



North Macedonia

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.

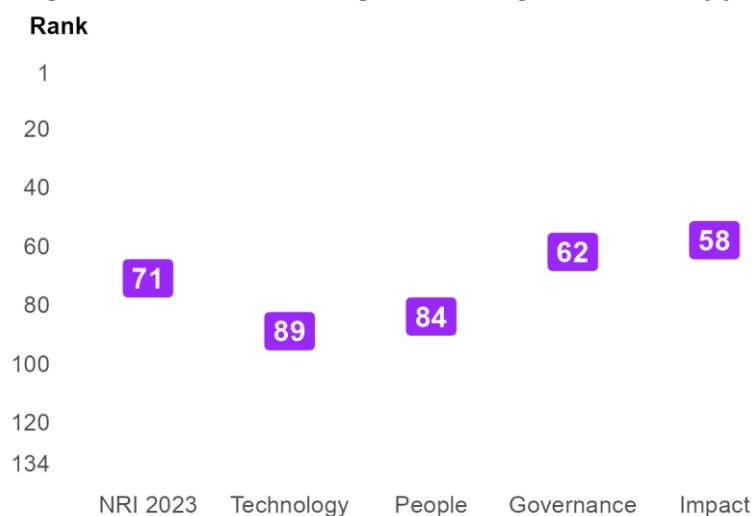
Figure 1: The NRI 2023 model



Global NRI position of North Macedonia

North Macedonia ranks 71st 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 Technology.

Figure 2: North Macedonia global ranking, overall and by pillar



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Performance at sub-pillar level

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

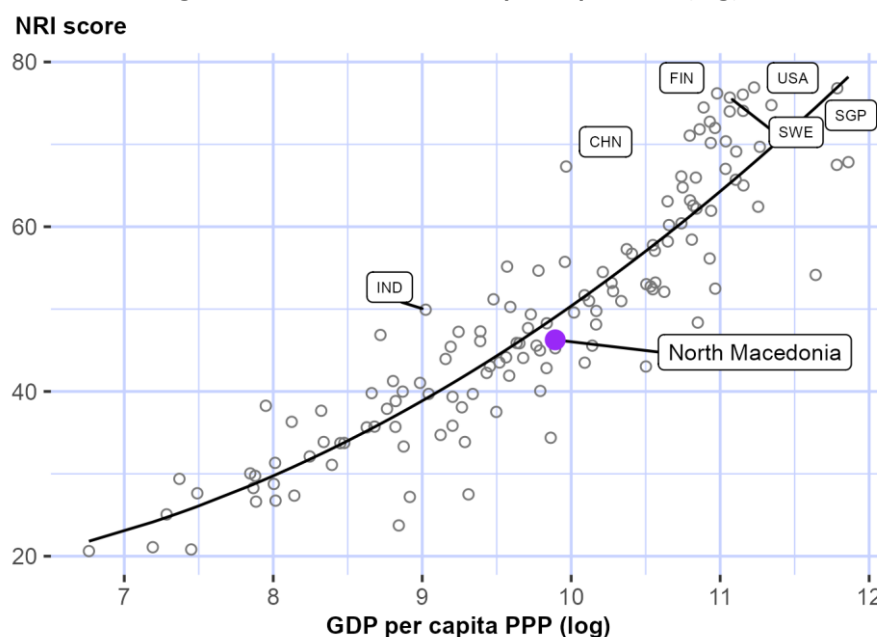
Table 1: North Macedonia rankings by sub-pillar

Sub-pillar	Rank	Sub-pillar	Rank
Quality of Life	48	SDG Contribution	75
Trust	61	Access	81
Inclusion	62	Regulation	81
Economy	62	Governments	83
Content	73	Individuals	94
Businesses	75	Future Technologies	109

NRI score and income

Figure 3 shows the position of North Macedonia 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, North Macedonia 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: USA = United States (rank: 1), SGP = Singapore (rank: 2), FIN = Finland (3), NLD = Netherlands (4), SWE = Sweden (5), CHN = China (20), IND = India (61). North Macedonia belongs to the group of upper-middle-income countries, where the best performer is China (CHN). The top performer of its region-Europe-is Finland (FIN).

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Performance against its income group and region

Upper-middle-income countries

North Macedonia is ranked 18th 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 two of the four pillars: Governance and Impact. At the sub-pillar level, it outperforms upper-middle-income countries in five of the twelve sub-pillars: Businesses, Trust, Inclusion, Economy and Quality of Life.

Europe

North Macedonia is ranked 38th within Europe (Figure 4, right panel). It lags behind its region in each of the four pillars. With regard to sub-pillars, it trails the regional average in each of them.

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

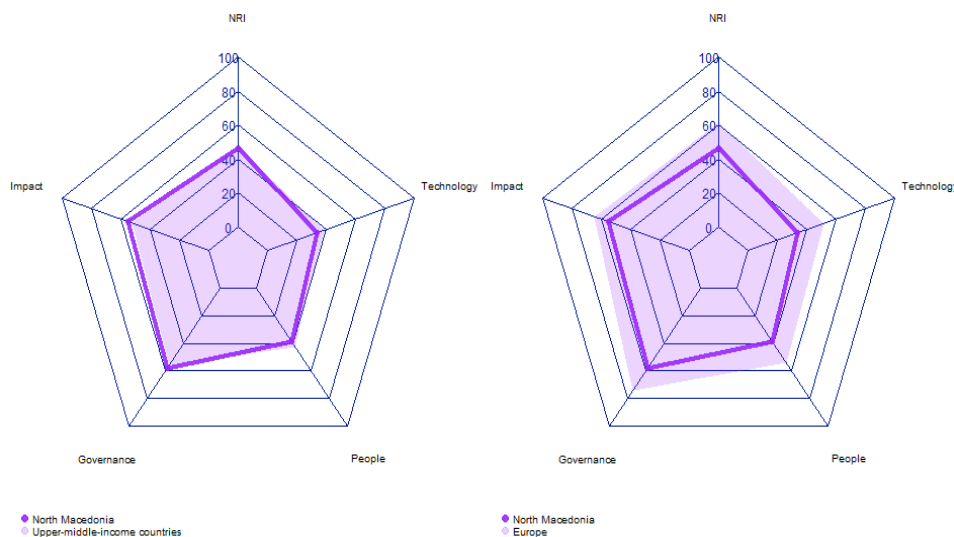


Table 2: North Macedonia scores vs. averages of its income group and region, overall and by pillar

Dimension	North Macedonia	Upper-middle-income countries	Europe
NRI	46.26	47.35	61.25
Technology	33.72	38.48	51.90
People	38.59	42.59	54.16
Governance	57.98	55.90	74.33
Impact	54.77	52.43	64.61

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Strongest and weakest indicators

The indicators where North Macedonia performs particularly well include 4.1.1 High-tech and medium-high-tech manufacturing, 1.1.2 Handset prices, and 4.1.6 ICT services exports (Table 3). By contrast, the economy's weakest indicators include 1.1.5 International Internet bandwidth, 1.3.2 Investment in emerging technologies, and 2.2.4 Annual investment in telecommunication services.

Table 3: Highlight of Strengths and Opportunities for North Macedonia

Strongest indicators	Rank	Weakest indicators	Rank
4.1.1 High-tech and medium-high-tech manufacturing	11	3.2.4 E-commerce legislation	87
1.1.2 Handset prices	22	2.1.2 ICT skills in the education system	101
4.1.6 ICT services exports	28	2.2.4 Annual investment in telecommunication services	110
2.1.5 Adult literacy rate	33	1.1.5 International Internet bandwidth	123
1.1.4 Population covered by at least a 3G mobile network	38	1.3.2 Investment in emerging technologies	123
4.2.3 Income inequality	41		
2.2.3 Knowledge intensive employment	42		
3.3.1 E-Participation	43		
4.3.4 SDG 7: Affordable and Clean Energy	43		
3.1.2 Cybersecurity	46		

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

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NRI 2023 At-A-Glance: North Macedonia

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Rank: 71 (out of 134)

Score: 46.26

Pillar/sub-pillar	Rank	Score	Pillar/sub-pillar	Rank	Score
A. Technology pillar	89	33.72	C. Governance pillar	62	57.98
1st sub-pillar: Access	81	58.98	1st sub-pillar: Trust	61	49.16
2nd sub-pillar: Content	73	21.87	2nd sub-pillar: Regulation	81	62.07
3rd sub-pillar: Future Technologies	109	20.30	3rd sub-pillar: Inclusion	62	62.70
B. People pillar	84	38.59	D. Impact pillar	58	54.77
1st sub-pillar: Individuals	94	39.45	1st sub-pillar: Economy	62	29.80
2nd sub-pillar: Businesses	75	42.67	2nd sub-pillar: Quality of Life	48	73.74
3rd sub-pillar: Governments	83	33.66	3rd sub-pillar: SDG Contribution	75	60.76

The Network Readiness Index in detail

Indicator	Rank	Score	Indicator	Rank	Score
A. Technology pillar	89	33.72	C. Governance pillar	62	57.98
1st sub-pillar: Access	81	58.98	1st sub-pillar: Trust	61	49.16
1.1.1 Mobile tariffs	99	42.78	3.1.1 Secure Internet servers	63	55.30
1.1.2 Handset prices	22	76.52	3.1.2 Cybersecurity	46	89.74
1.1.3 FTTH/building Internet subscriptions	90	19.45	3.1.3 Online access to financial account	88	16.85
1.1.4 Population covered by at least a 3G mobile network	38	99.95	3.1.4 Internet shopping	57	34.75
1.1.5 International Internet bandwidth	123	56.22	2nd sub-pillar: Regulation	81	62.07
1.1.6 Internet access in schools	NA	NA	3.2.1 Regulatory quality	51	59.01
2nd sub-pillar: Content	73	21.87	3.2.2 ICT regulatory environment	45	87.06
1.2.1 GitHub commits	57	8.77	3.2.3 Regulation of emerging technologies	88	30.65
1.2.2 Internet domain registrations	51	6.70	3.2.4 E-commerce legislation	87	66.67
1.2.3 Mobile apps development	56	69.62	3.2.5 Privacy protection by law content	62	66.96
1.2.4 AI scientific publications	83	2.40	3rd sub-pillar: Inclusion	62	62.70
3rd sub-pillar: Future Technologies	109	20.30	3.3.1 E-Participation	43	68.61
1.3.1 Adoption of emerging technologies	97	32.55	3.3.2 Socioeconomic gap in use of digital payments	74	69.91
1.3.2 Investment in emerging technologies	123	17.50	3.3.3 Availability of local online content	80	52.40

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Indicator	Rank	Score	Indicator	Rank	Score
1.3.3 Robot density	NA	NA	3.3.4 Gender gap in Internet use	77	63.04
1.3.4 Computer software spending	87	10.85	3.3.5 Rural gap in use of digital payments	74	59.52
B. People pillar			D. Impact pillar		
<i>1st sub-pillar: Individuals</i>			<i>1st sub-pillar: Economy</i>		
2.1.1 Mobile broadband internet traffic within the country	96	2.25	4.1.1 High-tech and medium-high-tech manufacturing	11	62.57 ●
2.1.2 ICT skills in the education system	101	17.52 ○	4.1.2 High-tech exports	84	7.34
2.1.3 Use of virtual social networks	82	53.57	4.1.3 PCT patent applications	60	3.91
2.1.4 Tertiary enrollment	74	27.20	4.1.4 Domestic market size	117	35.05
2.1.5 Adult literacy rate	33	96.72 ●	4.1.5 Prevalence of gig economy	68	38.37
2.1.6 AI talent concentration	NA	NA	4.1.6 ICT services exports	28	31.56 ●
<i>2nd sub-pillar: Businesses</i>			<i>2nd sub-pillar: Quality of Life</i>		
2.2.1 Firms with website	44	62.38	4.2.1 Happiness	NA	NA
2.2.2 GERD financed by business enterprise	64	27.59	4.2.2 Freedom to make life choices	NA	NA
2.2.3 Knowledge intensive employment	42	49.54 ●	4.2.3 Income inequality	41	74.12 ●
2.2.4 Annual investment in telecommunication services	110	71.28 ○	4.2.4 Healthy life expectancy at birth	63	73.37
2.2.5 GERD performed by business enterprise	61	2.54	<i>3rd sub-pillar: SDG Contribution</i>		
<i>3rd sub-pillar: Governments</i>			4.3.1 SDG 3: Good Health and Well-Being	79	65.76
2.3.1 Government online services	65	67.06	4.3.2 SDG 4: Quality Education	64	26.92
2.3.2 Publication and use of open data	49	33.82	4.3.3 SDG 5: Women's economic opportunity	60	78.76
2.3.3 Government promotion of investment in emerging tech	96	27.14	4.3.4 SDG 7: Affordable and Clean Energy	43	76.52 ●
2.3.4 R&D expenditure by governments and higher education	68	6.62	4.3.5 SDG 11: Sustainable Cities and Communities	81	55.82

NOTE: ● a strength and ○ a weakness.

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