

The UKRI logo consists of the letters 'UK' stacked above 'RI' in a white, bold, sans-serif font, set against a dark blue square background.

UK
RI

The Innovate UK logo features the text 'Innovate' above 'UK' in a white, sans-serif font, positioned to the right of a purple square graphic.

Innovate
UK

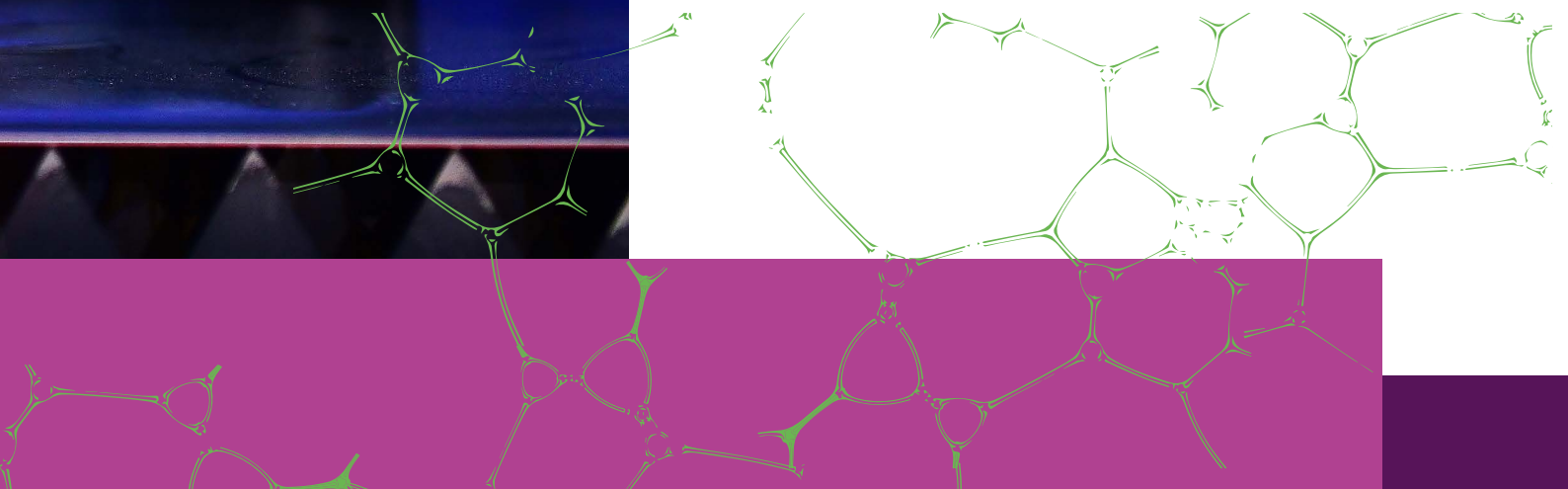
Global Regulation Index

Full Methodology



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Introduction

This document sets out the methodology behind the Global Regulation Index (GRI), including:

1. Full set of metrics included, including sources
2. Methodologies for the metrics based on primary research
3. Full weighting for each of the metrics

Selecting sectors

Sector-specific metrics in this iteration of the GRI cover Energy, Transport (focusing on connected and autonomous vehicles), Telecoms, and Fintech. These sectors were chosen based on two primary factors: relevance of the sector to UK innovation priorities; and availability of data for the 21 countries in the GRI. For future iterations of the GRI, there is an opportunity to include different sectors or add to the current list. Secondary sector-specific metrics identified are less likely to be replicated than cross-cutting metrics.



Selecting the metrics

Metrics were selected for the GRI based on an initial review of metrics identified by the Innovate UK team, followed by a wider search for potential metrics based on discussions held in the first workshop with Innovate UK. Different approaches to including metrics were considered: an initial iteration included a greater number of output metrics, these were abandoned in subsequent versions in favour of a greater focus on input metrics. This was to ensure that the final set of metrics specifically measure what regulators are doing and does not include metrics where the link to regulation was not direct. Where relevant metrics had been identified for one sector or at a cross-cutting level, an attempt was made to identify similar metrics for other sectors. In some instances, where similar metrics were not found, but where the metric was considered both relevant and feasible to develop through primary research, new metrics were added to the GRI. Five of the 37 metrics included in the final version of the GRI have been based on primary research.

Selecting countries

Countries were selected based on evidence of innovation-friendly regulation, position on Global Innovation Index (shown in parentheses), availability of data and geographical spread. The following countries have been included in the GRI:

1.	Australia	25
2.	Austria	17
3.	Brazil	54
4.	Canada	15
5.	China	11
6.	Denmark	10
7.	Finland	9
8.	France	12
9.	Germany	8
10.	Israel	16
11.	Japan	13
12.	Korea (Rep)	6
13.	Mexico	58
14.	The Netherlands	5
15.	Norway	22
16.	Singapore	7
17.	Sweden	3
18.	Switzerland	1
19.	United Arab Emirates	–
20.	United Kingdom	4
21.	United States	2

Approach to weighting



The first step to weighting was to assign each metric a score (on a 1-5 scale) for both the reliability of the data and the relevance of the data to the question of regulation's impact on innovation. These scores were first assigned separately by the project team and team expert. The team then came together to discuss scores assigned, the rationales for those scores and determine a consensus score. In practice, no metrics were scored below a '3' on either element. A score below '3' would suggest that the metric was either not reliable enough or not relevant enough to be included in the GRI. The two scores were added together to produce a final weight (out of 10) for each metric.

When considering the reliability of the data, we considered the strength of the methodology. Metrics that were based on survey responses (e.g. the World Economic Forum's Executive Opinion Survey) were considered slightly less reliable than metrics based on an assessment of existing regulatory frameworks. The relevance of data was assessed considering both the relevance to regulation and the relevance to innovation. This means that metrics that seemed to measure elements beyond just regulation

(such as 'Government responsiveness to change') were scored lower as compared to those that focused more explicitly on regulation (such as 'Regulation of emerging technologies'). Likewise, metrics where the link to innovation appeared weaker or less direct (such as 'AV-focused agency', which measures the institutional set-up for regulating autonomous vehicles) were scored lower than those with a more direct and explicit link to innovation (such as 'AV regulations', which measures the suitability of regulations for supporting autonomous vehicles).

The second step to weighting was to consider how the scores for each pillar were determined, or to what extent the sector-specific and cross-cutting metrics contributed to the pillar score. This was done similarly to the approach for individual metric weighting, with the project team coming together to discuss and reach a consensus. Scores were assigned to each sector and cross-cutting metrics to equal 100%. This discussion was also informed by the discussion at the weighting workshop with Innovate UK.



The third step to weighting was to assign relative weights to each of the pillars to determine the overall ranking. This was determined through an expert Delphi workshop in order to produce quantitative outputs from a qualitative process.¹ The approach involved three iterative rounds of anonymous scoring and written rationales using an online whiteboard. These rationales and scoring were used to develop a consensus weight for each pillar.

The overall ranking was then calculated based on a composite of the five pillars. The scores are presented here at pillar level in their weighted versions, meaning that the maximum score for each is not out of 100, but rather out of the relevant percentage of their contribution (e.g. scores for Adaptability are out of 27.5). The relative contributions of each pillar to is illustrated in Figure 1, below.



Figure 1 Contribution of pillars to overall score

¹The Delphi method is used to elicit scores from a group and typically includes the following features: anonymity of participants to avoid groupthink or halo effects; controlled feedback

to make explicit the views of other participants; iteration to enable participants to evolve their thinking based; some form of statistical aggregation.

Adaptability

This pillar includes metrics that consider how well the overall regulatory framework is able to adapt to new and emerging technologies and approaches. For this pillar there are no metrics relevant to Energy or Telecoms.

Sector	Weight	Metrics	Notes	Reliability	Relevance
Cross-cutting	70%	Efficiency of legal framework in challenging regulations (WEF)	"In your country, how easy is it for private businesses to challenge government actions and/or regulations through the legal system?"	4	3
		Government's responsiveness to change (WEF)	"In your country, to what extent does the government respond effectively to change (e.g. technological changes, societal and demographic trends, security and economic challenges)?"	4	4
		Legal framework's adaptability to digital business models (WEF)	"In your country, how fast is the legal framework of your country adapting to digital business models (e.g. e-commerce, sharing economy, fintech, etc.)?"	4	5
		Regulation of emerging technologies (WEF)	"In your country, how adequately regulated are the emerging technologies and their applications (e.g., artificial intelligence, robotics, digital platforms)?"	4	5
		Existence of regulatory framework for enabling technologies (Primary)	See method on next page	3	4
Transport (CAVs)	20%	AV-focused agency (KPMG AV Readiness Index)	"With the AV-focused agency variable, governments that spread the responsibility for AVs across a large number of government entities are given lower marks; those that take the most common approach, of placing responsibility in an existing agency, gain middling marks; and those establishing an AV or transportation technology and innovation-focused agency that has sole responsibility gain the highest marks."	4	3
		AV regulations (KPMG AV Readiness Index)	"On AV regulations, countries that have regulations that are supportive of AV use and place few restrictions on when, where and how testing of AVs may occur are scored higher and countries that place greater restrictions on testing are scored lower."	4	5
Fintech	10%	Existence of regulatory framework for fintech activities (Primary)	See method on next page	3	5

Methodology for 'Existence of regulatory framework for enabling technologies'

This metric seeks to assess the extent to which each country has specific regulation in place intended to address different 'enabling technologies' that are likely to facilitate innovation across sectors. This metric uses a report published by the Financial Stability Institute (available [here](#)) in January 2020 as a starting point and seeks to assess how far along each country is in considering how each of these elements are regulated. The output of this should ideally correlate with the WEF metric on the regulation of emerging technologies. For each element, a full point is given where there is a regulatory framework in place, a half point is given where there is something planned but not yet in place or a different approach/initiative implemented, a quarter point is given where the element is under consideration. The following enabling technologies have been assessed under this metric:

1. Cloud computing
2. Biometrics
3. Distributed Ledger Technology (DLT)
4. Machine Learning and Artificial Intelligence

For countries included in the FSI report, that data was taken directly from the report. This report was published in January 2020, meaning that it is possible that the situation has evolved in some countries since then. Therefore, for countries where this report indicated there is no regulatory approach in place, further research was conducted.

For countries requiring further research, the method was to conduct a Google search of "[technology]" & ("regulation" OR "legislation")

& "[country]" to determine the presence/absence of a regulatory framework in each of the areas.

Methodology for 'Existence of regulatory framework for fintech activities'

This metric seeks to assess the extent to which each country has specific regulation in place intended to address different activities that fall under "fintech". This metric is based largely on a report published by the Financial Stability Institute (available [here](#)) in January 2020. For each element, a full point is given where there is a regulatory framework in place, a half point is given where there is something planned but not yet in place or a different approach/initiative implemented. The following elements have been assessed under this metric:

1. The presence of a specific licensing regime for digital banking
2. The presence of fintech-specific legislation for loan crowdfunding
3. The presence of fintech-specific legislation for equity crowdfunding

For countries included in the FSI report, that data was taken directly from the report. This report was published in January 2020, meaning that it is possible that the situation has evolved in some countries since then. Therefore, for countries where this report indicated there is no regulatory approach in place, further research was conducted.

For countries requiring further research, the method was to conduct a Google search of "[element]" & ("regulation" OR "legislation") & "[country]" to determine the presence/absence of a regulatory framework in each of the areas

Clarity & Reliability

This pillar includes metrics that consider transparency and reliability of regulatory policy and activity and trust in the regulated markets. For this pillar there are no metrics relevant to Transport (CAVs) or Fintech.

Sector	Weight	Metrics	Notes	Reliability	Relevance
Cross-cutting	60%	Government long-term vision (WEF)	"In your country, to what extent does the government have a long-term vision in place?"	4	3
		Policy design principles (ITU G5 Benchmark)	Existence of regulatory design principles and transparency	5	4
		Trust in government (OECD)	"In this country, do you have confidence in... national government?" [OUTPUT]	3	3
Transport (CAVs)	20%	Legal framework for renewable energy (RISE)	Whether legal framework allows private sector ownership of renewable energy generation; Existence of an official renewable energy target and nature of the target; existence of plan/strategy to attain the target	5	4
		National energy efficiency planning (RISE)	National energy efficiency legislation/action planning, Existence of sub-sectoral targets, Scope of targets	5	3
		Energy efficiency entities (RISE)	Existence and responsibilities of governmental and/or independent bodies that carry out roles related to energy efficiency	5	3
Telecoms	20%	Digital strategy for development (ITU G5 Benchmark)	Is there an overarching digital strategy in place?, The digital strategy has mechanisms for implementation/ operational objectives?	5	3
		Codes of conduct (ITU G5 Benchmark)	Do codes of conduct exist (voluntary or enforceable/required by regulator)?	5	3
		Regulatory Mandate (ICT Regulatory Tracker)	Metric looking at what entities are responsible for different aspects of regulation.	5	3
		Regulatory Authority (ICT Regulatory Tracker)	Existence of a separate regulator and characteristics of that regulator	5	4
		Regulatory regime (ICT Regulatory Tracker)	Metric considering whether specific elements related to ICT are permitted / not.	5	4

Collaboration

Effective digital regulation underpins innovation in many sectors and regulatory and policy development frameworks will need to be implemented through cross-sector collaboration.

Sector	Weight	Metrics	Notes	Reliability	Relevance
Cross-cutting	60%	National collaborative governance (ITU G5 Benchmark)	Metric presenting an overall score for the extent to which the ICT regulator collaborates with different authorities / regulators	5	5
Energy	10%	ICT Collaboration with energy regulator (ITU G5 Benchmark)	Response options are formal, informal, no collaboration	4	4
Transport (CAVs)	10%	ICT Collaboration with transport regulator (ITU G5 Benchmark)	Response options are formal, informal, no collaboration.	4	4
Telecoms	10%	Regulatory collaboration in digital core areas (ITU G5 Benchmark)	Collaboration with: (independent) Spectrum Authority; (independent) Broadcasting (content) Authority; cybersecurity agency; CERT (Computer Emergency Response Team); (Independent) Data Protection Authority; Collaboration between ICT ministry OR ICT regulator AND Digital (Transformation) Agency/ National Agency in charge of (coordination of) the implementation of digital policies/strategies	4	4
		Regulatory collaboration in digital core areas (ITU G5 Benchmark)	Does your country belong to regional integration initiatives with ICT chapters? Has your country made commitment to facilitate trade in telecommunication services?	4	4
Fintech	10%	ICT Collaboration with Finance Regulator (ITU G5 Benchmark)	Response options are formal, informal, no collaboration	4	4

Experimentation

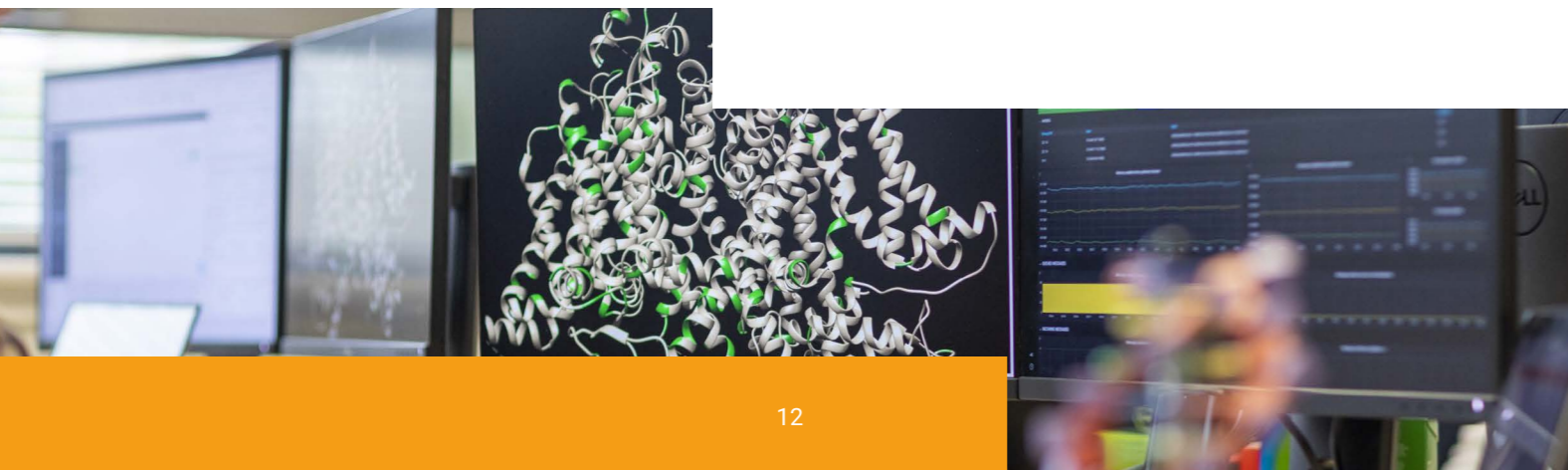
This pillar includes metrics that consider how regulators are providing space for experimentation and emerging technologies. There are no cross-cutting metrics that adequately cover experimentation, so this pillar is based solely on what is happening at sector level.

Sector	Weight	Metrics	Notes	Reliability	Relevance
Energy	25%	Use of sandboxes/testbeds in the energy sector (Primary)	See method on next page	3	4
Transport (CAVs)	25%	Government-funded AV pilots (KPMG AV Readiness Index)	Pilots that allow for better testing scored higher, based on desk research.	4	5
Telecoms	25%	Regulatory experimentation (ITU G5 Benchmark)	"Are there mechanisms for regulatory experimentation?"	4	4
Fintech	25%	Use of sandboxes/testbeds in the fintech sector (Primary)	See method on the next page	3	4

Methodology for 'Existence of regulatory framework for enabling technologies'

This metric is based on either the presence or absence of a regulatory sandbox for the given sector. This means that each country is scored either '1' or '0'. There is presently no accounting for the quality of sandboxes identified, as there is not enough data available to make these judgments. The presence or absence was determined by:

1. For Fintech, for countries included in the BIS report (p 37), that data was taken directly from the report. This report was published in January 2020, meaning that it is possible that the situation has evolved in some countries since then. Therefore, for countries where this report indicated there has been no use of sandboxes, further research was conducted.
2. For countries requiring further research, the method in both sectors was:
 - a. Conduct an initial Google search of "[country name]" & "[sector name]" & ("sandbox" or "testbed"). In many instances, this led to an immediate initial indication of a sandbox or testbed, in which case countries were marked as '1'. In some instances, it also led to a clear indication that there are no sandboxes/testbeds in use (e.g. an explanation that existing legislation in a country did not permit these types of approach or a recent article outlining potential interest in the approach). In these cases, countries were marked as '0'.
 - b. Where results were still ambiguous, the next step was to browse directly through the relevant government ministry or department webpages. For non-English speaking countries, this was done using Google's translate function.
 - c. Where this exercise still produced no evidence of a sandbox or similar approach being used, these countries were marked as '0'.



Entrepreneurship

This pillar includes metrics that consider the extent to which regulations support the establishment and running of innovative businesses. No metrics for Transport (CAVs) or Telecoms are included in this pillar.

Sector	Weight	Metrics	Notes	Reliability	Relevance
Cross-cutting	65%	Burden of government regulation (WEF)	"In your country, how burdensome is it for businesses to comply with governmental administrative requirements (e.g., permits, regulations, reporting)?"	4	4
		Government online services (UNDESAO)	Comprehensive Survey of the online presence of all 193 United Nations Member States	5	4
		Extent of market dominance (WEF)	"In this country, do you have confidence in... national government?" [OUTPUT]	4	4
		Companies embracing disruptive ideas (WEF)	"In your country, to what extent do companies embrace risky or disruptive business ideas?" [OUTPUT]	4	3
Energy	25%	Financing mechanisms for energy efficiency (RISE)	Are there "national financial coverage" mechanisms in place for energy efficiency activities in each sector? What is the share of financial and/or non-financial institutions which offer credit lines for energy efficiency investments in each sector?	5	4
		Energy labelling systems (RISE)	Energy efficiency labelling schemes adopted for different products; mandatory vs voluntary nature of labelling system	5	5
		Carbon pricing (RISE)	Is there carbon pricing mechanism that covers GHG emissions within the country? Is there a monitoring, reporting and verification system for GHG emissions in place?	5	5
Fintech	10%	Presence of innovation hub (Primary)	See method on next page	3	5

Methodology for presence of innovation hub (Fintech)

This metric looks at 'innovation hubs', a term used to describe various dedicated approaches to providing bespoke regulatory advice to new entrants in a market. This metric is based on either the presence or absence of an 'innovation hub'. This means that each country is scored either '1' or '0'. As with sandboxes, there is presently no accounting for the quality of innovation hubs, as there is not enough data available to make these judgments. This metric is being piloted first for Fintech, where this is a common approach used by regulators. The presence or absence was determined by:

- For countries included in the BIS report (p 37), that data was taken directly from the report. This report was published in January 2020, meaning that it is possible that the situation has evolved in some countries since then. Therefore, for countries where this report indicated there has been no use of sandboxes, further research was conducted.
- For countries requiring further research, the method in both sectors was:
 - Conduct an initial Google search to identify the relevant Fintech regulator for that country.
 - Browse directly through the relevant government ministry or department webpages to identify pages dedicated to Fintech firms. For non-English speaking countries, this was done using Google's translate function.
 - Where this exercise still produced no evidence of bespoke advice services, these countries were marked as '0'.



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