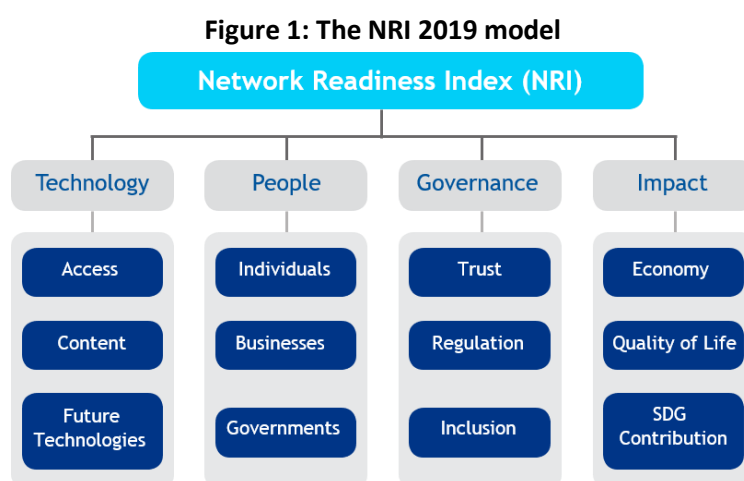


# Network Readiness Index 2019

## Bahrain

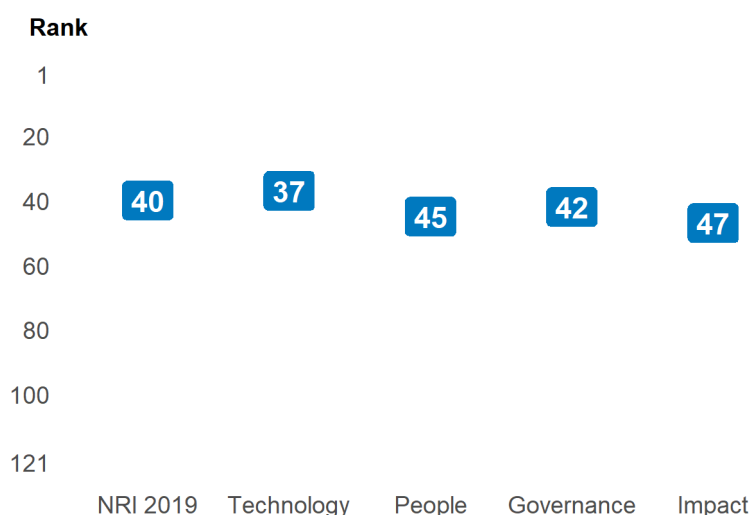
The Network Readiness Index (NRI) is one of the leading global indices on the application and impact of information and communication technology (ICT) in economies around the world. In its latest version of 2019 the NRI Report maps the network-based readiness landscape of 121 economies based on their performances in four different pillars: Technology, People, Governance, and Impact. Each of these pillars is itself comprised of three sub-pillars (see Figure 1) that have been populated by a total of 62 variables.



### Global NRI position of Bahrain

Bahrain ranks 40th out of the 121 economies included in the NRI 2019 (Figure 2). Its main strength relates to Technology. The greatest scope for improvement, meanwhile, concerns Impact.

**Figure 2: Bahrain global ranking, overall and by pillar**



### Performance at sub-pillar level

When it comes to sub-pillars, the strongest showings of Bahrain relate to Individuals, Future Technologies and Quality of Life, among others (Table 1). More could be done, though, to improve the economy's performances in the Content, Businesses and SDG Contribution sub-pillars.

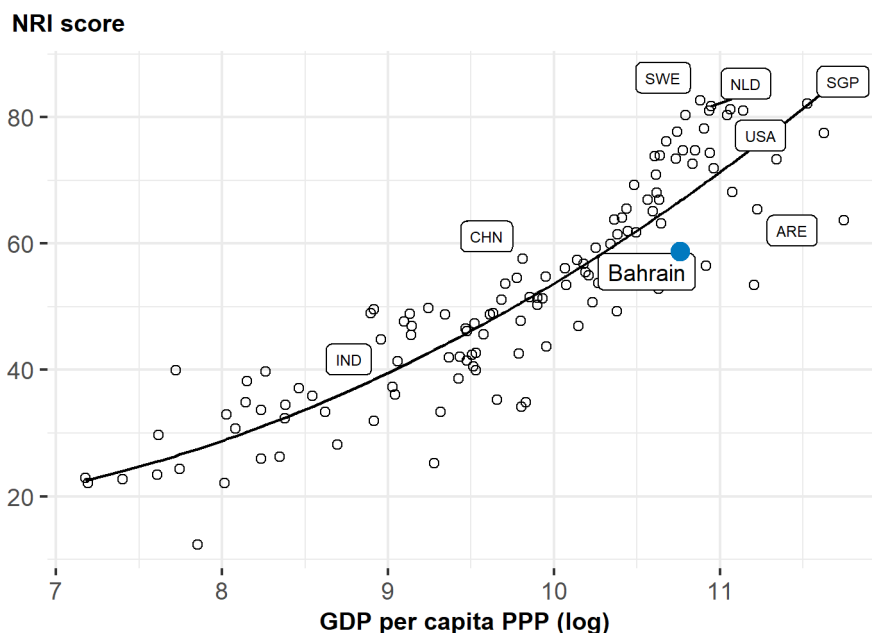
**Table 1: Bahrain rankings by sub-pillar**

Sub-pillar	Rank	Sub-pillar	Rank
Individuals	4	Economy	43
Future Technologies	22	Trust	61
Quality of Life	26	Governments	63
Inclusion	32	Content	64
Regulation	37	Businesses	67
Access	41	SDG Contribution	76

### NRI score and income

Figure 3 shows the position of Bahrain in terms of both NRI score and GDP per capita (PPP). The trend line shows the expected NRI score given an economy's income level. As can be seen, Bahrain is well below the trend line, which suggests that it is underachieving and that one would expect it could raise its network readiness in view of its income level.

**Figure 3: NRI score and GDP per capita PPP (log)**



Note: SWE = Sweden (rank: 1), SGP = Singapore (2), NLD = Netherlands (3), CHN = China (41), IND = India (79). USA is ranked 8th. Bahrain belongs to the group of high-income countries, where the best performer is Sweden (SWE). The top performer of its region—Arab States—is United Arab Emirates (ARE).

## Performance against its income group and region

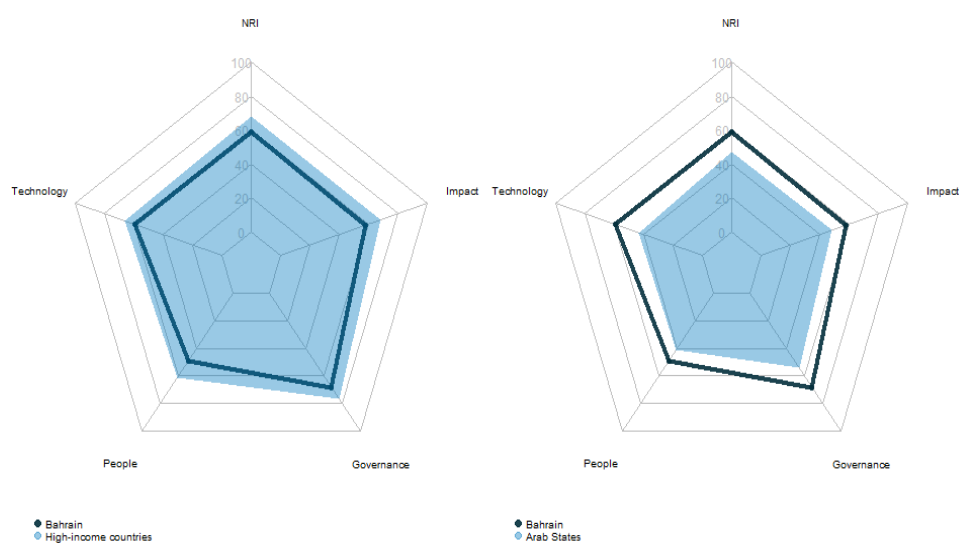
### High-income countries

Bahrain is ranked 39th in the group of high-income countries (Figure 4, left panel). In terms of pillar performance, it has a score below the income group average in each of the four pillars. At the sub-pillar level, it outperforms high-income countries in two of the twelve sub-pillars: Future Technology and Individuals.

### Arab States

Bahrain is ranked 3rd within Arab States (Figure 4, right panel). It outperforms its region in each of the four pillars. With regard to sub-pillars, it has a higher score than the regional average in each of the twelve sub-pillars.

**Figure 4: Performance of Bahrain against its income group and region, overall and by pillar**



**Table 2: Bahrain scores vs. averages of its income group and region, overall and by pillar**

Dimension	Bahrain	High-income countries	Arab States
NRI	58.73	68.12	46.82
Technology	59.30	66.07	43.54
People	49.59	61.07	41.30
Governance	68.38	77.07	54.28
Impact	57.63	68.29	48.18

### Strongest and weakest indicators

The indicators where Bahrain performs particularly well include 4G mobile network coverage, Internet access in schools, and Access to basic services (Table 3). By contrast, the economy's weakest indicators include Pollution, High-tech exports, and Handset prices.

**Table 3: Top-ranked and bottom-ranked indicators of Bahrain**

<b>Strongest indicators</b>	<b>Rank</b>	<b>Weakest indicators</b>	<b>Rank</b>
4G mobile network coverage	1	Publication and use of open data	72
Internet access in schools	1	Secure Internet servers	72
Access to basic services	1	Technicians and associate professionals	75
Use of clean fuels and technology	1	Mobile tariffs	78
Internet users	4	Professionals	78
Internet access	7	R&D expenditure by businesses	78
ICT skills	7	R&D expenditure by governments and higher education	95
Use of virtual social networks	8	Handset prices	104
ICT use and government efficiency	12	High-tech exports	106
Active mobile-broadband subscriptions	13	Pollution	116

# NRI 2019 At-A-Glance: Bahrain

Network Readiness Index

Rank: 40 (out of 121)

Score: 58.73

Pillar/sub-pillar	Rank	Score	Pillar/sub-pillar	Rank	Score
<b>A. Technology pillar</b>	<b>37</b>	<b>59.30</b>	<b>C. Governance pillar</b>	<b>42</b>	<b>68.38</b>
1st sub-pillar: Access	41	78.05	1st sub-pillar: Trust	61	56.32
2nd sub-pillar: Content	64	46.46	2nd sub-pillar: Regulation	37	74.77
3rd sub-pillar: Future Technologies	22	53.39	3rd sub-pillar: Inclusion	32	74.05
<b>B. People pillar</b>	<b>45</b>	<b>49.59</b>	<b>D. Impact pillar</b>	<b>47</b>	<b>57.63</b>
1st sub-pillar: Individuals	4	75.17	1st sub-pillar: Economy	43	28.15
2nd sub-pillar: Businesses	67	28.35	2nd sub-pillar: Quality of Life	26	74.57
3rd sub-pillar: Governments	63	45.25	3rd sub-pillar: SDG Contribution	76	70.17

## The Network Readiness Index in detail

Indicator	Rank	Score	Indicator	Rank	Score
<b>A. Technology pillar</b>			<b>C. Governance pillar</b>		
<i>1st sub-pillar: Access</i>			<i>1st sub-pillar: Trust</i>		
1.1.1 Mobile tariffs	78	57.10	3.1.1 Rule of law	45	62.75
1.1.2 Handset prices	104	23.16	3.1.2 Software piracy rate	46	50.00
1.1.3 Internet access	7	97.38	3.1.3 Secure Internet servers	72	50.46
1.1.4 4G mobile network coverage	1	100.00	3.1.4 Cybersecurity	69	62.06
1.1.5 Fixed-broadband subscriptions	20	94.83	3.1.5 Online trust and safety	NA	NA
1.1.6 International Internet bandwidth	25	73.86	<i>2nd sub-pillar: Regulation</i>		
1.1.7 Internet access in schools	1	100.00	3.2.1 Regulatory quality	50	61.24
<i>2nd sub-pillar: Content</i>			3.2.2 Ease of doing business	42	81.00
1.2.1 Digital participation and content creation	*	*	3.2.3 Legal framework's adaptability to digital business models	NA	NA
1.2.2 Mobile apps development	44	69.32	3.2.4 E-commerce legislation	66	75.00
1.2.3 Intellectual property receipts	NA	NA	3.2.5 Social safety net protection	30	68.21
<i>3rd sub-pillar: Future Technologies</i>			3.2.6 ICT regulatory environment	44	88.42
1.3.1 Availability of latest technologies	33	72.94	<i>3rd sub-pillar: Inclusion</i>		
1.3.2 Company investment in emerging technology	NA	NA	3.3.1 E-Participation	53	77.07
1.3.3 Government procurement of advanced technology products	21	59.95	3.3.2 Socioeconomic gap in use of digital payments	48	77.50
1.3.4 ICT PCT patent applications	NA	NA	3.3.3 Availability of local online content	NA	NA
1.3.5 Computer software spending	30	27.27	3.3.4 Gender gap in internet use	23	66.36
1.3.6 Robot density	NA	NA	3.3.5 Rural gap in use of digital payments	30	75.26
<b>B. People pillar</b>			<b>D. Impact pillar</b>		
<i>1st sub-pillar: Individuals</i>			<i>1st sub-pillar: Economy</i>		
2.1.1 Internet users	4	98.88	4.1.1 Medium and high-tech industry	67	28.14
2.1.2 Active mobile-broadband subscriptions	13	49.18	4.1.2 High-tech exports	106	1.99
2.1.3 Use of virtual social networks	8	81.29	4.1.3 PCT patent applications	NA	NA
2.1.4 Tertiary enrolment	58	36.57	4.1.4 Labour productivity per employee	23	54.32
2.1.5 Adult literacy rate	33	96.11	<i>2nd sub-pillar: Quality of Life</i>		
2.1.6 ICT skills	7	88.98	4.2.1 Happiness	40	66.03
<i>2nd sub-pillar: Businesses</i>			4.2.2 Freedom to make life choices	25	87.36
2.2.1 Firms with website	NA	NA	4.2.3 Income inequality	NA	NA
2.2.2 Internet shopping	43	32.09	4.2.4 Healthy life expectancy at birth	42	70.33
2.2.3 Professionals	78	18.27	<i>3rd sub-pillar: SDG Contribution</i>		
2.2.4 Technicians and associate professionals	75	26.42	4.3.1 Access to basic services	1	100.00
2.2.5 Extent of staff training	27	64.45	4.3.2 Pollution	116	28.54
2.2.6 R&D expenditure by businesses	78	0.52	4.3.3 Road safety	33	83.44
<i>3rd sub-pillar: Governments</i>			4.3.4 Reading proficiency in schools	36	69.62
2.3.1 Government online services	45	77.69	4.3.5 Maths proficiency in schools	48	39.39
2.3.2 Publication and use of open data	72	18.91	4.3.6 Use of clean fuels and technology	1	100.00
2.3.3 ICT use and government efficiency	12	78.34			
2.3.4 R&D expenditure by governments and higher education	95	6.06			

\* Confidential data

## Sources

- Berry, B. (2019). berryFunctions: Function Collection Related to Plotting and Hydrology. R package version 1.18.2. URL: <https://CRAN.R-project.org/package=berryFunctions>
- Dutta, S., & Lanvin, B. (eds.) (2019). The Network Index 2019: Towards a Future-Ready Society. Washington DC: Portulans Institute.
- Gohel, D. (2019). officer: Manipulation of Microsoft Word and PowerPoint Documents. R package version 0.3.6. URL: <https://CRAN.R-project.org/package=officer>
- Gohel, D. (2019). flextable: Functions for Tabular Reporting. R package version 0.5.6. URL: <https://CRAN.R-project.org/package=flextable>
- Milton Bache, S. & Wickham, H. (2014). magrittr: A Forward-Pipe Operator for R. R package version 1.5. URL: <https://CRAN.R-project.org/package=magrittr>
- Nakazawa, M. (2019). fmsb: Functions for Medical Statistics Book with some Demographic Data. R package version 0.7.0. URL: <https://CRAN.R-project.org/package=fmsb>
- R Core Team (2018). R: A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria. URL: <https://www.R-project.org/>.
- Slowikowski, K. (2019). ggrepel: Automatically Position Non-Overlapping Text Labels with 'ggplot2'. R package version 0.8.1. URL: <https://CRAN.R-project.org/package=ggrepel>
- Wickham, H. (2007). Reshaping Data with the reshape Package. Journal of Statistical Software, 21(12), 1-20. URL: <http://www.jstatsoft.org/v21/i12/>.
- Wickham, H. (2016). ggplot2: Elegant Graphics for Data Analysis. Springer-Verlag. New York.
- Wickham et al., (2019). Welcome to the tidyverse. Journal of Open Source Software, 4(43), 1686, URL: <https://doi.org/10.21105/joss.01686>