertise not available internally

Action 13: Partner with fintechs to access new skills.

Develop strategic alliances combining the trusted brands and access to customers of financial services providers with the capabilities in building innovative products and services of fintech and technology companies. Examples include Barclay's partnership with MarketInvoice for SME lending or Société Générale's partnership with Tagpay for alternative payment methods.

Leverage CSR programs to further promote labour resilience

Action 14: Align CSR efforts to build labour resilience in the broader community.

Combining an internal strategy to promote labour resilience within banks with external CSR efforts to support labour resilience outside the bank generates opportunities for cross fertilisation between the two initiatives and greater shared value from CSR investment.

For instance, consistent with its internal efforts in promoting greater resilience of its employees, HSBC has made a broader commitment to help one million people to become more employable by 2020.

Stretch

Develop mid-career opportunities for workforce rotation

Action 15: Develop mid-career rotation schemes to keep employees familiar with the different parts of the institution and maintain flexibility and resilience.

ATB Financial in Canada has experimented with an innovative formal career development program that allows for more flexible role changes, creating internal recruiting and on boarding channels to facilitate internal role changes and a training of management to create a culture that accepts and encourages internal talent mobility.

Provide data on skills that are most in demand and give staff the tools to develop and stretch their skills to capture new opportunities

Action 16: Create an internal skills portal that provides employees with an improved understanding of what skills are in demand, where they could be deployed most effectively and how best to build those skills.

Citibank's Professional Conversion Program, which builds on the existing skills of employees in roles that are likely to be made obsolete and stretches these employees into new roles, is a good example of a successful stretch program (see Figure 14).

Figure 14. Citi's Professional Conversion Program

Source: Whiteshield Partners; Citigroup Press Release, June 29, 2018

Promote

Adjust recruitment and retention strategies to adapt to the new, more diverse candidate profiles needed.

Action 17: Adapt recruitment and retention strategies to ensure the workforce includes relevant diversity.

The Y and X generations place stronger emphasis than previous generations on flexible working conditions and working in an entrepreneurial environment. However, the desire for more flexible working options and a dynamic work environment is almost universal.

Banks should look at how flexible working conditions and entrepreneurial working environments can make them more attractive employers to a broad range of diverse talent. Actions might involve offering more time for personal projects and alternative office environments akin to those of the big tech companies in San Francisco's Bay Area. HSBC struggled to recruit high quality technical talent to their team until they moved part of the unit away from the more corporate environment of Canary Wharf in London to the more tech-friendly South Bank.

Rotational graduate programs (e.g. 4 x 6 month rotations in different parts of the bank) are another attractive offering for younger staff that provide a range of experiences to make employees more adaptable and well rounded.[31]

Develop and instil in employees a greater sense of purpose

Action 18: Develop and instil in employees a greater sense of purpose, helping staff to understand the vital role that the bank plays in the economy and in society and how their work benefits others.

[31] See for example https://career.berenberg.com/international-graduate-programme/.

Linking banking to purpose in society and delivering better outcomes for customers can attract and motivate diverse talent, which will in turn be critical to building the resilient workforce of the future and enhancing the reputation of the banking sector overall.

Set up internal incubators to enable staff to develop their own innovative ideas and to attract external talent

Action 19: Set up internal incubators to source innovative ideas and talent.

Internal incubators represent yet another way to harness diverse entrepreneurial talent both from within and outside the banks. The incubators can be used also to test innovative solutions for building the resilience of workers.

Measure

Develop more sophisticated HR systems to enable systematic capturing of data on skills in the organization and projecting future skills needs

Action 20: Develop more sophisticated HR systems to capture better data on skills and capabilities within the organization, emerging needs and future projections.

The resulting data can be used to better inform recruiting and training strategies, offer staff transparency on the skills they need to develop, where they stand relative to peers, and what roles they might bridge to in order to drive forward the business and their own careers.

These improved HR systems can be supported by data scientists to increase the precision and timeliness of analysis. The body of knowledge that is created should feed into all the other actions suggested in this chapter.

Monitor diversity and put in place programs to ensure diversity across the organization

Action 21: Ensure systematic monitoring of diversity across the organization both in the different roles within the bank and in areas such as the availability of and access to skills building and training opportunities.

Systematic monitoring of diversity should help implement targeted schemes to promote gender, age and other under-represented group diversity in the workforce, which is essential to its resilience.

Conclusion: Banks must further anticipate on their workforce resilience requirements

There is no doubt that the latest wave of technological change sweeping through the banking industry is likely to cause significant disruption to employment. However, disruption does not mean the end of work in banking.

The banking industry must develop and continuously refine its vision of the future of work in the sector and anticipate on its workforce resilience requirements.

Banks and their employees will need to redouble efforts to upskill and fully leverage the human advantage working side-by-side with technology. Technology will take over more mundane and repetitive tasks, freeing time for employees to focus on areas of greater value addition such as problem solving, customer service, and innovation.

What is more, advances in technology will continue to create new markets and opportunities for individuals with the right skills.

Ultimately, as technology becomes a commodity, talent should emerge as a true differentiator for banks. To enable their employees to deliver that differentiated performance, banks must help them fully prepare for the coming disruption.

CHAPTER 3: THE GLOBAL LABOUR RESILIENCE INDEX 2019 - A CALL FOR ACTION

Four GLRI Country Segments

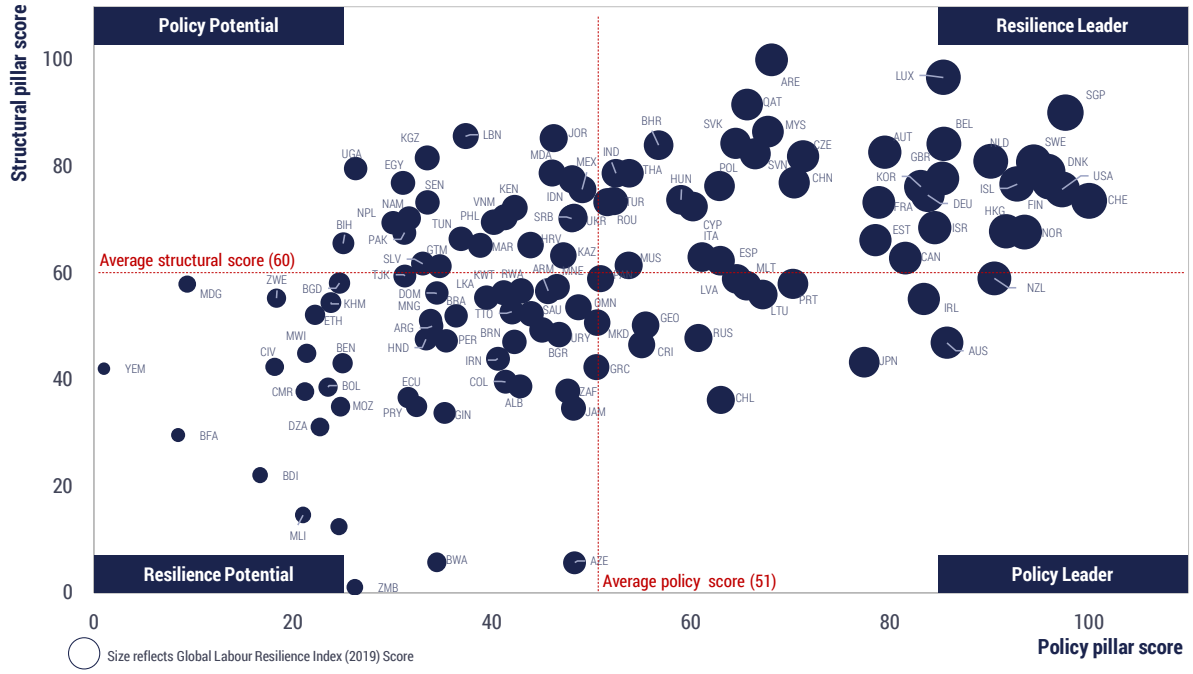
Important gaps across countries in labour market resilience must be addressed

The results of the Global Labour Resilience Index 2019 highlight important gaps across different global economies in achieving labour market resilience. The GLRI also highlights that the nature of these gaps differs by country segment.

Labour markets can be classified into four different segments

Based on the results of the Global Labour Resilience Index, economies can be classified into four different segments: Resilience Leaders, Policy Leaders, Policy Potentials and Resilience Potentials (see Figure 15).

Figure 15. Country Labour Resilience Matrix 2019



Source: Whiteshield Partners

Resilience Leaders

Resilience Leaders are the top-ranked countries in the GLRI with high scores in both the structural and the policy pillars.

They are predominantly high-income democracies, including a significant number of countries from Europe. Scandinavian countries, such as Denmark, Sweden and Finland, score particularly highly.

Asian Tigers such Singapore, Korea, and China, are also Resilience Leaders supported by excellent education systems, technology capabilities and an increasingly favourable entrepreneurship ecosystem.

Other Asian countries such as India, Malaysia and Thailand have more recently become Resilience Leaders after making great strides to diversify their economies and enhance their business climate for entrepreneurship.

To sustain and even improve their labour market resilience, Resilience Leaders need to continue to invest in active labour market policies (ALMPs), to adapt education policy to future labour market requirements and to address long-term structural issues such as aging populations and growing inequality.

Policy Leaders

Policy Leaders are countries and economies with comparatively low scores on the structural pillar and higher scores on the policy pillar. While they have strong policy platforms in place, they face longer-term structural challenges. Policy Leader countries and economies come from many different regions of the world, including East Asia & the Pacific, Latin America & the Caribbean and Europe. Examples of countries in this segment are Australia, Portugal, Japan and Chile.

Their path to stronger labour resilience typically requires longer-term structural reforms. Some countries need to focus on economic diversification (Chile, Australia), while others, in particular Japan, need measures to address ageing populations and growing inter-generational inequality.

Lower income countries such as Georgia have also entered the Policy Leader segment through a series of policy reforms to increase labour market flexibility while making the business climate more attractive.

Policy Potentials

Policy Potential countries have a higher than average score on the structural pillar and a relatively low score on the policy pillar. They have the highest labour resilience potential – they already perform well on structural elements which take a longer time to adjust but can make a real difference to their labour resilience through better public policy.

Countries in this group mainly fall into the middle to low income category and come predominantly from the Middle East, Eastern Europe and Central & Southern Asia. Examples of Policy Potential countries include Pakistan, Kazakhstan, Ukraine, Egypt and Tunisia.

Many of these countries have relatively young populations but significant red tape, inflexible labour markets and inadequate education systems. In Eastern Europe and Central Asia, for instance, the education, labour and entrepreneurship dimensions pull down the policy score.

Some lower-income Policy Potential countries, such as Senegal, Nepal and Uganda have managed to diversify their economies primarily through export diversification, raising their structural pillar score above global average. This represents a promising development. If countries at the bottom right of the resilience matrix are able to diversify their economies through exports, this can help create a virtuous cycle of rising economic development and investment into better education and labour policies.

Overall, the Policy Potential segment must "shake the policy tree" and undergo significant policy reforms to boost labour market resilience, including strengthening education outcomes, liberalising labour markets and creating more attractive business climates for entrepreneurs.

Resilience Potentials

Resilience Potentials are the lowest-ranked countries in the GLRI with weaker scores in both the structural and policy pillars. Approximately half of these countries (22 out of 49) - mainly from Sub-Saharan Africa - are low and lower-middle income countries burdened with comparatively low levels of economic development and limited room to invest in labour market resilience.

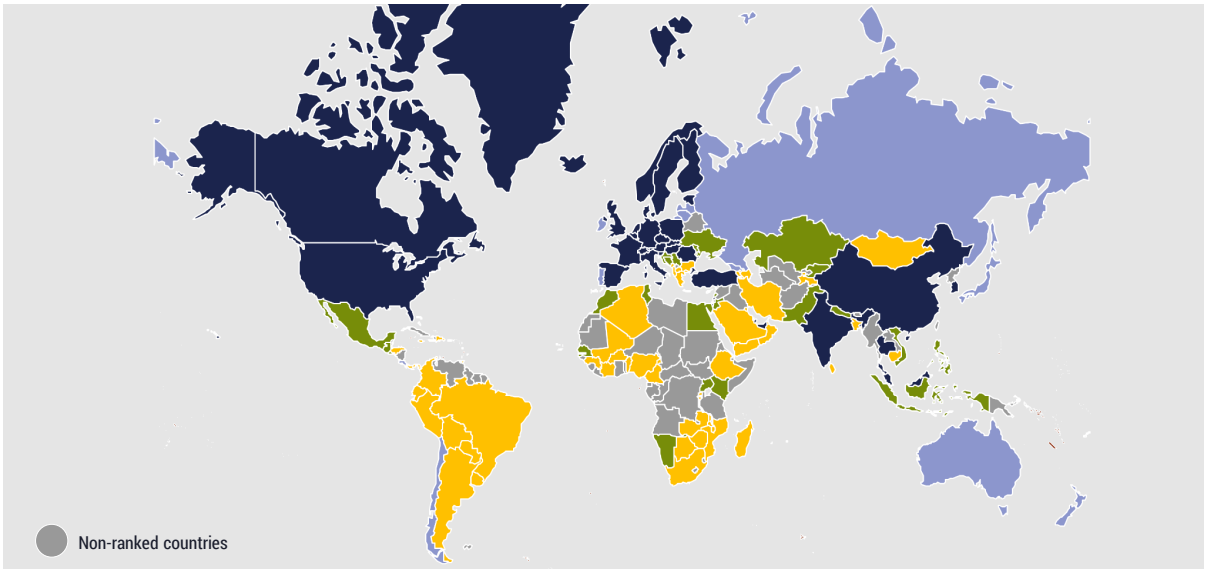
However, Resilience Potentials also include upper-middle income countries such as Algeria, Brazil, Iran, South-Africa and even high-income Saudi Arabia and Greece. Many of the upper-middle- and high-income Resilience Potentials are resource-rich countries that have struggled to diversify their economies and not taken enough action to address gaps in education, labour, innovation and entrepreneurship policy.

Resilient Potential countries must typically invest in economic diversification and innovation while implementing targeted policies to upgrade skills and liberalize labour markets as well as the wider business climate to strengthen labour market resilience in the short-term.

Countries such as Rwanda – close to breaking out of the Resilience Potential quadrant through significant business climate reforms – and the UAE – which has successfully diversified its economy and made great strides in policy development to become a Resilience Leader – offer some direction of what can be done to achieve higher levels of labour resilience for Resilience Potentials.

The overall GLRI scores for the four resilience segments are summarized and broken down by income level in Figure 16.

Figure 16. Breakdown of GLRI 2019 Results by Region by Resilience Segment



Resilience Leaders	Policy Leaders	Policy Potentials	Resilience Potentials
Average GLRI: 75	**Average GLRI: 65**	**Average GLRI: 46**	**Average GLRI: 35**
Average Structural pillar score: 73	Average Structural pillar score: 73	Average Structural pillar score: 53	Average Structural pillar score: 51
Average Policy pillar score: 77	Average Policy pillar score: 64	Average Policy pillar score: 43	Average Policy pillar score: 33
Average Labour Resilience Gap: 2	**Average Labour Resilience Gap: -19**	**Average Labour Resilience Gap: 33**	**Average Labour Resilience Gap: 9**
31 **high-income** countries and economies	9 **high-income** countries	1 **high-income** country	9 **high-income** countries
6 **upper-middle income** countries	2 **upper-middle income** countries	8 **upper-middle income** countries	18 **upper-middle income** countries
1 **lower-middle income** country	1 **lower-middle income** country	12 **lower-middle income** countries	9 **lower-middle income** countries
		3 **low-income** countries	13 **low-income** countries

Source: Whiteshield Partners

Different country paths to achieve resilient labour markets

The analysis of GLRI results by region suggests that there are different paths to achieve labour market resilience

An analysis of GLRI dynamics over time reveals three different country paths to labour market resilience, the structural path, the policy path and the equilibrium path (see Figure 17).[32]

The *structural path*: countries that follow this path focus on building a structural foundation around greater economic diversity and complexity before investing more heavily in short-term policies related to skills, labour, technology, innovation and entrepreneurship. Examples are India, China, and the UAE.

The *policy path*: countries on this path place an emphasis on shorter-term policies to boost labour market resilience before building longer-term capabilities, economic diversification and addressing rising inequality. Examples in this case are Georgia, and Costa Rica.

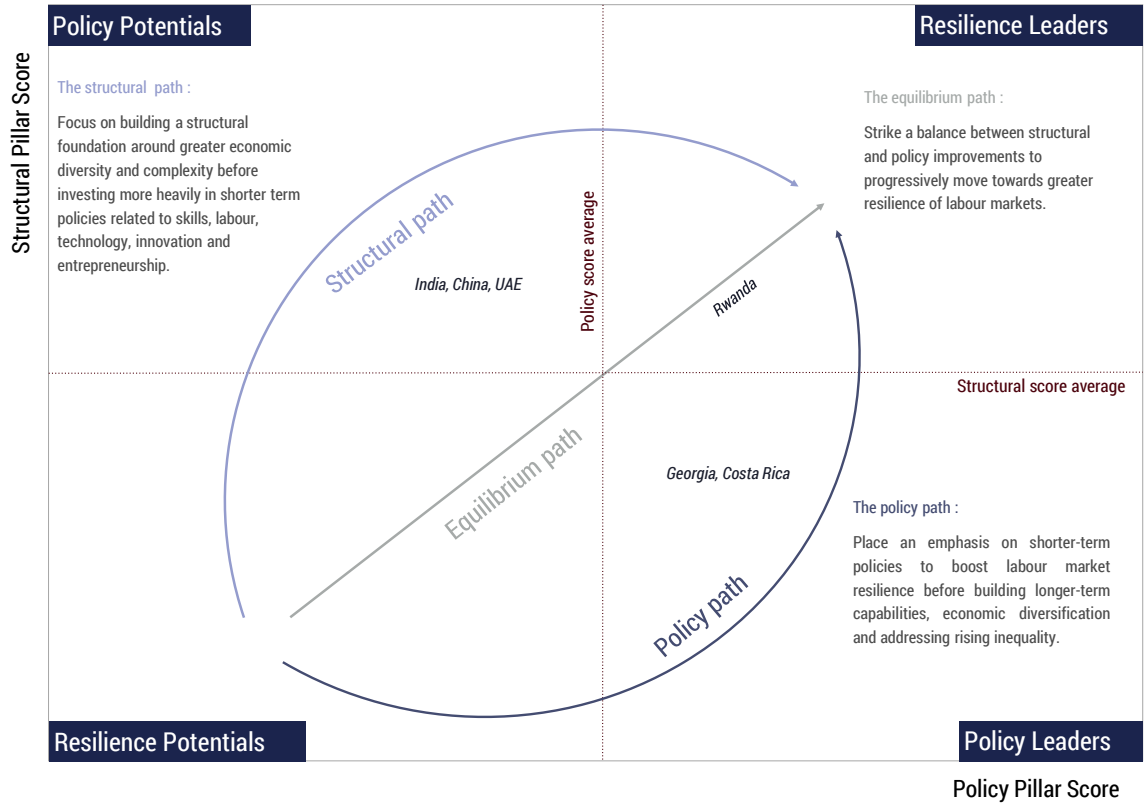
The *equilibrium path*: these countries strike a balance between structural and policy improvements to progressively move towards greater resilience of labour markets. Rwanda appears to have followed an equilibrium direction over the last decade.

Choosing a path depends on a country's initial endowments, capabilities built over time and relative structural and policy advantages.

Each country must define a direction that is most adapted to its structural characteristics and strategic priorities, drawing lessons from other countries that have already taken those paths.

[32] While GLRI 2009 and GLRI 2014 use the same methodology and set of indicators as GLRI 2019, the difference in availability of data needs to be taken into consideration for the comparability of results. Moreover, it should be noted, that the overall analysis in this section has also taken into account country progress on selected GLRI indicators before GLRI 2009.

Figure 17. Three Pathways to Labour Market Resilience



Source: Whiteshield Partners

India, China and the UAE have followed a structural path

India, China and the UAE are examples of countries, which have successfully managed to become Resilience Leaders by following the structural path. After an initial focus on structural improvements to economic development and diversification that pulled them into the Policy Potentials segment, they then undertook a series of policy reforms to become emerging Resilience Leaders. While China focused its effort on innovation and technology improvements, India showed significant progress in education, employment and entrepreneurship. The UAE had a balanced progress on all policy sub-pillars (see Figure 18).

The Philippines and Kazakhstan also appear to be following the structural path as in the case of India, China and the UAE. For instance, the Philippines increased its economic capability rank from 69th to 53rd in 10 years. The next step for both countries is to implement policy reforms, taking inspiration from countries like India and the UAE.

Georgia and Costa Rica have adopted the policy path

Georgia and Costa Rica demonstrate how countries with a low initial score in the structural pillar can start by focusing on policy reforms such as education, technology and entrepreneurship to become policy leaders. These countries are now likely to follow the path of Israel and Norway, leveraging their policy assets in order to achieve greater structural resilience.

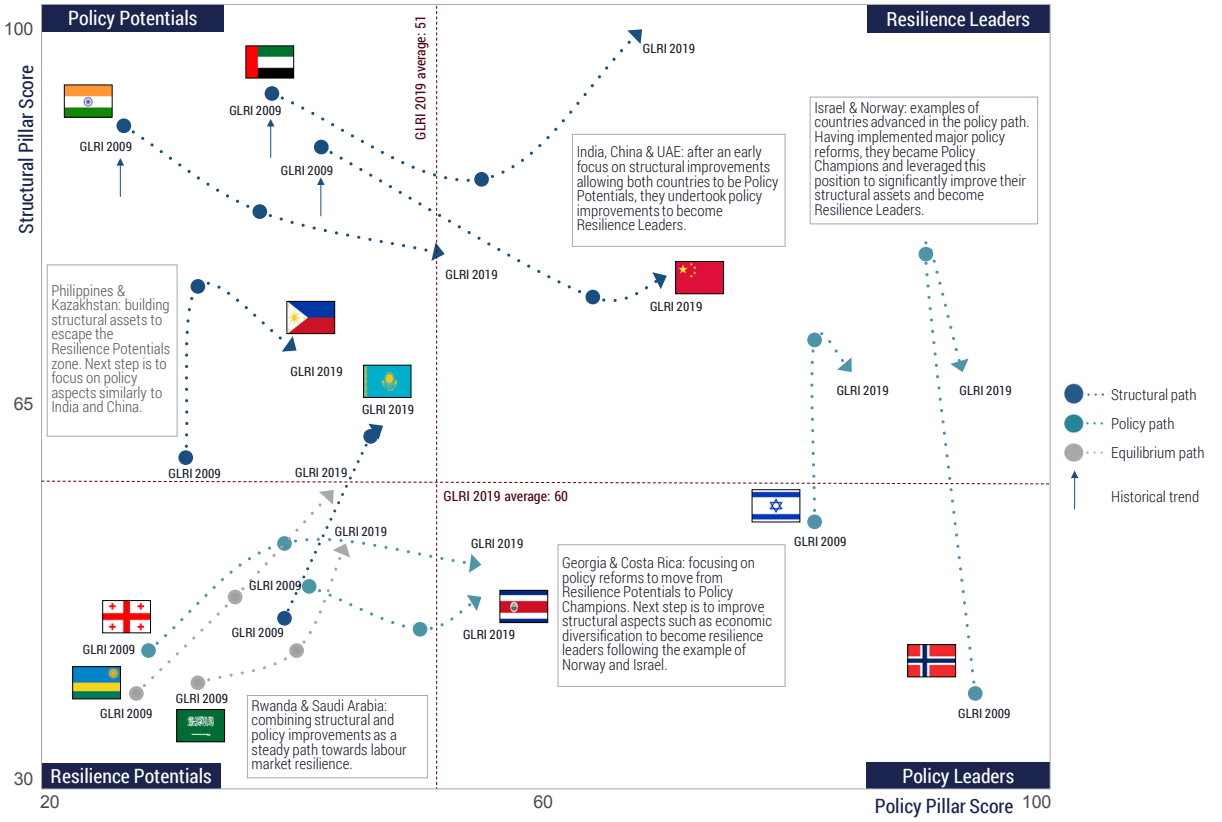
While still in the bottom left quadrant of Policy Potentials, Rwanda and Saudi Arabia have been progressively moving up the ladder across the last decade through a combination of structural and policy

initiatives. In the policy pillar particularly, Rwanda shows significant balanced progress over almost all policy pillars with a focus on employment and entrepreneurship reforms.

Rwanda appears to be following the equilibrium path to labour resilience

The case of Rwanda demonstrates how a country which appears "stuck at the bottom" on both the structural and policy pillars, with limited areas of comparative advantage, can trace a balanced pathway to labour resilience. The country has been progressively moving up the ladder over the last decade through a combination of structural and policy initiatives. In the policy pillar particularly, Rwanda shows significant balanced progress over almost all policy pillars with a focus on employment and entrepreneurship reforms.

Figure 18. Progress of Selected Countries Along 3 Labour Resilience Paths, GLRI 2009 – GLRI 2019



Source: Whiteshield Partners

Countries that have attained the resilience leadership must sustain their position through continuous policy refinements

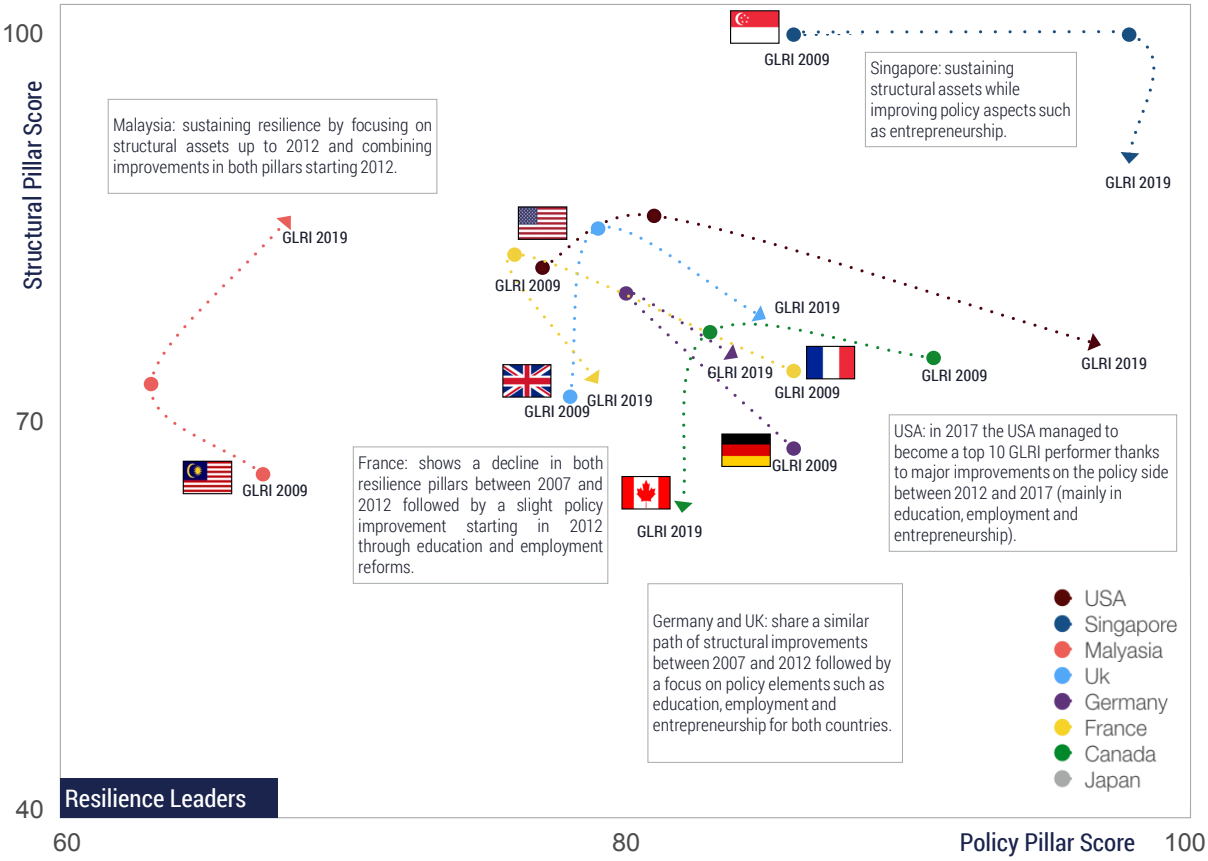
Resilience Leaders such as Singapore – which went from 6th to 1st place from 2007 to 2012 and then remained in 1st place over the next 5 years by strengthening its entrepreneurial ecosystem – underscore how a methodical approach to continuous improvement in priority policy areas can bolster and sustain labour market resilience (see Figure 19).

By contrast, more scattered approaches such as those adopted by France, which fell from 12th to 20th place from 2007 to 2012, and has remained at a similar rank since, or Portugal, which fell from 25th to 31st place over that same period, are in danger of falling out of the Resilience Leader category.

Malaysia demonstrates how middle-income resilience leaders must focus on structural improvement

While high-income top performers are already very advanced on the structural front and tend to focus on policy progress, middle-income countries like Malaysia, which have managed to reach Resilience Leader status, should concentrate their efforts on building a more complex and diversified economy. Between 2007 and 2017, the country managed to move from 55th in the structural pillar to 5th thanks to a strong focus on increasing economic complexity and economic diversification.

Figure 19. Progress of Selected Resilience Leaders Along 3 Labour Resilience Paths, GLRI 2009 – GLRI 2019



Source: Whiteshield Partners

Overall, countries appear to be converging towards greater labour market resilience

When comparing labour market resilience of countries by income group between GLRI 2009 and GLRI 2019, there appears to be a convergence in pathways that cuts across income levels: the picture of labour resilience in GLRI 2019 is more concentrated than for GLRI 2009 (see Figure 20). The progressive convergence in labour market resilience suggests that countries across income segments are increasing emulating each other along the road to workforce resilience.

As we saw in the analysis of GLRI 2019 in Chapter 1, regional blocks such as the European Union - with free movement of labour and trade, but also common guidelines on policies - also generate an emulation effect between countries that enhances the resilience of their labour markets at both the regional and individual country level.

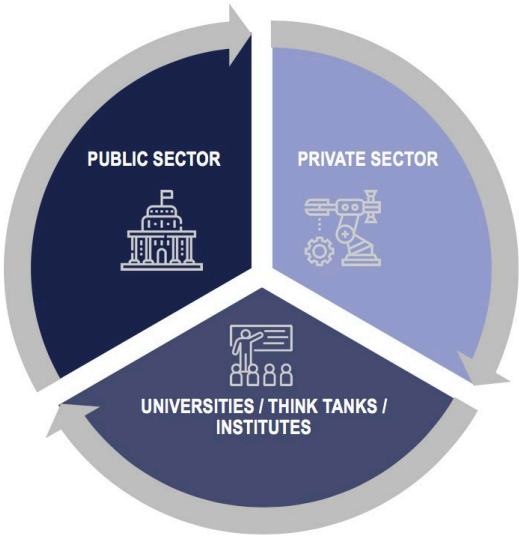
Figure 20. Labour Resilience Matrix GLRI 2009 – GLRI 2019 by Income Segment

Source: Whiteshield Partners

Action to boost the resilience of labour markets must involve a multi-stakeholder partnership approach

A labour policy is no longer solely owned by government. Action to boost labour market resilience must come from a coordinated response between different relevant stakeholders and influencers from the public, private and tertiary sector (see Figure 21).

Figure 21. Three Key Stakeholders Must Partner to Manage the Future of Work



Source: Whiteshield Partners

Greater scale and impact can be achieved in addressing the future of work by having governments, the private sector and the tertiary sector (universities / think tanks / institutes / communities) work in partnership.

Beyond the cross-cutting policy recommendations highlighted in the key findings of the report,

.

Whiteshield Partners has developed a series of case studies from governments, companies, universities, and non-profit organisations to share policy ideas and inspire further individual and collective action.

These case studies are available as a separate document on www.whiteshieldpartners.com.

APPENDICES

APPENDIX I: OVERVIEW OF GLOBAL LABOUR RESILIENCE INDEX CONCEPTUAL FRAMEWORK AND METHODOLOGY

Overview of the Global Labour Resilience Index Conceptual Framework

The Global Labour Resilience Index assesses over 123 countries and economies on the resilience of their labour markets based on a total of 10 dimensions and 66 indicators from a wide range of international sources, including some constructed by Whiteshield Partners, related to economic diversification and statistics.

Most of the GLRI indicators were selected and developed based on an extensive review of the economic literature establishing correlations with both employment and productivity.[33] GLRI indicator correlations with employment and productivity were further tested by the GLRI team of economists throughout the elaboration of the model. Some of the overall results of these tests are noted at the end of this Appendix.

Adopting a comprehensive view of drivers affecting the availability, quality and sustainability of work, the GLRI fills an important gap by expanding the definition of workforce resilience and introducing a comparative assessment of countries on the resilience of their labour markets.[34]

The GLRI framework is structured around a wide range of structural and policy dimensions that directly impact the resilience of labour markets. Some factors which have an indirect impact on labour market resilience, such as monetary policy, have not been included.

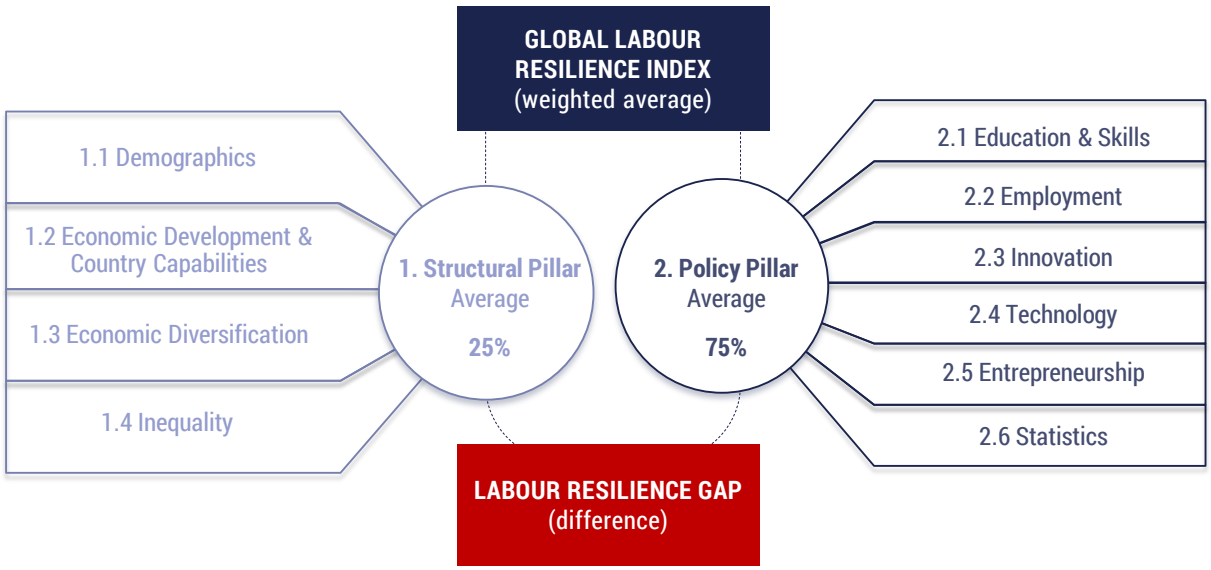
Taking into account both longer-term structural factors – such as demographics, level of economic development, economic diversification and inequality – as well as shorter-term policy factors – including education, labour policy, innovation, entrepreneurship, technology infrastructure and statistics – the GLRI gauges which countries are most at risk in generating long-term unemployment (see figure below presented in the introduction of this report).

By measuring the gap between structural and policy factors, the Index also highlights the *labour resilience gap*: countries which have the greatest potential to improve the resilience of their labour markets in the short-term.

[33] See for example Nicole Maestas, Kathleen J. Mullen, and David Powell, "The Effect of Population Aging on Economic Growth, the Labor Force and Productivity", RAND Labor & Population, USA, 2016; Grimaccia, Lima, "Public expenditure on education, education attainment and employment: a comparison among European countries", XXVIII Conference of the Italian Association of Labour Economists (AIEL) Rome, September 2013 ; Partridge, M.D. J, The relationship between inequality and labor market performance: Evidence from U.S. states, Labor Res (2006) 27: https://doi.org/10.1007/s12122-006-1007-y

[34] Traditional definitions of labour market resilience are more restrictive than the one adopted by the Global Labour Resilience Index. The OECD, for example, defines resilient labour markets as "labour markets that weather economic downturns with limited losses in worker welfare." The definition focuses on workers, but the firm perspective is also integral to the resilience of labour markets. Moreover, the disruptive role of technological evolution is not directly addressed in this definition. See "What Makes Labour Markets Resilient during Recessions," OECD Employment Outlook 2012."

Figure 22. The Global Labour Resilience Index Framework



Source: Whiteshield Partners

Four main measures are calculated within the GLRI:

Structural pillar score: 4 sub-pillars (demographics, economic development and capabilities, economic diversification and inequality) capture the fundamental characteristics of a country and its economy which impact employment and the resilience of labour markets in the long-term (> 5 years). The structural pillar score is a simple average of the 4 sub-pillar scores involving 7 indicators.

The policy pillar score: 6 sub-pillars (education and skills, employment, innovation, technology, entrepreneurship and statistics) capture key policy areas that impact employment and the resilience of labour markets in the short-term (< 5 years). Each policy sub-pillar (with the exception of the statistics sub-pillar) combines both policy inputs and policy outputs that can be influenced by government action. The statistics sub-pillar highlights the completeness of a country's data set related to labour market resilience– a vital component in being able to make fact-based policy decisions. The policy pillar score is a simple average of the 6 sub-pillar scores covering 66 individual indicators.

The overall GLRI score: a weighted average of the structural pillar (25%) and policy pillar (75%). The policy pillar is given a greater weight to take into account the larger number of indicators associated with this pillar and its greater sensitivity to policy action.

The Labour Resilience Gap: measures the difference in scores between the structural pillar and the policy pillar. It shows the potential of a country to improve its labour market resilience through active policy intervention.

The GLRI structural pillar

The first pillar of the GLRI has 4 sub-pillars: demographics, economic development and capabilities, economic diversification and inequality. These sub-pillars represent the economic foundations and fundamental characteristics of a country that impact employment and resilience of labour markets. They can only be fundamentally altered by policy action in the longer-term (10+ years).

Sub-pillar 1.1: Demographics

This sub-pillar aims at assessing the impact of demographic dynamics of a country on the resilience of its labour market. The demographic sub-pillar mainly captures the impact of population age structures on labour resilience. Age structure as well as long-term demographic trends can have a major impact on the availability of adequate labour supply by affecting both labour force participation and the skills of employees, including their adaptability to new technologies. Population aging can lead to a decrease in labour force participation, causing potential bottlenecks in labour supply. It can also be associated with growing skill gaps, with older generations being less familiar and less trained for technological disruptions. Age structure is an important matter to take into consideration not only to assess the level of labour resilience but also to design the right policies, especially education and labour market related policies.

Sub-pillar 1.2: Economic Development and Capabilities

This sub-pillar captures the impact of the fundamental characteristics of an economy on its labour market resilience. The level of economic development determines the resilience of an economy, which in turn is a major factor of labour resilience. Three types of variables are included in this sub-pillar: variables measuring the level of wealth, variables reflecting the level of sophistication of an economy and variables assessing the focus on services in the economy. Richer and more complex economies with big share of services in GDP are often more resilient to external shocks. They have the resources and abilities to develop and adopt new technologies, to benefit from the process of creative destruction and to exploit the new opportunities created by technological disruptions rather than be passive victims of their effects.

Economies with a higher share of services also are able to capture the positive impact of technological disruption on job creation that occurs mainly in the services sector and avoid the worst effects of technologically driven de-industrialization.

Sub-pillar 1.3: Economic Diversification

The extent of economic diversification affects both the economy and labour market resilience. A highly diversified economy with a diversified labour structure is less affected by cyclical changes, de-industrialization trends and external shocks in general. The economic diversification sub-pillar captures positive impact through variables measuring the level of GDP value added concentration and concentration of exports. These variables are negatively scaled because the concentration is the opposite of diversification.

Sub-pillar 1.4: Inequality

The inequality sub-pillar measures the negative impact of disparities of income on labour resilience both at a personal income and at a regional level. Highly unequal labour markets tend to have higher shares of precarious, low-paid, low-skilled jobs that are susceptible to technological progress and other external shocks. Regional disparities also reduce labour resilience by negatively impacting the labour supply and matching process as well as the mobility of workers.

The GLRI policy pillar

The second pillar of the GLRI has 6 sub-pillars: education and skills, employment, innovation, technology, entrepreneurship and statistics. Five of them represent areas of a country's policy framework impacting labour resilience while the last is focused on measuring results. Education and employment policies directly impact the inherent resilience of labour. Innovation and technology affect the general resilience of an economy and thus of the jobs generated by this economy.

Entrepreneurship reflects the attractiveness of the business environment of a country and thus its capacity to create new jobs.

Statistics characterize the level of country's openness to evaluation and the degree of evidence-based policy making. This, in turn, affects the flexibility of workforce management and ability to adjust to labour disruption.

Sub-pillar 2.1: Education and Skills

Human capital is a major driver of labour resilience starting from early childhood. Higher education is linked with higher employability, employees with higher education are 2 to 3 times less threatened by unemployment compared to low educated employees.[35]

In the specific context of technological disruption, higher education is a driver of labour market resilience since highly educated employees benefit from advanced skills, reducing the risk of losing their job to automation: they are more likely to have their jobs complemented rather than replaced by new technologies. Higher education also increases the job mobility of workers and their adaptability. It facilitates the job reconversion process if needed.

Poor educational systems can exacerbate skill gaps and low productivity levels in the labour market, reducing its resilience. This sub-pillar includes both input and output policy variables. Input policy indicators relate mainly to spending on education, schooling and corporate training; output policy indicators reflect educational attainment, educational quality, digital skills and vocational education.

Sub-pillar 2.2: Employment

The employment sub-pillar covers labour market policies ranging from employment protection to active labour market policies, the tax wedge, hiring and firing legislation.

The labour policy framework is a driver of labour resilience considering its impact on job creation incentives and on the flexibility of the labour market, especially in times of economic downturn. Active labour market policies determine the efficiency of the job search process as well as professional reconversions. Output employment indicators measure a variety of variables representing direct determinants of labour resilience: gender balance, level of talent and skills of employees, job quality as well labour productivity and the effectiveness of labour support mechanisms.

Sub-pillar 2.3: Innovation

The innovation sub-pillar aims to measure policy inputs encouraging and enhancing innovation in an economy as well as outputs reflecting the level of innovation. Innovation increases the level of competitiveness and productivity driving the resilience of an economy and its labour market. Although innovation can also lead to job destruction, this is compensated for by labour-friendly product innovations and the economic growth induced by the productivity and competitiveness gains in innovative economies.

Policy inputs include spending on research and development and intellectual property legislation. Innovation outputs measure the level of innovation through trademark and patent applications, an overall evaluation of the innovation environment as well as an estimation of the share of innovation in trade.

[35] See, for example, "The High/Scope Perry Preschool Study Through Age 40," by Lawrence J. Schweinhart, Jeanne Montie, Zongping Xiang, W. Steven Barnett, Clive R. Belfield, & Milagros Nores, 2005.

Sub-pillar 2.4: Technology

This sub-pillar assesses the level of exposure of a country to technology by measuring both the population's access to ICT and the degree of adoption of technology in the economy, evaluating technology infrastructure and the extent of technology exports. Technology-enabled employees are more resilient since they have a greater adaptability to technology-driven disruptions in the workplace. Technology-intensive sectors are in general economically more resilient because they drive competitiveness and help create more resilient jobs.

Sub-pillar 2.5: Entrepreneurship

The business regulation framework is a major determinant of business creation and thus job creation in an economy. The entrepreneurship sub-pillar measures the quality of the business environment in supporting entrepreneurship - an important driver of workforce resilience and job creation, namely in a context of technological disruption that is expanding the pool of the self-employed relative to the overall workforce. The sub-pillar includes indicators assessing the ease of starting a business, entrepreneurship activity (including the Global Entrepreneurship Index) and access to finance.

Sub-pillar 2.6: Statistics

The completeness of the available GLRI data on the country (65 indicators outside of the statistics indicator) also affects the quality of the country's GLRI ranking. It is indicative of the extent to which the country's policies are evidence-based. The higher the proportion of GLRI indicators out of a total of 65, the more reliable the value of the country's GLRI rank, and the higher the country scores on this dimension.

The GLRI 2019 data

Data collection: the GLRI model includes 66 individual indicators, 7 are included in the structural pillar and 59 in the policy pillar. These indicators were selected after careful consideration of the econometric impact on labour resilience and evidence from the relevant academic literature. A detailed rationale is provided for each indicator.

Hard data: include 45 individual variables drawn from a set of reliable publicly available sources such as the World Bank, the UNESCO institute for statistics, the OECD, Eurostat, the International Labour Organization and World Intellectual Property Organization, etc.

Composite indicators, indices: includes 7 indicators: The Global Entrepreneurship index, the Logistics Performance Index, IPR Score, PIAAC, H Index, PISA, ECI. Only widely recognized indices are included after careful consideration of their methodology and all the variables they measure to avoid data bias and redundancy.

Qualitative surveys: 14 survey results are included, mainly from the World Economic Forum, measuring variables for which hard data are not available.

Data coverage and missing data: the GLRI covers 123 countries and economies. Individual indicators use the latest available data.

Missing data are referred to as: "n/a". For transparency and unbiased data purposes, the GLRI does not try to fill in missing data. Instead, a statistical indicator ranging from 1 to 100 has been added to the GLRI as a policy sub-pillar to measure the availability of data for each country.

Countries for which data are available in 66 indicators of the GLRI have a statistical indicator score of 100 (no country has available data for all 65 indicators, excluding the statistics indicator). This indicator accounts for the positive impact of data availability. Availability of data allows a better assessment of the situation of an economy and thus the adoption of adequate policy actions. The ability to measure progress, based off an accurate assessment of the

initial baseline, is also critical in improving performance over time.

Note that, outside of the statistics indicator, a country is not negatively penalized if it is missing a specific indicator.

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Calculation methodology of the GLRI

Data comparability, scaling and thresholds:

To create uniform, comparable measures across indicators, the index is scaled as follows. Indicators, sub-pillars, pillars and the overall index which have *positive* impact on labour resilience are scaled according to this formula:

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Box 1. GLRI is Calculated Using the Weighted Average Approach

For each country the Global Labour Resilience Index is a weighted average of the two pillar components included in it:

$$GLRI = 0.25 * SI_p + 0.75 * SI_s$$

where
- SI_s- the value of structural pillar
- SI_p– the value of policy pillar

Each pillar is a simple average of all sub-pillars included in it:

$$SI_t = \frac{1}{n_t}\sum_{j=1}^{n_t} SubPillar_{jt}$$

where
- $SubPillar_{tj}$- the value of sub-pillar j included to pillar t, t=p,s
- n_{ti}- the number of sub-pillars included to pillar t

In the structural pillar each sub-pillar is a simple average of all indicators included in it.

$$SubPillar_j = \frac{1}{n_j}\sum_{m=1}^{n_j} Ind_{mj}$$

where
- Ind_{mj} - the value of indicator *m* included in sub-pillar *j*
- n_j– the number of indicators included in sub-pillar *j*

In the policy pillar each sub-pillar is a simple average of the corresponding sub-pillar input and sub-pillar output, which are simple average of all categories included in them:

$$SubPillar_i = 1/2*(SubPillar_{input\ i}+SubPillar_{output\ i})$$

$$SubPillar_{p\,i} = \frac{1}{n_{pi}}\sum_{j=1}^{n_{pi}} Category_{pij}$$

where
- $Category_{pij}$ - the value of category j included in input sub-pillar i or output sub-pillar i (input and output are identified by the index p, p="input" or "output")
- n_{pi} – the number of categories included in sub-pillar pi

Each category is a simple mean of all indicators included in it:

$$Category_j = \frac{1}{n_j}\sum_{m=1}^{n_j} Ind_{mj}$$

where
- Ind_{mj} - the value of indicator *m* included in category *j*
- n_j– the number of indicators included in category *j*

Note that indicators can be included to the categories with a positive or negative sign depending on the direction of their impact.

$99 \times \frac{X_i - \min(x)}{\max(x) - \min(x)} + 1$; where X_i is the value of the indicator, category, sub-pillar or pillar in the *i* country.

Indicators, sub-pillars and pillars, which have a negative impact on labour resilience are scaled according to this formula:

$$100 - 99 \times \frac{X_i - \min(x)}{\max(x) - \min(x)}$$

In the case of the indicator of ICT goods exports and imports, top ranked countries' scores can be so much higher than lower ranked countries that they have a disproportionate impact on index ranking. To smooth differences between the top countries and the rest, a 95% threshold has been set.

Global Labour Resilience Index 2019 versus Unemployment and Productivity

GLRI vs Unemployment

The link between the GLRI and unemployment is an important measure. Correlation between unemployment and the GLRI score is both a validation of the GLRI and an indicator of future potential disruption. A low score in the GLRI is indicative of the risk of higher unemployment, both at present and in the near future. The correlations between GLRI 2019 and unemployment rates are broken by different country segments in the table below.

Table 6. Correlation Between GLRI 2019 and Unemployment Rate

Correlations	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
OECD	-0.41	-0.46	-0.41	-0.38	-0.44	-0.47	-0.51	-0.46	-0.49	-0.51	-0.52
BRICS	-0.39	-0.01	-0.15	-0.40	-0.58	-0.70	-0.67	-0.65	-0.66	-0.70	-0.68
EU	-0.32	-0.31	-0.34	-0.43	-0.54	-0.59	-0.58	-0.51	-0.50	-0.48	-0.44
Least developed	0.14	0.01	0.24	-0.22	-0.08	0.12	-0.10	-0.25	-0.17	-0.11	-0.23
NATO	-0.60	-0.61	-0.55	-0.56	-0.64	-0.66	-0.66	-0.64	-0.65	-0.64	-0.62
OPEC	-0.73	-0.65	-0.50	-0.47	-0.40	-0.43	-0.53	-0.60	-0.49	-0.61	-0.66
Overall	-0.23	-0.21	-0.07	-0.04	-0.06	-0.01	-0.03	-0.07	-0.10	-0.16	-0.19

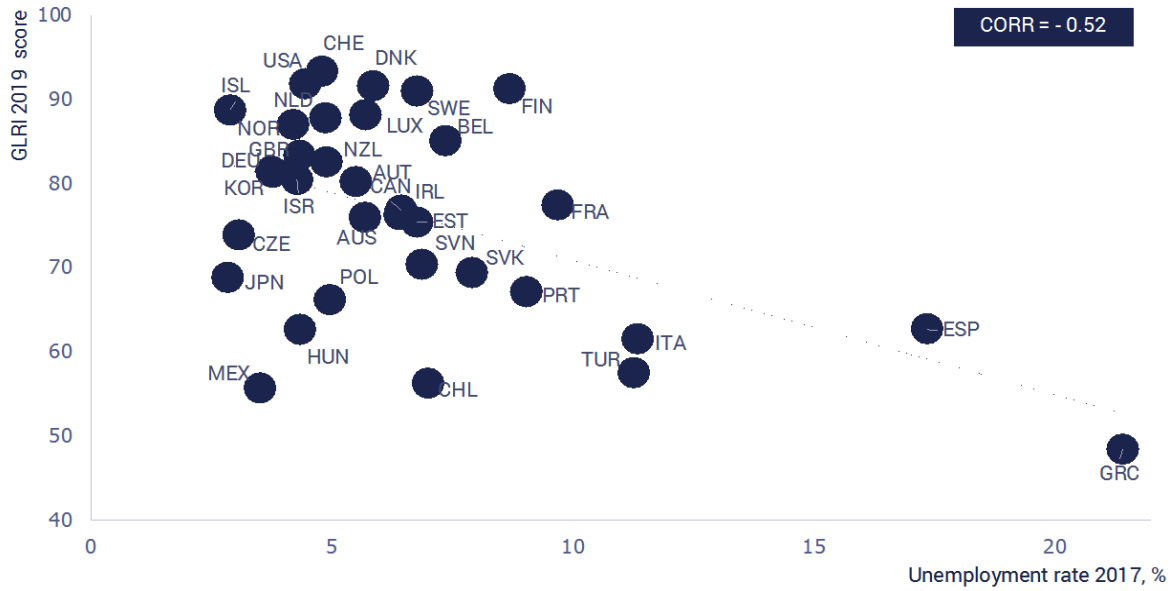
Source: Whiteshield Partners

As can be seen from the Table 6 and Figure 23, for most groups of countries this correlation is strong and negative: in 2017 it is strongest for the BRICS (-0.68), NATO (-0.62) and OPEC (-0.66) groups; it is slightly weaker, but still strong for OECD (-0.52) and EU (-0.44) groups. These correlation for most of the country segments have also been strengthening over time, which is an indicator of the increasing relevance of the GLRI.

Correlation between the GLRI and unemployment in less developed economies and at the global level is weaker, however. One of the main reasons appears to be the limited data availability in many developing countries, which can have as little as one third of the 66 indicators.

Other factors may also be influencing the resilience of the workforce. These include wars, ethnic differences and poor accounting of unemployment. Nevertheless, as can be seen from the table, even for this group, the significance of the correlation has increased recently.

Figure 23 Country Global Labour Resilience Index 2019 vs Unemployment Rate 2017 for OECD Countries



Source: Whiteshield Partners

GLRI vs Productivity

The GLRI also underscores the preparedness of the labour market to cope with technological progress. Since technological progress usually leads directly to an increase in labour productivity, it is expected, that the GLRI would be positively and significantly correlated with labour productivity. This strong correlation can be seen in Table 7 for the entire set of countries as well as for most of the different groupings of countries used for analysis. In addition, as in the case of unemployment, this correlation has improved over time for most groups of countries.

However, this strong correlation does not hold for either the least developed group of countries or for the BRICS countries. In the case of the least developed group of countries, the reasons for this poor correlation are likely similar to the reasons cited for the lack of correlation with unemployment cited above. This may also be true for the BRICs countries.

Table 7. Correlation Between GLRI Sub-Pillars and Labour Productivity

Correlations	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
OECD	0.33	0.32	0.39	0.47	0.47	0.47	0.46	0.52	0.41	0.41	0.49
BRICS	0.06	0.75	0.18	-0.07	-0.36	-0.41	-0.43	-0.40	-0.35	-0.24	-0.32
EU	0.44	0.42	0.49	0.54	0.54	0.50	0.49	0.54	0.47	0.47	0.54
Least developed	-0.57	-0.56	-0.51	-0.04	-0.21	-0.31	-0.09	0.00	-0.10	0.07	0.04
NATO	0.50	0.49	0.54	0.59	0.59	0.59	0.59	0.63	0.56	0.57	0.64
OPEC	0.72	0.59	0.36	0.61	0.67	0.59	0.61	0.57	0.68	0.68	0.51
Overall	0.49	0.50	0.53	0.63	0.63	0.61	0.63	0.66	0.68	0.67	0.70

Source: Whiteshield Partners

APPENDIX II: GLRI 2019 COUNTRY PROFILES

Albania

Global Labour Resilience Index 2019

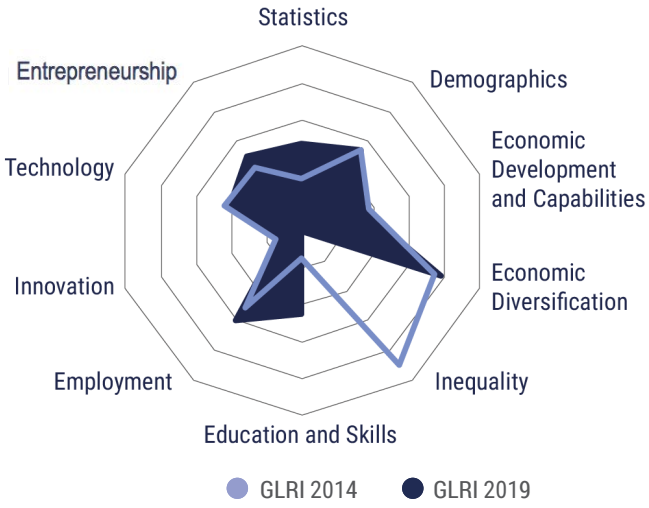
83

GLRI 2014 Rank 79 ↓

Key Indicators [1]

Population, mn	2.9
GDP per capita, PPP	11803
GDP, current US$ bn	13
Income Group	Upper middle-income
Region	Europe

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Note: the score of the inequality sub-pillar for GLRI 2019 is equal to 0 due to the lack of data for the corresponding indicators in 2019.

Algeria

Global Labour Resilience Index 2019

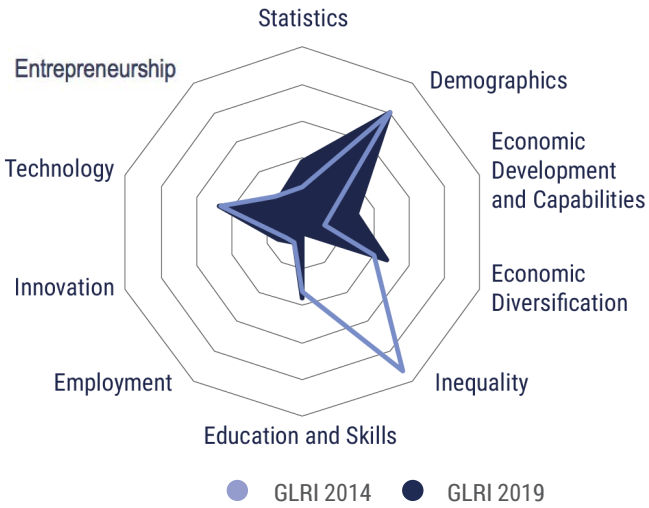
114

GLRI 2014 Rank 115 ↑

Key Indicators

Population, mn	41.3
GDP per capita, PPP	13914
GDP, current US$ bn	170
Income Group	Upper middle-income
Region	Middle East & North Africa

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Note: the score of the inequality sub-pillar for GLRI 2019 is equal to 0 due to the lack of data for the corresponding indicators.

[1] Data for GDP and GDP per capita are based on the latest World Bank Development Indicators 2018. GDP PPP is in constant 2011 international dollars. Different country income groups are classified according to World Bank Atlas method: low-income, $995 or less; lower middle-income, $996–3,895; upper middle-income, $3,896–12,055; and high-income, $12,056 or more.

Argentina

Global Labour Resilience Index 2019

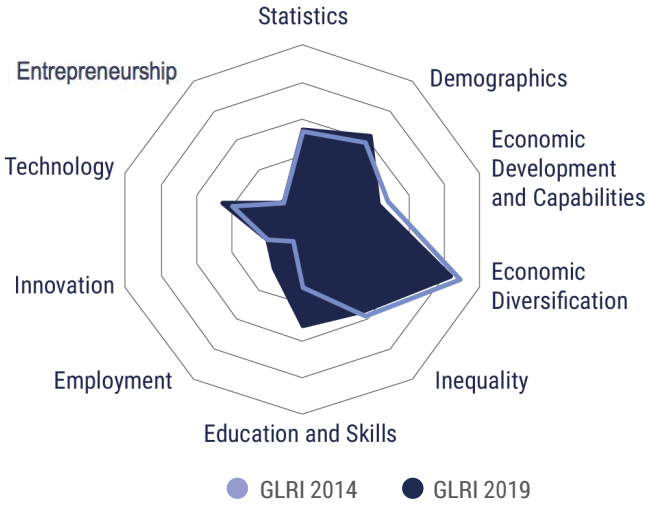
97

GLRI 2014 Rank 95 ↓

Key Indicators

Population, mn	44.3
GDP per capita, PPP	18934
GDP, current US$ bn	638
Income Group	High-income
Region	Latin America & Caribbean

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Armenia

Global Labour Resilience Index 2019

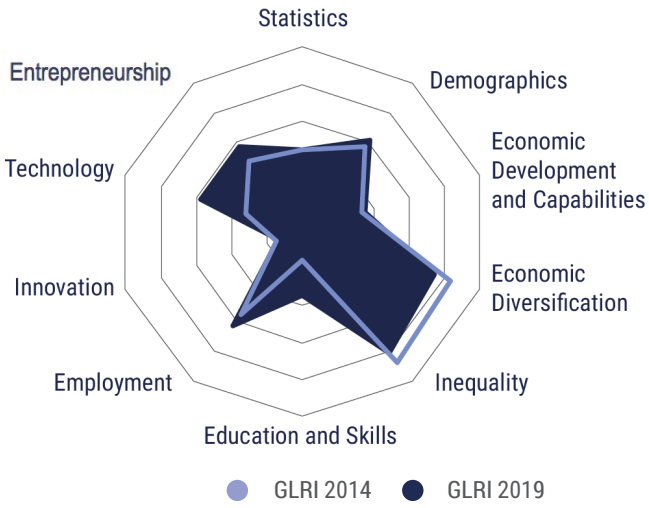
66

GLRI 2014 Rank 73 ↑

Key Indicators

Population, mn	2.9
GDP per capita, PPP	8788
GDP, current US$ bn	12
Income Group	Upper middle-income
Region	Central & Southern Asia

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Australia

Global Labour Resilience Index 2019

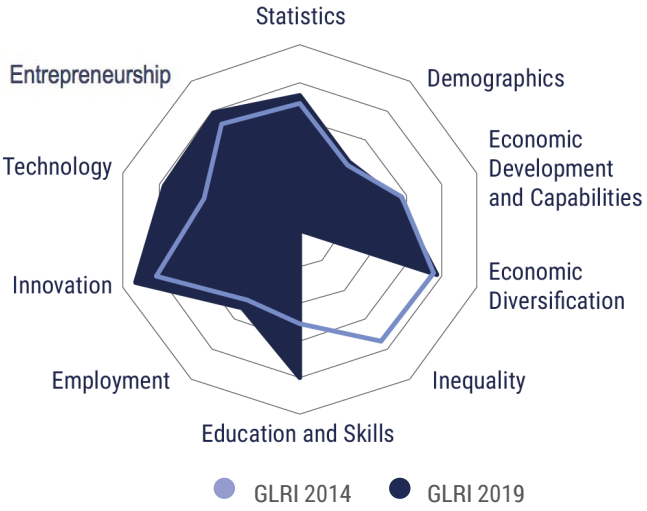
22

GLRI 2014 Rank 24 ↑

Key Indicators

Population, mn	24.6
GDP per capita, PPP	44649
GDP, current US$ bn	1323
Income Group	High-income
Region	East Asia & Pacific

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Note: the score of the inequality sub-pillar for GLRI 2019 is equal to 0 due to the lack of data for the corresponding indicators.

Austria

Global Labour Resilience Index 2019

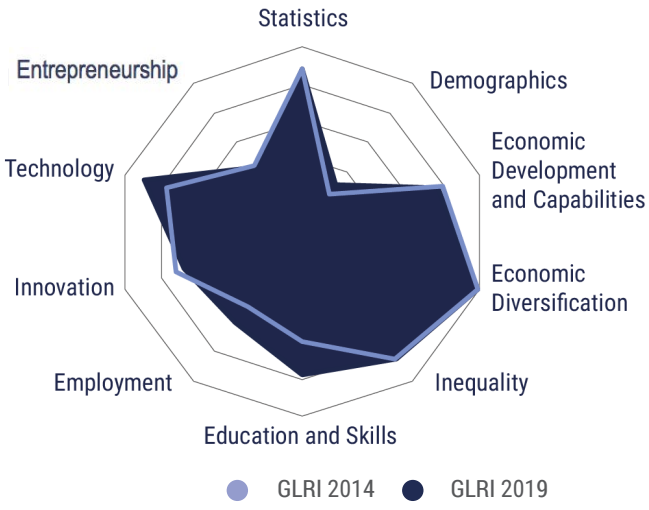
17

GLRI 2014 Rank 15 ↓

Key Indicators

Population, mn	8.8
GDP per capita, PPP	45437
GDP, current US$ bn	417
Income Group	High-income
Region	Europe

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Azerbaijan

Global Labour Resilience Index 2019

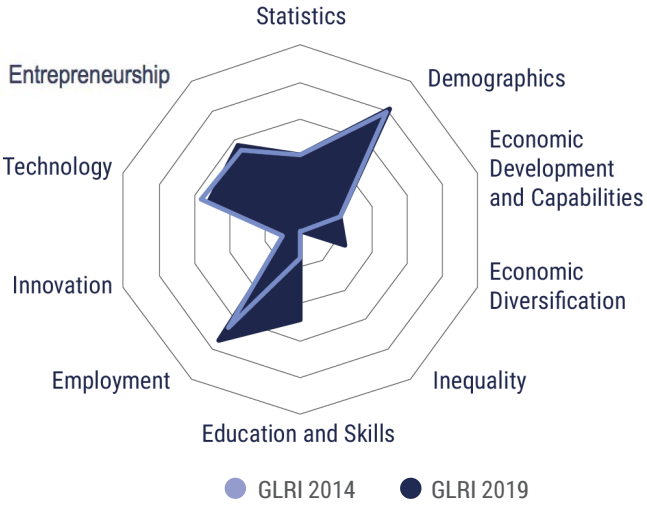
98

GLRI 2014 Rank 103 ↑

Key Indicators

Population, mn	9.9
GDP per capita, PPP	15847
GDP, current US$ bn	41
Income Group	Upper middle-income
Region	Central & Southern Asia

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Note: the score of the inequality sub-pillar for GLRI 2014 and GLRI 2019 is equal to 0 due to the lack of data for the corresponding indicators.

Bahrain

Global Labour Resilience Index 2019

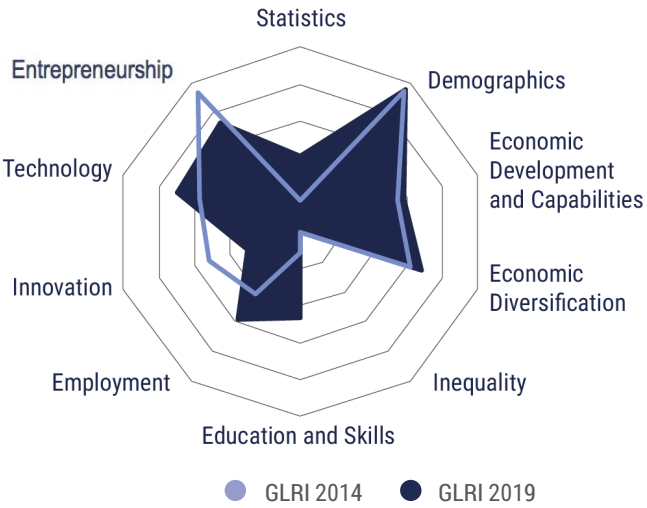
35

GLRI 2014 Rank 42 ↑

Key Indicators

Population, mn	1.5
GDP per capita, PPP	43291
GDP, current US$ bn	35
Income Group	High-income
Region	Middle East & North Africa

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Note: the score of the inequality sub-pillar for GLRI 2014 and GLRI 2019 is equal to 0 due to the lack of data for the corresponding indicators.

Bangladesh

Global Labour Resilience Index 2019

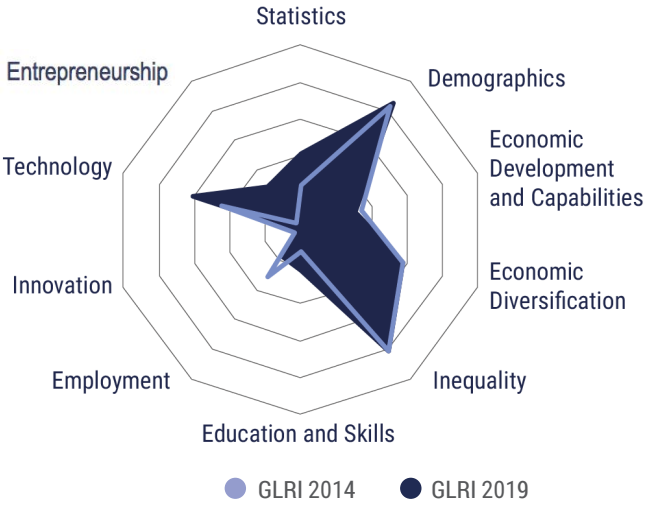
102

GLRI 2014 Rank 116 ↑

Key Indicators

Population, mn	164.7
GDP per capita, PPP	3524
GDP, current US$ bn	250
Income Group	Lower middle-income
Region	Central & Southern Asia

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Belgium

Global Labour Resilience Index 2019

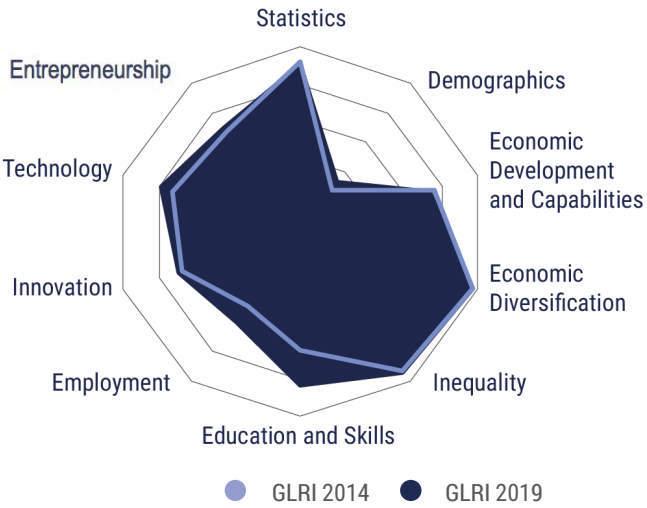
11

GLRI 2014 Rank 8 ↓

Key Indicators

Population, mn	11.4
GDP per capita, PPP	42659
GDP, current US$ bn	493
Income Group	High-income
Region	Europe

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Benin

Global Labour Resilience Index 2019

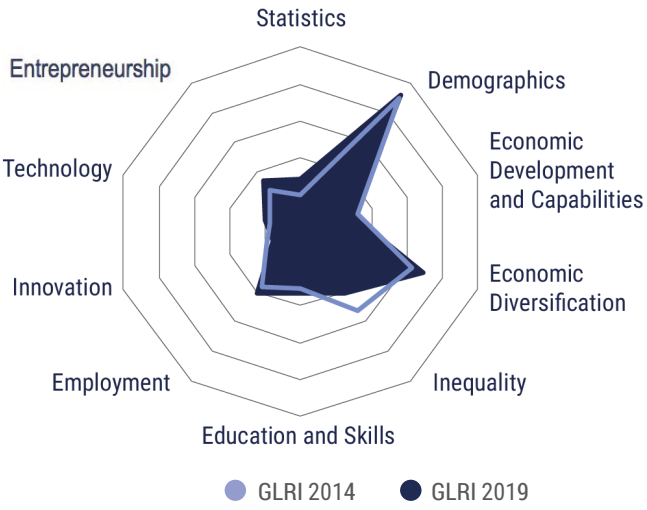
107

GLRI 2014 Rank 110 ↑

Key Indicators

Population, mn	11.2
GDP per capita, PPP	2064
GDP, current US$ bn	9
Income Group	Low-income
Region	Sub-Saharan Africa

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Bolivia

Global Labour Resilience Index 2019

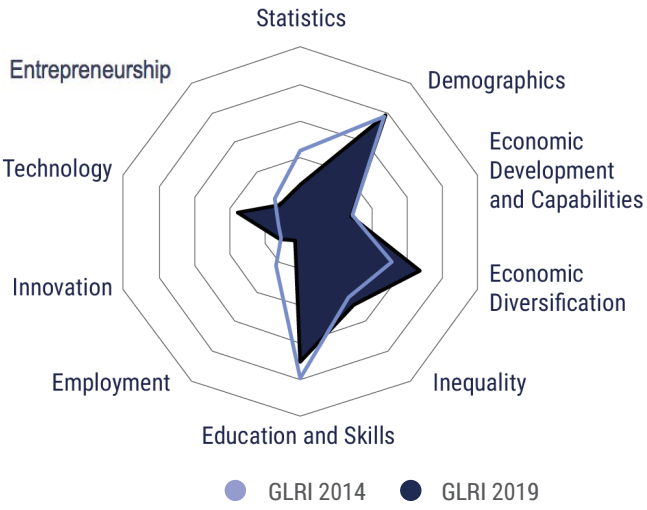
111

GLRI 2014 Rank 102 ↓

Key Indicators

Population, mn	11.1
GDP per capita, PPP	6886
GDP, current US$ bn	38
Income Group	Lower middle-income
Region	Latin America & Caribbean

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Bosnia and Herzegovina

Global Labour Resilience Index 2019

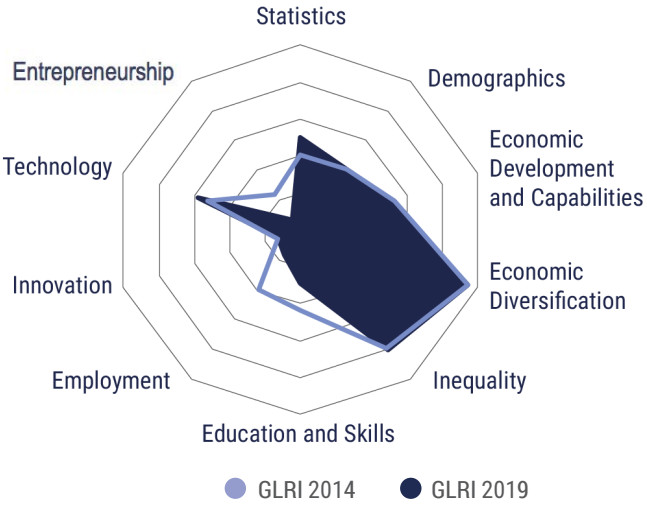
100

GLRI 2014 Rank 67 ↓

Key Indicators

Population, mn	3.5
GDP per capita, PPP	11714
GDP, current US$ bn	18
Income Group	Upper middle-income
Region	Europe

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Botswana

Global Labour Resilience Index 2019

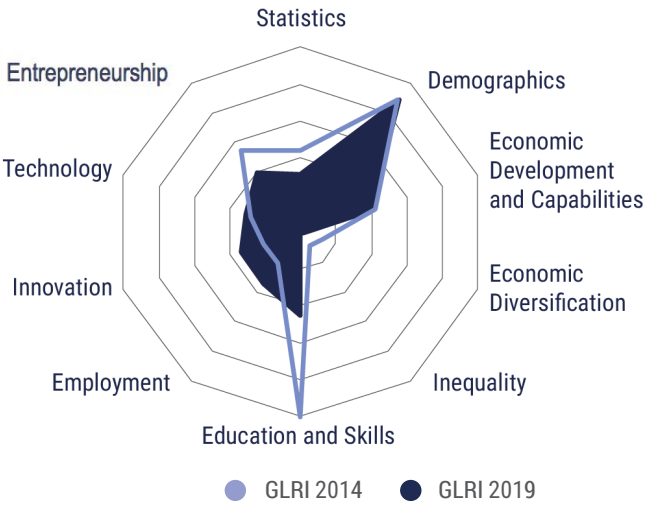
110

GLRI 2014 Rank 82 ↓

Key Indicators

Population, mn	2.3
GDP per capita, PPP	15807
GDP, current US$ bn	17
Income Group	Upper middle-income
Region	Sub-Saharan Africa

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Note: the score of the inequality sub-pillar for GLRI 2019 is equal to 0 due to the lack of data for the corresponding indicators.

Brazil

Global Labour Resilience Index 2019

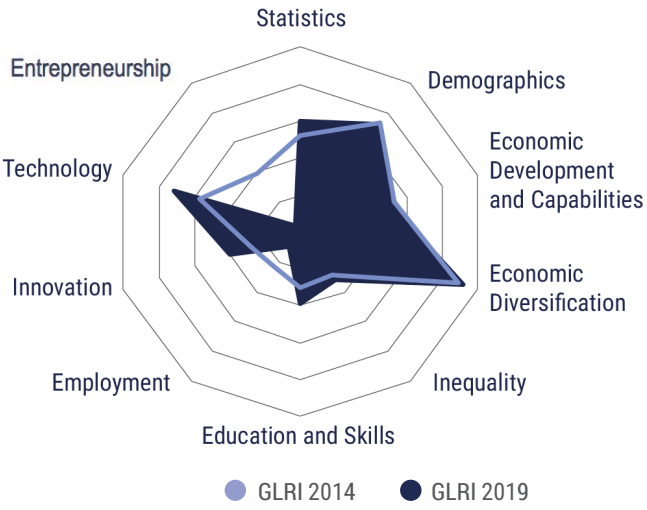
88

GLRI 2014 Rank 69

Key Indicators

Population, mn	209.3
GDP per capita, PPP	14103
GDP, current US$ bn	2056
Income Group	Upper middle-income
Region	Latin America & Caribbean

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Brunei Darussalam

Global Labour Resilience Index 2019

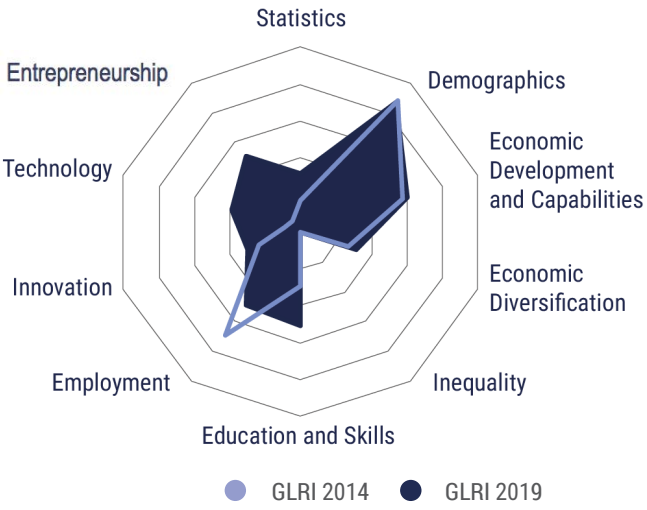
80

GLRI 2014 Rank 112

Key Indicators

Population, mn	0.4
GDP per capita, PPP	71809
GDP, current US$ bn	12
Income Group	High-income
Region	East Asia & Pacific

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Note: the score of the inequality sub-pillar for GLRI 2014 and GLRI 2019 is equal to 0 due to the lack of data for the corresponding indicators.

Bulgaria

Global Labour Resilience Index 2019

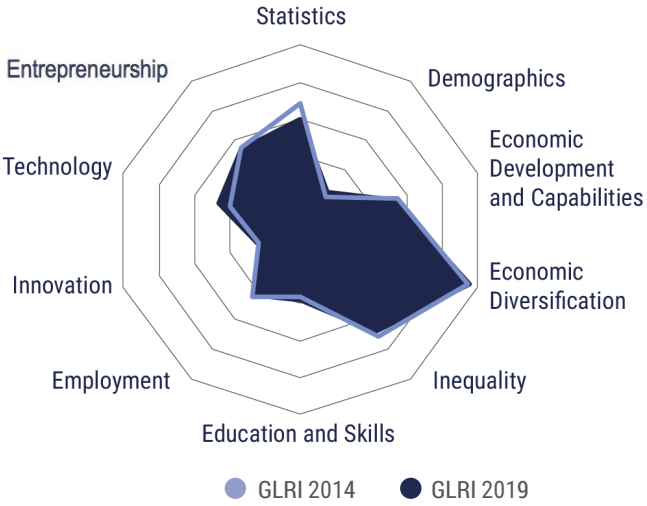
70

GLRI 2014 Rank 51

Key Indicators

Population, mn	7.1
GDP per capita, PPP	18563
GDP, current US$ bn	57
Income Group	Upper middle-income
Region	Europe

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Burkina Faso

Global Labour Resilience Index 2019

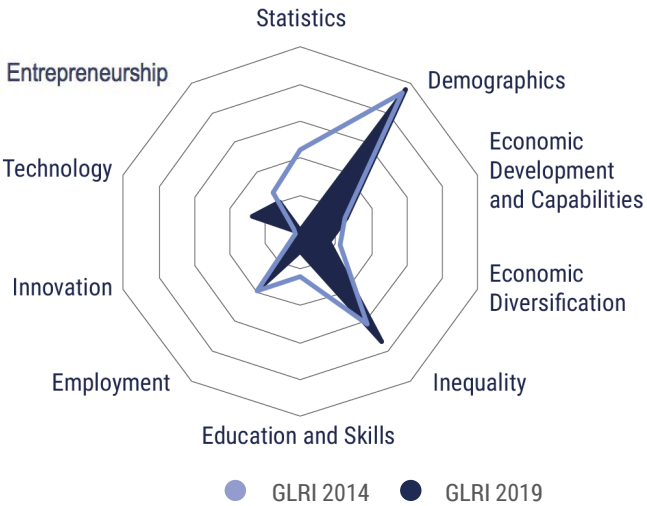
121

GLRI 2014 Rank 118

Key Indicators

Population, mn	19.2
GDP per capita, PPP	1703
GDP, current US$ bn	13
Income Group	Low-income
Region	Sub-Saharan Africa

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Burundi

Global Labour Resilience Index 2019

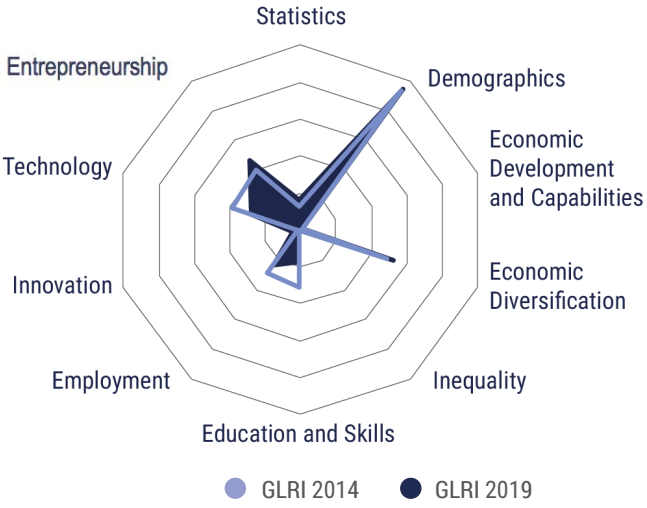
120

GLRI 2014 Rank 117

Key Indicators

Population, mn	10.9
GDP per capita, PPP	702
GDP, current US$ bn	3
Income Group	Low-income
Region	Sub-Saharan Africa

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Cambodia

Global Labour Resilience Index 2019

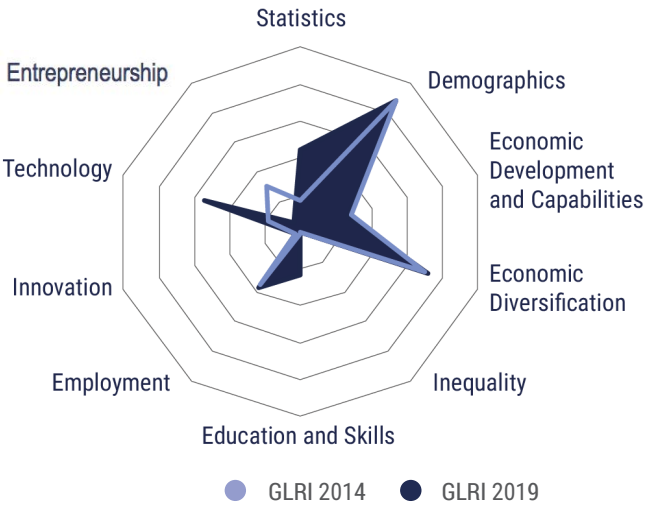
105

GLRI 2014 Rank 119

Key Indicators

Population, mn	16.0
GDP per capita, PPP	3645
GDP, current US$ bn	22
Income Group	Lower middle-income
Region	East Asia & Pacific

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Note: the score of the inequality sub-pillar for GLRI 2014 and GLRI 2019 is equal to 0 due to the lack of data for the corresponding indicators.

Cameroon

Global Labour Resilience Index 2019

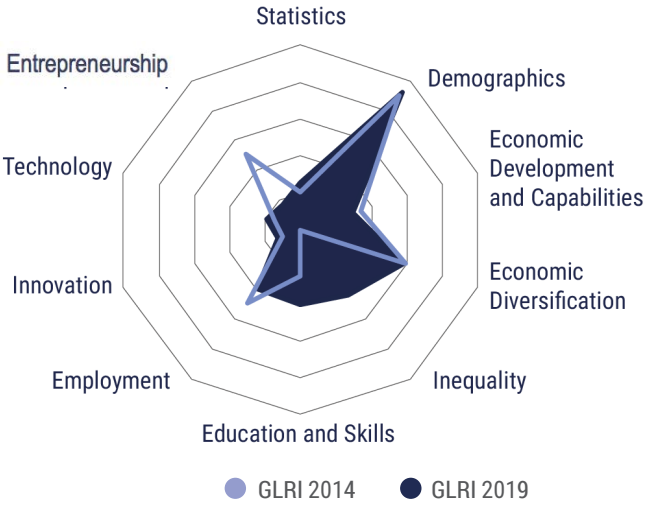
113

GLRI 2014 Rank 97

Key Indicators

Population, mn	24.1
GDP per capita, PPP	3365
GDP, current US$ bn	35
Income Group	Lower middle-income
Region	Sub-Saharan Africa

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Note: the score of the inequality sub-pillar for GLRI 2014 is equal to 0 due to the lack of data for the corresponding indicators.

Canada

Global Labour Resilience Index 2019

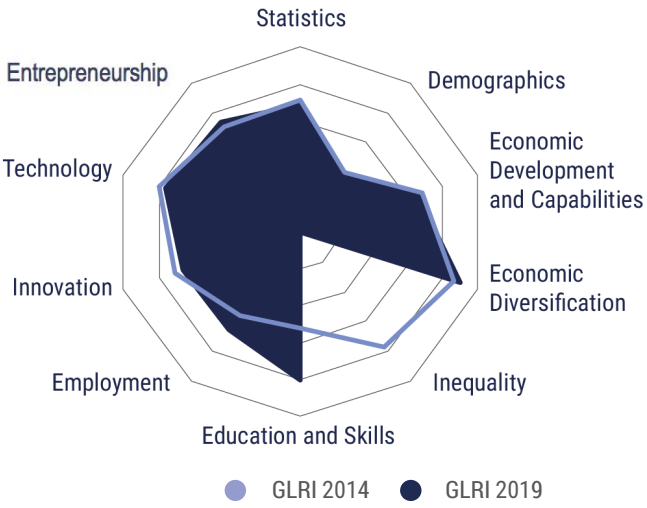
19

GLRI 2014 Rank 13

Key Indicators

Population, mn	36.7
GDP per capita, PPP	44018
GDP, current US$ bn	1653
Income Group	High-income
Region	North America

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Note: the score of the inequality sub-pillar for GLRI 2019 is equal to 0 due to the lack of data for the corresponding indicators.

Chile

Global Labour Resilience Index 2019

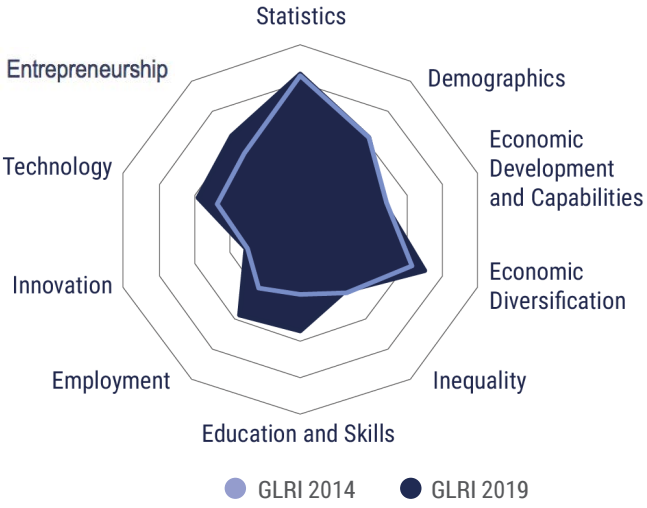
46

GLRI 2014 Rank 52 ↑

Key Indicators

Population, mn	18.1
GDP per capita, PPP	22767
GDP, current US$ bn	277
Income Group	High-income
Region	Latin America & Caribbean

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



China

Global Labour Resilience Index 2019

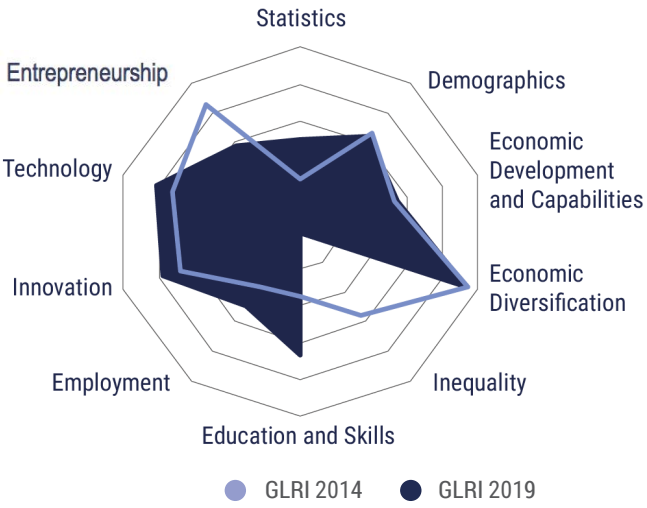
27

GLRI 2014 Rank 29 ↑

Key Indicators

Population, mn	1 386.4
GDP per capita, PPP	15309
GDP, current US$ bn	12238
Income Group	Upper middle-income
Region	East Asia & Pacific

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Note: the score of the inequality sub-pillar for GLRI 2019 is equal to 0 due to the lack of data for the corresponding indicators.

Colombia

Global Labour Resilience Index 2019

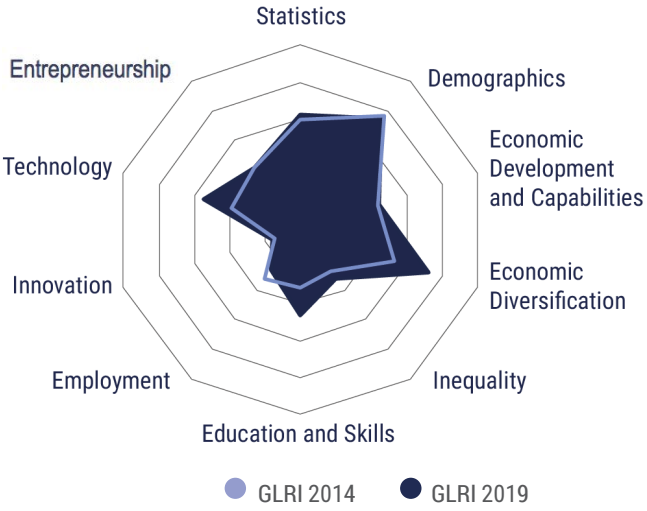
87

GLRI 2014 Rank 86 ↓

Key Indicators

Population, mn	49.1
GDP per capita, PPP	13255
GDP, current US$ bn	309
Income Group	Upper middle-income
Region	Latin America & Caribbean

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Costa Rica

Global Labour Resilience Index 2019

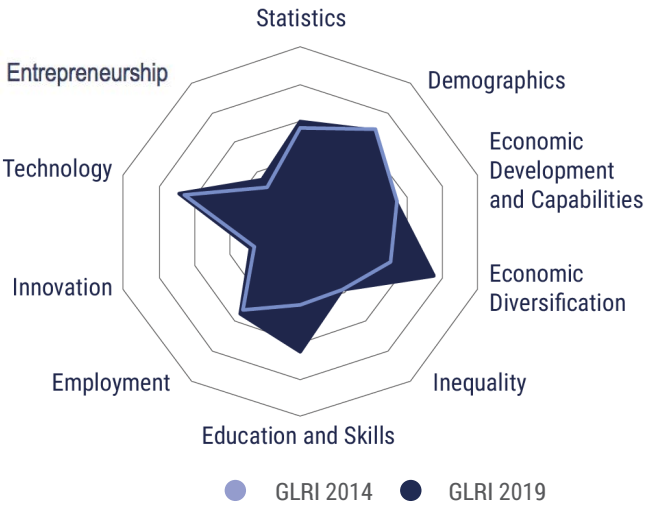
56

GLRI 2014 Rank 59 ↑

Key Indicators

Population, mn	4.9
GDP per capita, PPP	15525
GDP, current US$ bn	57
Income Group	Upper middle-income
Region	Latin America & Caribbean

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Cote d'Ivoire

Global Labour Resilience Index 2019

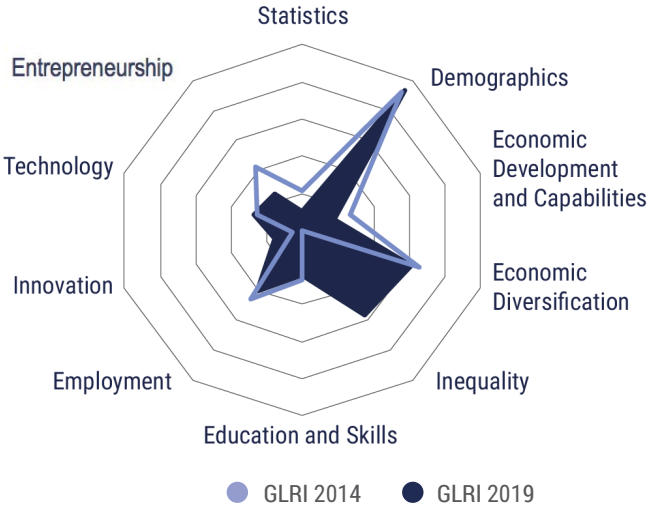
115

GLRI 2014 Rank 99

Key Indicators

Population, mn	24.3
GDP per capita, PPP	3601
GDP, current US$ bn	40
Income Group	Upper middle-income
Region	Sub-Saharan Africa

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Note: the score of the inequality sub-pillar for GLRI 2014 is equal to 0 due to the lack of data for the corresponding indicators.

Croatia

Global Labour Resilience Index 2019

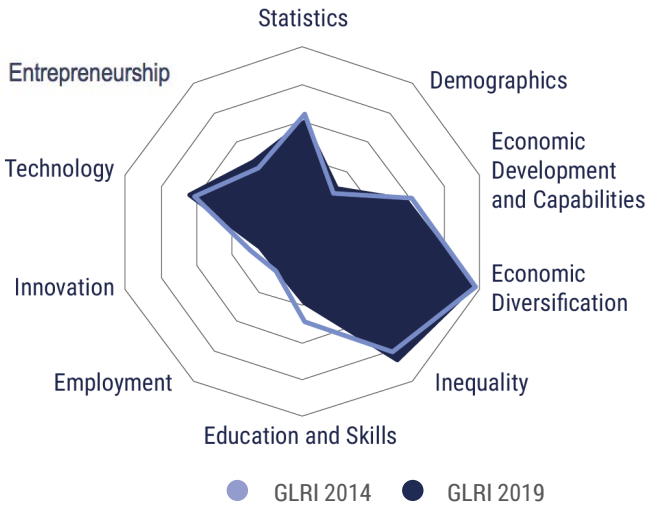
63

GLRI 2014 Rank 44

Key Indicators

Population, mn	4.1
GDP per capita, PPP	22670
GDP, current US$ bn	55
Income Group	High-income
Region	Europe

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Cyprus

Global Labour Resilience Index 2019

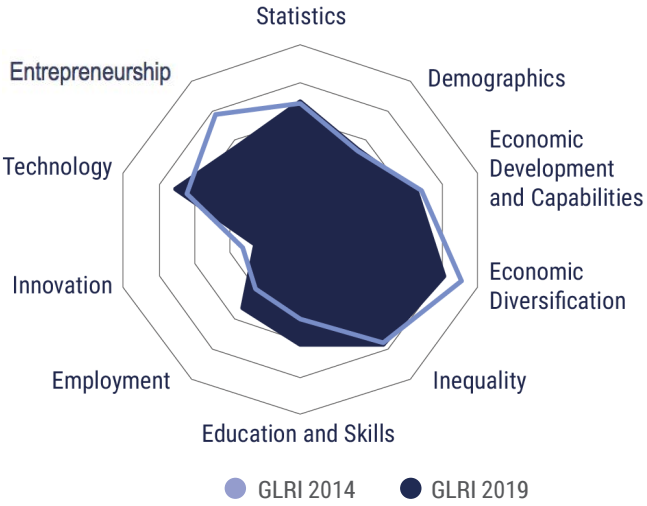
36

GLRI 2014 Rank 25

Key Indicators

Population, mn	1.2
GDP per capita, PPP	32415
GDP, current US$ bn	22
Income Group	High-income
Region	Europe

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Czech Republic

Global Labour Resilience Index 2019

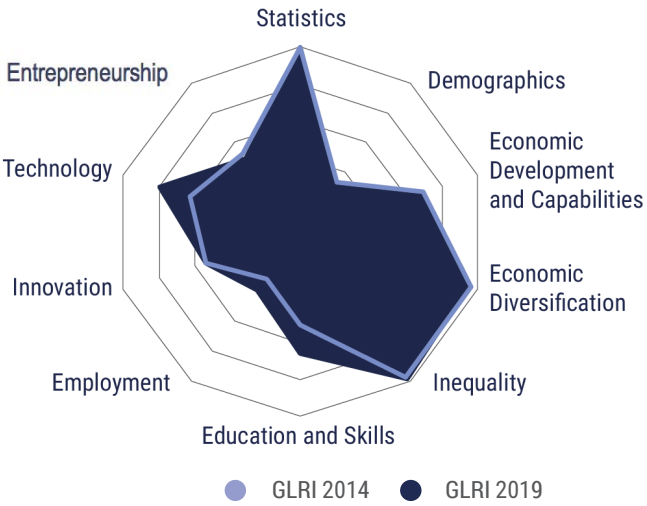
24

GLRI 2014 Rank 22

Key Indicators

Population, mn	10.6
GDP per capita, PPP	32606
GDP, current US$ bn	216
Income Group	High-income
Region	Europe

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Denmark

Global Labour Resilience Index 2019

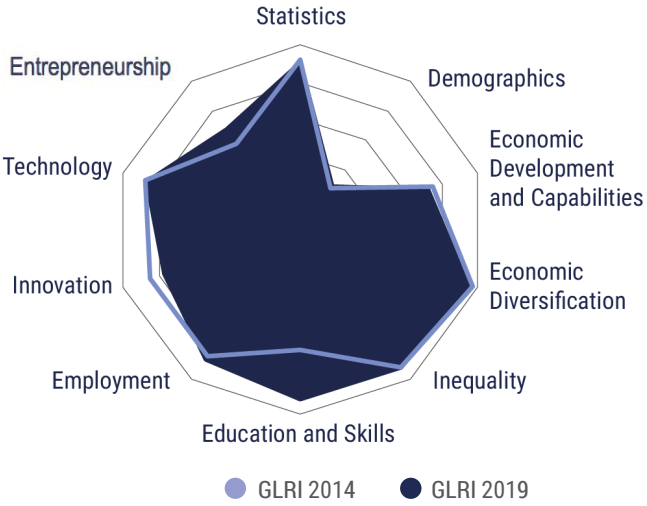
4

GLRI 2014 Rank 2

Key Indicators

Population, mn	5.8
GDP per capita, PPP	46683
GDP, current US$ bn	325
Income Group	High-income
Region	Europe

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Dominican Republic

Global Labour Resilience Index 2019

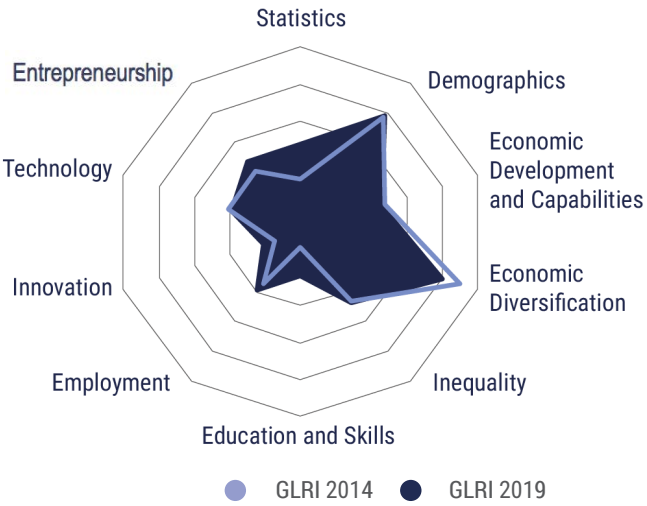
92

GLRI 2014 Rank 94

Key Indicators

Population, mn	10.8
GDP per capita, PPP	14601
GDP, current US$ bn	76
Income Group	Upper middle-income
Region	Latin America & Caribbean

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Ecuador

Global Labour Resilience Index 2019

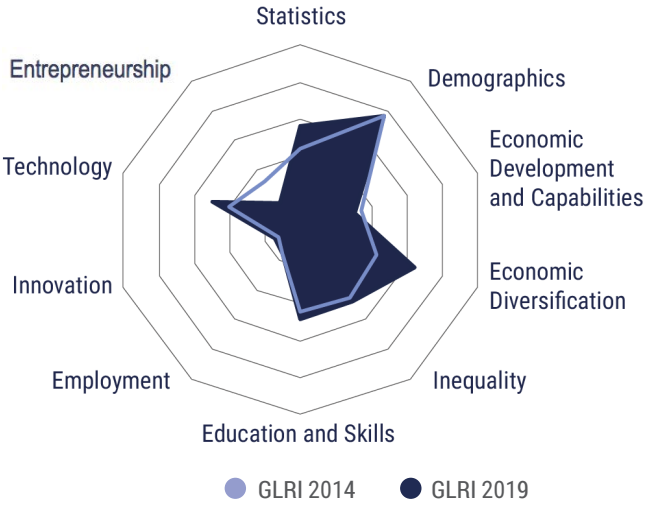
104

GLRI 2014 Rank 105 ↑

Key Indicators

Population, mn	16.6
GDP per capita, PPP	10582
GDP, current US$ bn	103
Income Group	Upper middle-income
Region	Latin America & Caribbean

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Egypt

Global Labour Resilience Index 2019

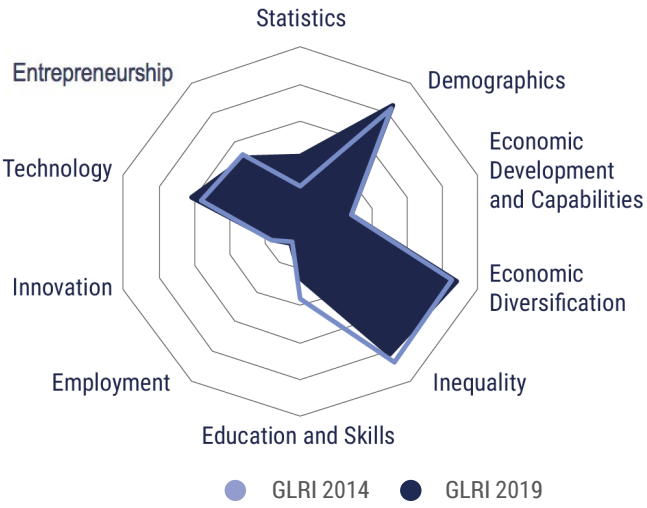
82

GLRI 2014 Rank 72 ↓

Key Indicators

Population, mn	97.6
GDP per capita, PPP	10550
GDP, current US$ bn	235
Income Group	Lower middle-income
Region	Middle East & North Africa

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



El Salvador

Global Labour Resilience Index 2019

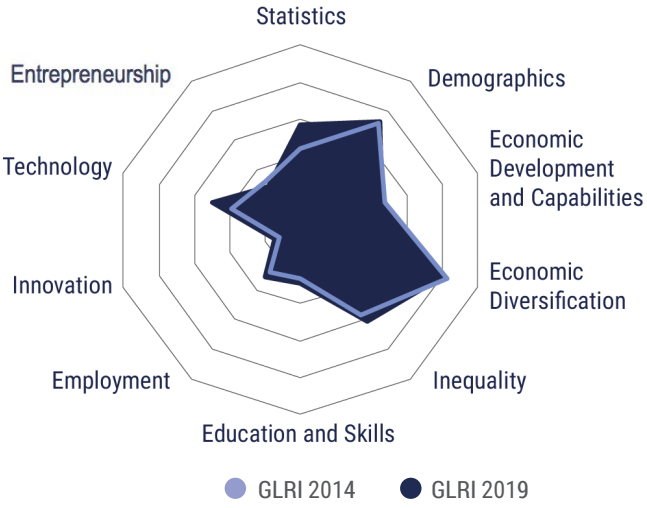
90

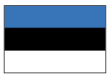
GLRI 2014 Rank 84

Key Indicators

Population, mn	6.4
GDP per capita, PPP	7292
GDP, current US$ bn	25
Income Group	Lower middle-income
Region	Latin America & Caribbean

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)





Estonia

Global Labour Resilience Index 2019

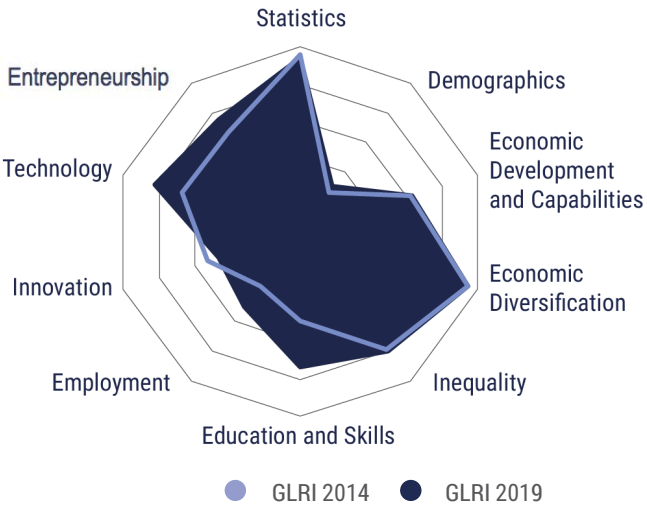
23

GLRI 2014 Rank 23

Key Indicators

Population, mn	1.3
GDP per capita, PPP	29481
GDP, current US$ bn	26
Income Group	High-income
Region	Europe

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Ethiopia

Global Labour Resilience Index 2019

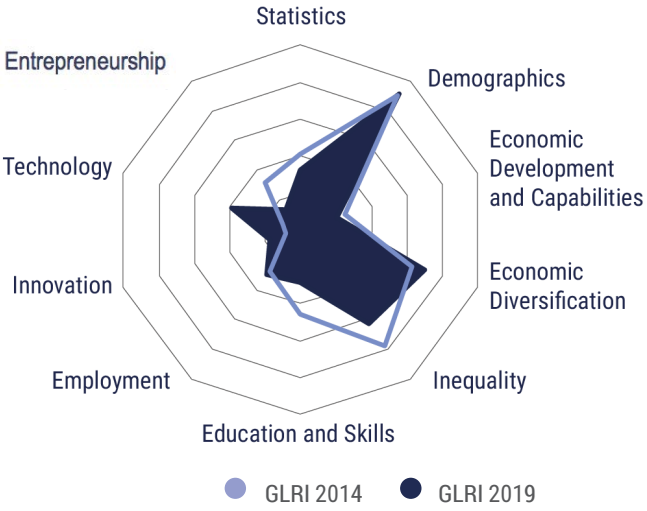
106

GLRI 2014 Rank 96

Key Indicators

Population, mn	105.0
GDP per capita, PPP	1730
GDP, current US$ bn	81
Income Group	Low-income
Region	Sub-Saharan Africa

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Finland

Global Labour Resilience Index 2019

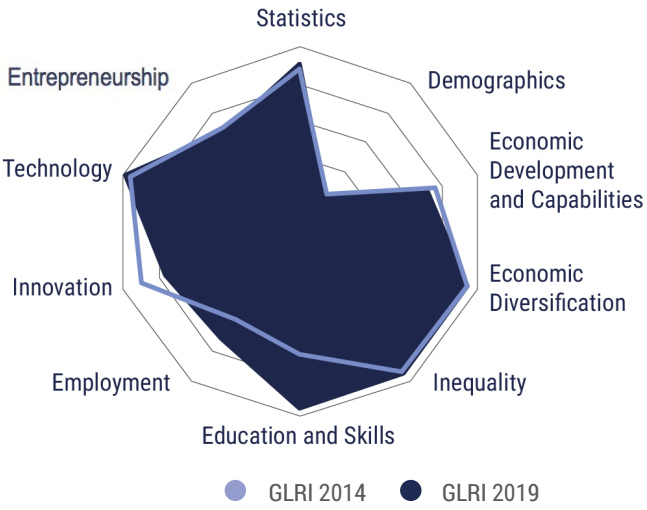
5

GLRI 2014 Rank 3

Key Indicators

Population, mn	5.5
GDP per capita, PPP	40586
GDP, current US$ bn	252
Income Group	High-income
Region	Europe

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



France

Global Labour Resilience Index 2019

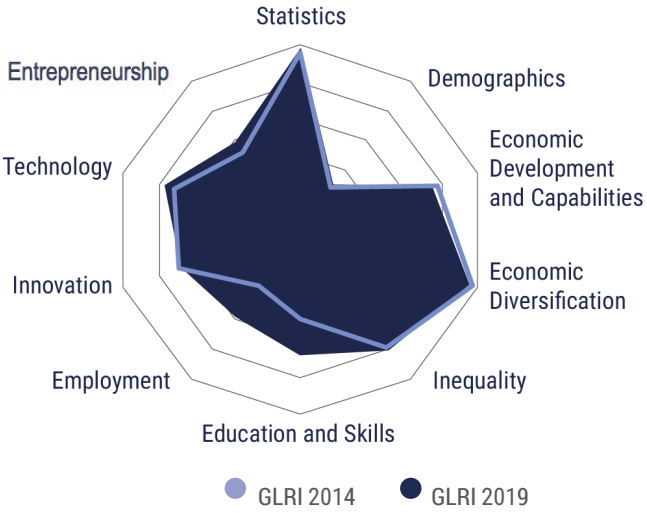
18

GLRI 2014 Rank 20 ↑

Key Indicators

Population, mn	67.1
GDP per capita, PPP, constant int$2011	38606
GDP, current US$ bn	2583
Income Group	High-income
Region	Europe

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Georgia

Global Labour Resilience Index 2019

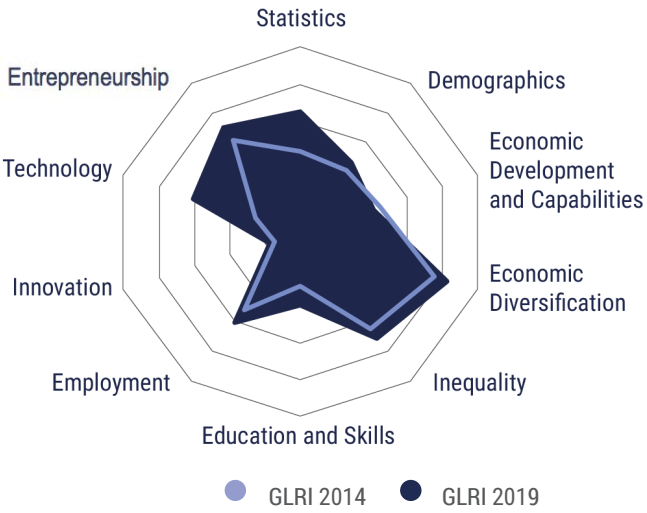
52

GLRI 2014 Rank 76 ↑

Key Indicators

Population, mn	3.7
GDP per capita, PPP	9745
GDP, current US$ bn	15
Income Group	Lower middle-income
Region	Europe

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Germany

Global Labour Resilience Index 2019

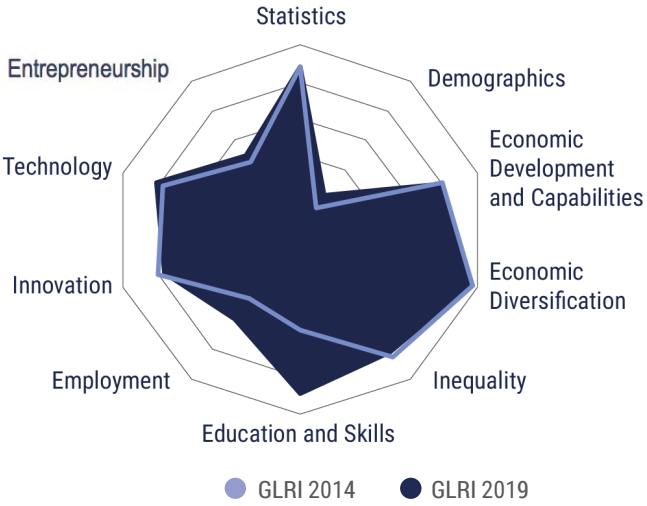
14

GLRI 2014 Rank 17 ↑

Key Indicators

Population, mn	82.7
GDP per capita, PPP	45229
GDP, current US$ bn	3677
Income Group	High-income
Region	Europe

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Greece

Global Labour Resilience Index 2019

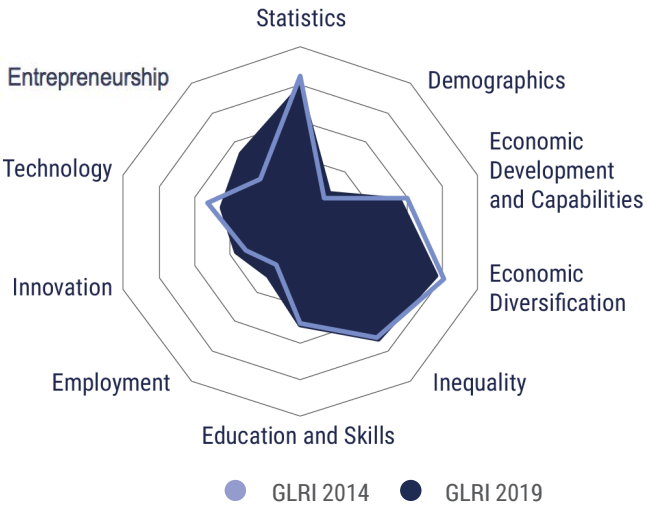
65

GLRI 2014 Rank 50 ↓

Key Indicators

Population, mn	10.8
GDP per capita, PPP	24574
GDP, current US$ bn	200
Income Group	High-income
Region	Europe

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Guatemala

Global Labour Resilience Index 2019

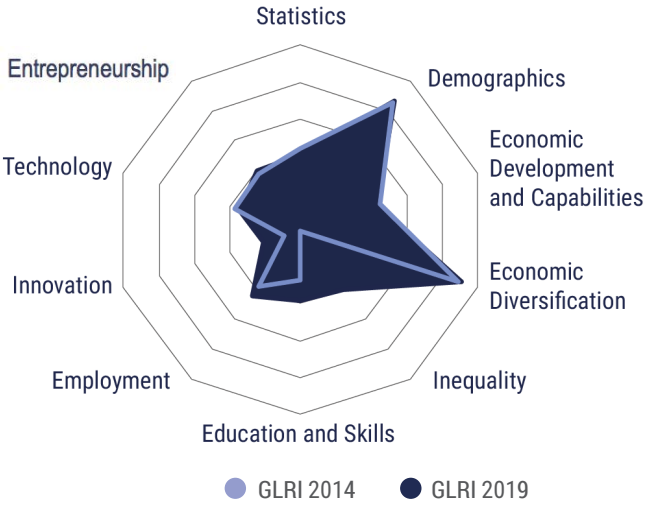
85

GLRI 2014 Rank 70

Key Indicators

Population, mn	16.9
GDP per capita, PPP	7424
GDP, current US$ bn	76
Income Group	Upper middle-income
Region	Latin America & Caribbean

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Note: the score of the inequality sub-pillar for GLRI 2014 is equal to 0 due to the lack of data for the corresponding indicators.

Guinea

Global Labour Resilience Index 2019

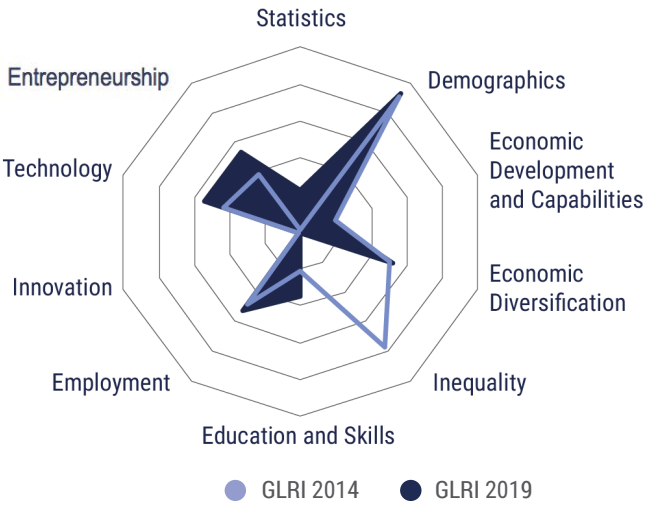
101

GLRI 2014 Rank 108

Key Indicators

Population, mn	12.7
GDP per capita, PPP	2081
GDP, current US$ bn	10
Income Group	Low-income
Region	Sub-Saharan Africa

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Note: the score of the inequality sub-pillar for GLRI 2019 is equal to 0 due to the lack of data for the corresponding indicators.

Honduras

Global Labour Resilience Index 2019

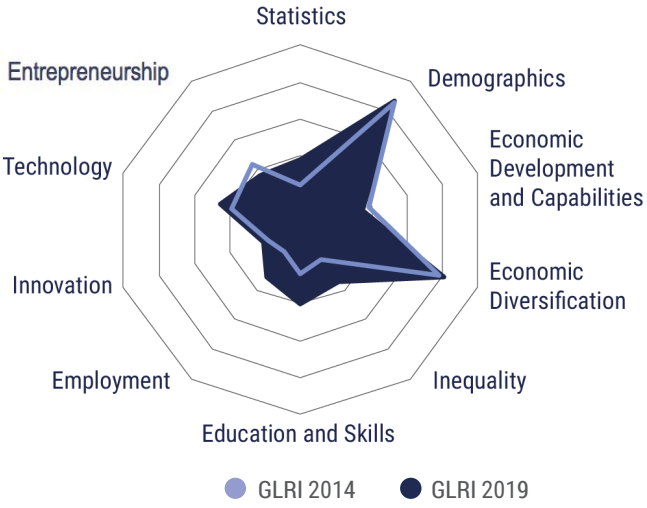
99

GLRI 2014 Rank 109 ↑

Key Indicators

Population, mn	9.3
GDP per capita, PPP	4542
GDP, current US$ bn	23
Income Group	Lower middle-income
Region	Latin America & Caribbean

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Hungary

Global Labour Resilience Index 2019

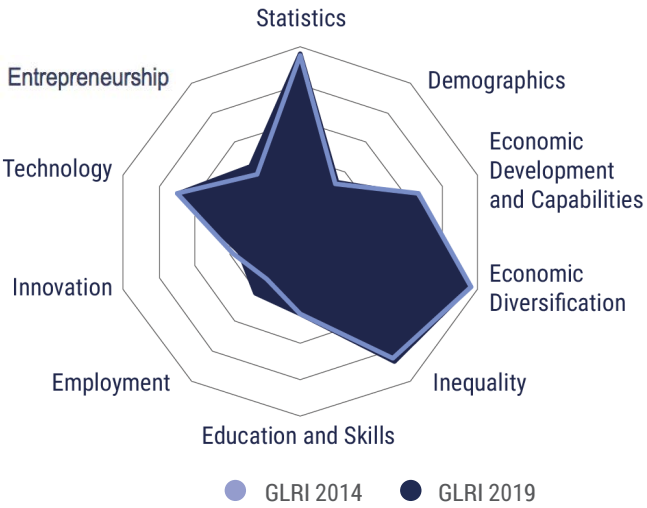
39

GLRI 2014 Rank 31 ↓

Key Indicators

Population, mn	9.8
GDP per capita, PPP	26778
GDP, current US$ bn	139
Income Group	High-income
Region	Europe

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Iceland

Global Labour Resilience Index 2019

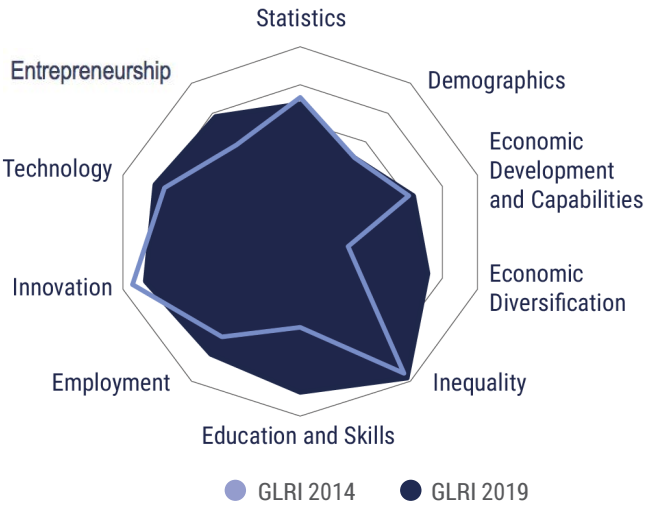
7

GLRI 2014 Rank 18 ↑

Key Indicators

Population, mn	0.3
GDP per capita, PPP	46483
GDP, current US$ bn	24
Income Group	High-income
Region	Europe

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



India

Global Labour Resilience Index 2019

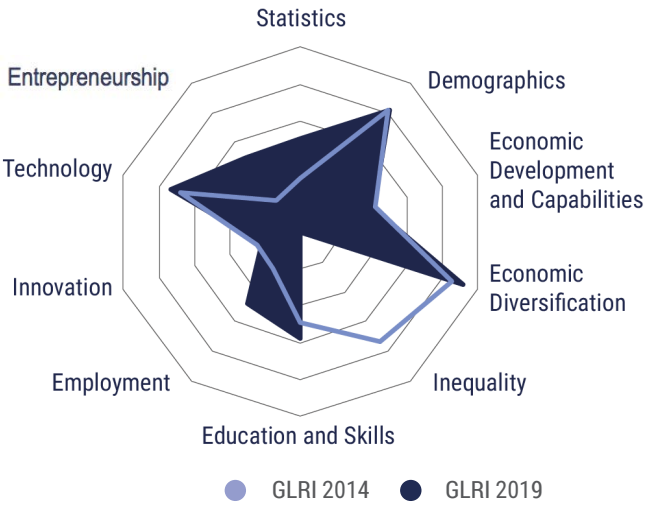
42

GLRI 2014 Rank 61 ↑

Key Indicators

Population, mn	1339.2
GDP per capita, PPP	6427
GDP, current US$ bn	2597
Income Group	Lower middle-income
Region	Central & Southern Asia

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Note: the score of the inequality sub-pillar for GLRI 2019 is equal to 0 due to the lack of data for the corresponding indicators.

Indonesia

Global Labour Resilience Index 2019

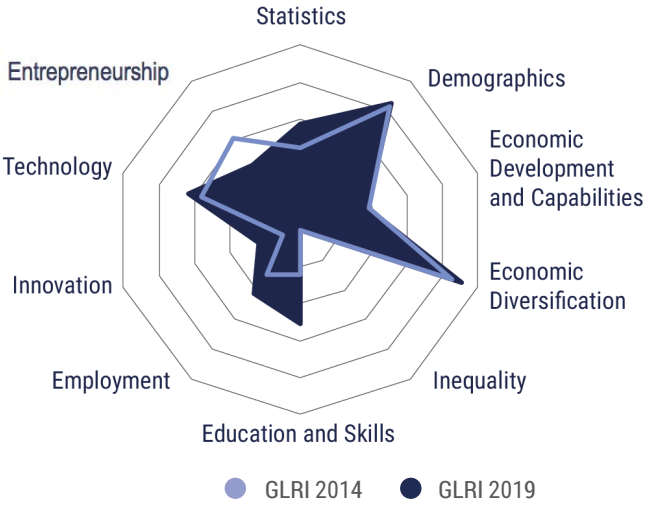
50

GLRI 2014 Rank 57 ↑

Key Indicators

Population, mn	264.0
GDP per capita, PPP	11189
GDP, current US$ bn	1016
Income Group	Lower middle-income
Region	East Asia & Pacific

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Note: the score of the inequality sub-pillar for GLRI 2014 and GLRI 2019 is equal to 0 due to the lack of data for the corresponding indicators.

Iran

Global Labour Resilience Index 2019

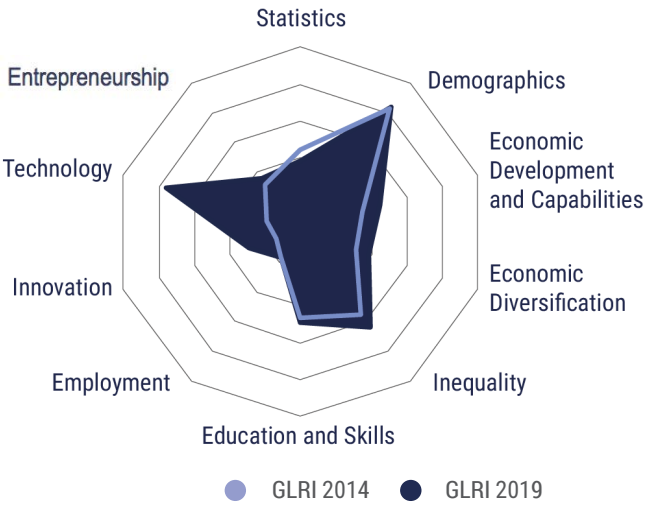
84

GLRI 2014 Rank 113 ↑

Key Indicators

Population, mn	81.2
GDP per capita, PPP	19083
GDP, current US$ bn	440
Income Group	Upper middle-income
Region	Middle East & North Africa

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Ireland

Global Labour Resilience Index 2019

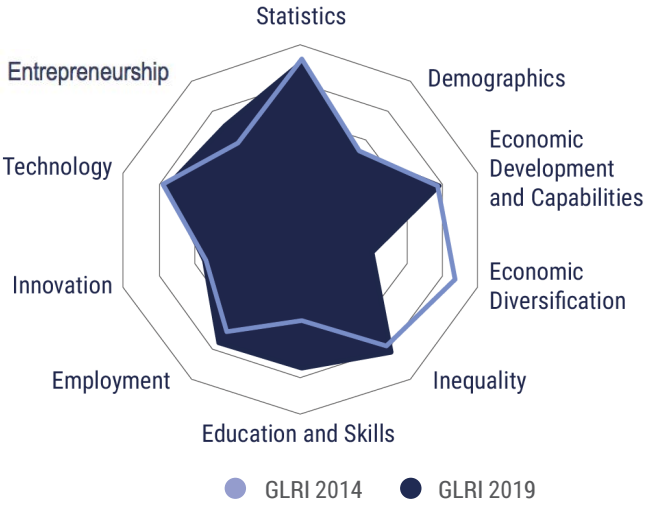
20

GLRI 2014 Rank 10

Key Indicators

Population, mn	4.8
GDP per capita, PPP	67335
GDP, current US$ bn	334
Income Group	High-income
Region	Europe

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Israel

Global Labour Resilience Index 2019

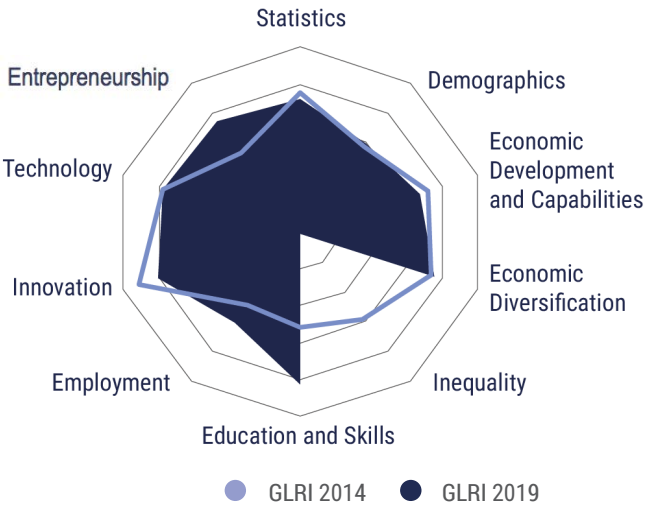
16

GLRI 2014 Rank 19

Key Indicators

Population, mn	8.7
GDP per capita, PPP	33132
GDP, current US$ bn	351
Income Group	High-income
Region	Middle East & North Africa

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Note: the score of the inequality sub-pillar for GLRI 2019 is equal to 0 due to the lack of data for the corresponding indicators.

Italy

Global Labour Resilience Index 2019

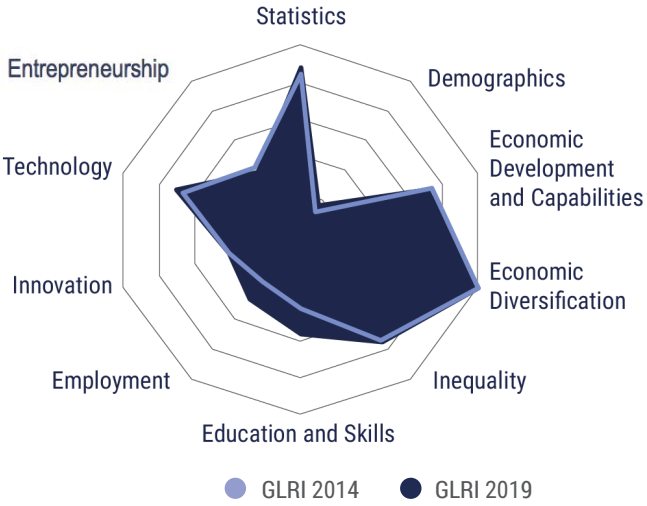
40

GLRI 2014 Rank 36

Key Indicators

Population, mn	60.6
GDP per capita, PPP	35220
GDP, current US$ bn	1935
Income Group	High-income
Region	Europe

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Jamaica

Global Labour Resilience Index 2019

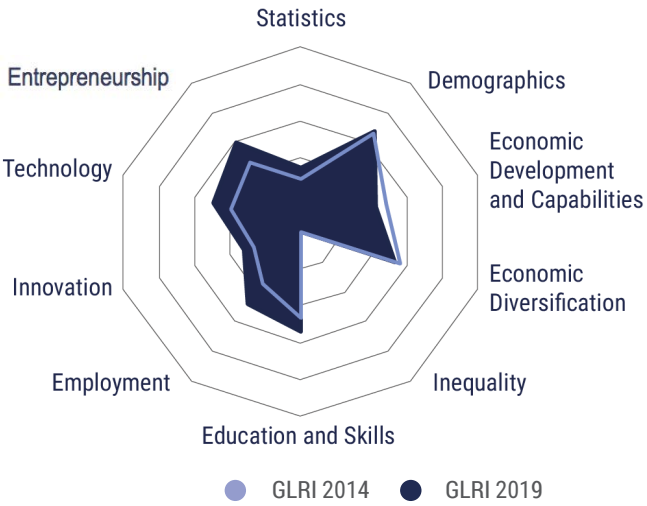
76

GLRI 2014 Rank 78

Key Indicators

Population, mn	2.9
GDP per capita, PPP	8194
GDP, current US$ bn	15
Income Group	Upper middle-income
Region	Latin America & Caribbean

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Note: the score of the inequality sub-pillar for GLRI 2014 and GLRI 2019 is equal to 0 due to the lack of data for the corresponding indicators.

Japan

Global Labour Resilience Index 2019

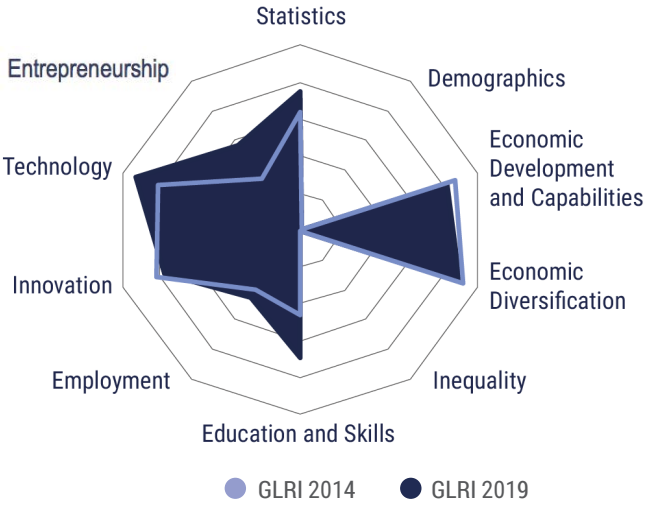
30

GLRI 2014 Rank 32

Key Indicators

Population, mn	126.8
GDP per capita, PPP	39002
GDP, current US$ bn	4872
Income Group	High-income
Region	East Asia & Pacific

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Note: the score of the inequality sub-pillar for GLRI 2014 and GLRI 2019 is equal to 0 due to the lack of data for the corresponding indicators.

Jordan

Global Labour Resilience Index 2019

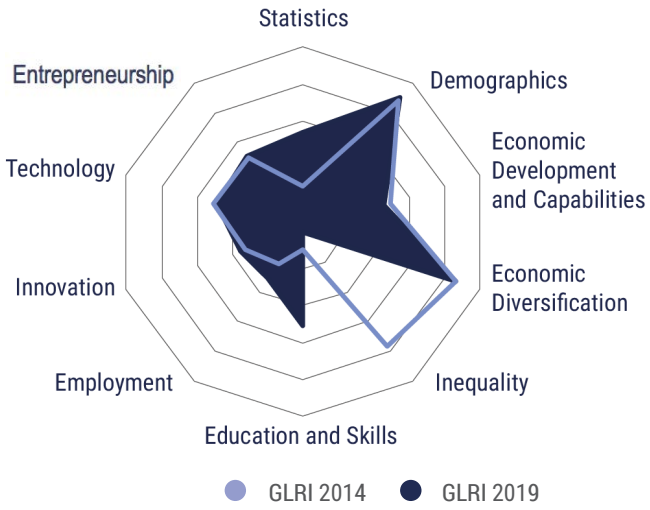
47

GLRI 2014 Rank 66

Key Indicators

Population, mn	9.7
GDP per capita, PPP	8337
GDP, current US$ bn	40
Income Group	Upper middle-income
Region	Middle East & North Africa

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Note: the score of the inequality sub-pillar for GLRI 2019 is equal to 0 due to the lack of data for the corresponding indicators.

Kazakhstan

Global Labour Resilience Index 2019

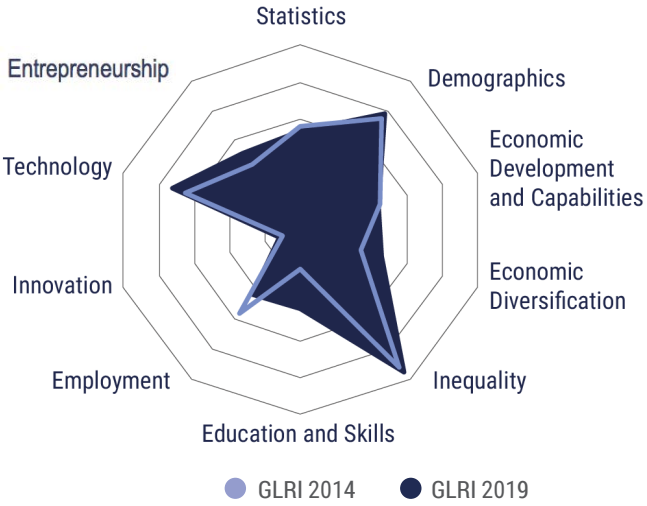
57

GLRI 2014 Rank 55

Key Indicators

Population, mn	18.0
GDP per capita, PPP	24056
GDP, current US$ bn	159
Income Group	Upper middle-income
Region	Central & Southern Asia

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Kenya

Global Labour Resilience Index 2019

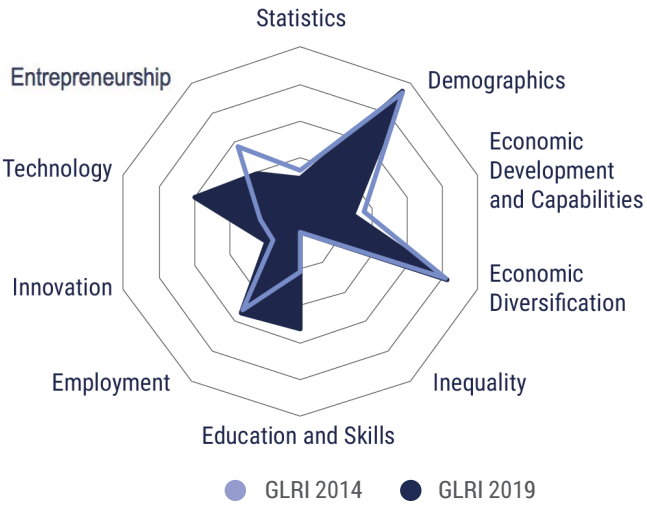
60

GLRI 2014 Rank 68

Key Indicators

Population, mn	49.7
GDP per capita, PPP	2993
GDP, current US$ bn	75
Income Group	Lower middle-income
Region	Sub-Saharan Africa

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Note: the score of the inequality sub-pillar for GLRI 2014 and GLRI 2019 is equal to 0 due to the lack of data for the corresponding indicators.

Korea, Rep.

Global Labour Resilience Index 2019

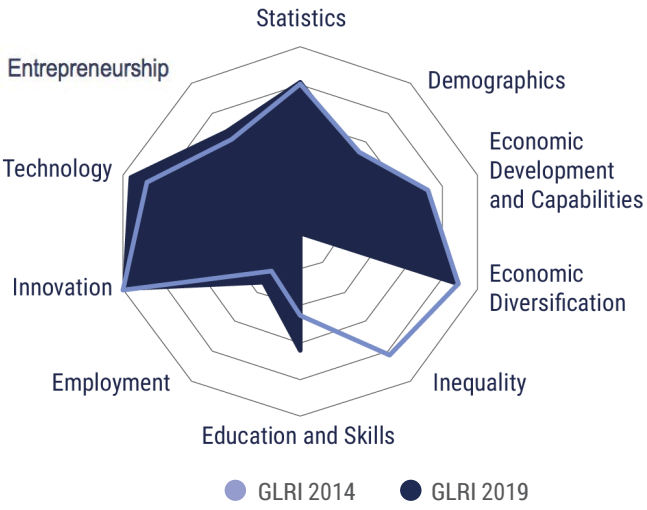
15

GLRI 2014 Rank 9

Key Indicators

Population, mn	51.5
GDP per capita, PPP	35938
GDP, current US$ bn	1531
Income Group	High-income
Region	East Asia & Pacific

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Note: the score of the inequality sub-pillar for GLRI 2019 is equal to 0 due to the lack of data for the corresponding indicators.

Kuwait

Global Labour Resilience Index 2019

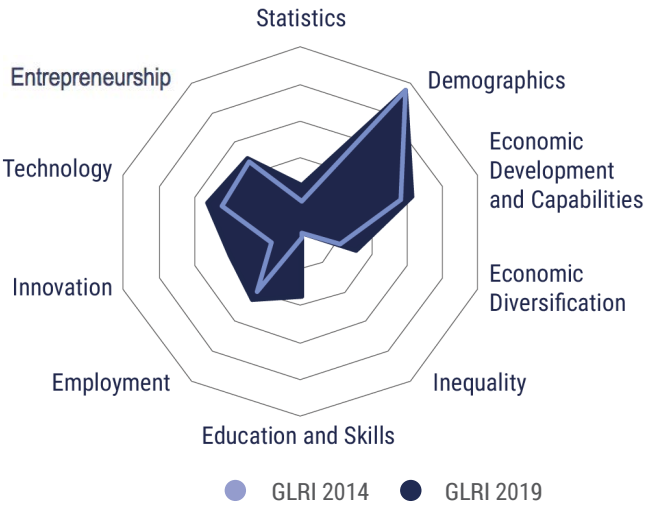
75

GLRI 2014 Rank 104

Key Indicators

Population, mn	4.1
GDP per capita, PPP	65531
GDP, current US$ bn	120
Income Group	High-income
Region	Middle East & North Africa

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Note: the score of the inequality sub-pillar for GLRI 2014 and GLRI 2019 is equal to 0 due to the lack of data for the corresponding indicators.

Kyrgyz Republic

Global Labour Resilience Index 2019

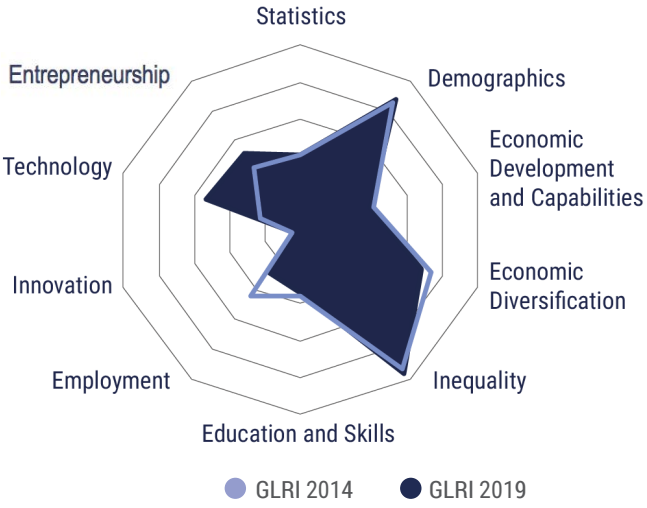
72

GLRI 2014 Rank 71

Key Indicators

Population, mn	6.2
GDP per capita, PPP	3393
GDP, current US$ bn	8
Income Group	Lower middle-income
Region	Central & Southern Asia

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Latvia

Global Labour Resilience Index 2019

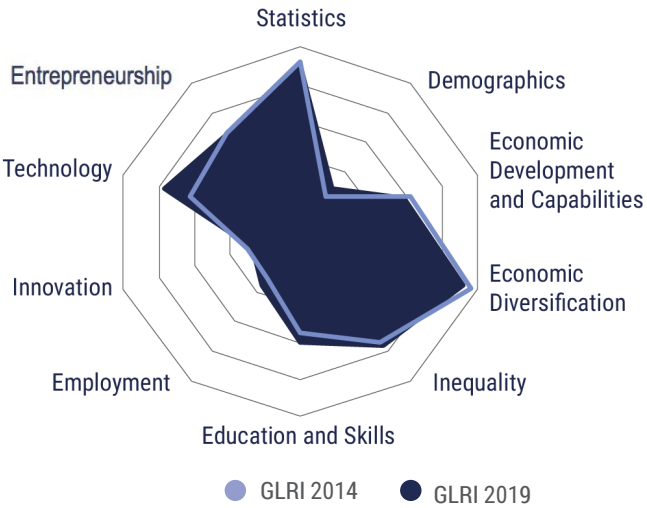
37

GLRI 2014 Rank 28

Key Indicators

Population, mn	1.9
GDP per capita, PPP	25064
GDP, current US$ bn	30
Income Group	High-income
Region	Europe

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Lebanon

Global Labour Resilience Index 2019

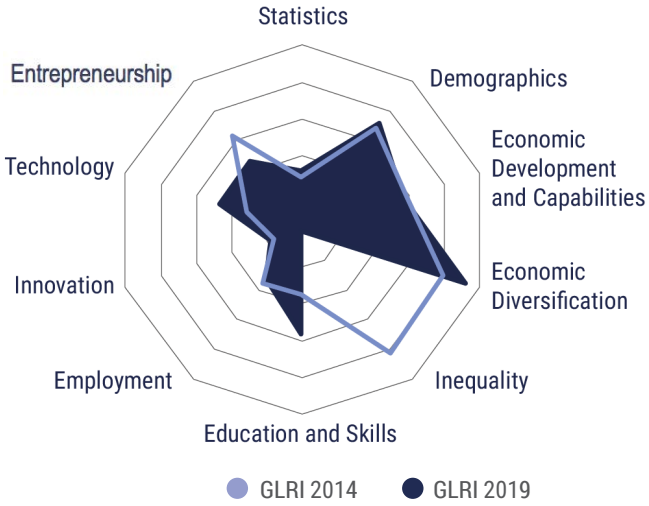
61

GLRI 2014 Rank 62

Key Indicators

Population, mn	6.1
GDP per capita, PPP	13368
GDP, current US$ bn	52
Income Group	Upper middle-income
Region	Middle East & North Africa

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Note: the score of the inequality sub-pillar for GLRI 2019 is equal to 0 due to the lack of data for the corresponding indicators.

Lithuania

Global Labour Resilience Index 2019

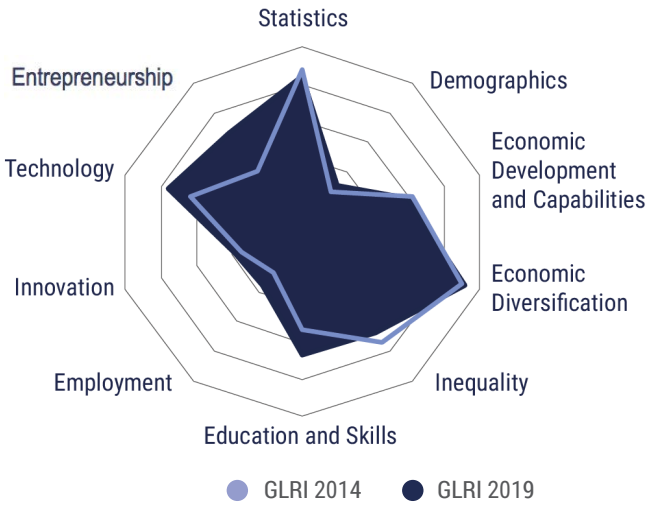
33

GLRI 2014 Rank 38

Key Indicators

Population, mn	2.8
GDP per capita, PPP	29524
GDP, current US$ bn	47
Income Group	High-income
Region	Europe

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Luxembourg

Global Labour Resilience Index 2019

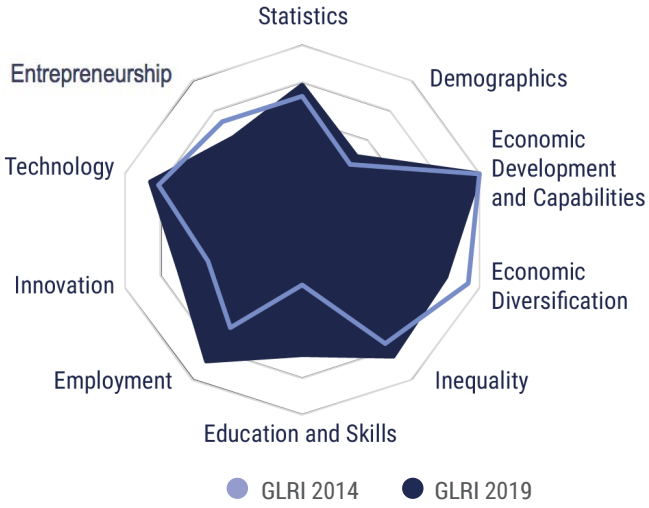
8

GLRI 2014 Rank 12

Key Indicators

Population, mn	0.6
GDP per capita, PPP	94278
GDP, current US$ bn	62
Income Group	High-income
Region	Europe

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Macedonia, FYR

Global Labour Resilience Index 2019

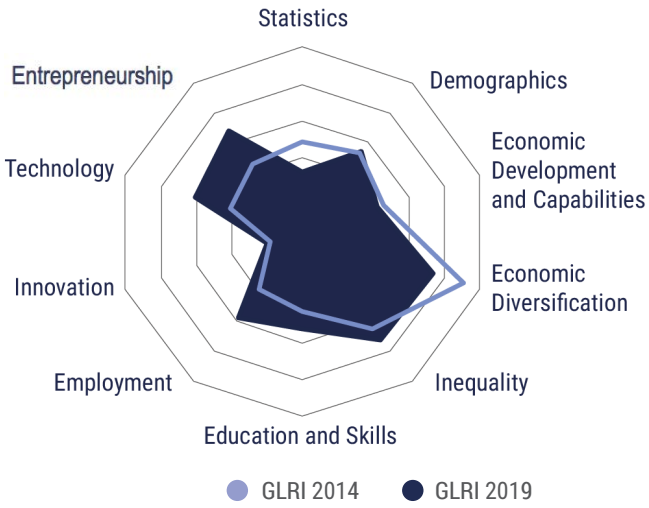
58

GLRI 2014 Rank 63

Key Indicators

Population, mn	2.1
GDP per capita, PPP	13111
GDP, current US$ bn	11
Income Group	Upper middle-income
Region	Europe

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Madagascar

Global Labour Resilience Index 2019

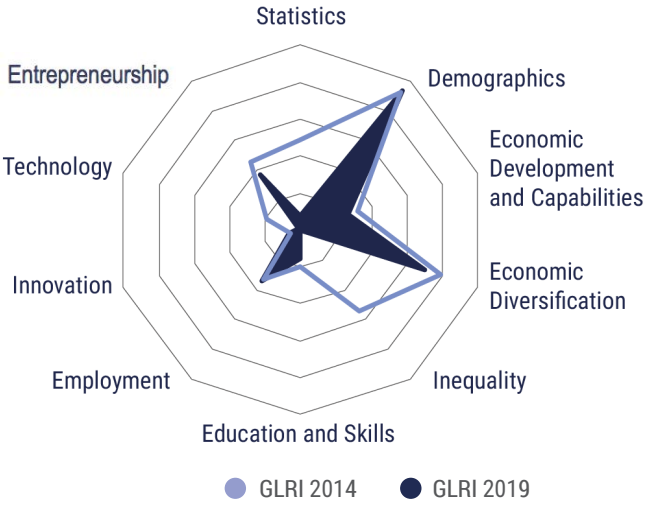
117

GLRI 2014 Rank 93

Key Indicators

Population, mn	25.6
GDP per capita, PPP	1416
GDP, current US$ bn	11
Income Group	Low-income
Region	Sub-Saharan Africa

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Note: the score of the inequality sub-pillar for GLRI 2019 is equal to 0 due to the lack of data for the corresponding indicators.

Malawi

Global Labour Resilience Index 2019

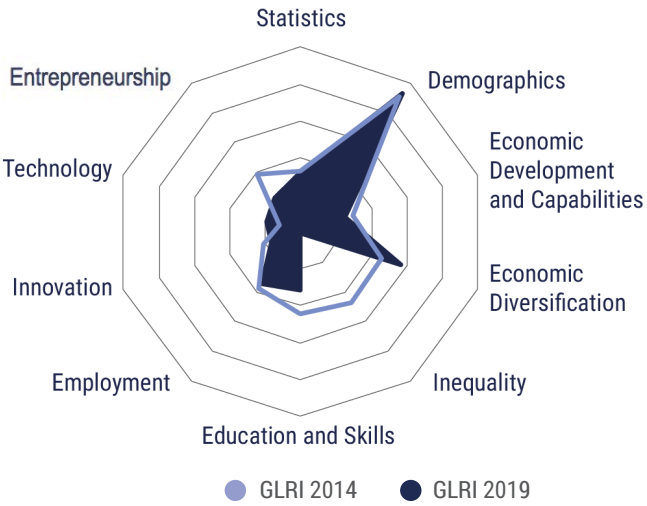
112

GLRI 2014 Rank 101

Key Indicators

Population, mn	18.6
GDP per capita, PPP	1095
GDP, current US$ bn	6
Income Group	Low-income
Region	Sub-Saharan Africa

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Note: the score of the inequality sub-pillar for GLRI 2019 is equal to 0 due to the lack of data for the corresponding indicators.

Malaysia

25

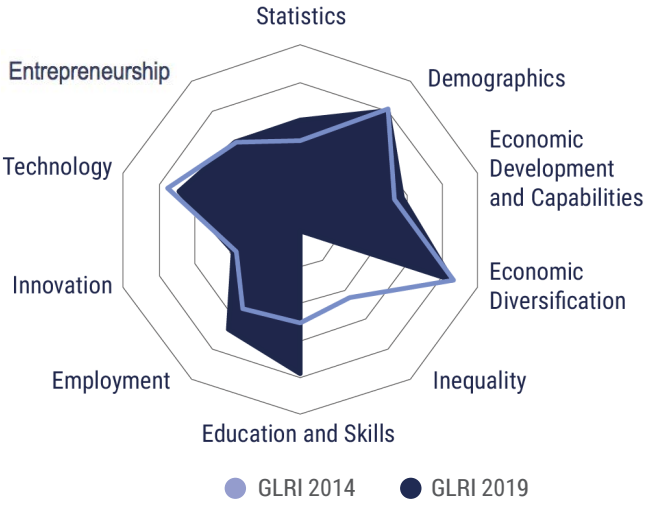
Global Labour Resilience Index 2019

GLRI 2014 Rank 33

Key Indicators

Population, mn	31.6
GDP per capita, PPP	26808
GDP, current US$ bn	315
Income Group	Upper middle-income
Region	East Asia & Pacific

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Note: the score of the inequality sub-pillar for GLRI 2019 is equal to 0 due to the lack of data for the corresponding indicators.

Mali

119

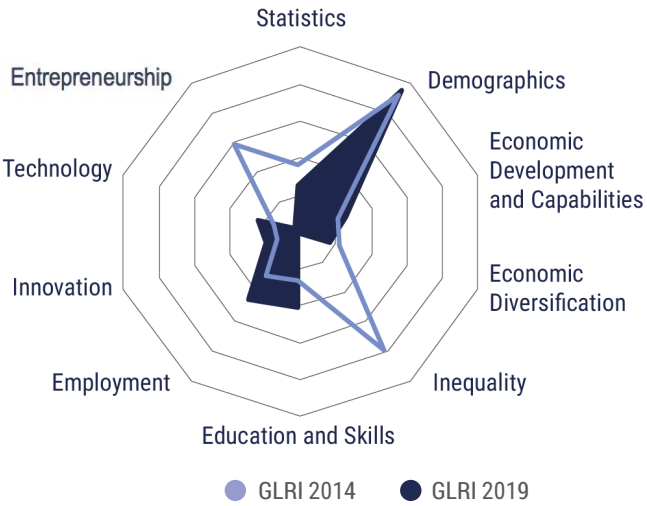
Global Labour Resilience Index 2019

GLRI 2014 Rank 106

Key Indicators

Population, mn	18.5
GDP per capita, PPP	2014
GDP, current US$ bn	15
Income Group	Low-income
Region	Sub-Saharan Africa

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Note: the score of the inequality sub-pillar for GLRI 2019 is equal to 0 due to the lack of data for the corresponding indicators.

Malta

34

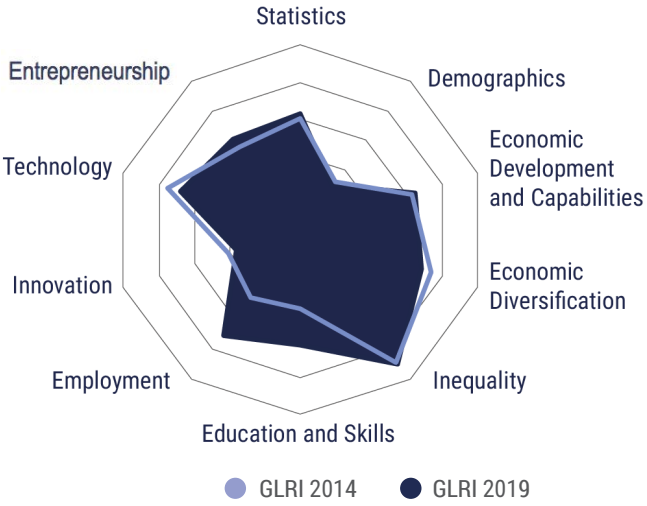
Global Labour Resilience Index 2019

2014 Rank 34

Key Indicators

Population, mn	0.5
GDP per capita, PPP	36513
GDP, current US$ bn	13
Income Group	High-income
Region	Middle East & North Africa

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Mauritius

49

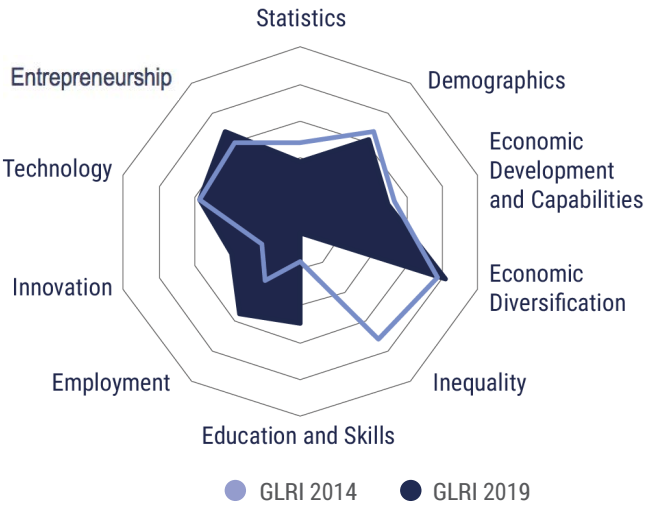
Global Labour Resilience Index 2019

GLRI 2014 Rank 54

Key Indicators

Population, mn	1.3
GDP per capita, PPP	20293
GDP, current US$ bn	13
Income Group	Upper middle-income
Region	Sub-Saharan Africa

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Note: the score of the inequality sub-pillar for GLRI 2019 is equal to 0 due to the lack of data for the corresponding indicators.

Mexico

48

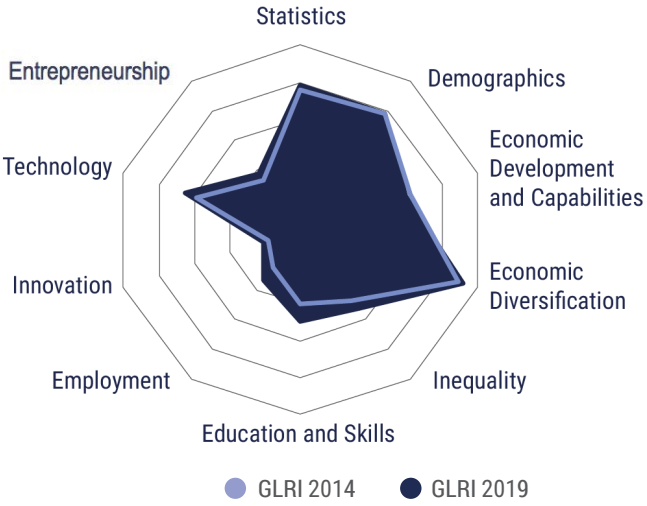
Global Labour Resilience Index 2019

GLRI 2014 Rank 48

Key Indicators

Population, mn	129.2
GDP per capita, PPP	17336
GDP, current US$ bn	1150
Income Group	Upper middle-income
Region	Latin America & Caribbean

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Moldova

51

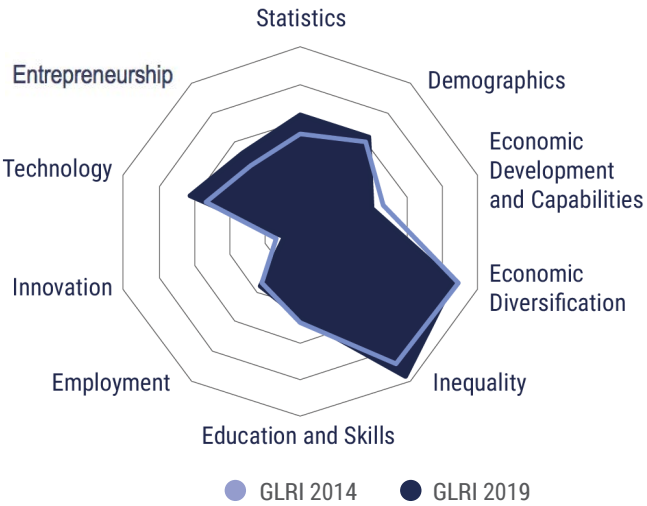
Global Labour Resilience Index 2019

GLRI 2014 Rank 46

Key Indicators

Population, mn	3.5
GDP per capita, PPP	5190
GDP, current US$ bn	8
Income Group	Lower middle-income
Region	Europe

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Mongolia

Global Labour Resilience Index 2019

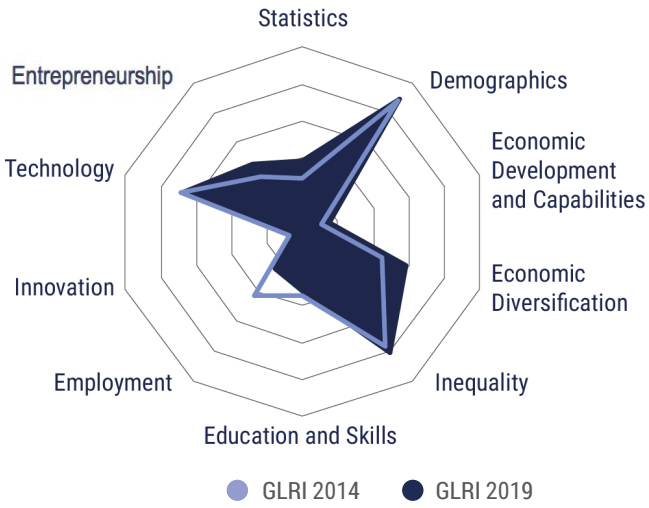
96

GLRI 2014 Rank 81

Key Indicators

Population, mn	3.1
GDP per capita, PPP	11841
GDP, current US$ bn	11
Income Group	Lower middle-income
Region	East Asia & Pacific

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Montenegro

Global Labour Resilience Index 2019

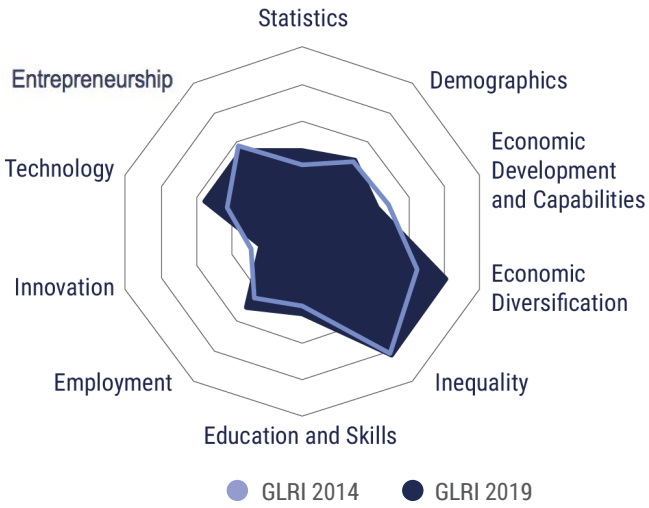
62

GLRI 2014 Rank 60

Key Indicators

Population, mn	0.6
GDP per capita, PPP	16409
GDP, current US$ bn	5
Income Group	Upper middle-income
Region	Europe

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Morocco

Global Labour Resilience Index 2019

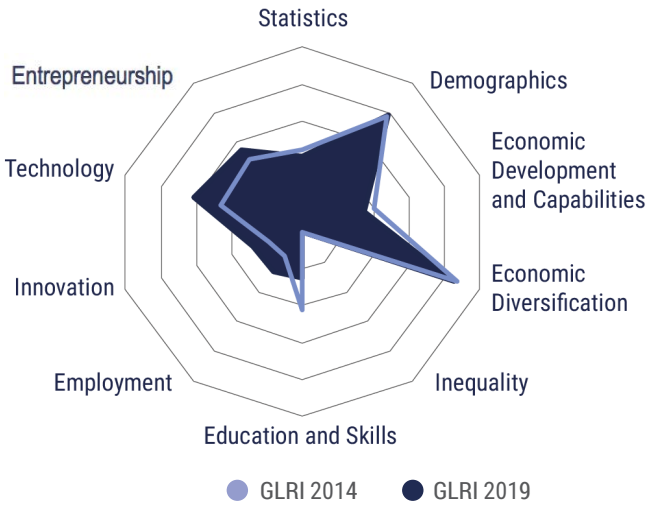
73

GLRI 2014 Rank 64

Key Indicators

Population, mn	35.7
GDP per capita, PPP	7485
GDP, current US$ bn	109
Income Group	Lower middle-income
Region	Middle East & North Africa

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Note: the score of the inequality sub-pillar for GLRI 2014 and GLRI 2019 is equal to 0 due to the lack of data for the corresponding indicators.

Mozambique

Global Labour Resilience Index 2019

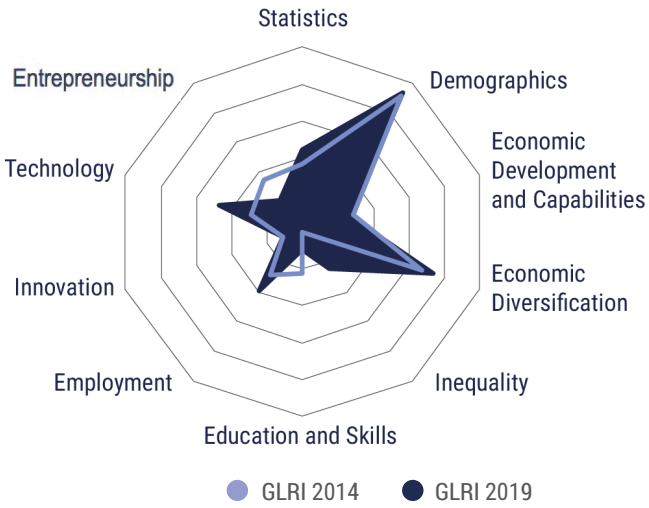
109

GLRI 2014 Rank 98

Key Indicators

Population, mn	29.7
GDP per capita, PPP	1136
GDP, current US$ bn	12
Income Group	Low-income
Region	Sub-Saharan Africa

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Note: the score of the inequality sub-pillar for GLRI 2014 is equal to 0 due to the lack of data for the corresponding indicators.

Namibia

Global Labour Resilience Index 2019

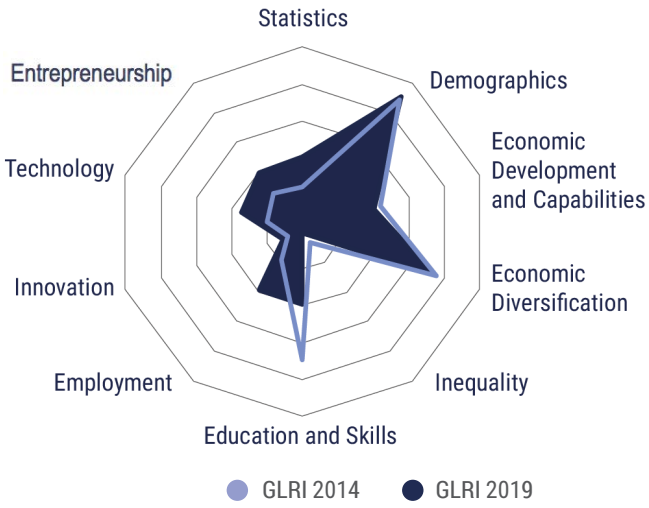
86

GLRI 2014 Rank 111 ↑

Key Indicators

Population, mn	2.5
GDP per capita, PPP	9542
GDP, current US$ bn	13
Income Group	Upper middle-income
Region	Sub-Saharan Africa

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Note: the score of the inequality sub-pillar for GLRI 2019 is equal to 0 due to the lack of data for the corresponding indicators.

Nepal

Global Labour Resilience Index 2019

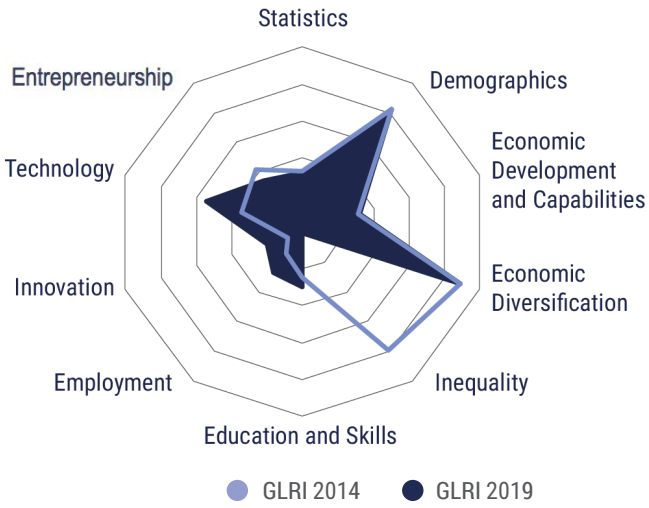
91

GLRI 2014 Rank 91 ↔

Key Indicators

Population, mn	29.3
GDP per capita, PPP	2443
GDP, current US$ bn	24
Income Group	Low-income
Region	Central & Southern Asia

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Note: the score of the inequality sub-pillar for GLRI 2019 is equal to 0 due to the lack of data for the corresponding indicators.

Netherlands

Global Labour Resilience Index 2019

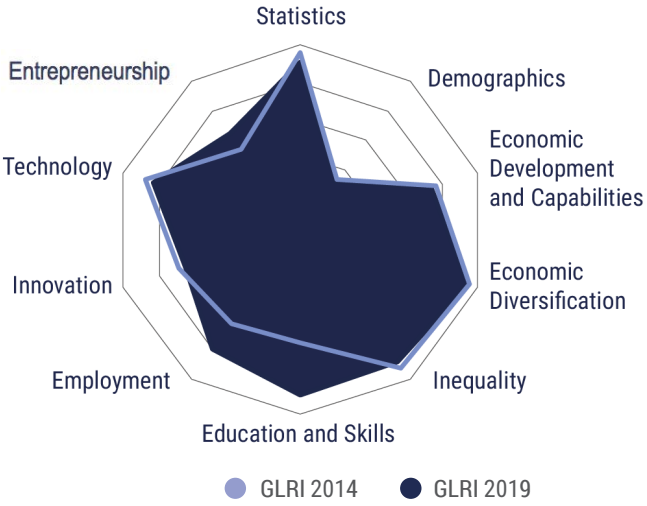
9

GLRI 2014 Rank 6

Key Indicators

Population, mn	17.1
GDP per capita, PPP	48473
GDP, current US$ bn	826
Income Group	High-income
Region	Europe

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



New Zealand

Global Labour Resilience Index 2019

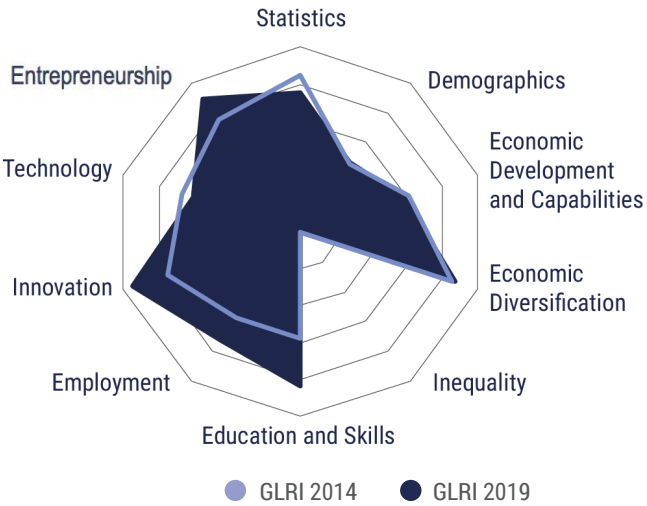
13

GLRI 2014 Rank 14

Key Indicators

Population, mn	4.8
GDP per capita, PPP	36086
GDP, current US$ bn	206
Income Group	High-income
Region	East Asia & Pacific

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Note: the score of the inequality sub-pillar for GLRI 2014 and GLRI 2019 is equal to 0 due to the lack of data for the corresponding indicators.

Nigeria

Global Labour Resilience Index 2019

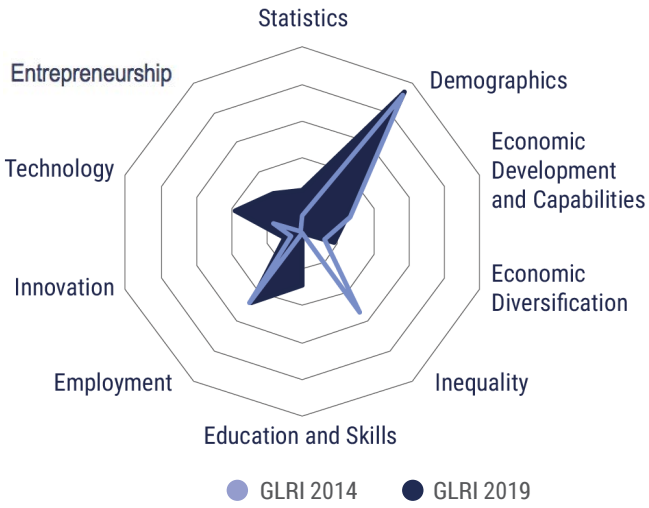
116

GLRI 2014 Rank 121

Key Indicators

Population, mn	190.9
GDP per capita, PPP	5338
GDP, current US$ bn	376
Income Group	Lower middle-income
Region	Sub-Saharan Africa

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Note: the score of the inequality sub-pillar in GLRI 2019 is equal to 0 due to the lack of data for the corresponding indicators. The score of the education and skills sub-pillar in GLRI 2014 is equal to 0 due to the lack of data for the corresponding indicators.

Norway

Global Labour Resilience Index 2019

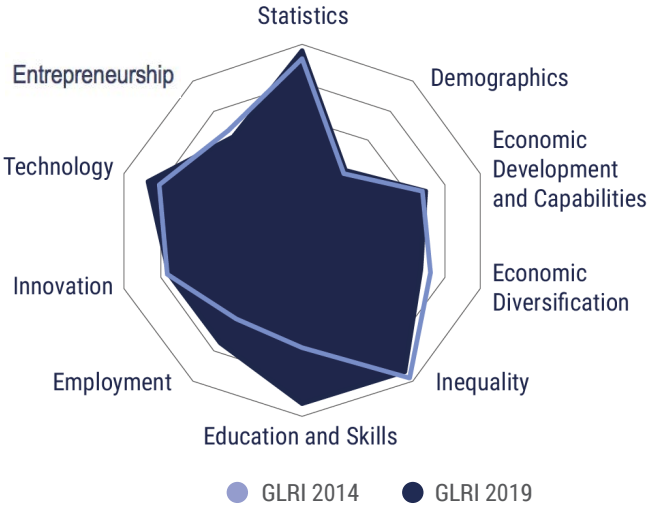
10

GLRI 2014 Rank 7

Key Indicators

Population, mn	5.3
GDP per capita, PPP	64800
GDP, current US$ bn	399
Income Group	High-income
Region	Europe

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Oman

Global Labour Resilience Index 2019

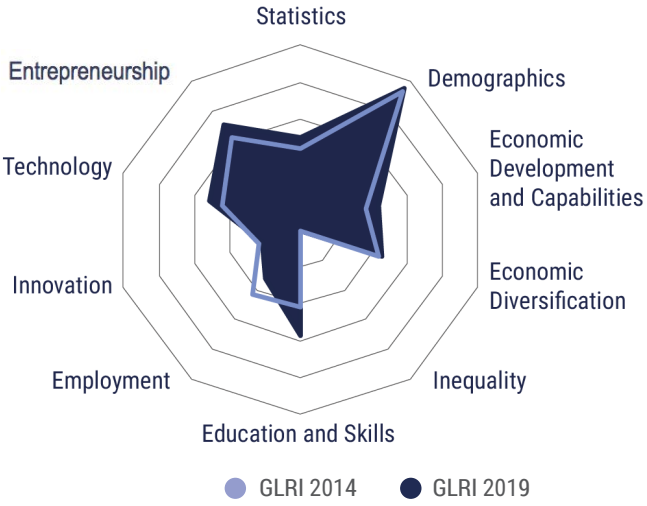
59

GLRI 2014 Rank 56

Key Indicators

Population, mn	4.6
GDP per capita, PPP	37961
GDP, current US$ bn	73
Income Group	High-income
Region	Middle East & North Africa

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Note: the score of the inequality sub-pillar for GLRI 2014 and GLRI 2019 is equal to 0 due to the lack of data for the corresponding indicators.

Pakistan

Global Labour Resilience Index 2019

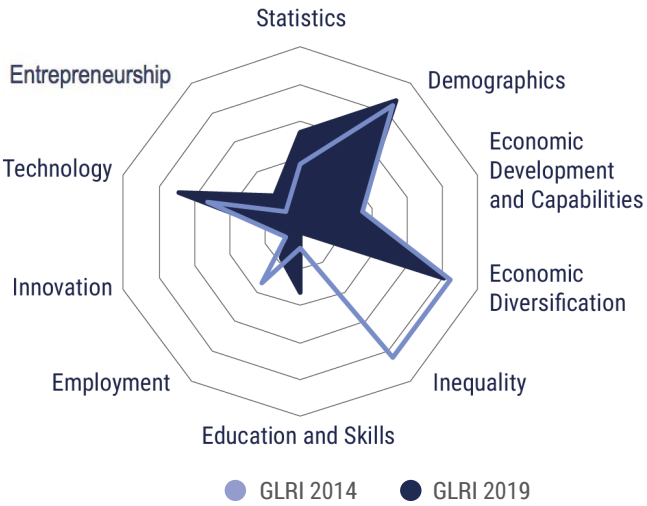
89

GLRI 2014 Rank 88

Key Indicators

Population, mn	197.0
GDP per capita, PPP	5035
GDP, current US$ bn	305
Income Group	Lower middle-income
Region	Central & Southern Asia

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Note: the score of the inequality sub-pillar for GLRI 2019 is equal to 0 due to the lack of data for the corresponding indicators.

Panama

Global Labour Resilience Index 2019

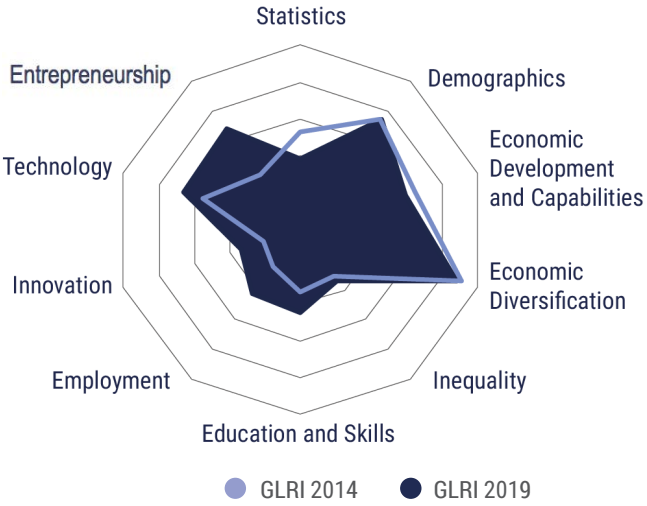
55

GLRI 2014 Rank 65

Key Indicators

Population, mn	4.1
GDP per capita, PPP	22267
GDP, current US$ bn	62
Income Group	High-income
Region	Latin America & Caribbean

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Paraguay

Global Labour Resilience Index 2019

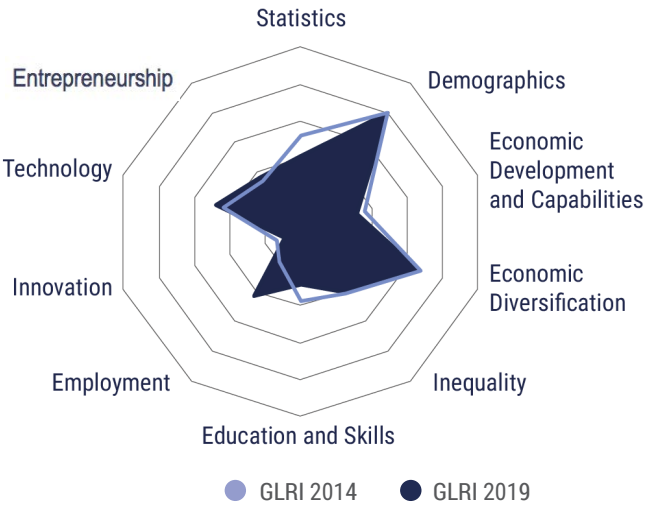
103

GLRI 2014 Rank 87

Key Indicators

Population, mn	6.8
GDP per capita, PPP	8827
GDP, current US$ bn	30
Income Group	Upper middle-income
Region	Latin America & Caribbean

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Peru

Global Labour Resilience Index 2019

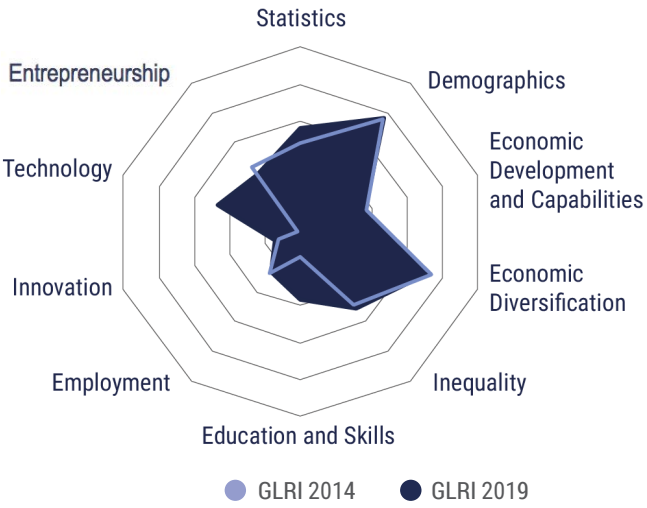
94

GLRI 2014 Rank 114

Key Indicators

Population, mn	32.2
GDP per capita, PPP	12237
GDP, current US$ bn	211
Income Group	Upper middle-income
Region	Latin America & Caribbean

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Philippines

Global Labour Resilience Index 2019

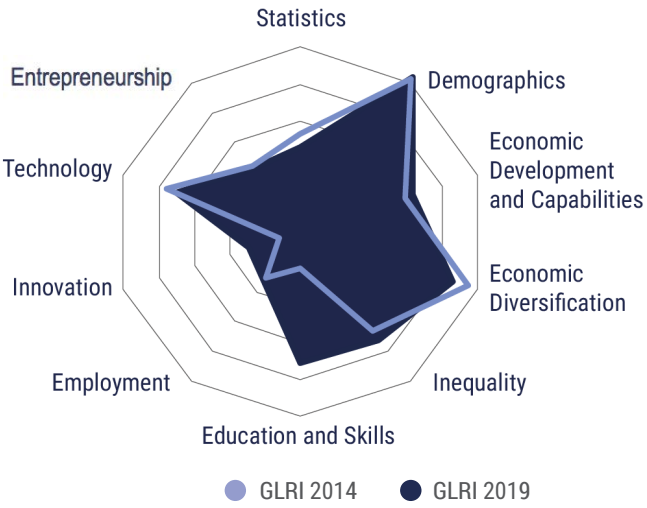
67

GLRI 2014 Rank 74

Key Indicators

Population, mn	104.9
GDP per capita, PPP	7599
GDP, current US$ bn	314
Income Group	Lower middle-income
Region	East Asia & Pacific

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Poland

Global Labour Resilience Index 2019

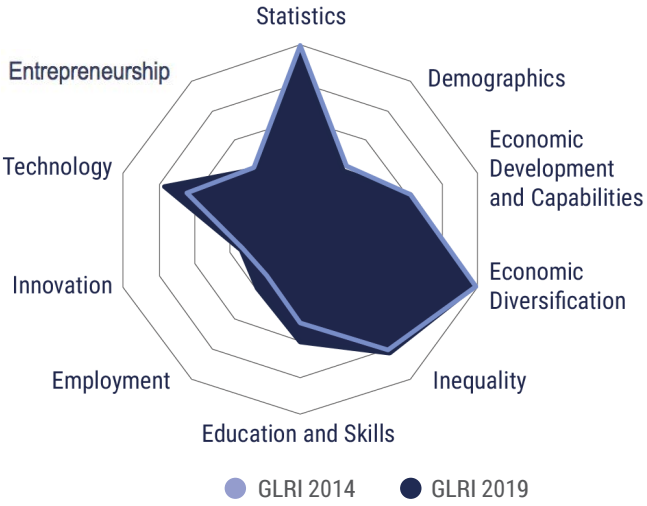
32

GLRI 2014 Rank 27 ↓

Key Indicators

Population, mn	38.0
GDP per capita, PPP	27216
GDP, current US$ bn	525
Income Group	High-income
Region	Europe

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Portugal

Global Labour Resilience Index 2019

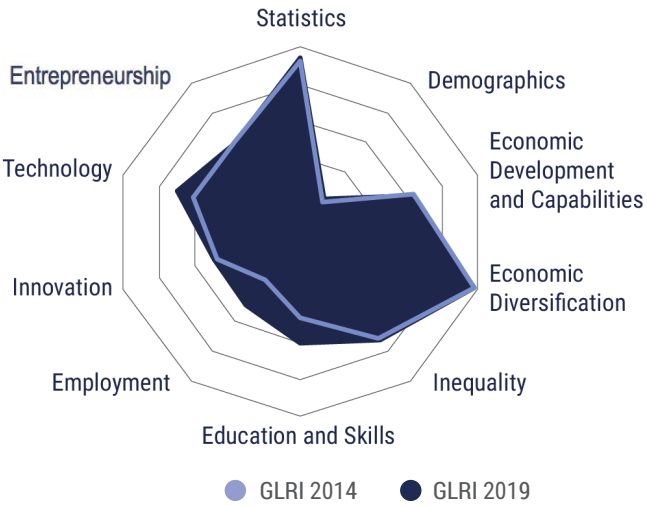
31

GLRI 2014 Rank 30 ↓

Key Indicators

Population, mn	10.3
GDP per capita, PPP	27937
GDP, current US$ bn	218
Income Group	High-income
Region	Europe

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Qatar

Global Labour Resilience Index 2019

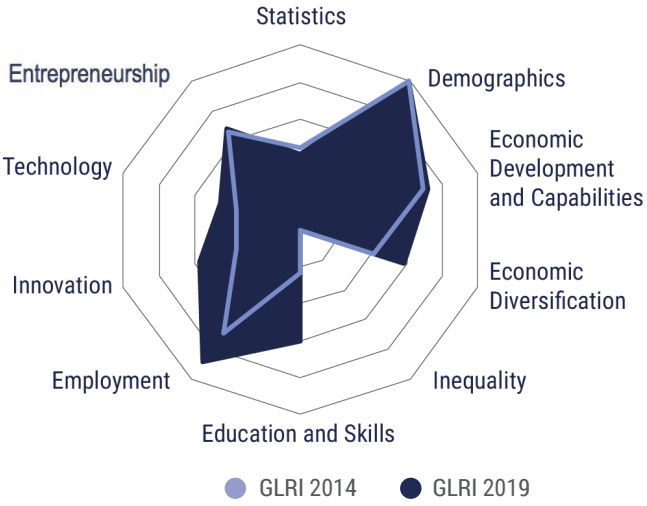
26

GLRI 2014 Rank 40

Key Indicators

Population, mn	2.6
GDP per capita, PPP	116936
GDP, current US$ bn	168
Income Group	High-income
Region	Middle East & North Africa

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Note: the score of the inequality sub-pillar for GLRI 2014 and GLRI 2019 is equal to 0 due to the lack of data for the corresponding indicators.

Romania

Global Labour Resilience Index 2019

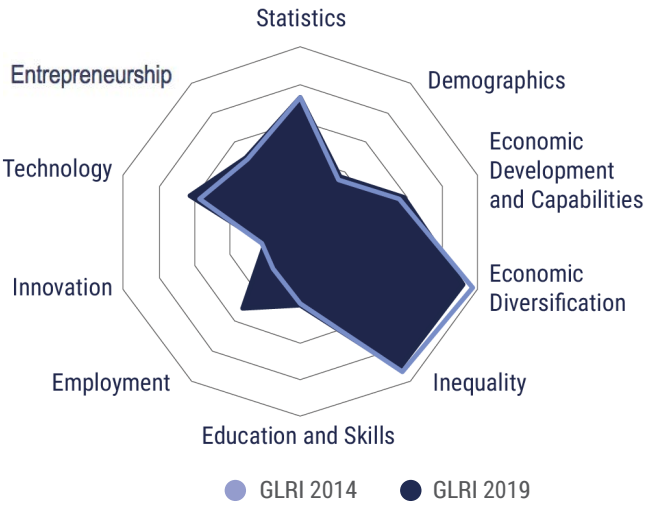
45

GLRI 2014 Rank 43

Key Indicators

Population, mn	19.6
GDP per capita, PPP	23313
GDP, current US$ bn	212
Income Group	Upper middle-income
Region	Europe

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Russian Federation

Global Labour Resilience Index 2019

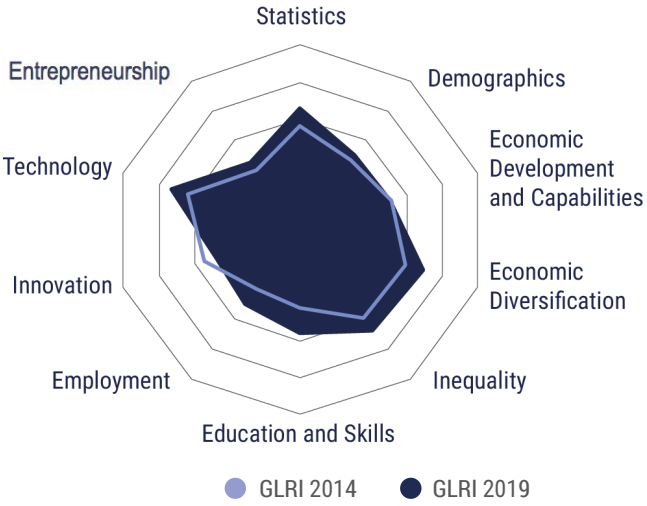
44

GLRI 2014 Rank 49 ↑

Key Indicators

Population, mn	144.5
GDP per capita, PPP	24766
GDP, current US$ bn	1578
Income Group	Upper middle-income
Region	Central & Southern Asia

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Rwanda

Global Labour Resilience Index 2019

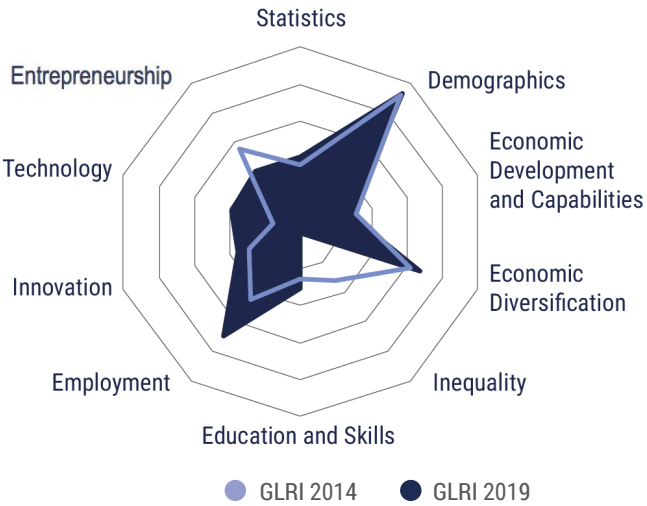
69

GLRI 2014 Rank 90 ↑

Key Indicators

Population, mn	12.2
GDP per capita, PPP	1854
GDP, current US$ bn	9
Income Group	Low-income
Region	Sub-Saharan Africa

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Note: the score of the inequality sub-pillar for GLRI 2019 is equal to 0 due to the lack of data for the corresponding indicators.

Saudi Arabia

Global Labour Resilience Index 2019

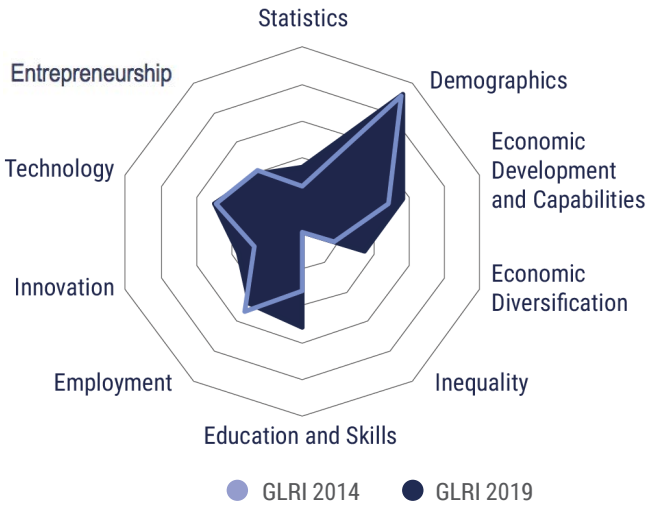
71

GLRI 2014 Rank 80 ↑

Key Indicators

Population, mn	32.9
GDP per capita, PPP	49045
GDP, current US$ bn	684
Income Group	High-income
Region	Middle East & North Africa

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Note: the score of the inequality sub-pillar for GLRI 2014 and GLRI 2019 is equal to 0 due to the lack of data for the corresponding indicators.

Senegal

Global Labour Resilience Index 2019

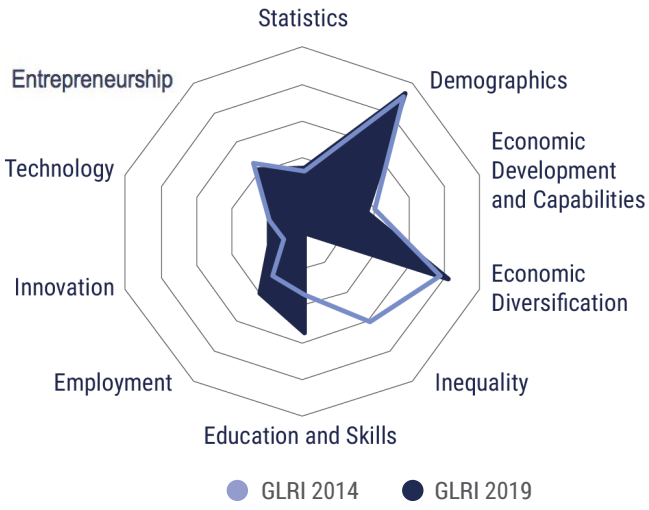
79

GLRI 2014 Rank 85 ↑

Key Indicators

Population, mn	15.9
GDP per capita, PPP	2471
GDP, current US$ bn	16
Income Group	Low-income
Region	Sub-Saharan Africa

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Note: the score of the inequality sub-pillar for GLRI 2019 is equal to 0 due to the lack of data for the corresponding indicators.

Serbia

Global Labour Resilience Index 2019

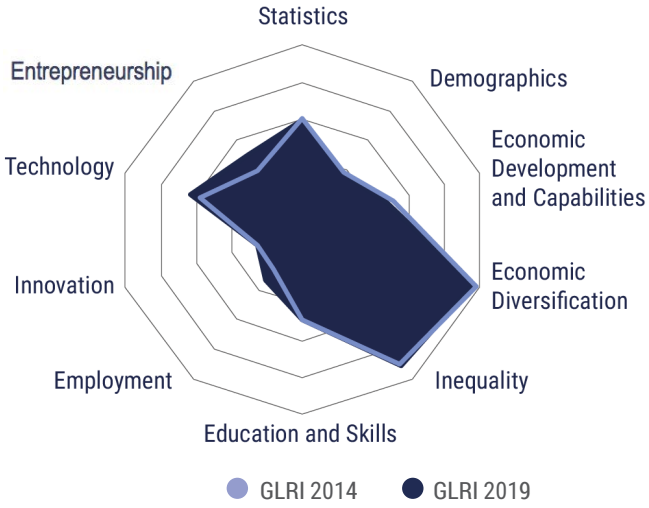
54

GLRI 2014 Rank 45

Key Indicators

Population, mn	7.0
GDP per capita, PPP	14049
GDP, current US$ bn	41
Income Group	Upper middle-income
Region	Europe

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Singapore

Global Labour Resilience Index 2019

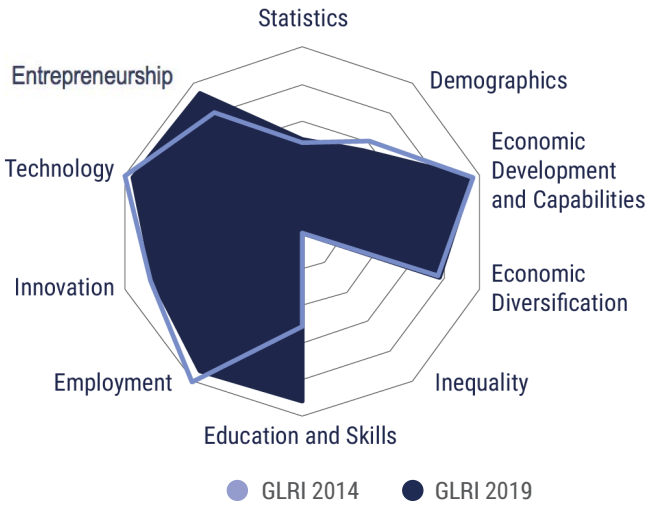
1

GLRI 2014 Rank 1

Key Indicators

Population, mn	5.6
GDP per capita, PPP	85535
GDP, current US$ bn	324
Income Group	High-income
Region	East Asia & Pacific

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Note: the score of the inequality sub-pillar for GLRI 2014 and GLRI 2019 is equal to 0 due to the lack of data for the corresponding indicators.

Slovak Republic

Global Labour Resilience Index 2019

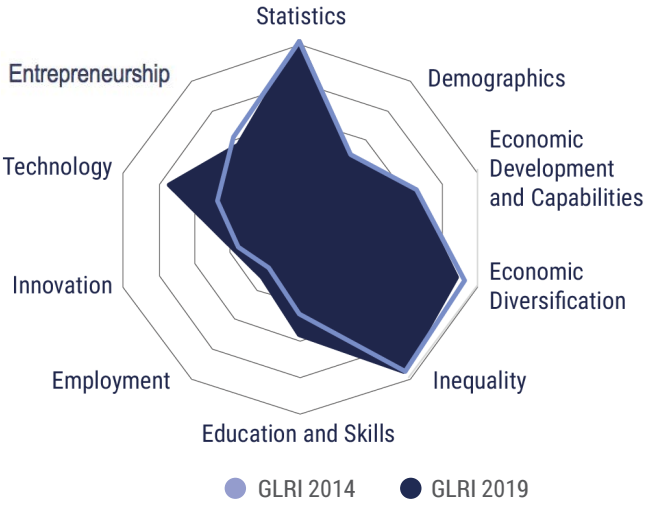
29

GLRI 2014 Rank 26

Key Indicators

Population, mn	5.4
GDP per capita, PPP	30155
GDP, current US$ bn	96
Income Group	High-income
Region	Europe

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Slovenia

Global Labour Resilience Index 2019

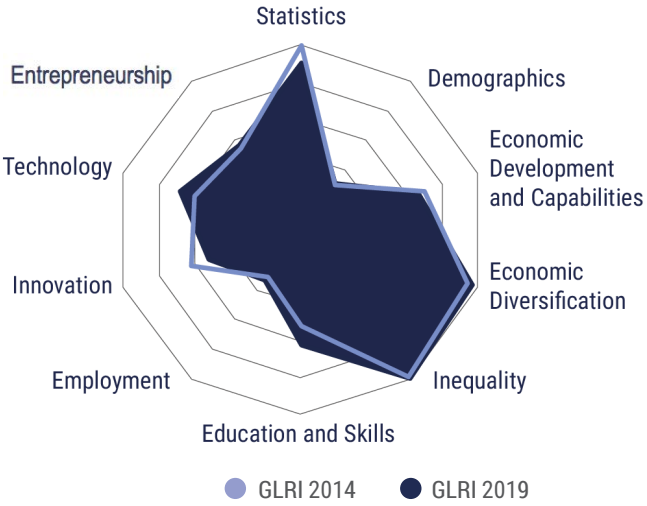
28

GLRI 2014 Rank 21

Key Indicators

Population, mn	2.1
GDP per capita, PPP	31401
GDP, current US$ bn	49
Income Group	High-income
Region	Europe

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



South Africa

Global Labour Resilience Index 2019

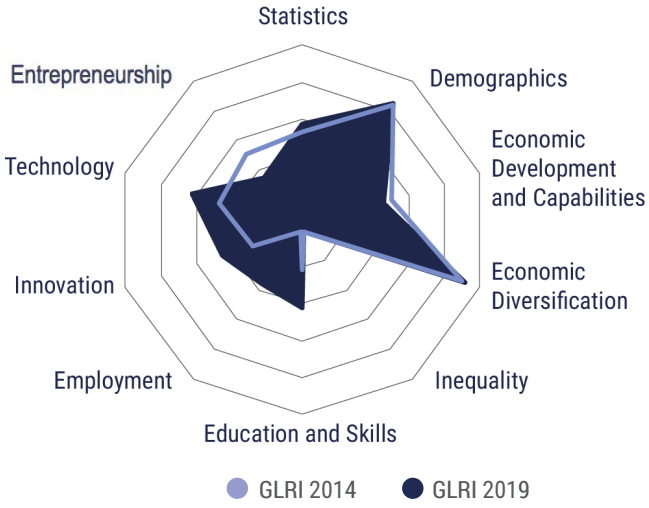
74

GLRI 2014 Rank 89 ↑

Key Indicators

Population, mn	56.7
GDP per capita, PPP	12295
GDP, current US$ bn	349
Income Group	Upper middle-income
Region	Sub-Saharan Africa

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Spain

Global Labour Resilience Index 2019

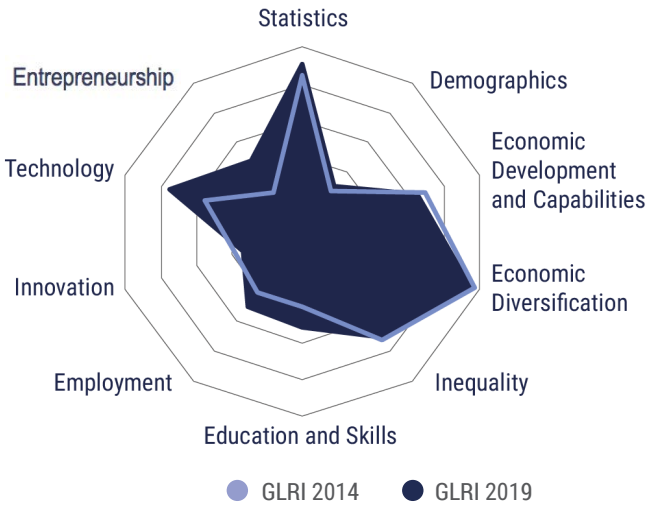
38

GLRI 2014 Rank 41 ↑

Key Indicators

Population, mn	46.6
GDP per capita, PPP	34272
GDP, current US$ bn	1311
Income Group	High-income
Region	Europe

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Sri Lanka

Global Labour Resilience Index 2019

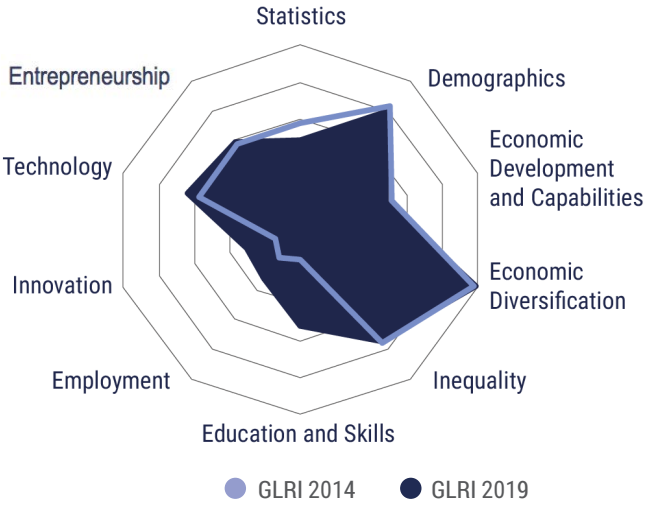
81

GLRI 2014 Rank 83

Key Indicators

Population, mn	21.4
GDP per capita, PPP	11669
GDP, current US$ bn	87
Income Group	Lower middle-income
Region	Central & Southern Asia

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Sweden

Global Labour Resilience Index 2019

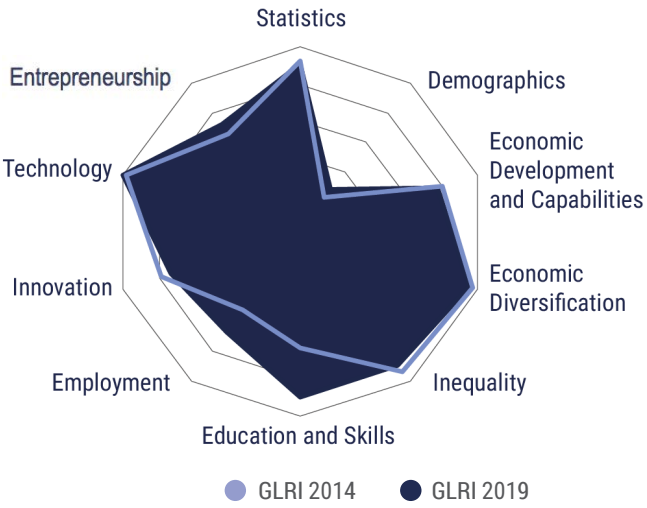
6

GLRI 2014 Rank 5

Key Indicators

Population, mn	10.1
GDP per capita, PPP	46949
GDP, current US$ bn	538
Income Group	High-income
Region	Europe

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Switzerland

Global Labour Resilience Index 2019

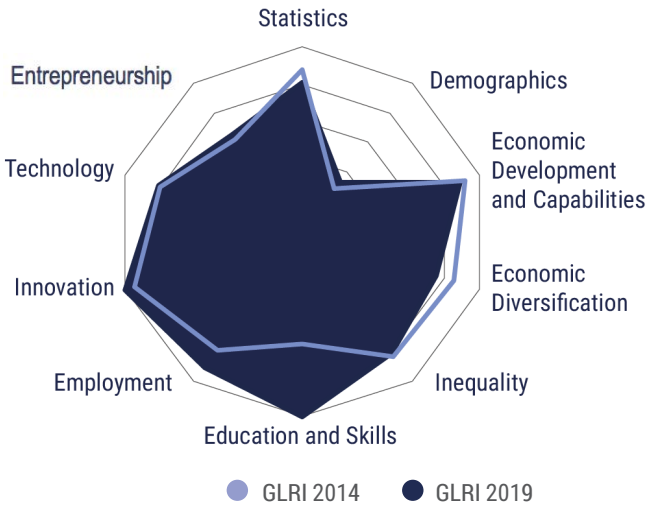
2

GLRI 2014 Rank 4

Key Indicators

Population, mn	8.5
GDP per capita, PPP	57410
GDP, current US$ bn	679
Income Group	High-income
Region	Europe

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Tajikistan

Global Labour Resilience Index 2019

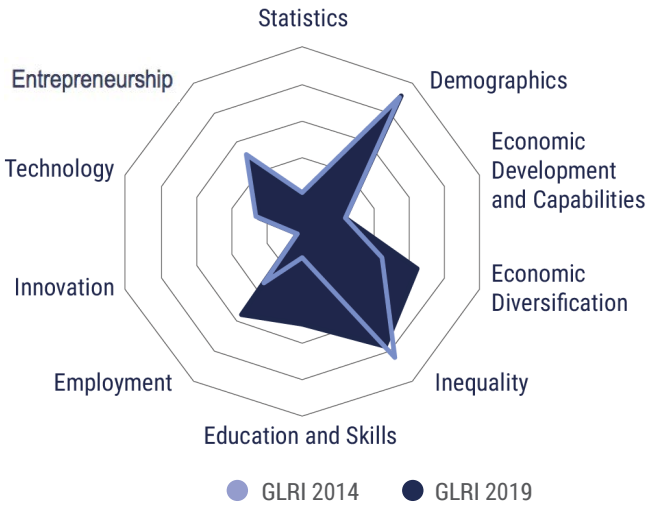
95

GLRI 2014 Rank 107

Key Indicators

Population, mn	8.9
GDP per capita, PPP	2897
GDP, current US$ bn	7
Income Group	Low-income
Region	Central & Southern Asia

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Thailand

Global Labour Resilience Index 2019

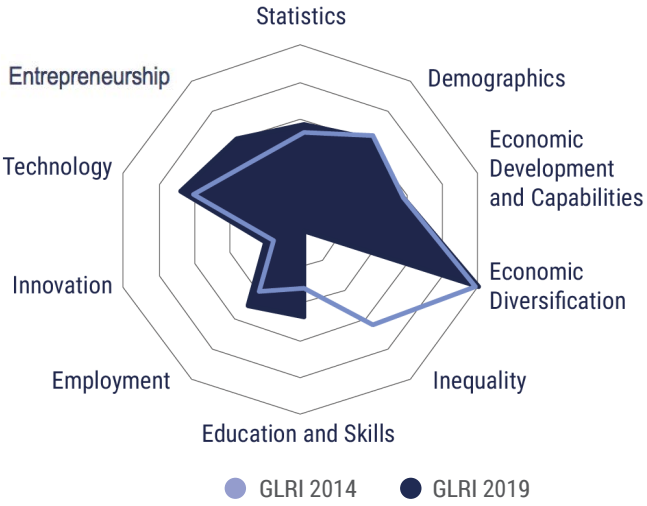
41

GLRI 2014 Rank 47 ↑

Key Indicators

Population, mn	69.0
GDP per capita, PPP	16278
GDP, current US$ bn	455
Income Group	Upper middle-income
Region	East Asia & Pacific

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Note: the score of the inequality sub-pillar for GLRI 2019 is equal to 0 due to the lack of data for the corresponding indicators.

Trinidad and Tobago

Global Labour Resilience Index 2019

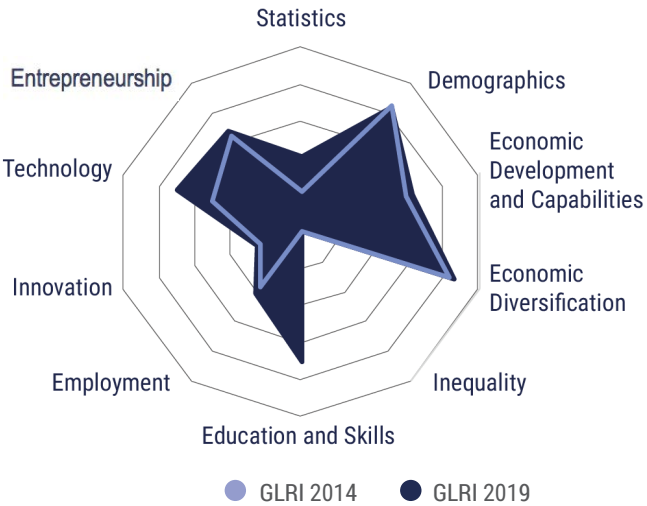
77

GLRI 2014 Rank 92 ↑

Key Indicators

Population, mn	1.4
GDP per capita, PPP	28763
GDP, current US$ bn	22
Income Group	High-income
Region	Latin America & Caribbean

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Note: the score of the inequality sub-pillar for GLRI 2014 and GLRI 2019 is equal to 0 due to the lack of data for the corresponding indicators. The score of the education and skills sub-pillar in GLRI 2014 is equal to 0 due to the lack of data for the corresponding indicators.

Tunisia

Global Labour Resilience Index 2019

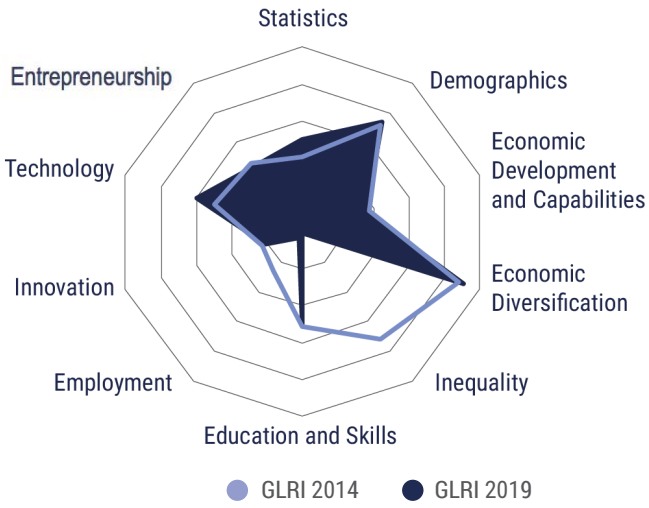
78

GLRI 2014 Rank 53 ↓

Key Indicators

Population, mn	11.5
GDP per capita, PPP	10849
GDP, current US$ bn	40
Income Group	Lower middle-income
Region	Middle East & North Africa

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Note: the score of the inequality sub-pillar for GLRI 2019 is equal to 0 due to the lack of data for the corresponding indicators.

Turkey

Global Labour Resilience Index 2019

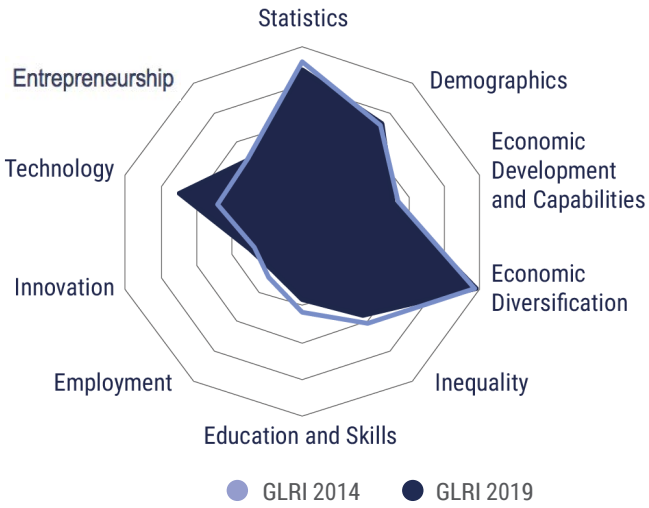
43

GLRI 2014 Rank 37 ↓

Key Indicators

Population, mn	80.7
GDP per capita, PPP	25129
GDP, current US$ bn	851
Income Group	Upper middle-income
Region	Central & Southern Asia

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Uganda

Global Labour Resilience Index 2019

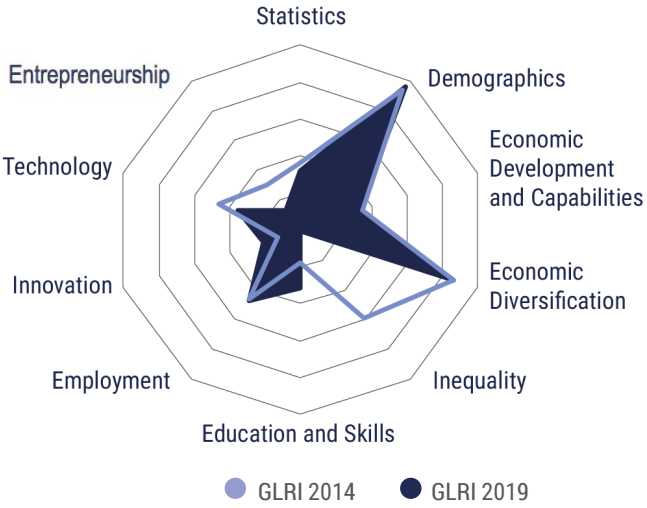
93

GLRI 2014 Rank 77 ↓

Key Indicators

Population, mn	42.9
GDP per capita, PPP	1698
GDP, current US$ bn	26
Income Group	Low-income
Region	Sub-Saharan Africa

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Note: the score of the inequality sub-pillar for GLRI 2019 is equal to 0 due to the lack of data for the corresponding indicators.

Ukraine

Global Labour Resilience Index 2019

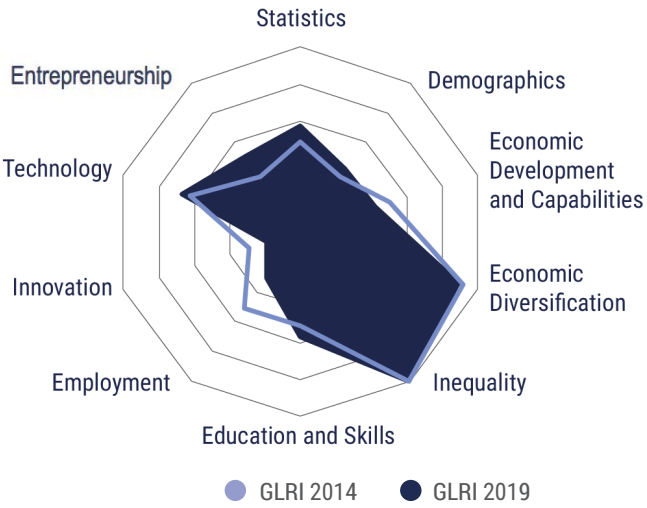
53

GLRI 2014 Rank 39 ↓

Key Indicators

Population, mn	44.8
GDP per capita, PPP	7894
GDP, current US$ bn	112
Income Group	Lower middle-income
Region	Europe

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



United Arab Emirates

Global Labour Resilience Index 2019

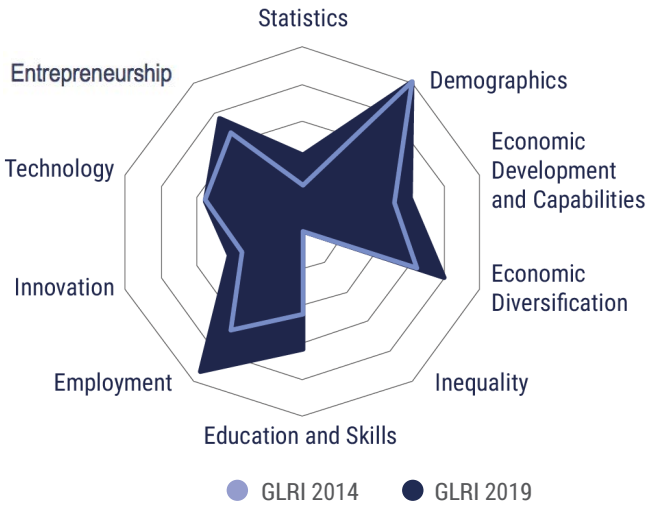
21

GLRI 2014 Rank 35 ↑

Key Indicators

Population, mn	9.4
GDP per capita, PPP	67293
GDP, current US$ bn	383
Income Group	High-income
Region	Middle East & North Africa

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Note: the score of the inequality sub-pillar for GLRI 2014 and GLRI 2019 is equal to 0 due to the lack of data for the corresponding indicators.

United Kingdom

Global Labour Resilience Index 2019

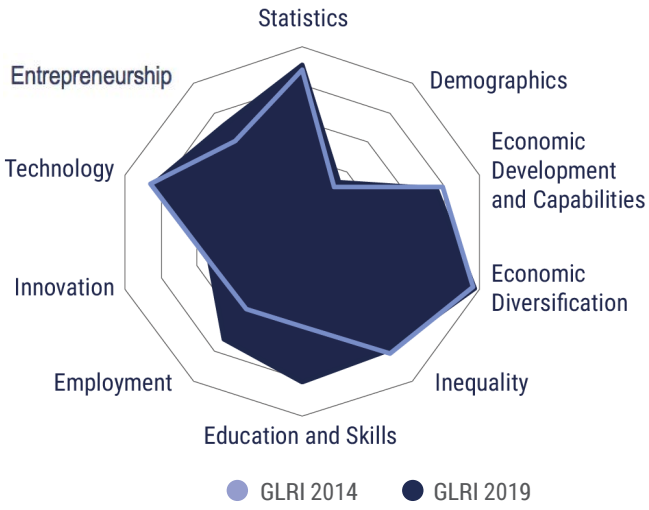
12

GLRI 2014 Rank 16 ↑

Key Indicators

Population, mn	66.0
GDP per capita, PPP	39753
GDP, current US$ bn	2622
Income Group	High-income
Region	Europe

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



United States

Global Labour Resilience Index 2019

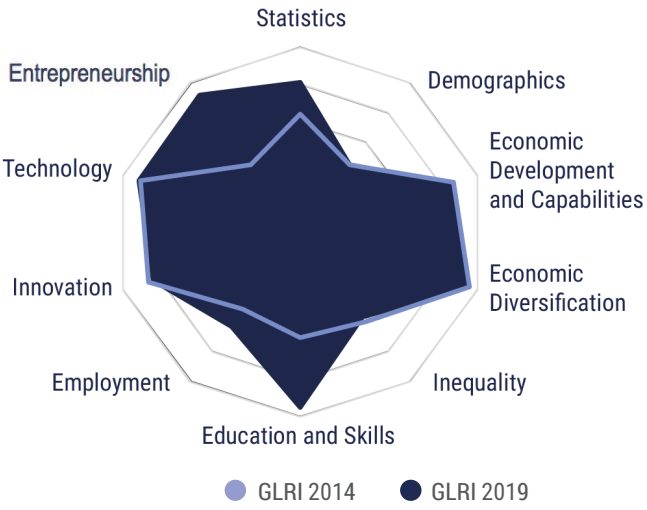
3

GLRI 2014 Rank 11

Key Indicators

Population, mn	325.7
GDP per capita, PPP	54225
GDP, current US$ bn	19391
Income Group	High-income
Region	North America

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Uruguay

Global Labour Resilience Index 2019

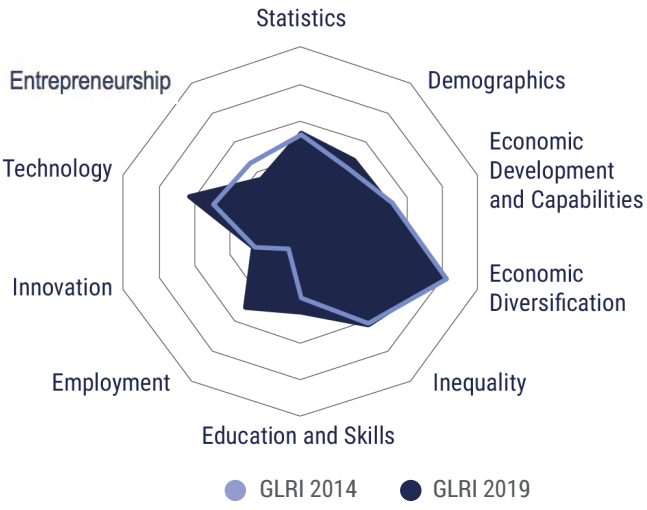
68

GLRI 2014 Rank 75

Key Indicators

Population, mn	3.5
GDP per capita, PPP	20551
GDP, current US$ bn	56
Income Group	High-income
Region	Latin America & Caribbean

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Vietnam

Global Labour Resilience Index 2019

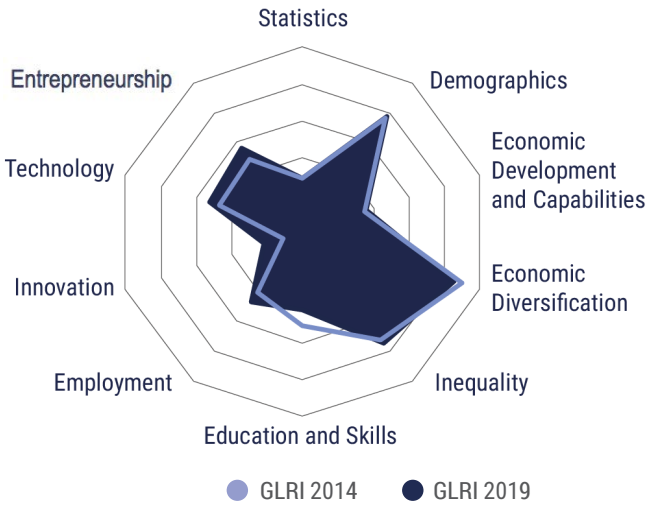
64

GLRI 2014 Rank 58

Key Indicators

Population, mn	95.5
GDP per capita, PPP	6172
GDP, current US$ bn	224
Income Group	Lower middle-income
Region	East Asia & Pacific

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Yemen, Rep.

Global Labour Resilience Index 2019

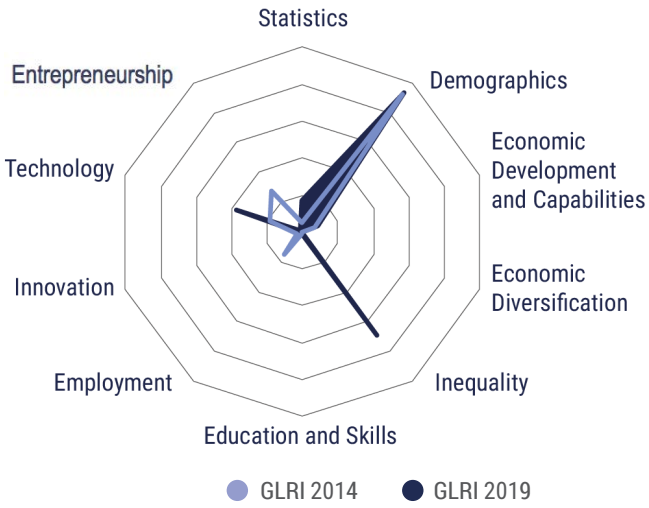
122

GLRI 2014 Rank 122

Key Indicators

Population, mn	28.3
GDP per capita, PPP	1479
GDP, current US$ bn	18
Income Group	Low-income
Region	Middle East & North Africa

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Note: the score of the inequality sub-pillar for GLRI 2014 is equal to 0 due to the lack of data for the corresponding indicators in 2014. The score of the economic diversification sub-pillar in GLRI 2014 and GLRI 2019 is equal to 0 due to the lack of data for the corresponding indicators.

Zambia

Global Labour Resilience Index 2019

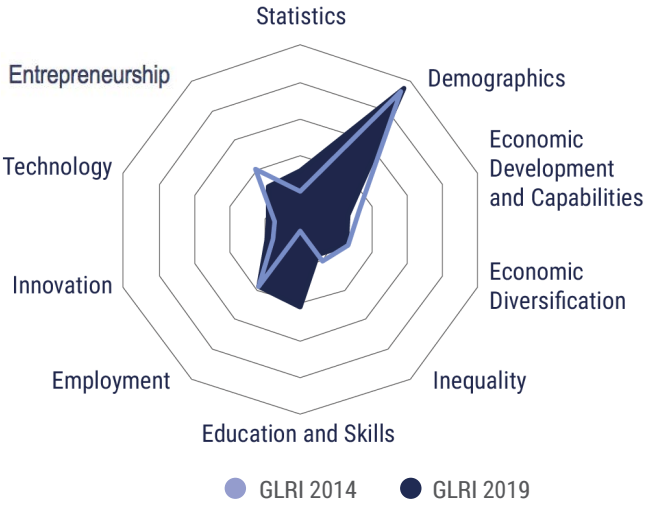
118

GLRI 2014 Rank 120 ↑

Key Indicators

Population, mn	17.1
GDP per capita, PPP	3689
GDP, current US$ bn	26
Income Group	Lower middle-income
Region	Sub-Saharan Africa

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Note: the score of the education and skills sub-pillar for GLRI 2014 is equal to 0 due to the lack of data for the corresponding indicators.

Zimbabwe

Global Labour Resilience Index 2019

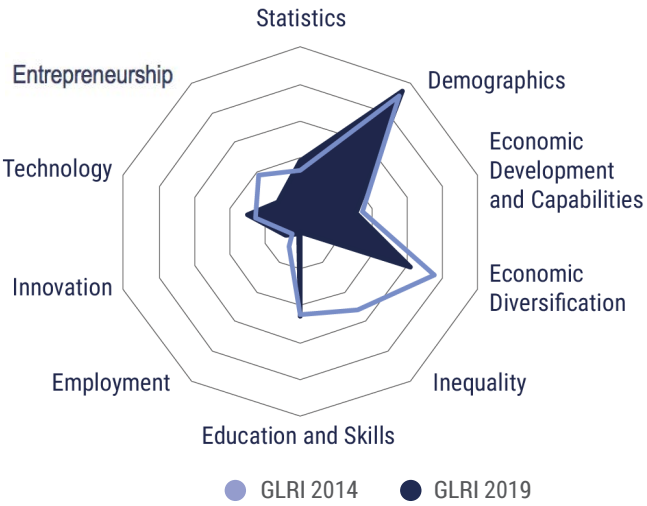
108

GLRI 2014 Rank 100 ↓

Key Indicators

Population, mn	16.5
GDP per capita, PPP	1900
GDP, current US$ bn	18
Income Group	Low-income
Region	Sub-Saharan Africa

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Note: the score of the inequality sub-pillar for GLRI 2019 is equal to 0 due to the lack of data for the corresponding indicators.

Hong Kong SAR

Global Labour Resilience Index 2019

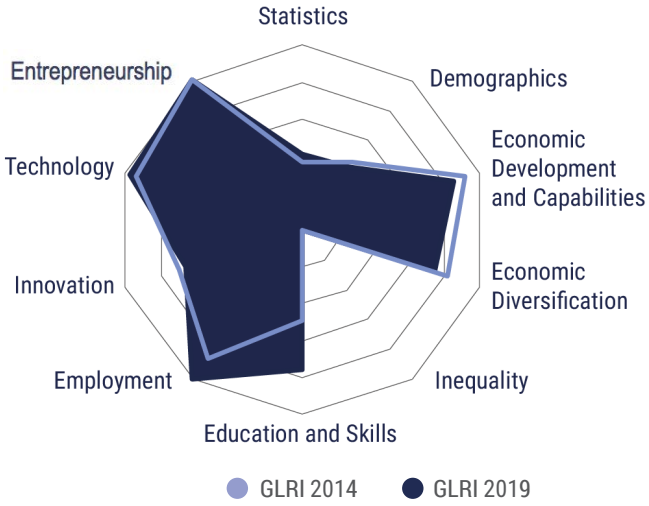
-

GLRI 2014 Rank -

Key Indicators

Population, mn	7.4
GDP per capita, PPP	56055
GDP, current US$ bn	341
Income Group	High-income
Region	East Asia & Pacific

Breakdown of Global Labour Resilience Results by Sub-Pillar Score (1-100)



Note: the score of the inequality sub-pillar for GLRI 2014 and GLRI 2019 is equal to 0 due to the lack of data for the corresponding indicators.

APPENDIX III: SELECTED DATA TABLES

Table 8. Structural Pillar Score Ranking

Countries	Structural Pillar	Rank	Demographics	Rank	Economic Development & Country Capabilities	Rank	Economic Diversification	Rank	Inequality	Rank
United Arab Emirates	100	1	100	1	61	34	80	65		
Luxembourg	97	2	50	83	100	1	82	57	84	21
Qatar	92	3	99	2	72	14	59	100		
Singapore	90	4	55	76	96	2	78	68		
Malaysia	86	5	80	47	58	43	86	50		
Lebanon	86	6	72	62	58	42	93	26		
Jordan	85	7	90	28	46	65	87	46		
Slovak Republic	84	8	47	88	65	27	88	44	96	6
Belgium	84	9	33	101	73	13	97	9	93	11
Bahrain	84	10	95	6	58	44	68	91		
Austria	83	11	31	107	77	9	100	2	86	19
Slovenia	82	12	32	106	66	24	96	11	99	2
Czech Republic	82	13	32	105	68	20	95	18	98	4
Kyrgyz Republic	82	14	87	32	40	82	69	88	95	7
Netherlands	81	15	33	103	74	11	95	20	89	17
Sweden	81	16	28	115	78	7	96	12	89	16
Uganda	80	17	96	3	34	94	86	48		
Denmark	79	18	29	111	72	15	95	21	92	12
Moldova	79	19	63	69	40	80	87	47	97	5
India	79	20	81	44	41	78	93	27		
Thailand	79	21	61	74	56	47	98	5		
United Kingdom	78	22	34	100	76	10	97	7	79	34
Indonesia	78	23	84	40	38	84	92	34		
Finland	77	24	23	118	72	16	95	19	95	9
China	77	25	64	68	55	50	94	25		
Egypt, Arab Rep.	77	26	85	39	29	105	88	43	82	23
Iceland	77	27	49	84	64	29	72	82	98	3
Poland	76	28	40	94	62	32	99	3	82	23
Korea, Rep.	76	29	51	80	71	17	90	39		
Mexico	76	30	78	51	60	36	92	30	52	60
United States	76	31	45	90	85	4	95	17	57	56
Germany	75	32	22	119	79	6	97	8	83	22
Hungary	74	33	33	102	64	28	96	13	86	18
Switzerland	74	34	34	99	89	3	75	73	80	29
Turkey	73	35	73	60	51	54	98	6	56	58
Romania	73	36	36	98	59	39	92	31	91	13
Senegal	73	37	93	19	35	92	81	62		
France	73	38	29	112	74	12	95	16	80	31
Cyprus	72	39	53	79	66	23	81	60	77	35
Kenya	72	40	94	11	30	101	83	53		
Vietnam	70	41	77	55	36	86	86	49	74	39
Ukraine	70	42	41	92	43	72	90	40	100	1
Namibia	70	43	91	27	41	79	74	77		
Serbia	70	44	38	97	48	61	97	10	91	14
Philippines	70	45	86	37	54	52	72	81	61	55
Nepal	69	46	82	43	33	95	89	41		
Israel	68	47	60	75	67	21	76	71		
Norway	68	48	40	95	69	19	67	94	93	10
Pakistan	68	49	87	33	34	93	81	61		

Countries	Structural Pillar	Rank	Demographics	Rank	Economic Development & Country Capabilities	Rank	Economic Diversification	Rank	Inequality	Rank
Tunisia	66	50	74	59	36	87	91	36		
Estonia	66	51	30	110	63	30	94	23	80	31
Bosnia & Herzegovina	66	52	41	93	51	56	94	24	80	31
Croatia	65	53	29	113	57	45	95	22	85	20
Morocco	65	54	79	50	35	91	86	51		
Kazakhstan	63	55	78	53	44	70	46	109	95	8
Italy	63	56	16	121	71	18	100	1	75	38
Canada	63	57	39	96	67	22	90	37		
Spain	62	58	30	109	65	26	95	15	71	44
El Salvador	62	59	73	61	46	63	80	64	61	54
Mauritius	61	60	63	70	50	60	83	56		
Guatemala	61	61	86	36	43	71	91	35	39	69
Tajikistan	59	62	91	25	24	115	65	97	77	35
New Zealand	59	63	46	89	59	40	87	45		
Panama	59	64	74	58	59	38	89	42	34	72
Latvia	59	65	29	114	59	41	92	29	76	37
Bangladesh	58	66	85	38	31	98	58	102	81	28
Portugal	58	67	22	120	61	33	98	4	73	41
Madagascar	58	68	93	15	27	110	71	83		
Malta	58	69	30	108	65	25	69	89	90	15
Montenegro	57	70	48	86	42	76	81	59	82	25
Rwanda	57	71	93	17	29	104	68	93		
Armenia	57	72	61	73	36	88	74	74	80	29
Kuwait	56	73	95	4	62	31	31	114		
Dominican Republic	56	74	78	52	46	64	81	63	47	64
Lithuania	56	75	32	104	60	37	92	32	68	47
Sri Lanka	55	76	66	67	40	81	83	55	61	53
Zimbabwe	55	77	94	13	31	97	63	98		
Ireland	55	78	51	81	78	8	39	111	82	25
Cambodia	54	79	88	31	27	111	72	80		
Oman	54	80	95	5	45	69	46	110		
Trinidad and Tobago	53	81	66	66	50	59	69	90		
Saudi Arabia	52	82	92	24	57	46	35	113		
Ethiopia	52	83	91	26	21	117	70	84	63	51
Brazil	52	84	72	63	50	57	92	33	31	74
Mongolia	51	85	89	30	15	120	59	101	81	27
Macedonia, FYR	51	86	54	78	43	73	74	75	72	42
Georgia	50	87	48	87	42	77	83	54	70	45
Argentina	50	88	62	72	42	75	83	52	55	59
Bulgaria	49	89	25	117	53	53	96	14	68	47
Uruguay	48	90	48	85	50	58	79	66	62	52
Russian Federation	48	91	50	82	51	55	70	85	67	49
Honduras	48	92	87	35	35	90	81	58	35	71
Peru	47	93	77	56	37	85	73	79	51	61
Brunei Darussalam	47	94	87	34	60	35	31	115		
Australia	47	95	45	91	55	49	78	69		
Costa Rica	47	96	68	64	54	51	76	72	38	70
Malawi	45	97	93	18	26	112	57	104		
Iran, Islamic Rep.	44	98	84	42	46	67	39	112	64	50
Japan	43	99	1	122	83	5	90	38		

Countries	Structural Pillar	Rank	Demographics	Rank	Economic Development & Country Capabilities	Rank	Economic Diversification	Rank	Inequality	Rank
Benin	43	100	92	23	29	102	69	87	41	67
Cote d'Ivoire	42	101	93	16	18	118	62	99	57	56
Greece	42	102	26	116	56	48	77	70	71	43
Yemen, Rep.	42	103	93	14	9	121			70	46
Colombia	40	104	75	57	45	68	73	78	33	73
Albania	39	105	54	77	35	89	79	67		
Bolivia	39	106	79	49	29	106	68	92	49	62
South Africa	38	107	84	41	46	66	92	28	1	77
Cameroon	38	108	92	22	29	103	58	103	44	65
Ecuador	37	109	77	54	31	99	65	96	48	63
Chile	36	110	62	71	48	62	70	86	41	66
Paraguay	35	111	80	48	32	96	66	95	40	68
Mozambique	35	112	92	21	27	109	74	76	24	75
Jamaica	35	113	67	65	43	74	54	105		
Guinea	34	114	92	20	17	119	53	107		
Algeria	31	115	81	46	31	100	48	108		
Burkina Faso	30	116	95	7	26	113	16	120	73	40
Burundi	22	117	95	10	1	122	53	106		
Mali	15	118	95	9	27	108	18	119		
Nigeria	12	119	94	12	25	114	18	118		
Botswana	6	120	89	29	39	83	1	121		
Azerbaijan	6	121	81	45	23	116	25	117		
Zambia	1	122	95	8	27	107	27	116	16	76
Hong Kong, China	68	-	42	-	86	-	75	-		

Source: Whiteshield Partners

Table 9. Policy Pillar Score Ranking

Country	Policy Pillar	Rank	Education	Rank	Employment	Rank	Innovation	Rank	Technology	Rank	Entrepreneurship	Rank	Statistics	Rank
Switzerland	100	1	100	1	90	3	100	1	82	15	65	26	81	25
Singapore	98	2	91	6	93	2	84	6	95	4	93	1	51	62
United States	97	3	95	3	63	20	83	7	91	6	92	2	81	25
Finland	96	4	96	2	72	13	76	13	98	2	67	18	91	9
Denmark	96	5	92	5	86	6	77	10	86	9	67	19	91	9
Sweden	94	6	90	8	67	17	73	15	100	1	71	12	91	9
Norway	94	7	93	4	75	10	75	14	86	8	63	30	97	3
Iceland	93	8	87	10	82	7	87	5	82	13	77	5	69	36
New Zealand	90	9	83	11	72	12	94	3	61	62	89	3	75	31
Netherlands	90	10	90	7	80	8	65	21	83	12	64	27	91	9
Australia	86	11	80	16	52	37	93	4	76	23	78	4	72	33
Belgium	85	12	82	12	59	27	69	17	79	18	70	16	91	9
Luxembourg	85	13	67	23	88	5	69	16	85	10	63	29	78	28
United Kingdom	85	14	81	14	71	14	52	26	84	11	72	11	91	9
Israel	85	15	82	13	60	25	80	8	77	20	75	7	72	33
Germany	84	16	89	9	60	24	77	11	81	17	50	58	88	19

Country	Policy Pillar	Rank	Education	Rank	Employment	Rank	Innovation	Rank	Technology	Rank	Entrepreneurship	Rank	Statistics	Rank
Ireland	83	17	75	19	75	9	55	23	75	28	70	15	91	9
Korea, Rep.	83	18	63	30	33	86	99	2	96	3	67	20	81	25
Canada	82	19	80	15	66	18	67	18	77	21	74	9	69	36
Austria	79	20	77	18	60	22	66	19	89	7	43	78	88	19
France	79	21	67	24	57	30	66	20	76	26	57	37	97	3
Estonia	79	22	74	20	50	43	45	29	82	14	75	8	94	7
Japan	77	23	69	22	45	58	76	12	92	5	57	40	75	31
Czech Republic	71	24	66	27	38	74	53	24	79	19	49	60	100	1
China	70	25	66	26	49	47	77	9	81	16	58	36	51	62
Portugal	70	26	61	35	49	48	48	27	70	37	59	34	94	7
United Arab Emirates	68	27	64	29	94	1	42	31	55	72	76	6	41	73
Malaysia	68	28	78	17	66	19	38	36	69	41	59	35	60	44
Lithuania	67	29	67	25	36	80	38	37	76	25	66	24	85	23
Slovenia	66	30	62	32	33	88	52	25	69	42	57	41	91	9
Qatar	66	31	61	34	89	4	57	22	45	95	67	22	41	73
Malta	66	32	62	33	70	15	36	41	67	46	62	31	63	41
Latvia	65	33	59	38	35	81	27	57	76	22	66	25	91	9
Slovak Republic	64	34	57	39	33	90	37	38	73	30	55	46	100	1
Chile	63	35	54	49	57	31	31	50	59	66	63	28	85	23
Spain	63	36	52	54	50	44	34	47	74	29	47	69	91	9
Poland	63	37	60	36	39	71	34	46	76	24	41	81	97	3
Italy	61	38	56	45	46	55	40	32	71	35	38	89	88	19
Russian Federation	61	39	56	46	50	45	48	28	73	31	45	73	66	39
Cyprus	60	40	62	31	52	38	25	61	70	36	56	42	69	36
Hungary	59	41	44	75	41	65	34	44	68	43	44	75	97	3
Bahrain	57	42	46	69	58	28	30	51	70	38	73	10	41	73
Georgia	55	43	39	89	60	23	17	87	61	60	70	14	66	39
Costa Rica	55	44	65	28	55	34	28	55	68	44	35	96	60	44
Thailand	54	45	47	68	51	40	21	69	69	40	61	32	57	50
Mauritius	54	46	49	61	55	33	38	35	56	70	68	17	38	87
India	52	47	57	40	48	51	22	67	72	32	49	66	51	62
Turkey	52	48	37	93	26	107	30	53	69	39	49	67	88	19
Romania	52	49	40	86	52	39	20	79	62	55	49	62	72	33
Panama	51	50	45	73	43	60	33	48	65	49	67	23	38	87
Macedonia, FYR	51	51	53	50	58	29	20	78	61	63	67	21	32	98
Greece	50	52	50	59	29	98	36	40	44	98	53	49	78	28
Mexico	49	53	50	60	33	87	20	76	65	51	38	90	78	28
Oman	49	54	57	42	32	91	21	70	51	83	70	13	51	62
Azerbaijan	48	55	49	64	74	11	8	110	52	82	57	39	41	73
Ukraine	48	56	57	41	31	95	19	83	66	48	50	57	57	50
Jamaica	48	57	55	47	48	50	32	49	50	85	60	33	35	95
Indonesia	48	58	51	55	42	64	23	66	63	53	43	77	57	50
Serbia	48	59	48	66	33	89	25	62	63	54	50	56	60	44
South Africa	48	60	43	79	36	78	45	30	62	57	35	98	57	50
Kazakhstan	47	61	42	81	43	63	12	102	72	33	52	52	54	57
Uruguay	47	62	43	78	51	41	26	58	63	52	36	94	54	57
Montenegro	47	63	44	76	51	42	23	65	55	73	55	45	44	70
Jordan	46	64	51	56	32	93	35	42	48	88	50	55	54	57

Country	Policy Pillar	Rank	Education	Rank	Employment	Rank	Innovation	Rank	Technology	Rank	Entrepreneurship	Rank	Statistics	Rank
Moldova	46	65	47	67	37	77	9	109	62	56	52	51	63	41
Armenia	46	66	34	99	62	21	13	98	57	69	57	38	44	70
Bulgaria	45	67	38	92	43	61	24	63	46	94	54	48	60	44
Saudi Arabia	44	68	52	53	48	49	36	39	49	87	39	87	35	95
Croatia	44	69	38	90	24	109	25	60	65	50	47	70	60	44
Rwanda	43	70	30	105	69	16	35	43	39	102	41	82	41	73
Albania	43	71	45	72	60	26	12	103	41	99	49	59	47	68
Kenya	42	72	52	51	54	35	18	85	60	64	39	88	29	108
Brunei Darussalam	42	73	51	57	49	46	30	52	40	100	51	54	32	98
Trinidad and Tobago	42	74	56	44	34	85	20	77	56	71	53	50	32	98
Colombia	41	75	46	70	26	105	16	91	54	74	42	80	63	41
Vietnam	41	76	42	80	47	52	22	68	52	81	56	43	29	108
Kuwait	41	77	35	97	45	56	40	33	53	80	49	65	26	111
Iran, Islamic Rep.	41	78	49	62	17	112	29	54	76	27	35	95	38	87
Philippines	40	79	59	37	28	100	24	64	58	67	35	97	38	87
Sri Lanka	39	80	43	77	27	101	25	59	53	79	49	61	41	73
Morocco	39	81	25	113	27	103	27	56	61	59	55	44	41	73
Lebanon	37	82	56	43	32	92	17	89	46	93	46	71	32	98
Tunisia	37	83	49	63	3	121	21	72	60	65	44	76	51	62
Brazil	36	84	39	88	10	116	40	34	72	34	4	120	60	44
Peru	35	85	36	94	27	102	14	97	47	90	39	86	57	50
Guinea	35	86	35	96	53	36	1	122	54	75	54	47	23	115
Guatemala	35	87	38	91	44	59	21	73	34	108	40	85	41	73
Botswana	34	88	45	74	34	83	34	45	31	110	40	83	32	98
Dominican Republic	34	89	24	115	39	73	20	75	38	103	48	68	47	68
Argentina	34	90	52	52	26	106	20	80	45	97	18	114	54	57
Mongolia	34	91	32	102	25	108	6	112	67	47	45	74	38	87
Senegal	34	92	54	48	41	66	19	82	20	118	42	79	35	95
Kyrgyz Republic	33	93	34	98	28	99	4	116	53	78	51	53	41	73
Honduras	33	94	40	85	31	96	20	74	45	96	36	93	38	87
El Salvador	33	95	28	110	31	94	15	95	49	86	29	103	57	50
Paraguay	32	96	29	107	43	62	9	108	48	89	37	91	41	73
Namibia	32	97	39	87	39	72	11	105	34	109	40	84	41	73
Ecuador	32	98	48	65	16	115	14	96	50	84	18	113	57	50
Tajikistan	31	99	50	58	56	32	3	117	24	115	49	64	20	117
Pakistan	31	100	33	100	18	111	5	114	68	45	23	106	54	57
Egypt, Arab Rep.	31	101	25	112	8	117	15	94	61	58	49	63	41	73
Nepal	30	102	30	106	26	104	19	81	54	76	34	99	32	98
Uganda	26	103	31	103	47	54	21	71	35	107	13	117	32	98
Zambia	26	104	42	82	38	75	19	84	18	121	30	101	32	98
Bosnia&Herzegovina	25	105	29	108	16	114	13	101	58	68	8	118	51	62
Benin	25	106	33	101	40	68	16	92	21	117	34	100	29	108
Mozambique	25	107	9	121	40	69	11	106	47	91	21	109	44	70
Bangladesh	25	108	22	117	17	113	1	121	61	61	29	102	41	73
Nigeria	25	109	28	111	47	53	10	107	37	104	26	104	23	115
Cambodia	24	110	23	116	38	76	3	118	54	77	6	119	44	70
Bolivia	24	111	70	21	5	119	11	104	35	106	18	112	26	111
Algeria	23	112	36	95	7	118	13	100	46	92	22	108	38	87

Country	Policy Pillar	Rank	Education	Rank	Employment	Rank	Innovation	Rank	Technology	Rank	Entrepreneurship	Rank	Statistics	Rank
Ethiopia	22	113	29	109	30	97	17	88	39	101	13	116	32	98
Malawi	21	114	31	104	34	82	16	90	19	120	23	107	32	98
Cameroon	21	115	41	84	39	70	13	99	19	119	17	115	26	111
Mali	21	116	41	83	45	57	18	86	22	116	3	121	26	111
Zimbabwe	18	117	46	71	1	122	8	111	30	111	19	111	38	87
Cote d'Ivoire	18	118	24	114	41	67	16	93	27	114	24	105	10	120
Burundi	17	119	17	118	23	110	4	115	27	113	46	72	16	118
Madagascar	9	120	16	119	34	84	6	113	1	122	36	92	7	121
Burkina Faso	8	121	11	120	36	79	1	120	28	112	20	110	1	122
Yemen, Rep.	1	122	1	122	5	120	2	119	37	105	1	122	16	118
Hong Kong, China	92	-	76	-	100	-	65	-	97	-	100	-	41	-

Source: Whiteshield Partners

Table 10. Average GLRI 2019 Performance by Income Group

Region	Number of Countries and Economies	Average GLRI	Average Structural Score	Average Policy Score	Average Labour Resilience Gap
High-income group	50	71	68	72	-4
Upper-middle income group	34	46	54	44	10
Lower-middle income group	23	42	58	36	22
Low-income group	16	29	48	23	25
All countries and economies	123	53	60	51	9

*Source: Whiteshield Partners*T

Table 11. Top 10 Countries by GLRI 2019 Results and Income Group

GLRI top 10	Structural Pillar top 10	Policy Pillar top 10	Labour Resilience Gap top 10
High-income countries and economies (50 in total)			
Singapore	United Arab Emirates	Switzerland	United Arab Emirates
Switzerland	Luxembourg	Singapore	Bahrain
United States	Qatar	United States	Qatar
Denmark	Singapore	Finland	Croatia
Finland	Slovak Republic	Denmark	Slovak Republic
Sweden	Belgium	Sweden	Argentina
Iceland	Bahrain	Norway	Slovenia
Luxembourg	Austria	Iceland	Kuwait
Netherlands	Slovenia	Hong Kong SAR, China	Hungary
Norway	Czech Republic	New Zealand	Poland
Upper-midde income countries (34 in total)			
Malaysia	Malaysia	China	Lebanon
China	Lebanon	Malaysia	Bosnia and Herzegovina
Thailand	Jordan	Russian Federation	Jordan
Russian Federation	Thailand	Costa Rica	Namibia
Turkey	China	Thailand	Mexico
Romania	Mexico	Mauritius	Guatemala
Jordan	Turkey	Turkey	Thailand
Mexico	Romania	Romania	Cote d'Ivoire
Mauritius	Namibia	Macedonia, FYR	Serbia
Serbia	Serbia	Mexico	Dominican Republic
Lower-middle income countries (23 in total)			
India	Kyrgyz Republic	Georgia	Kyrgyz Republic
Indonesia	Moldova	India	Egypt, Arab Rep.
Moldova	India	Ukraine	Pakistan
Georgia	Indonesia	Indonesia	Bangladesh
Ukraine	Egypt, Arab Rep.	Moldova	Moldova
Kenya	Kenya	Kenya	Cambodia
Vietnam	Vietnam	Vietnam	Kenya
Philippines	Ukraine	Philippines	Tunisia
Kyrgyz Republic	Philippines	Sri Lanka	Indonesia
Morocco	Pakistan	Morocco	Philippines
Low-income countries (16 in total)			
Rwanda	Uganda	Rwanda	Uganda
Senegal	Senegal	Guinea	Madagascar
Nepal	Nepal	Senegal	Yemen, Rep.
Uganda	Tajikistan	Tajikistan	Senegal
Tajikistan	Madagascar	Nepal	Nepal
Guinea	Rwanda	Uganda	Zimbabwe
Ethiopia	Zimbabwe	Benin	Ethiopia
Benin	Ethiopia	Mozambique	Tajikistan
Zimbabwe	Malawi	Ethiopia	Malawi
Mozambique	Benin	Malawi	Burkina Faso

Source: Whiteshield Partners

APPENDIX IV: SOURCES AND DEFINITIONS

Sources and Definitions

1 Structural Pillar

1.1 Demographics sub-pillar

Older population
Share of older population | 2017

Description: Ratio of people aged 65 years old and above as % of total population.

Rationale: A high share of older population as a percentage of total population has a negative impact on labour market resilience. It can create bottlenecks for the available workforce and potential skill gaps since older generations are less adaptable to change and less familiar with new technologies. Both lead to a less resilient labour market.

Source: World Bank, World Bank staff estimates based on age/sex distributions of United Nations Population Division's World Population Prospects.

1.2 Economic development and country capabilities sub-pillar

Economic complexity
Economic Complexity Index | 2016

Description: The Economic Complexity Index measures the knowledge intensity of an economy by considering the knowledge intensity of the products it exports.

Rationale: An increasing level of economic complexity has a positive impact on labour resilience. Economic complexity reflects the level of economic sophistication of a country and its ability to use technology and engage in creative destruction processes. This allows it to offset the impact of automation on job destruction by the creation of new jobs. There is also a statistically significant negative impact of economic complexity on inequality indicating that complex economies are better suited to address the issue of polarized-labour markets and the destruction of low and medium skilled jobs induced by technological disruptions.

Source: Observatory of Economic Complexity, 2011-2016.

Income per capita
GDP per capita | Last available 2014-2017

Description: Gross domestic product divided by midyear population. Data in current U.S. dollars.

Rationale: The level of GDP/capita has a positive impact on labour market resilience. A lower GDP/capita reflects a lower production function thus lower labour demand and a higher unemployment rate. A high long-term unemployment rate is associated with low labour market resilience. A higher GDP/capita reflects higher economic development and sufficient resources to invest in innovation and technology and develop resilience to technological change.

Source: World Bank, World Bank national accounts data, and OECD National Accounts data files.

Tertiarisation of the economy
Share of services in GDP | Last available 2014-2017

Description: Share of services as a component of the GDP (%) per country.

Rationale: The level of tertiarisation of the economy has a positive impact on labour market resilience. Economies with a higher share of services as a proportion of their economy are able to capture the positive impact of technological disruption on job creation. As such job creation occurs mainly in services, this helps to avoid some of the negative impact of de-industrialization trends associated with technological development.

Source: World Bank, World Bank national accounts data, and OECD National Accounts data files.

1.3 Economic diversification sub-pillar

Concentration of exports
HH export concentration index | 2016

Description: Product concentration index for merchandise exports. The HH market concentration index is a measure of export concentration. A country with exports concentrated in very few markets will have an index value close to 1. Similarly, a country with a perfectly diversified export portfolio will have an index close to zero.

Rationale: The level of concentration of exports has a negative impact on labour market resilience. Less concentration allows the economy to be more resilient since it is not dependent on one or a few sectors and is less affected by the cyclical changes of sectors. It leads to a broader and more diversified structure of employment and thus a more reliable and resilient labour market. The level of export concentration impacts other GLRI indicators such as the level of economic development and economic capabilities. It should be noted that many developing countries are particularly vulnerable to the low level of their export concentration.

Source: UNCTAD

Concentration of production
Value added concentration HHI index | 2016

Description: The Herfindahl-Hirschman Index (HHI) is a commonly accepted measure of market concentration. It is calculated by squaring the market share of each firm competing in a market and then summing the resulting numbers. It can range from close to 0 to 1.

The country-level production concentration index is calculated by squaring the sector share of country's common production and then summing the resulting numbers.

Value added at factor costs was used in the calculations. Mining sectors (05-09) are grouped into one sector as well as water supply, sewerage, waste management and remediation activities (36-39) due to incompleteness of data. Other sectors (2-digit) are included in the HHI as they are. If the value of the group (e.g. 05-09) is less than sum of sectors (05+06+07+08+09) included in it, then the maximum value was used.

Rationale: The level of concentration of production has a negative impact on labour market resilience. Less concentration allows the economy to be more resilient since it is not dependent on one or a few sectors and is less affected by the cyclical changes of individual sectors. It leads to a broader and more diversified structure of employment and thus a more reliable and resilient labour market.

Concentration of production impacts other GLRI indicators such as the level of economic development, and economic capabilities and level of export diversification. Many developing countries are particularly vulnerable to a high level of concentration of production.

Source: Whiteshield Partners estimates, OECD.

1.4 Inequality sub-pillar

Income inequality
GINI index | Last available 2014-2017

Description: Gini index measures the extent to which the distribution of income (or, in some cases, consumption expenditure) among individuals or households within an economy deviates from a perfectly equal distribution. A Lorenz curve plots the cumulative percentages of total income received against the cumulative number of recipients, starting with the poorest individual or household. The Gini

index measures the area between the Lorenz curve and a hypothetical line of absolute equality, expressed as a percentage of the maximum area under the line. Thus, a Gini index of 0 represents perfect equality, while an index of 100 implies perfect inequality.

Rationale: The level of income inequality has a negative impact on labour market resilience. High income inequality reflects a bi-polarized labour market between low-skilled and high-skilled workers as well as a high wage gap between both. Low-skilled, low-paid workers are less resilient to technological disruptions since their occupations are more likely to be replaced rather than complemented by technological innovation. With low levels of education, low-skilled workers are less likely to achieve job-reconversion. The effect of automation on job destruction will thus affect unequal countries more.

Source: World Bank, Development Research Group. Data is based on primary household survey data obtained from government statistical agencies and World Bank country departments

2 Policy Pillar

2.1 Education and skills sub-pillar

Education and skills input

Education expenditure

Education spending
Government expenditure on education (% GDP)| Last available 2014-2017

Description: General government expenditure on education (current, capital, and transfers) is expressed as a percentage of GDP. It includes expenditure funded by transfers from international sources to government. General government usually refers to local, regional and central governments.

Rationale: There is a significant positive impact of government education expenditure on the employment rate and thus labour market resilience. It is important to consider this variable because tertiary education attainment and quality alone are not sufficient measures. Public investments in the whole educational system matter to achieve a more educated and more resilient labour market.

Source: United Nations Educational, Scientific, and Cultural Organization (UNESCO) Institute for Statistics.

Tertiary education spending
Government expenditure on tertiary education (% government expenditure on education)| Last available 2014-2017

Description: Government expenditure on tertiary education as a percentage of total government education expenditure.

Rationale: The level of tertiary education expenditure has a positive impact on the resilience of the labour force as higher education is linked with a higher employability. In general, knowledge-intensive jobs requiring tertiary education are less threatened by the risk of automation and are more adaptable to a technology-rich workplace.

Source: World Bank.

Schooling and teaching

Critical thinking
Critical thinking in teaching| 2017

Description: Response to the survey question "In your country, how do you assess the style of teaching?" [1 = frontal, teacher based, and focused on memorizing; 7 = encourages creative and critical individual thinking].

Rationale: The level of critical thinking has a positive impact on the resilience of the labour force. Teaching which includes the development of critical thinking in

students contributes to a person's ability to correctly assess various situations and efficiently adapt to a changing environment, including the situation in the labour market. People with developed critical thinking better understand what skills are currently needed in the labour market and can accordingly work on developing the necessary skills, making them more resilient to job disruptions. Critical thinking is also one of the human attributes which is most difficult to automate, increasing the potential resilience of who have this skill.

Source: WEF GCI 4.0, World Economic Forum, Executive Opinion Survey.

Years of schooling
Mean years of schooling| 2017

Description: Average number of completed years of education of a country's population aged 25 years and older, excluding years spent repeating individual grades.

Rationale: The number of years of schooling has a positive impact on labour resilience. More years of study allows more knowledge and skills to be acquired by students. This, in turn, increases productivity, which makes the workforce more resilient to job disruptions.

Source: WEF GCI 4.0, United Nations Educational, Scientific and Cultural Organization (UNESCO); Wittgenstein Centre for Demography and Global Human Capital.

Corporate policy

Staff training
Extent of staff training| 2017

Description: Response to the survey question "In your country, to what extent do companies invest in training and employee development?" [1 = not at all; 7 = to a great extent].

Rationale: The extent of staff training has a positive impact on the resilience of the labour market. Investing in personnel training increases the skills of workers in areas that are currently in demand in the market. Thus, workers are not only unlikely to be rendered obsolete due to the automation of their activities but will also be able to find another job more quickly if necessary. Thus, staff training makes employees more resilient to job disruption.

Source: WEF GCI 4.0 World Economic Forum, Executive Opinion Survey.

Education and skills output

Digital skills

STEM graduates
Percentage of graduates from Science, Technology, Engineering and Mathematics programmes in tertiary education (%) | Last available 2014-2017

Description: Percentage of persons who, during the reference academic year, has successfully completed an education Science, Technology, Engineering and Mathematics programmes, both sexes (%).

Rationale: The percentage of STEM graduates has a positive effect on labour market resilience. People who have graduated from these programs are in the most demand in the labour market. These people are at less risk from the effects of digital disruption.

Source: United Nations Educational, Scientific, and Cultural Organization (UNESCO) Institute for Statistics.

Digital skills
Digital skills among active population| 2017

Description: Response to the survey question "In your country, to what extent does the active population possess sufficient digital skills (e.g. computer skills, basic coding, digital reading)?" [1 =not all; 7 = to a great extent].

Rationale: There is a significant positive impact of digital skills on labour market resilience. People with a high level of digital skills are less threatened by technological innovation. They are more likely to be complemented rather than replaced by technology. They have a greater adaptability to a technology-rich environment.

Source: World Economic Forum, Executive Opinion Survey.

Vocational education

Vocational enrolment

Percentage of students in secondary education enrolled in vocational programmes, both sexes (%) |Last available 2014-2017

Description: Total number of students enrolled in vocational programmes at a given level of education, expressed as a percentage of the total number of students enrolled in all programmes (vocational and general) at that level. The level of educational attainment is based on International Standard Classification of Education (ISCED) 2 and 3.

Rationale: Significant positive impact of vocational enrolment on labour market resilience. Vocational training helps to train specialized workers according to the evolving needs of the labour market. When well implemented, these programs allow a workforce to avoid skill gaps between employees' competencies and employers' needs thus increasing the resilience of the labour market through increased productivity, sustainability and suitability in the labour force. Vocational training also provides an efficient pathway to help the unemployed to re-orient themselves and find new jobs, increasing labour mobility and professional reconversion opportunities.

Source: United Nations Educational, Scientific, and Cultural Organization (UNESCO) Institute for Statistics.

Quality of vocational education

Quality of vocational training| 2017

Description: Response to the survey question "In your country, how do you assess the quality of vocational training?" [1 = extremely poor; among the worst in the world; 7 = excellent; among the best in the world].

Rationale: Significant positive impact of quality of vocational training on labour market resilience. High quality of vocational training allows for the training specialized workers according to the evolving needs of the labour market. When well implemented these programs help to avoid skill gaps between employees' competencies and employers' needs, thus increasing the resilience of the labor market through increased productivity, sustainability and suitability in the labour force. It's also an efficient pathway to help the unemployed to re-orient themselves and find new jobs thus increasing labour mobility and professional reconversion opportunities.

Source: World Economic Forum GCI 4.0

Educational attainment

Tertiary attainment rate

Average of Doctoral, Bachelor, Masters attainment rates, population 25+ (%) | Last available 2014-2017

Description: The percentage of population aged 25 and over that attained or completed Doctoral, Masters and Bachelor or equivalent.

Rationale: Significant positive impact of educational attainment on labour market resilience. A higher rate of tertiary education attainment means a higher level of potential future knowledge intensive workers. A better educated workforce with a higher level of qualifications is a factor of labour resilience.

More specifically, higher education increases job resilience to technological disruptions since educated, knowledge-intensive workers are less threatened by technological innovation. They are more likely to see

their job complemented rather than replaced by technology.

Workforce participants with higher degrees tend to have a greater mobility, more adaptability and more ease in job-reconversion thanks to their educational background and skills in "learning to learn".

Source: United Nations Educational, Scientific, and Cultural Organization (UNESCO) Institute for Statistics.

Education quality

PISA (Program for International Students Assessment) score

PISA average scales in reading, mathematics, and science| 2015

Description: Average scores of 15-year-old students on the PISA science, mathematics and reading literacy scale.

Rationale: PISA score has a positive effect on labour market resilience. PISA scores reflect the quality of the pre-tertiary educational system. Studies confirm that focusing on tertiary education is not sufficient to measure educational outcomes. The quality of education and thus of workers' skills is linked to high quality secondary education as a first step to high employability and resilience in the workforce.

Source: NCES, National Centre for Education Statistics.

PIAAC (Programme for the International Assessment of Adult Competencies) score

Average PIAAC in numeracy, literacy and problem solving in technology| 2012/2014

Description: The Programme for the International Assessment of Adult Competencies (PIAAC) develops and conducts a survey of adult skills. The survey measures adults' proficiencies in key information-processing skills such as literacy, numeracy and problem solving in technology-rich environments. It measures how adults use their skills at home, at work and in the wider community. The indicator used in the GLRI is calculated as an average of the PIAAC scores in literacy, numeracy and problem solving in technology-rich environments.

Rationale: A higher PIAAC score has a positive effect on labour market resilience. High PIAAC scores mean that the adult population has better skills in the professional environment, including in technology-rich environments (one of the variables in the survey). This leads directly to a higher resilience of employees as it means that they can adapt more easily to technological innovations and problem solving in technologically-rich environment.

Source: Institute of Education Sciences (IES), U.S. Department of Education, National Center for Education Statistics, Statistics Canada and Organization for Economic Cooperation and Development, Program for the International Assessment of Adult Competencies (PIAAC), IALS 1994-1998, ALL 2003-2008, and PIAAC 2012/2014 Literacy, Numeracy, and Problem Solving TRE Assessments.

H-index

H citation index| Last available 2014-2017

Description: H-index is an author-level metric that attempts to measure both the productivity and citation impact of the publications of a scientist or scholar. The index is based on the set of the scientist's most cited papers and the number of citations that they have received in other publications. The index can also be applied to the productivity and impact of a scholarly journal as well as a group of scientists, such as a department, university or country.

Rationale: H index has a positive effect on labour market resilience. A higher H index reflects a better quality of tertiary education and university research and thus more resources and a greater ability to form

skilled, knowledge-intensive workers as well as to translate research into economic benefits.

Source: SJR country and Journal Rank.

Skillset of graduates
Skillset of graduates| 2017

Description: Average answer to the question: In your country, to what extent do graduating students possess the skills needed by businesses at the following levels: a, Secondary education; b, Tertiary education [1 = not at all; 7 = to a great extent].

Rationale: The skillset of graduates has a positive effect on labour market resilience. The number of skilled workers in the job market is not sufficient for labour resilience. The skills of labour supply have to match the skills required in the workplace. Skills mismatches and skills gaps lead to higher unemployment, lower productivity and longer job searches, thus reducing the resilience of the labour market.

Source: WEF Executive Opinion Survey.

Skilled labour supply
Ease of finding skilled employees| 2017

Description: Response to the survey question "In your country, to what extent can companies find people with the skills required to fill their vacancies?" [1 = not at all; 7 = to a great extent].

Rationale: A skilled labour supply that matches the needs of the job market has a positive effect on labour market resilience. The ease of finding skilled employees, which is facilitated by effective recruitment agencies, databases and platforms on which workers can offer their services and employers can post vacancies, makes workers more mobile, and job finding easier and faster. This makes workers less threatened by job disruption.

Source: WEF GCI 4.0, World Economic Forum, Executive Opinion Survey.

2.2 Employment Sub-pillar

Employment input

Labour policy
Hiring and firing practices
Hiring and firing practices | Last available 2014-2017

Description: Answer to the question: In your country, how would you characterize the hiring and firing of workers? [1 = heavily impeded by regulations; 7 = extremely flexible], 1-7 (best).

Rationale: There is a significant positive impact of hiring and firing practices on employment rate and thus labour market resilience. Greater flexibility in hiring and firing practices encourages firms to create more jobs. Moreover, it also incentivises them to innovate more and engage in the creative destructive process, ultimately creating new jobs to compensate for job destruction brought about by innovation.

Source: World Economic Forum; Executive Opinion Survey.

Worker's rights
Worker's rights | 2017

Description: Score adapted from the ITUC Global Rights Index, which measures the level of protection of internationally recognized core labour standards. The scale of this indicator ranges from 1 (no protection) to 7 (high protection). Dimensions of labour protection include civil rights, the right to bargain collectively, the right to strike, the right to associate freely, and the right of access to due process. The indicator does not consider firing regulations.

Rationale: The level of workers' rights has a positive impact on the employment rate and thus labour market resilience. In countries where there is significant protection of the rights of workers, the dismissal of an employee may cost the employer more than retraining and upskilling. Thus, workers are more resilient to job disruptions.

Source: International Trade Union Confederation (ITUC); World Economic Forum.

Hiring foreign labour
Ease of hiring foreign labour| 2017

Description: Response to the survey question "In your country, how restrictive are regulations related to the hiring of foreign labour?" [1 = highly restrictive; 7 = not restrictive at all].

Rationale: Ease of hiring foreign labour has a positive impact on labour market resilience. More lenient restrictions on the hiring of foreign labour allow companies to source and hire the best talent and spur more dynamic and innovative economies.

Source: World Economic Forum, Executive Opinion Survey.

Cost of labour

Tax wedge
Tax wedge |2017

Description: Tax wedge is defined as the ratio between the amount of taxes paid by an average single worker (a single person at 100% of average earnings) without children and the corresponding total labour cost for the employer. The average tax wedge measures the extent to which tax on labour income discourages employment. This indicator is measured as a percentage of labour cost.

Rationale: Significant negative impact of tax wedge on labour market resilience. A higher tax wedge means that the firms have less incentives to create jobs and hire additional workers. It might also lead to a higher rate of informal employment which negatively impacts labour resilience.

Source: OECD.

Active Labour Market policies

Active labour market spending
Public expenditure and participant stocks on LMP (% of GDP) | Last available 2014-2017

Description: Government spending (as % of GDP) on all programs aiming to help unemployed people as well as people outside the labour force to find jobs. This includes all policies for increasing incentives to seek employment, employability of job seekers and job opportunities.

Rationale: Active labour market policies have a significant positive impact on labour resilience. They reduce obstacles to employment by helping unemployed people to enter the labour market more easily through placement services, job subsidies, counselling and job search programs. Active labour policies also allow professional reconversion and the upskilling of unemployed people through vocational training, helping them become more resilient to technological disruptions.

Source: OECD.

Employment output

Gender balance

Women in labour force
Ratio of female to male labour force participation rate (%) |2017

Description: The labour force participation rate is the proportion of the population aged 15 and older that is economically active; that is all people who supply labour for the production of goods and services during

a specified period. The ratio of female to male labour force participation is calculated by dividing the female labour force participation rate by the male labour force participation rate and multiplying by 100.

Rationale: Significant positive impact on labour market resilience. Technological job destruction has been related so far to routine manual and cognitive labour. Non-routine cognitive jobs and knowledge-intensive jobs are more resilient to technological disruptions since technological innovations in these jobs are complementary and not substitutional to labour. Knowledge-intensive workers will be able to adapt to incorporate these innovations and use them to increase their productivity.

Source: ILOSTAT database.

Gender pay gap

Gender pay gap | Last available 2014-2017

Description: The gender wage gap is unadjusted and defined as the difference between median earnings of men and women relative to median earnings of men. Data refers to full-time employees and to self-employed.

Rationale: There is a negative impact of gender pay gap on labour market resilience. A high gender pay gap indicates that the remunerating system is based on gender rather than talent. A labour market where positions and remunerations are not driven by talent and abilities is less resilient since it is fundamentally negatively biased.

Source: OECD Employment Outlook.

Talent and skills

Capacity to retain and attract talent

Country capacity to retain and attract talent | Last available 2014-2017

Description: Average of two indicators: country capacity to retain talent and country capacity to attract talent. First indicator: country capacity to retain talent, measured on a scale of 1-7. Does your country retain talented people? [1 = the best and brightest leave to pursue opportunities in other countries; 7 = the best and brightest stay and pursue opportunities in the country]. Second indicator: country capacity to attract talent, measured on a scale of 1-7. Does your country attract talented people from abroad? [1 = not at all; 7 = attracts the best and brightest from around the world].

Rationale: There is a positive effect of attracting and retaining talent on labour market resilience. Ability to attract and retain talent along with the Global Talent Competitiveness Index shows a country's ability to build a very highly skilled labour force, not only adaptable to technological disruptions but also able to innovate and lead innovation, raising competitiveness and productivity. A labour market with a high concentration of talent is thus a more resilient one.

Source: World Economic Forum; Executive Opinion Survey.

Knowledge intensive employment

Share of knowledge intensive employees, (%)| Last available 2014-2016

Description: Share of workforce employed in knowledge-intensive activities (%).

Rationale: Significant positive impact of knowledge-intensive employment on labour market resilience. Technological job destruction has so far primarily affected routine manual and cognitive labour. Non-routine cognitive jobs and knowledge-intensive jobs are more resilient to technological disruptions since technological innovations in these jobs tend to be complementary and not substitutional. Knowledge-intensive workers will likely be able to adapt and incorporate innovations into their roles, using them to increase their productivity.

Source: WEF, Global Information Technology Report.

Productivity of labour

Labour productivity

Labour productivity per employee (GDP constant 2011 international $ in PPP) | 2017

Description: Defined as output per worker. These indicators are part of the ILO Estimates and Projections series, analysed in the ILO's World Employment and Social Outlook reports. This measure of labour productivity is calculated using data on GDP (in constant 2011 international dollars in PPP) derived from the World Development Indicators database of the World Bank. To compute labour productivity as GDP per worker, ILO estimates for total employment are used.

Rationale: There is a significant positive impact of labour productivity on labour market resilience. High labour productivity is characteristic of more resilient jobs that tend to be more difficult to replace with technology and automation. A high level of labour productivity also reflects a good match of skills in the labour market.

Source: ILO.

Employment support

ALP effectiveness

Active labour market policies effectiveness | 2015-2016

Description: Average answer to the question: In your country, to what extent do labour market policies help unemployed people to reskill and find new employment (including skills matching, retraining, etc.)? [1 = not at all; 7 = to a great extent].

Rationale: There is a significant positive impact of ALP effectiveness on labour market resilience. Active labour policies help to reduce obstacles to employment by helping the unemployed to re-enter the job market more easily through placement services, job subsidies, counselling and job search programs. Active labour policies also allow professional reconversion and the upskilling of unemployed people through vocational training, thus helping them to become more resilient to technological disruptions.

Source: World Economic Forum, Executive Opinion Survey.

Labour-employer cooperation

Cooperation in labour-employer relations | Last available 2014-2017

Description: Cooperation in labour-employer relations, measured on a scale of 1-7. In your country, how would you characterise labour-employer relations? [1 = generally confrontational; 7 = generally cooperative].

Rationale: There is a significant positive impact of good labour-employer cooperation on labour market resilience. Cooperation between labour and employers allows the enhancement of collaboration between the different actors who impact labour resilience, reduces the costs of labour-employee relations and may make automation less likely. It helps employees to adapt more easily and work with employers to increase skills matching, productivity and decrease employee turnover.

Source: World Economic Forum; Executive Opinion Survey.

Effect of taxation on incentives to work

Effect of taxation on incentives to work | Last available 2014-2017

Description: Effect of taxation on incentives to work, measured on a scale of 1-7. In your country, to what extent do taxes reduce the incentive to work? [1 = significantly reduce the incentive to work; 7 = do not reduce incentive to work at all].

Rationale: A tax system that does not reduce the incentive to work has a positive impact on labour market resilience. A taxation system that increases the incentive to work increases labour force participation

and encourages unemployed workers to reduce the length of their job search. This increases flows from unemployment to employment and raises resilience. *Source:* World Economic Forum; Executive Opinion Survey.

Job quality

Earnings quality
Earnings quality (in constant prices, at constant PPPs) | 2014

Description: Job quality refers to multiple aspects of employment that contribute to well-being of workers and represents an inherently multi-dimensional construct. The OECD job quality database focuses on three key dimensions. These are earnings quality, labour market security and the quality of the working environment. Earnings quality captures the extent to which earnings contribute to workers' well-being in terms of average earnings and their distribution across the workforce.

Rationale: There is a significant positive impact of earnings quality on employment and labour market resilience. A high level of earnings strengthens the desire of people to find work and provides an additional opportunity to strengthen their skills through training in paid courses and continuous higher education which increases resilience to job disruption.

Source: OECD.

Labour market insecurity
Labour market insecurity (%)| 2015

Description: Job quality refers to multiple aspects of employment that contribute to well-being of workers and represents an inherently multi-dimensional construct. The OECD job quality database focuses on three key dimensions. These are earnings quality, labour market security and the quality of the working environment. Labour market security captures those aspects of economic security related to the risks of job loss and its economic cost for workers. It is defined by the risks of unemployment and benefits received in case of unemployment.

Rationale: Lower labour market security has a negative effect on labour resilience. The risk of unemployment and its economic cost for workers reduces resilience to job disruption.

Source: OECD.

Quality of the working environment
Quality of the working environment (%) | 2015

Description: Job quality refers to multiple aspects of employment that contribute to well-being of workers and represents an inherently multi-dimensional construct. The OECD job quality database focuses on three key dimensions. These are earnings quality, labour market security and quality of the working environment. Quality of the working environment captures non-economic aspects of jobs including the nature and content of the work performed, working-time arrangements and workplace relationships. These are measured as incidence of job strain characterised as high job demands with low job resources.

Rationale: Low job quality has a negative effect on labour resilience. A low quality working environment increases employee fatigue, increases the probability of illness and reduces the employee's desire to work. This culminates in several negative effects which reduce resilience to job disruption.

Source: OECD.

2.3 Innovation Sub-pillar

Innovation input

Expenditure on R&D

R&D spending
Gross R&D expenditure (% GDP) | Last available 2014-2015

Description: Gross domestic expenditure on research and development (R&D), expressed as a percentage of GDP. This includes both capital and current expenditures in the four main sectors: business enterprise, government, higher education and private non-profit. R&D covers basic research, applied research, and experimental development.

Rationale: There is a significant positive impact of R&D expenditure on labour market resilience. Gross R&D expenditure is a policy input, encouraging and leading to further innovation.

At the firm level, innovation – both labour-friendly product innovations and labour-saving process innovation- is believed to have positive impact on employment. Innovation ultimately allows the firm to become more competitive, gain market share and thus create more jobs.

At the sector level, this positive impact might be mitigated by the reaction of competitors and the ability of others to assimilate the technology.

However, on balance innovation allows the economy of a country to gain more competitiveness and firms to increase market share compared to foreign competitors, increasing growth, job creation and labour market resilience to technological disruptions.

Source: United Nations Educational, Scientific, and Cultural Organization (UNESCO) Institute for Statistics.

Intellectual property legislation

IPR score
Intellectual property protection score|2017

Description: The IPRI scores the underlining institutions of a strong property rights regime: the legal and political environment, physical property rights, and intellectual property rights. It is the world's only index entirely dedicated to the measurement of intellectual and physical property rights.

Rationale: A high level of intellectual property protection positively impacts labour market resilience. Gross R&D expenditure, government R&D expenditure and intellectual property legislation are all policy inputs encouraging and leading to more innovation.
At the firm level innovation – both labour-friendly product innovation and labour-saving process innovation- is believed to have positive impact on employment. Innovation ultimately allows the firm to become more competitive, gain market share and thus create more jobs.

Policy inputs that increase innovation allow the economy of the country to gain more competitiveness and firms to increase market share compared to foreign competitors, thus increasing growth, job creation and labour market resilience to technological disruptions.

Source: Property Rights Alliance.

Innovation output

Innovation products

Trademark applications
Trademark applications per 1000 pop., sum of resident and non-residents | Last available 2014-2016

Description: Number of trademark applications divided by population size*1000. Trademark applications filed are applications to register a trademark with a national or regional Intellectual Property (IP) office. A trademark is a distinctive sign which identifies certain goods or services as those produced or provided by a specific person or enterprise. A trademark provides protection to the owner of the mark by ensuring the exclusive right to use it to identify goods or services, or to authorize another to use it in return for payment. The period of protection varies, but a trademark can be renewed indefinitely beyond the time limit on payment of additional fees.

Rationale: There is a significant positive impact of trademarks applications on labour market resilience. Trademark applications reflect higher product innovation which (as explained previously) is labour-friendly both at the firm, sector and overall economy level, leading to the creation of new jobs.

Source: World Intellectual Property Organization (WIPO), WIPO Patent Report: Statistics on Worldwide Patent Activity.

Patent applications

Patent applications per 1000 pop., sum of resident and non-residents | Last available 2014-2016

Description: Number of patent applications of residents and nonresidents divided by population size*1000. Patent applications are worldwide patent applications filed through the Patent Cooperation Treaty procedure or with a national patent office for exclusive rights for an invention: a product or process that provides a new way of doing something or offers a new technical solution to a problem. A patent provides protection for the invention to the owner of the patent for a limited period, generally 20 years.

Rationale: There is a significant positive impact of patent applications on labour market resilience. This reflects higher levels of product innovation which (as explained previously) is labour-friendly both at the firm, sector and overall economy level, leading to the creation of new jobs.

Source: World Intellectual Property Organization (WIPO), WIPO Patent Report: Statistics on Worldwide Patent Activity.

Innovation environment

R&D journals

Scientific and technical journal articles per 1000 pop. | Last available 2014-2016

Description: Number of scientific and technical journal articles divided by 1000 pop. Scientific and technical journal articles refer to the number of scientific and engineering articles published in the following fields: physics, biology, chemistry, mathematics, clinical medicine, biomedical research, engineering and technology, and earth and space sciences.

Rationale: There is a significant positive impact of scientific R&D publications on labour market resilience. A high number of scientific and technical journal articles reflect the knowledge intensity within a country and its potential to be an innovation leader. This increases both the dynamism of the economy and labour resilience.

Source: World Bank, National Science Foundation, Science and Engineering Indicators.

Researchers in R&D

Researchers in R&D per 1 million pop.| Last available 2014-2015

Description: The number of researchers engaged in research & development (R&D), expressed as per million of population. Researchers are professionals who conduct research and improve or develop concepts, theories, models, techniques, instrumentation and software of operational methods. R&D covers basic research, applied research, and experimental development.

Rationale: The number of R&D research personnel in a country has a positive effect on labour resilience. Firstly, a high number of researchers in R&D reflects a source of employment for a significant number of people in the economy which illustrates one of the ways R&D can allow an economy to create new jobs. Secondly, a high number of researchers in R&D allow the country to reach a higher level of innovation which creates further employment opportunities in new areas, increasing labour force resilience.

Source: United Nations Educational, Scientific, and Cultural Organization (UNESCO) Institute for Statistics.

Technicians in R&D

Technicians in R&D per 1 million. pop.| Last available 2014-2015

Description: The number of technicians participating in research & development (R&D), expressed as per million of population. Technicians and equivalent staff are people who perform scientific and technical tasks involving the application of concepts and operational methods, normally under the supervision of researchers. R&D covers basic research, applied research, and experimental development.

Rationale: The number of technical R&D staff in a country has a positive effect on labour resilience. Firstly, a high number of technicians in R&D reflects a source of employment for a significant number of people in the economy which illustrates one of the ways R&D can allow an economy to create new jobs. Moreover, a high number of technicians in R&D allow the country to reach a higher level of innovation which further creates employment opportunities

Source: United Nations Educational, Scientific, and Cultural Organization (UNESCO) Institute for Statistics.

Innovative firms

Innovative firms (product/process or ongoing/abandoned or organisational/marketing) as a percentage of total firms |2017

Description: Number of innovative firms in manufacturing (product/process or ongoing/abandoned or organisational/ marketing) as a percentage of total firms (within the scope of national innovation surveys).

Rationale: The presence of innovative firms has a positive effect on labour resilience. High numbers of innovative firms leads to the creation of new jobs and makes the national labour market more resilient to technological disruption.

Source: United Nations Educational, Scientific, and Cultural Organization (UNESCO) Institute for Statistics.

Innovation trade

Creative goods exports

Shares of creative goods exports (% of total good exports) | Last available 2014-2015

Description: Creative goods exports as percentage of total goods exports.

Rationale: There is a significant positive impact of creative goods exports on labour market resilience. Creative goods both reflect higher levels of product innovation (as explained previously labour-friendly both at the firm, sector and overall economy level), leading to the creation of new jobs. They are also dependent on creativity, a human attribute difficult to automate, making jobs involved in creative products more resilient.

Source: UNCTAD.

2.4 Technology Sub-pillar:

Technology input

ICT affordability

ICT affordability

Affordability of ICT infrastructure | Last available 2014-2016

Description: 4th pillar in Networked Readiness Index by WEF. The affordability pillar (three variables) assesses the cost of accessing ICT, either via mobile telephony or fixed broadband internet, as well as the level of competition in the internet and telephony sectors that determine this cost.

Rationale: The affordability of ICT has a positive impact on labour market resilience. In the context of digitalization, access to the Internet and mobile communications is a necessary condition for people to develop digital skills. In addition, a low cost of access allows people to find upskilling resources and learning programs/platforms and thus to increase their

personal resilience by enabling them to retrain in demanded skills and to find work more quickly in case of dismissal.

Source: WEF, the Global Information Technology Report.

Technology output

ICT trade

High technology exports

High technology exports (% of manufactured exports) | Last available 2014-2016

Description: High technology exports (% of manufactured exports). High-technology exports are products with high R&D intensity, such as aerospace, computers, pharmaceuticals, scientific instruments, and electrical machinery.

Rationale: High technology exports have a positive impact on labour market resilience. They reflect a high use of technology in the economy. A technologically-rich business environment reflects a potential position of leadership in new technologies increasing the global competitiveness of a country and thus employment growth.

Source: United Nations, Comtrade database through the WITS platform.
ICT services trade

ICT services trade

Communication services, average of export and import (% of total services export and import) | Last available 2014-2016

Description: Average of communication services export and import. Information and communication technology goods imports include computers and peripheral equipment, communication equipment, consumer electronic equipment, electronic components, and other information and technology goods (miscellaneous).

Rationale: Communication services have a positive impact on labour resilience. The indicator reflects the degree of usage of technology in the economy. A technologically-rich business environment reflects a potential position as a leader in new technologies increasing, the global competitiveness of the country and thus employment growth. Moreover, it is also correlated with a high share of ICT-intensive sectors which are more likely to create new jobs in the future economy.

Source: United Nations Conference on Trade and Developments UNCTADstat database.

ICT goods trade

Communication services, average of export and import (% of total services export and import) | Last available 2014-2016

Description: Average of ICT goods export and import. Information and communication technology goods exports and imports include computers and peripheral equipment, communication equipment, consumer electronic equipment, electronic components, and other information and technology goods (miscellaneous).

Rationale: The level of imports and exports of ICT goods has a positive impact on labour resilience. A high level of ICT goods trade reflects a high use of technology in the economy.

The indicator reflects the degree of usage of technology in the economy. A technologically-rich business environment reflects a potential position as a leader in new technologies increasing, the global competitiveness of the country and thus employment growth. Moreover, it is also correlated with a high share of ICT-intensive sectors which are more likely to create new jobs in the future economy.

Source: United Nations Conference on Trade and Developments UNCTADstat database.

ICT infrastructure

Fixed internet broadband subscriptions

Fixed internet broadband subscriptions (per 100 pop.) | Last available 2014-2016

Description: Number of fixed internet broadband subscriptions per 100 people. Fixed broadband subscriptions refers to fixed subscriptions to high-speed internet (a TCP/IP connection), at downstream speeds equal to, or greater than, 256 kbit/s. This includes cable modem, DSL, fibre-to-the-home/building, other fixed (wired)-broadband subscriptions, satellite broadband and terrestrial fixed wireless broadband. This total is measured irrespective of the method of payment. It excludes subscriptions that have access to data communications (including the Internet) via mobile-cellular networks. It should include fixed WiMAX and any other fixed wireless technologies. It includes both residential subscriptions and subscriptions for organizations.

Rationale: Significant positive impact of fixed internet affordability on labour market resilience. Internet access allows a population easier access to technology and is indicative of a knowledge economy. With fast internet access, the population has better access to information and online training and is likely more familiar with technological innovations, helping them adopt and use them with more ease, including professionally. A knowledge economy is also more resilient to technological change.

Source: International Telecommunication Union, World Telecommunication/ICT Development Report and database.

Fixed mobile broadband subscriptions

Fixed mobile broadband subscriptions (per 100 pop.)| Last available 2014-2017

Description: Number of mobile broadband subscriptions per 100 people.

Rationale: Significant positive impact of mobile subscriptions on labour market resilience. Mobile broadband access allows the population easier access to technology and is indicative of a knowledge economy. With fast internet access, the population has better access to information and online training and is likely more familiar with technological innovations, helping them adopt and use them with more ease, including professionally. A knowledge economy is also more resilient to technological change.

Source: International Telecommunication Union.

Fibre internet subscriptions

Fibre internet subscriptions (per 100 pop.)| 2017

Description: Fibre internet subscriptions per 100 people.

Rationale: Significant positive impact of fibre internet subscriptions on labour market resilience. Fibre access allows the population greater access to technology and is indicative of a knowledge economy. With fast internet access, the population has better access to information and online training and is likely more familiar with technological innovations, helping them adopt and use them with more ease, including professionally. A knowledge economy is also more resilient to technological change. Fibre access in particular is indicative of both significant investment in infrastructure (which supports labour resilience) and of an advanced ICT economy.

Source: International Telecommunications Union, World Telecommunication/ICT Indicators (WTI) database.

Technology environment

ICT specialists

Employed ICT specialists (%) |2017

Description: Percentage of employed ICT specialists as a percentage of total employment.

Rationale: Significant positive impact of the share of ICT specialists on employment and labour market resilience. This indicator reflects the degree of integration of technology into a country's economy. A technologically-rich business environment reflects a potential position as leader in new technologies and increasing global competitiveness of the country. Moreover, it also reflects a high share of ICT-intensive sectors which more likely to create new jobs in the future economy.

Source: Eurostat.

Infrastructure

Logistics performance index

Logistics performance index | Last available 2014-2016

Description: The Logistics Performance Index overall score reflects perceptions of a country's logistics based on efficiency of customs clearance process, quality of trade and transport-related infrastructure, ease of arranging competitively priced shipments, quality of logistics services, ability to track and trace consignments, and frequency with which shipments reach the consignee within the scheduled time. The index ranges from 1 to 5, with a higher score representing better performance. Data is from Logistics Performance Index surveys conducted by the World Bank in partnership with academic and international institutions, private companies and individuals engaged in international logistics. The 2009 round of surveys covered more than 5,000 country assessments by nearly 1,000 international freight forwarders. Respondents evaluate eight markets on six core dimensions on a scale from 1 (worst) to 5 (best). The markets chosen are the most important export and import markets of the respondent's country, random selection, and, for landlocked countries, neighbouring countries that connect them with international markets. Scores for the six areas are averaged across all respondents and aggregated to a single score using principal components analysis.

Rationale: Significant positive impact of the level of logistics performance index on labour market resilience. A business-friendly environment that is open to trade allows a country to sustain a higher number of new businesses which will ultimately create new jobs and increase employment thus contributing to the resilience of the labour market.

Source: World Bank and Turku School of Economics, Logistic Performance Index Surveys.

2.5 Entrepreneurship Sub-pillar

Entrepreneurship input

Doing business

Dealing with government regulations

Time spent dealing with the requirements of government regulations (% of senior management time) | Last available 2014-2017

Description: Time spent dealing with the requirements of government regulations is the proportion of senior management's time, in a typical week, that is spent dealing with the requirements imposed by government regulations (e.g., taxes, customs, labour regulations, licensing and registration, including dealings with officials, and completing forms).

Rationale: Negative impact on labour resilience. Time spent on regulation requirements distracts from business management, reduces the profits of firms and counteracts both the normal activities of existing organizations and the opening of new firms. A business-friendly environment allows a country to sustain a higher number of new businesses and is attractive to investment, which will ultimately create new jobs and increase employment thus contributing to the resilience of the labour market.

Source: World Bank, Enterprise Surveys.

Start a business

Time to start a business
Time required to start a business (days) |2017

Description: Time required to start a business is the number of calendar days needed to complete the procedures to legally operate a business. If a procedure can be hastened at additional cost, the fastest procedure, independent of cost, is chosen.

Rationale: A longer time to start a business has a negative impact on labour resilience. Time spent on business formation requirements constitutes a burden on business management and in particular to entrepreneurship and the starting of new firms. This harms the functioning of the labour market, as it is a barrier to the creation of new businesses, rendering it less resilient.

Source: World Bank, Doing Business project.

Procedures to register a business
Start-up procedures to register a business (number) |2017

Description: Start-up procedures are those required to start a business, including interactions to obtain necessary permits and licenses and to complete all inscriptions, verifications, and notifications to start operations. Data is for businesses with specific characteristics of ownership, size, and type of production.

Rationale: Negative impact on labour resilience. Time spent on start-up requirements constitutes a burden on business management and in particular to entrepreneurship and the starting of new firms. This harms the functioning of the labour market, rendering it less resilient.

Source: World Bank, Doing Business project.

Cost to start a business
Cost to start a business (% GNI per capita) |2017

Description: Cost to register a business is normalized by presenting it as a percentage of gross national income (GNI) per capita.

Rationale: A higher cost to start a business has a negative impact on labour resilience. A high cost of opening a business disincentivises new business formation. This reduces employment, which makes the labour market less resilient with lower levels of job creation.

Source: World Bank, Doing Business project.

Entrepreneurship output

Entrepreneurship activity

Global Entrepreneurship Index
Global Entrepreneurship Index |2016

Description: The Global Entrepreneurship Index is an annual index that measures the health of the entrepreneurship ecosystems in each of 137 countries. It then ranks the performance of these against each other. This provides a picture of how each country performs in both the domestic and international context. The GEDI methodology collects data on the entrepreneurial attitudes, abilities and aspirations of the local population and then weights these against the prevailing social and economic 'infrastructure' – this includes aspects such as broadband connectivity and the transport links to external markets. This process creates 14 'pillars' which GEDI uses to measure the health of the regional ecosystem.

Rationale: A better level of entrepreneurship activity has a positive impact on labour resilience. A new business environment friendly to entrepreneurship fosters a greater number of new businesses which will ultimately create new jobs and increase employment thus contributing to the resilience of the labour market.

Source: Global Entrepreneurship and Development Institute.

New corporate registrations
New businesses registered per 1000 pop. | Last available 2014-2016

Description: New businesses registered divided by population *1000. New businesses registered are the number of new limited liability corporations registered in the calendar year.

Rationale: A higher level of business creation has a positive impact on labour resilience. New businesses create new jobs and increase employment thus contributing to the resilience of the labour market.

Source: World Bank Entrepreneurship Survey.

Access to finance

Venture capital investments
Venture capital investments (% of GDP) |2016

Description: Investments in seed/start-ups at the early stage and later stages of company development as a percentage of GDP.

Rationale: Venture capital availability has a positive impact on labour resilience. Venture capital investments help to open new businesses, particularly in innovative sectors of the economy, creating new jobs and increasing the resilience of the labour market.

Source: OECD, Entrepreneurship at a Glance.

SME outstanding loans
Share of SME outstanding loans (% of total outstanding business loans) | Last available 2015-2017

Description: SME outstanding loans as a share of total outstanding business loans.

Rationale: A high proportion of SME loans has a positive impact on labour resilience. SMEs account for up to 60% of employment in most economies. Access to capital allows SMEs to invest in R&D and expansion, providing both technological progress and job creation, which counteracts job disruption.

Source: OECD, Centre for Entrepreneurship, SMEs, Local Development and Tourism (CFE).

Access to loans
Ease of access to loans | Last available 2014-2017

Description: Answer to the question "In your country, how easy is it for businesses to obtain a bank loan?" [1 = extremely difficult; 7 = extremely easy].

Rationale: Ease of access to loan financing has a positive impact on labour resilience. Access to capital allows companies to invest in R&D and expansion which provides both technological progress and job creation. This helps counteract digital job disruption.

Source: WEF, Executive Opinion Survey.

2.6 Statistics Sub-pillar:

Statistical fullness
Statistical fullness | 2017

Description: Share of the number of country indicators for the GLRI available out of the total number of indicators.

Rationale: The completeness of available data on the country directly affects the quality of the country's GLRI ranking. It is also indicative of the extent of evidence based policy making. The statistics indicator is added to the index as a weighting factor: the more information which is available about the country, the more reliable the value of the country's GLRI rank and the higher the country in the ranking.

Source: Whiteshield Partners calculation.