Europe 5G Readiness Index Methodology

May 2020

Methodological Steps

Europe 5G Readiness Index was constructed based on the *Handbook on Constructing Composite Indicators*[1] by OECD, which includes a stepwise user guide on how to construct a composite index. Although the steps followed during the construction of the Index were in-line with those suggested by OECD, Figure 1 highlights the most important steps which are also further explained in the following sections of this document. In the factor selection step, the main factor categories and criteria used in the construction of the Index are presented. In the data handling step, the treatment of the data from data collection till normalisation is discussed. Weight allocation and aggregation and Scenario analysis sections explain how the weights for the factor categories and criteria were selected for two different Scenarios, one with equal and one with unequal weights.

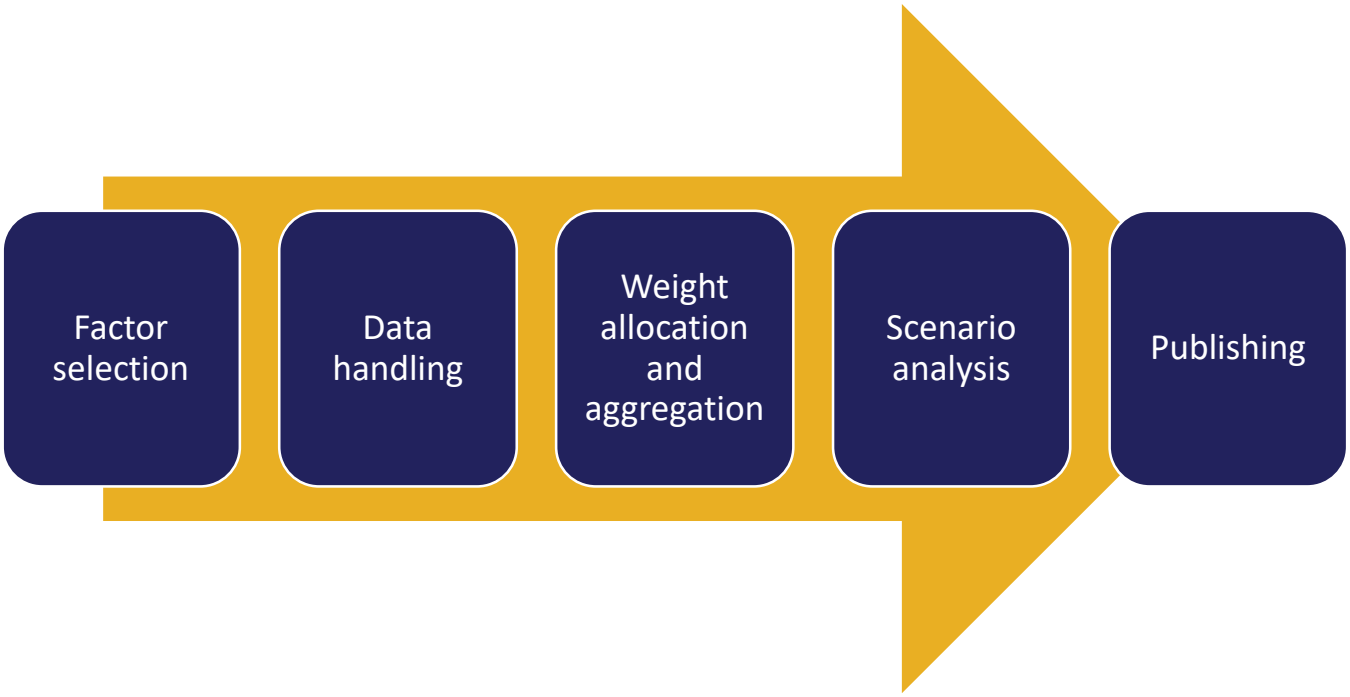

Figure 1: ***Europe 5G Readiness Index Methodology***

Factor selection

Factor and Criteria selection

The selection of the main factors and criteria was based on several principles, namely:

- **Relevance** to the deployment and adoption of 5G
- **Consistency** in terms of ensuring that the collected and imputed data measure the exact same metric across all countries, allowing for like-for-like comparisons and that the data is collected in regular time intervals by the respective authorities.

[1] https://www.oecd.org/sdd/42495745.pdf

- The data should **accurately** measure the unique traits of the variables they describe. Hence, thorough research was performed during the factor selection process.

Six main factor categories were selected as the most appropriate for the construction of the Index and these are:

- Infrastructure and Technology
- Regulation and Policy
- Innovation Landscape
- Human Capital
- Country Profile
- Demand

The definition for each of these factor categories is presented in Table 1.

Table 1: ***Main factors used for the construction of the Index***

Factor category	Definition
Infrastructure and Technology	Includes factors that relate to existing fixed and mobile infrastructure that will be used in 5G networks as well as preparatory steps towards deploying the new technology, such as spectrum auctions and trials.
Regulation and Policy	Includes factors that relate to the regulatory and policy frameworks that will be key to facilitate the smooth and swift deployment of 5G networks.
Innovation Landscape	Includes factors that relate to potential contributors to the development of the new technology from a research and financial perspective.
Human Capital	Includes factors that relate to quality of the education system and on-the-job training initiatives that could be useful in deploying and adopting new technologies.
Country Profile	Includes factors that relate to the existing economic state of a country, existing ICT industry competition and the government's reception of new technologies.
Demand	Includes factors that relate to the reception of new fixed and mobile technologies as well as the use of the Internet.

Factor selection justification

Due to the limited availability of publicly available data that would give a more thorough view on all aspects surrounding 5G, several criteria were used as proxies of factors that should actually be examined. For instance, *Time required to get electricity* was used as a proxy of the approximate time required for an operator to power with electricity its cell sites that will be used as part of the 5G network architecture.

Factor naming nomenclature

For better representation of the results, condensed names are used for the criteria. Table 2 shows the full name of each of the criteria as originally used by the respective data gathering authority and the name that is used for the purpose of this study.

Table 2: ***Full and condensed criteria names***

Full criterion name	Condensed criterion name
Infrastructure and Technology	
4G coverage	4G coverage
Fiber coverage	Fiber coverage
International Internet bandwidth (kb/s) per Internet user	Internet BW per user
5G commercial network deployments	5G commercial networks
Number of Internet exchange points	# of IXPs
Number and maturity of 5G pilots	# and maturity of 5G pilots
Time required to get electricity	Time to get electricity
4G launch year	4G launch year
5G spectrum auction plans	5G spectrum auction plans
Regulation and Policy	
Government ensuring policy stability	Govt ensuring policy stability
Legal framework's adaptability to digital business models	Legal fwk's adaptability to digital BMs
Efficiency of legal system in settling disputes	Efficiency in settling disputes
Efficiency of legal system in challenging regulations	Efficiency in challenging regulations
Burden of government regulation	Burden of govt regulation
Public sector corruption	Public sector corruption
No. of days to start a business	Time to start a business
Innovation Landscape	
Companies embracing disruptive ideas	Companies with disruptive ideas
Growth of innovative companies	Growth of innovative companies
Researchers in R&D (per million people)	Researchers in R&D
Research and development expenditure (% of GDP)	R&D expenditure
University-industry collaboration in Research & Development	University-industry collaboration
Foreign direct investment (FDI) and technology transfer	FDI and technology transfer
Venture capital availability	VC availability
Human Capital	
Tertiary (%)	Tertiary (%)
Skillset of university graduates	Skillset of university graduates
Extent of staff training	Extent of staff training
Availability of scientists and engineers	Availability of scientists and engineers
Country Profile	
Government's online services	e-Gov services
Competition in network services	Competition in network services
GDP per capita	GDP per capita
ICTs and business model creation	ICTs % business model creation
Demand	
4G penetration	4G penetration
NGA penetration	NGA penetration
Mobile data traffic per user per month	Mobile data traffic per user per month
Individuals using the Internet (% of population)	Internet users (% of population)

Criteria measurement units

Table 3 shows the raw data unit for each of the criteria.

Table 3: ***Factor categories and criteria and measurement unit of raw data***

Factor category	Criterion	Units of raw data
Infrastructure and Technology	4G coverage	Percentage
	Fiber coverage	Percentage
	Internet BW per user	Kb/s
	5G commercial networks	Absolute
	# of IXPs	Absolute
	# and maturity of 5G pilots	Absolute
	Time to get electricity	Number of days
	4G launch year	Launch quarter
	5G spectrum auction plans	Planned/actual auction timing
Regulation and Policy	Govt ensuring policy stability	Index value (1-7)
	Legal fwk's adaptability to digital BMs	Index value (1-7)
	Efficiency in settling disputes	Index value (1-7)
	Efficiency in challenging regulations	Index value (1-7)
	Burden of govt regulation	Index value (1-7)
	Public sector corruption	Index value (0-100)
	Time to start a business	Absolute
Innovation Landscape	Companies with disruptive ideas	Index value (1-7)
	Growth of innovative companies	Index value (1-7)
	Researchers in R&D	Number of researchers per 1 million people
	R&D expenditure	Percentage
	University-industry collaboration	Index value (1-7)
	FDI and technology transfer	Index value (1-7)
	VC availability	Index value (1-7)
Human Capital	Tertiary (%)	Percentage
	Skillset of university graduates	Index value (1-7)
	Extent of staff training	Index value (1-7)
	Availability of scientists and engineers	Index value (1-7)
Country Profile	e-Gov services	Index value (0-100)
	Competition in network services	Index value (1-7)
	GDP per capita	Percentage
	ICTs % business model creation	Index value (1-7)
Demand	4G penetration	Percentage
	NGA penetration	Percentage
	Mobile data traffic per user per month	Number of MB
	Internet users (% of population)	Percentage

Criteria definitions

Table 4 shows the definition and source of each criterion as well as the year used during data collection for the majority of the countries.

Table 4: ***Criterion definition, source and year used***

Criterion	Definition	Source	Year*
4G coverage	This metric shows how consistently accessible 4G networks are in each country. Rather than measure geographic coverage, OpenSignal's availability metric tracks the proportion of time users have access to a particular network.	Opensignal	2019
Fiber coverage	FTTP (fiber-to-the-premise) reflects the number of homes passed by this technology at a national level.	European Commission	2018
Internet BW per user	International Internet bandwidth is the sum of the capacity of all Internet exchanges offering international bandwidth measured in kilobits per second (kb/s).	ITU	2017
5G commercial networks	The level of a country's commercial 5G network development	GSA	2019
# of IXPs	Number of IXPs by country	Packet Clearing House	2020
# and maturity of 5G pilots	The sum of the 'maturities' of all the pilots in each country as those have been identified and rated by the European 5G Observatory as of the beginning of February 2020. For the non-EU countries, inCITES experts have identified and rated the existing 5G pilots independently.	European 5G Observatory	2020
Time to get electricity	Time required to get electricity is the number of days to obtain a permanent electricity connection. The measure captures the median duration that the electricity utility and experts indicate is necessary in practice, rather than required by law, to complete a procedure.	World Bank	2019
4G launch year	The quarter that the first commercial 4G network went live in the country.	Prognosis	2020
5G spectrum auction plans	This score measures the country's readiness in allocating the three main frequency bands that will be used for 5G as these have been identified by the ITU, namely 700MHz, 3.6GHz and 26GHz.	Desk research/European 5G Observatory	2020
Govt ensuring policy stability	World Economic Forum, Executive Opinion Survey, various editions. To what extent does the government ensure a stable policy environment for doing business? [1 = not at all; 7 = to a great extent] | 2018–2019 weighted average or most recent period available	World Economic Forum	2019

Criterion	Definition	Source	Year*
Legal fwk's adaptability to digital BMs	World Economic Forum, Executive Opinion Survey, various editions. How fast is the legal framework of your country adapting to digital business models (e.g. e-commerce, sharing economy, fintech, etc.)? [1 = not fast at all; 7 = very fast] | 2018–2019 weighted average or most recent period available or most recent period available	World Economic Forum	2019
Efficiency in settling disputes	World Economic Forum, Executive Opinion Survey, various editions. In your country, how efficient are the legal and judicial systems for companies in settling disputes? [1 = extremely inefficient; 7 = extremely efficient] | 2018–2019 weighted average or most recent period available	World Economic Forum	2019
Efficiency in challenging regulations	World Economic Forum, Executive Opinion Survey, various editions. How easy is it for private businesses to challenge government actions and/or regulations through the legal system? [1 = extremely difficult; 7 = extremely easy] | 2018–2019 weighted average or most recent period available	World Economic Forum	2019
Burden of govt regulation	World Economic Forum, Executive Opinion Survey, various editions. How burdensome is it for companies to comply with public administration's requirements (e.g. permits, regulations, reporting)? [1 = extremely burdensome; 7 = not burdensome at all] | 2018–2019 weighted average or most recent period available	World Economic Forum	2019
Public sector corruption	The Corruption Perceptions Index (CPI) aggregates data from a number of different sources that provide perceptions by businesspeople and country experts of the level of corruption in the public sector.	Transparency International	2019
Time to start a business	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 speeded up at additional cost, the fastest procedure, independent of cost, is chosen.	World Bank	2019
Companies with disruptive ideas	World Economic Forum, Executive Opinion Survey, various editions. To what extent do companies embrace risky or disruptive business ideas? [1 = not at all; 7 = to a great extent] | 2018–2019 weighted average or most recent period available	World Economic Forum	2019
Growth of innovative companies	World Economic Forum, Executive Opinion Survey, various editions. To what extent do new companies with innovative ideas grow rapidly? [1 = not at all; 7 = to a great extent] | 2018–2019 weighted average or most recent period available	World Economic Forum	2019

Criterion	Definition	Source	Year*
Researchers in R&D	The number of researchers engaged in Research &Development (R&D), expressed as per million. Researchers are professionals who conduct research and improve or develop concepts, theories, models techniques instrumentation, software of operational methods. R&D covers basic research, applied research, and experimental development.	UNESCO	2017
R&D expenditure	Gloss domestic expenditures on research and development (R&D), expressed as a percent of GDP. They include 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.	UNESCO	2017
University-industry collaboration	World Economic Forum, Executive Opinion Survey, various editions. To what extent do business and universities collaborate on research and development (R&D)? [1 = do not collaborate at all; 7 = collaborate extensively] | 2018–2019 weighted average or most recent period available	World Economic Forum	2019
FDI and technology transfer	World Economic Forum, Executive Opinion Survey, 2017 edition. To what extent does foreign direct investment (FDI) bring new technology into your country? [1 = not at all; 7 = to a great extent] | 2016–17 weighted average	World Economic Forum	2017
VC availability	World Economic Forum, Executive Opinion Survey, various editions. How easy is it for start-up entrepreneurs with innovative but risky projects to obtain equity funding? [1 = extremely difficult; 7 = extremely easy] | 2018–2019 weighted average or most recent period available	World Economic Forum	2019
Tertiary (%)	Gross enrollment ratio is the ratio of total enrollment, regardless of age, to the population of the age group that officially corresponds to the level of education shown. Tertiary education, whether or not to an advanced research qualification, normally requires, as a minimum condition of admission, the successful completion of education at the secondary level.	UNESCO	2017
Skillset of university graduates	World Economic Forum, Executive Opinion Survey, various editions. To what extent do graduating students from university possess the skills needed by businesses? In each case, the answer ranges from 1 (not at all) to 7 (to a great extent). | 2018–2019 weighted average or most recent period available	World Economic Forum	2019
Extent of staff training	World Economic Forum, Executive Opinion Survey, various editions. To what extent do companies invest in training and employee development? [1 = not at all; 7 = to a great	World Economic Forum	2019

Criterion	Definition	Source	Year*
	extent] | 2018–2019 weighted average or most recent period available		
Availability of scientists and engineers	World Economic Forum, Executive Opinion Survey, 2017 edition. In your country, to what extent are scientists and engineers available? [1 = not available at all; 7 = widely available] | 2016–17 weighted average	World Economic Forum	2017
e-Gov services	A country's EPI reflects the e-participation mechanisms that are deployed by the government as compared to all other countries. The purpose of this measure is not to prescribe any specific practice, but rather to offer insight into how different countries are using online tools in promoting interaction between the government and its citizens, as well as among the citizens, for the benefit of all	Global Innovation Index	2019
Competition in network services	World Economic Forum, Executive Opinion Survey, various editions. How competitive is the provision of the following services: […] network sector (telecommunications, utilities, postal, transport, etc.)? […] the answer ranges from 1 (not at all competitive) to 7 (extremely competitive). | 2018–2019 weighted average or most recent period available	World Economic Forum	2019
GDP per capita	GDP per capita, current prices (U.S. dollars per capita)	International Monetary Fund	2019
ICTs % business model creation	World Economic Forum, Executive Opinion Survey, 2018 edition. To what extent do ICTs enable new business models? [1 = not at all; 7 = to a great extent]	Global Innovation Index	2019
4G penetration	4G mobile subscriptions excluding M2M over total country population.	Prognosis	2019
NGA penetration	Next Generation over total country population. Next generation access subscriptions are generally taken to mean fixed broadband products that provide a minimum download speed that is greater than or equal to 30 Mbit/s.	Prognosis	2019
Mobile data traffic per user per month	Total data usage (both downloads and uploads) generated on mobile networks in the country.	Prognosis	2019
Internet users (% of population)	Internet users are individuals who have used the Internet (from any location) in the last 3 months. The Internet can be used via a computer, mobile phone, personal digital assistant, games machine, digital TV etc.	World Bank/ITU	2018

**Refers to the year in which data for most countries was used*

Data handling

Figure 2 outlines the step followed in the data handling step. It is worth mentioning that around 2% of the data points used as part of the Index was imputed. Hence, the results of the Index were for the most part supported by the primary data collection process. As part of the data collection process, our experts ruled out several criteria that had initially been identified as relevant due to insufficient available data for several countries.

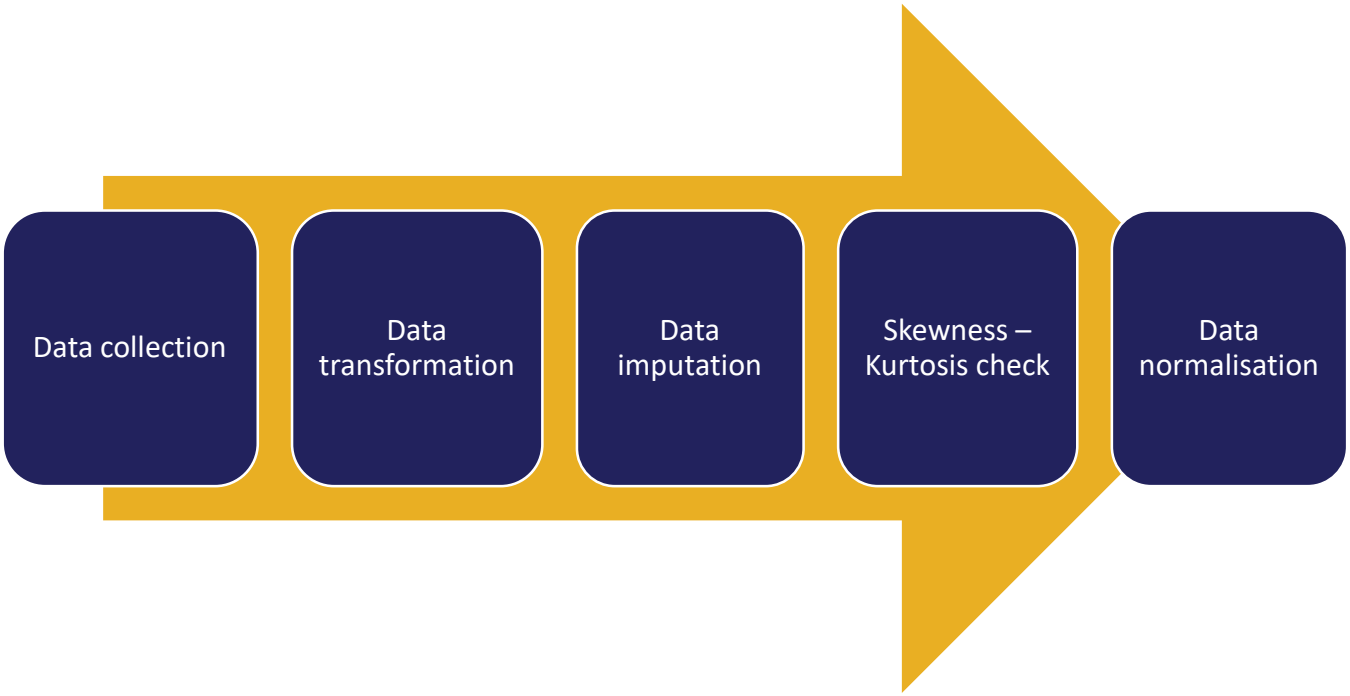

Figure 2: ***Data handling steps***

General remarks on data handling

- The data used for the construction of the *Europe 5G Readiness Index* come from publicly available sources as well as inCITES' proprietary market database Prognosis. inCITES assumes no responsibility for the accuracy of the employed data.
- For all criteria and countries, the latest available data has been used. In cases where there was no data for a country for a specific year:
  - The data for the previous year was used.
  - If data for the previous year was not available, then either data points from one of the previous years were used (in cases where a factor does not generally change a lot year on year, e.g. *Researchers in R&D*) or data imputation.
- For the imputation of the missing data in case where no reliable time series forecasting could be created, hot deck imputation was used. Hot deck imputation involves using the criterion value of a country with similar characteristics to the one with missing data. To identify a country with similar characteristics a correlation and clustering analysis of other criteria was employed. The analysis was also supported by desk research to further substantiate the argument of this analogous market.

- Dealing with data outliers involved calculating the skewness and kurtosis of each criterion and intervening in the criteria for which absolute skewness and kurtosis were above 2 and 3, respectively. Outlier values are replaced with the nearest lower/higher value until the skewness and kurtosis metrics are within the aforementioned limits. This process did not involve replacing more than two data points for any single criterion. In total, data points in four different criteria were replaced with values from other markets and only once in each case.
- Data for some criteria were also transformed to the logarithmic scale altogether. This is because logarithmic transformation not only improves the skewness and kurtosis of a dataset, but it also compensates countries with lower values in specific criteria to have a 'fairer' ranking against markets with higher values. For instance, a doubling of the *Mobile data traffic per user per month* criterion for a developing market from 100MB to 200MB, would have a much larger market impact than an increase by 100MB in a country like Finland, where data consumption is already multiple times larger. Logarithmic transformation enables this 'fairness' effect.
    - Logarithmic transformation was applied to the following criteria:
        - International Internet bandwidth (kb/s) per Internet user
        - GDP per capita
        - Mobile data traffic per user per month
- In order to be able to make comparisons with future Index updates and to allow for future improvement of the country data, the minimum and maximum values for all criteria were fixed. For criteria that have significant upside potential, we set the maximum value equal to the criterion's average value plus 3.5x its standard deviation.
- For the normalisation of the data, that renders the criteria comparable, the Min-Max method was employed. This method transforms all criteria so that they fall within the 0-100 range, which is conceptually familiar and easy to understand, using the following formula:

$$I_{qc}^{t} = \frac{x_{qc}^{t} - min_c(x_q^{t_0})}{max_c(x_q^{t_0}) - min_c(x_q^{t_0})}$$

  Where I_{qc}^{t} is the normalised value and x_{qc}^{t} is the value of indicator *q* for country *c* at time *t*. Since we are only using data for one year for all countries in each criterion, *t* is constant.
- As part of the normalisation process all criteria have been adjusted so that they have the same direction. In other words, the higher the score the better the performance of that country. For instance, the *No. of days to start a business* and *Time required to get electricity* factor was reversed so that the country with the lowest figure to receive the highest score.
- The z-score normalisation methodology was also employed to check whether the employed method plays a significant role in the final rank. Figure 3 shows that an overwhelming majority of countries changed by two positions or less when z-score was employed, which could be interpreted as an indication that the two methods are quite comparable. Hence, the 'Min-Max' method produced robust enough results to be used for the purpose of this analysis.

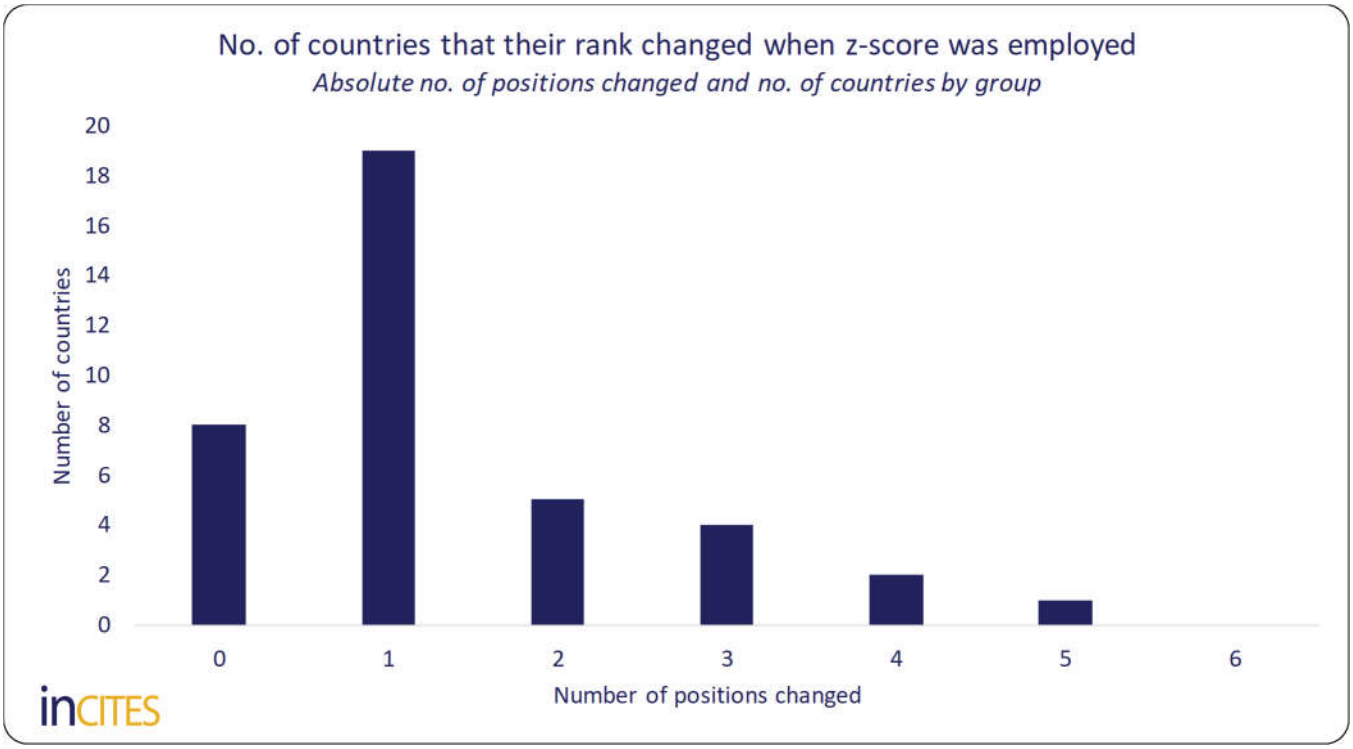

Figure 3: ***Number of countries that their ranking changed when z-score was employed***

Data limitations

- Due to the very nature of the Index components which come from publicly available sources, it is likely that in future iterations some of the factors might stop being tracked or their definition will change. For example, some of our criteria derived from the Word Economic Forum's Global Competitiveness Index, that have been used in last year calculation have indeed stopped being tracked. They were replaced with the most relevant criteria coming from the same source if possible. Even though the qualitative proximity of old and new criteria was established through meticulous research, it should be noted that direct comparisons with last year's Index are not to be conducted.
- Two criteria that were selected will become irrelevant in future iterations as they describe market characteristics that will lose relevance. These criteria are *4G launch year* and *Number of 5G pilots*. Despite their limitations, both criteria were deemed necessary to be used in the Index due to the important role they play in the development and deployment of 5G networks.

Other data transformations

4G launch date

To transform the *4G launch date* criterion into a meaningful scale we assigned a score to each of the countries based on when the first commercial 4G network was launched in the country. The scores were assigned as per Table 5.

Table 5: *Score by 4G launch quarter*

Score	Launch Quarter	Score	Launch Quarter	Score	Launch Quarter
0	No 4G yet	4.25	3Q16	7.75	1Q13
1	4Q19	4.5	2Q16	8	4Q12
1.25	3Q19	4.75	1Q16	8.25	3Q12
1.5	2Q19	5	4Q15	8.5	2Q12
1.75	1Q19	5.25	3Q15	8.75	1Q12
2	4Q18	5.5	2Q15	9	4Q11
2.25	3Q18	5.75	1Q15	9.25	3Q11
2.5	2Q18	6	4Q14	9.5	2Q11
2.75	1Q18	6.25	3Q14	9.75	1Q11
3	4Q17	6.5	2Q14	10	4Q10
3.25	3Q17	6.75	1Q14	10.25	3Q10
3.5	2Q17	7	4Q13	10.5	2Q10
3.75	1Q17	7.25	3Q13	10.75	1Q10
4	4Q16	7.5	2Q13	11	4Q09

5G commercial network

This scaling is also used in the *5G commercial network criterion* where the different development levels of commercial 5G networks are being evaluated. The levels are using the original source's classification as depicted in the following table

Table 6: Score by 5G network level of development

Score	Spectrum band status
0	No Data
0.25	Operator(s) investing in 5G
0.5	Operator(s) actively deploying 5G
0.75	Operators with launched 5G networks (limited availability)
1	Operators with launched 5G networks

5G spectrum auctions

To transform the *5G spectrum auctions* criterion into a meaningful scale we assigned a score to each of the countries based on whether the spectrum auctions for the three different bands that will be used in 5G have been planned, not planned yet or completed (Table 7). Primary research was conducted to identify whether the respective regulators have made plans for the 700MHz, 3.6GHz and 26GHz band allocations. Hence, the minimum value of this criterion is zero (0) and the maximum is three (3).

Table 7: *Score legend for 5G spectrum band auctions*

Score	Spectrum band status
0	No plan yet or public consultation
0.5	Auction planned
1	Auction completed

Weight allocation and aggregation / Scenario Analysis

Table 8 and Table 9 show the weights used for the factor categories and criteria in the two Scenarios that were examined. In Scenario 1, all factor categories and criteria were allocated equal weights while in Scenario 2 unequal weights were used, based on the following inputs:

- Correlation between the factor categories and criteria.
- Primary research on the impact of each of the criteria on the factor categories.
- Qualitative insights from clients and partners as well as inCITES experts' inputs.

In both Scenarios, however, simple arithmetic aggregation was used. In other words, the final scores were derived by summing the weighted and normalised individual scores for all criteria using the following formula:

$$CI_c = \sum_{q=1}^{Q} w_q I_{qc}$$

With $\sum_q w_q = 1$ and $0 \leq w_q \leq 1$, for all $q = 1, \dots, Q$ and $c = 1, \dots, M$.

Table 8: ***Criterion weight by Scenario***

Factor category	Criterion	Criterion weight in Scenario 1	Criterion weight in Scenario 2
Infrastructure and Technology	4G coverage	11.1%	12.5%
	Fiber coverage	11.1%	12.5%
	Internet BW per user	11.1%	7.5%
	5G commercial networks	11.1%	16%
	# of IXPs	11.1%	5%
	# and maturity of 5G pilots	11.1%	12.5%
	Time to get electricity	11.1%	9%
	4G launch year	11.1%	9%
	5G spectrum auction plans	11.1%	16.0%
Regulation and Policy	Govt ensuring policy stability	14.3%	17.5%
	Legal fwk's adaptability to digital BMs	14.3%	22.5%
	Efficiency in settling disputes	14.3%	12.5%
	Efficiency in challenging regulations	14.3%	12.5%
	Burden of govt regulation	14.3%	12.5%

Factor category	Criterion	Criterion weight in Scenario 1	Criterion weight in Scenario 2
	Public sector corruption	14.3%	12.5%
	Time to start a business	14.3%	10.0%
Innovation Landscape	Companies with disruptive ideas	14.3%	15.0%
	Growth of innovative companies	14.3%	15.0%
	Researchers in R&D	14.3%	15.0%
	R&D expenditure	14.3%	20.0%
	University-industry collaboration	14.3%	15.0%
	FDI and technology transfer	14.3%	10.0%
	VC availability	14.3%	10.0%
Human Capital	Tertiary (%)	25.0%	20.0%
	Skillset of university graduates	25.0%	25.0%
	Extent of staff training	25.0%	25.0%
	Availability of scientists and engineers	25.0%	30.0%
Country Profile	e-Gov services	25.0%	20.0%
	Competition in network services	25.0%	30.0%
	GDP per capita	25.0%	30.0%
	ICTs % business model creation	25.0%	20.0%
Demand	4G penetration	25.0%	30.0%
	NGA penetration	25.0%	25.0%
	Mobile data traffic per user per month	25.0%	25.0%
	Internet users (% of population)	25.0%	20.0%

Table 9: ***Factor category weight by Scenario***

Factor category	Factor category weight in Scenario 1	Factor category weight in Scenario 2
Infrastructure and Technology	16.7%	22.5%
Regulation and Policy	16.7%	22.5%
Innovation Landscape	16.7%	15.0%
Human Capital	16.7%	10.0%
Country Profile	16.7%	12.5%
Demand	16.7%	17.5%

Country Taxonomy

Region	Country Name	Region	Country Name
Eastern Europe	Albania	Western Europe	Austria
Eastern Europe	Azerbaijan	Western Europe	Belgium
Eastern Europe	Bosnia and Herzegovina	Western Europe	Cyprus
Eastern Europe	Bulgaria	Western Europe	Denmark
Eastern Europe	Croatia	Western Europe	Finland
Eastern Europe	Czech Republic	Western Europe	France
Eastern Europe	Georgia	Western Europe	Germany
Eastern Europe	Hungary	Western Europe	Greece
Eastern Europe	Latvia	Western Europe	Iceland
Eastern Europe	Lithuania	Western Europe	Ireland
Eastern Europe	North Macedonia	Western Europe	Italy
Eastern Europe	Moldova	Western Europe	Luxembourg
Eastern Europe	Poland	Western Europe	Netherlands
Eastern Europe	Romania	Western Europe	Norway
Eastern Europe	Russia	Western Europe	Portugal
Eastern Europe	Serbia	Western Europe	Spain
Eastern Europe	Slovakia	Western Europe	Sweden
Eastern Europe	Slovenia	Western Europe	Switzerland
Eastern Europe	Ukraine	Western Europe	United Kingdom
Eastern Europe	Estonia		

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