

Armenia

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 2023 the NRI Report maps the network-based readiness landscape of 134 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 58 variables.

Figure 1: The NRI 2023 model Future Technologies Access Content Network Individuals Businesses Governments Readiness Index 囯 Trust Regulation Inclusion Impact (<u>o</u>) Quality of Life Economy **SDG** Contribution

Global NRI position of Armenia

Armenia ranks 63rd out of the 134 economies included in the NRI 2023 (Figure 2). Its main strength relates to Impact. The greatest scope for improvement, meanwhile, concerns Governance.

Rank 1 20 40 51 53 61 60 63 77 80 100 120 134 NRI 2023 Technology Impact People Governance

Figure 2: Armenia global ranking, overall and by pillar





Performance at sub-pillar level

When it comes to sub-pillars, the strongest showings of Armenia relate to Future Technologies, Content and Governments, among others (Table 1). More could be done, though, to improve the economy's performances in the Businesses, Inclusion and Trust sub-pillars.

Table 1: Armenia rankings by sub-pillar

Sub-pillar	Rank	Sub-pillar	Rank
Future Technologies	48	Access	62
Content	53	Regulation	65
Governments	53	Economy	70
Quality of Life	54	Businesses	73
Individuals	55	Inclusion	83
SDG Contribution	55	Trust	90

NRI score and income

Figure 3 shows the position of Armenia 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, Armenia is well above the trend line, which suggests that it has a greater network readiness than would be expected given its income level.

NRI score 80 -SGP CHN RUS 60 0 Armenia IND 0 40 . 0 0 0 0 11 12 GDP per capita PPP (log)

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

Note: USA = United States (rank: 1), SGP = Singapore (rank: 2), FIN = Finland (3), NLD = Netherlands (4), SWE = Sweden (5), CHN = China (20), IND = India (61). Armenia belongs to the group of upper-middle-income countries, where the best performer is China (CHN). The top performer of its region-CIS-is Russian Federation (RUS).





Performance against its income group and region

Upper-middle-income countries

Armenia is ranked 14th in the group of upper-middle-income countries (Figure 4, left panel). In terms of pillar performance, it has a score higher than the income group average in three of the four pillars: NRI, Technology, People and Impact. At the sub-pillar level, it outperforms upper-middle-income countries in nine of the twelve sub-pillars: Access, Content, Future Technologies, Individuals, Businesses, Governments, Regulation, Quality of Life and SDG Contribution.

CIS

Armenia is ranked 3rd within CIS (Figure 4, right panel). It outperforms its region in each of the four pillars. With regard to sub-pillars, it outperforms the average in CIS in ten of the twelve sub-pillars: Access, Content, Future Technologies, Individuals, Businesses, Governments, Regulation, Economy, Quality of Life and SDG Contribution.

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

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

Dimension	Armenia	Upper-middle- income countries	CIS
NRI	49.36	47.35	45.81
Technology	44.04	38.48	38.11
People	45.50	42.59	41.35
Governance	51.63	55.90	51.08
Impact	56.28	52.43	52.69



Strongest and weakest indicators

The indicators where Armenia performs particularly well include 1.1.4 Population covered by at least a 3G mobile network, 1.1.6 Internet access in schools, and 3.3.4 Gender gap in Internet use (Table 3). By contrast, the economy's weakest indicators include 3.3.5 Rural gap in use of digital payments, 2.2.4 Annual investment in telecommunication services, and 4.1.4 Domestic market size.

Table 3: Highlight of Strengths and Opportunities for Armenia

Strongest indicators	Rank	Weakest indicators	Rank
1.1.4 Population covered by at least a 3G mobile network	1	3.2.4 E-commerce legislation	87
1.1.6 Internet access in schools	1	4.1.1 High-tech and medium-high-tech manufacturing	98
3.3.4 Gender gap in Internet use	2	4.1.4 Domestic market size	108
2.1.5 Adult literacy rate	9	2.2.4 Annual investment in telecommunication services	113
4.1.6 ICT services exports	9	3.3.5 Rural gap in use of digital payments	120
4.2.3 Income inequality	14		
2.3.3 Government promotion of investment in emerging technologies	29		
1.2.1 GitHub commits	36		
1.2.3 Mobile apps development	39		
3.2.3 Regulation of emerging technologies	41		

Note: For the full list of strengths and weaknesses, see At-A-Glance table.



Rank: 63 (out of 134) Score: 49.36

NRI 2023 At-A-Glance: Armenia

Network Readiness Index

Pillar/sub-pillar	Rank	Score	Pillar/sub-pillar	Rank	Score
A. Technology pillar	53	44.04	C. Governance pillar	77	51.63
1st sub-pillar: Access	62	66.35	1st sub-pillar: Trust	90	33.96
2nd sub-pillar: Content	53	26.75	2nd sub-pillar: Regulation	65	65.88
3rd sub-pillar: Future Technologies	48	39.01	3rd sub-pillar: Inclusion	83	55.05
B. People pillar	61	45.50	D. Impact pillar	51	56.28
1st sub-pillar: Individuals	55	50.11	1st sub-pillar: Economy	70	26.81
2nd sub-pillar: Businesses	73	43.21	2nd sub-pillar: Quality of Life	54	72.56
3rd sub-pillar: Governments	53	43.18	3rd sub-pillar: SDG Contribution	55	69.46

The Network Readiness Index in detail

Indicator	Rank	Score	Indicator Rank Score
A. Technology pillar	53	44.04	C. Governance pillar 77 51.63
1st sub-pillar: Access	62	66.35	1st sub-pillar: Trust 90 33.96
1.1.1 Mobile tariffs	64	61.49	3.1.1 Secure Internet servers 68 51.31
1.1.2 Handset prices	89	37.80	3.1.2 Cybersecurity 94 49.60
1.1.3 FTTH/building Internet subscriptions	57	30.40	3.1.3 Online access to financial account 85 17.52
1.1.4 Population covered by at least a 3G mobile network	1	100.00	3.1.4 Internet shopping 75 17.42
1.1.5 International Internet bandwidth	85	68.42	2nd sub-pillar: Regulation 65 65.88
1.1.6 Internet access in schools	1	100.00	3.2.1 Regulatory quality 63 52.88
2nd sub-pillar: Content	53	26.75	3.2.2 ICT regulatory environment 53 86.47
1.2.1 GitHub commits	36	27.89	3.2.3 Regulation of emerging technologies 41 59.48
1.2.2 Internet domain registrations	58	5.19	3.2.4 E-commerce legislation 87 66.67
1.2.3 Mobile apps development	39	72.52	3.2.5 Privacy protection by law content 67 63.89
1.2.4 Al scientific publications	97	1.39	3rd sub-pillar: Inclusion 83 55.05
3rd sub-pillar: Future Technologies	48	39.01	3.3.1 E-Participation 64 56.97
1.3.1 Adoption of emerging technologies	64	47.72	3.3.2 Socioeconomic gap in use of digital payments 94 55.89
1.3.2 Investment in emerging technologies	51	46.25	3.3.3 Availability of local online content 71 59.38







Indicator	Rank	Score		Indicator	Rank	Score	
1.3.3 Robot density	NA	NA		3.3.4 Gender gap in Internet use	2	84.45	•
1.3.4 Computer software spending	58	23.07		3.3.5 Rural gap in use of digital payments	120	18.57	0
B. People pillar	61	45.50		D. Impact pillar	51	56.28	
1st sub-pillar: Individuals	55	50.11		1st sub-pillar: Economy	70	26.81	
2.1.1 Mobile broadband internet traffic within the country	89	4.18		4.1.1 High-tech and medium-high-tech manufacturing	98	4.90	0
2.1.2 ICT skills in the education system	66	48.65		4.1.2 High-tech exports	71	10.56	
2.1.3 Use of virtual social networks	68	62.46		4.1.3 PCT patent applications	53	5.53	
2.1.4 Tertiary enrollment	59	35.56		4.1.4 Domestic market size	108	37.12	0
2.1.5 Adult literacy rate	9	99.71	•	4.1.5 Prevalence of gig economy	58	44.48	
2.1.6 Al talent concentration	NA	NA		4.1.6 ICT services exports	9	58.31	•
2nd sub-pillar: Businesses	73	43.21		2nd sub-pillar: Quality of Life	54	72.56	
2.2.1 Firms with website	55	55.45		4.2.1 Happiness	81	56.35	
2.2.2 GERD financed by business enterprise	71	20.64		4.2.2 Freedom to make life choices	77	69.08	
2.2.3 Knowledge intensive employment	75	25.95		4.2.3 Income inequality	14	88.19	•
2.2.4 Annual investment in telecommunication services	113	70.79	0	4.2.4 Healthy life expectancy at birth	50	76.63	
2.2.5 GERD performed by business enterprise	NA	NA	•	3rd sub-pillar: SDG Contribution	55	69.46	
3rd sub-pillar: Governments	53	43.18	_	4.3.1 SDG 3: Good Health and Well-Being	77	67.15	
2.3.1 Government online services	63	69.29		4.3.2 SDG 4: Quality Education	NA	NA	
2.3.2 Publication and use of open data	NA	NA		4.3.3 SDG 5: Women's economic opportunity	53	82.30	
2.3.3 Government promotion of investment in emerging tech	29	56.74	•	4.3.4 SDG 7: Affordable and Clean Energy	52	75.14	
2.3.4 R&D expenditure by governments and higher education	89	3.53		4.3.5 SDG 11: Sustainable Cities and Communities	85	53.25	

NOTE: ● a strength and o a weakness.



Sources

Dutta, S., & Lanvin, B. (eds.) (2022). The Network Readiness Index 2022: Benchmarking the Future of the Network Economy. Washington DC: Portulans Institute.

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 Readiness Index 2019: Towards a Future-Ready Society. Washington DC: Portulans Institute.

Dutta, S., & Lanvin, B. (eds.) (2020). The Network Readiness Index 2020: Fostering Digital Transformation in a post-COVID Global Economy. Washington DC: Portulans Institute.

Dutta, S., & Lanvin, B. (eds.) (2021). The Network Readiness Index 2021: Shaping the Global Recovery. How digital technologies can make the post-COVID world more equal. 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