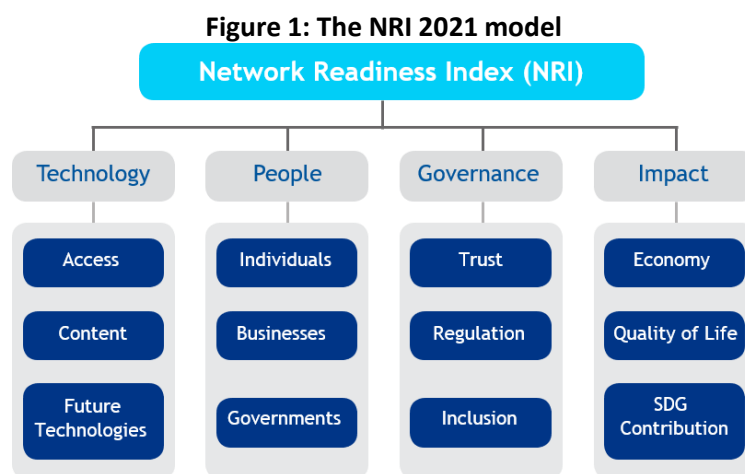


Network Readiness Index 2021

North Macedonia

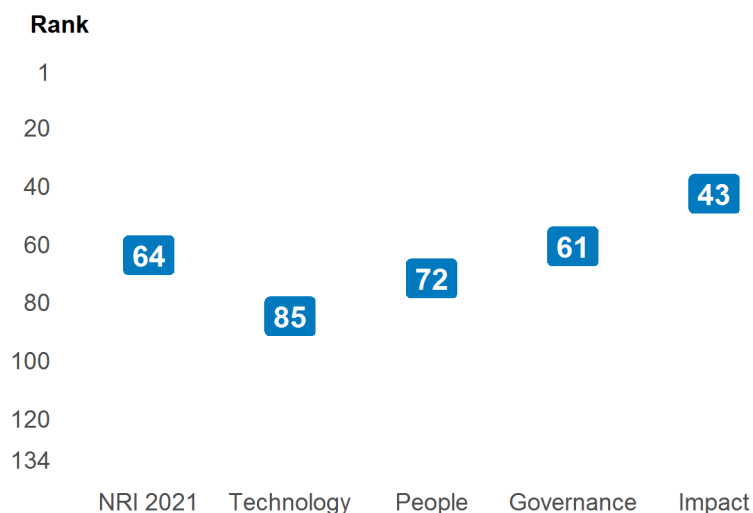
The Network Readiness Index (NRI) is one of the leading global indices on the application and impact of information and communication technology (ICT) in economies around the world. In its latest version of 2021 the NRI Report maps the network-based readiness landscape of 130 economies based on their 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 60 variables.



Global NRI position of North Macedonia

North Macedonia ranks 64th out of the 130 economies included in the NRI 2021 (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



Performance at sub-pillar level

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

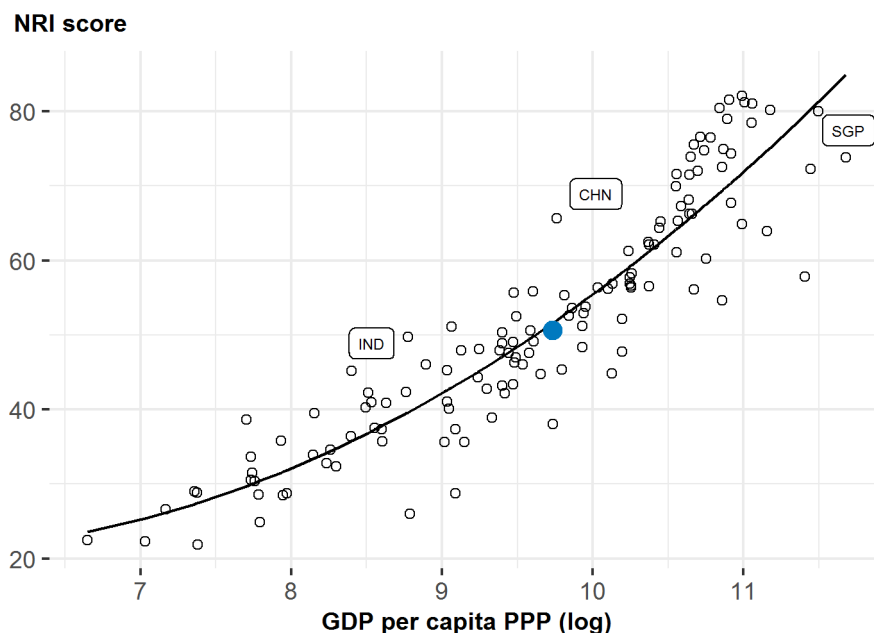
Table 1: North Macedonia rankings by sub-pillar

Sub-pillar	Rank	Sub-pillar	Rank
Quality of Life	39	Inclusion	68
Economy	46	Regulation	70
Content	53	Governments	80
SDG Contribution	57	Individuals	82
Businesses	62	Access	85
Trust	63	Future Technologies	107

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 slightly below the trend line, which suggests that its network readiness is more or less in line with what would be expected given its income level.

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



Note: NLD = Netherlands (rank: 1), SWE = Sweden (2), DNK = Denmark (3), CHN = China (29), IND = India (67). USA is ranked 4th. 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 Netherlands (NLD).

Performance against its income group and region

Upper-middle-income countries

North Macedonia is ranked 15th 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: nri.score, governance and impact. At the sub-pillar level, it outperforms upper-middle-income countries in eight of the twelve sub-pillars: Content, Businesses, Trust, Regulation, Inclusion, Economy, Quality of Life and SDG Contribution.

Europe

North Macedonia is ranked 37th 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

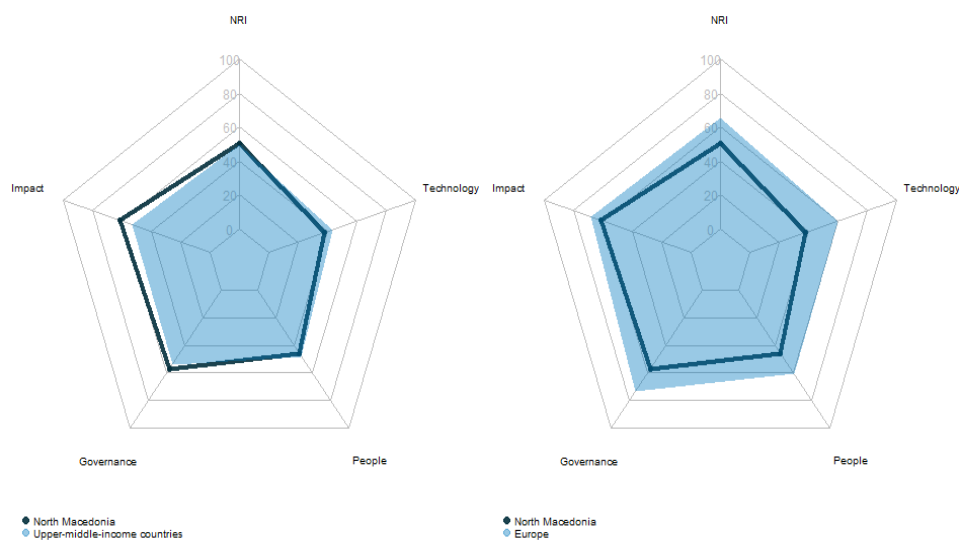


Table 2: North Macedonia scores vs. averages of its income group and region, overall and by pillar

Dimension	North Macedonia	Upper-middle-income countries	Europe
NRI	50.63	49.71	65.45
Technology	38.14	43.52	59.78
People	45.97	48.48	60.83
Governance	56.92	53.94	73.31
Impact	61.48	52.89	67.86

Strongest and weakest indicators

The indicators where North Macedonia performs particularly well include 4.1.1 High-tech and medium-high-tech manufacturing, 4.3.5 SDG 11: Sustainable Cities and Communities, and 2.1.5 Adult literacy rate (Table 3). By contrast, the economy's weakest indicators include 1.3.2 Investment in emerging technologies, 2.1.1 Active mobile broadband subscriptions, and 1.1.4 SMS sent by population 15-69.

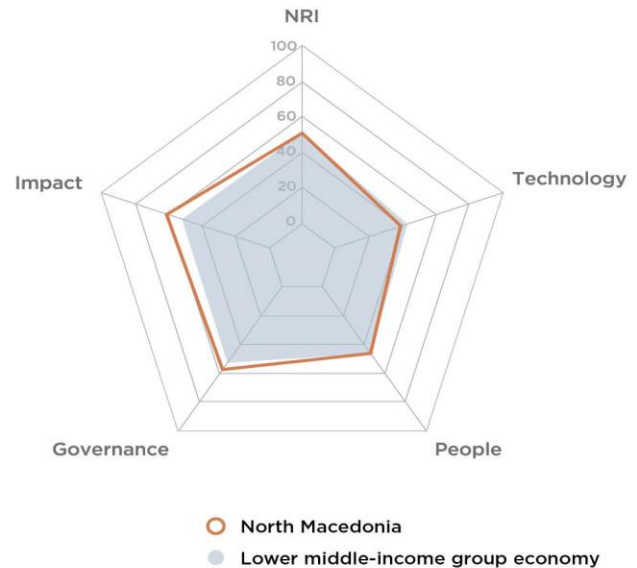
Table 3: Strongest and weakest indicators of North Macedonia

Strongest indicators	Rank	Weakest indicators	Rank
4.1.1 High-tech and medium-high-tech manufacturing	22	1.1.6 International Internet bandwidth	74
4.3.5 SDG 11: Sustainable Cities and Communities	22	3.2.4 E-commerce legislation	76
2.1.5 Adult literacy rate	32	1.1.4 SMS sent by population 15-69	104
1.1.5 Population covered by at least a 3G mobile network	34	2.1.1 Active mobile broadband subscriptions	112
3.3.1 E-Participation	38	1.3.2 Investment in emerging technologies	122
4.2.3 Income inequality	38		
1.2.2 Wikipedia edits	40		
4.1.6 ICT services exports	40		
2.2.4 Technicians and associate professionals	44		
3.1.2 Cybersecurity	46		

North Macedonia

Network Readiness Index Rank (out of 130) **64** Score **73.79**

Pillar/sub-pillar	Rank	Score
A. Technology pillar	85	38.14
1st sub-pillar: Access	85	54.65
2nd sub-pillar: Content	53	38.95
3rd sub-pillar: Future Technologies	107	20.81
B. People pillar	72	45.97
1st sub-pillar: Individuals	82	57.40
2nd sub-pillar: Businesses	62	42.00
3rd sub-pillar: Governments	80	38.51
C. Governance pillar	61	56.92
1st sub-pillar: Trust	63	45.86
2nd sub-pillar: Regulation	70	63.36
3rd sub-pillar: Inclusion	68	61.53
D. Impact pillar	43	61.48
1st sub-pillar: Economy	46	44.19
2nd sub-pillar: Quality of Life	39	75.75
3rd sub-pillar: SDG Contribution	57	64.51



Network Readiness Index in detail

Indicator	Rank	Score
A. Technology pillar	85	38.14
1st sub-pillar: Access	85	54.65
1.1.1 Mobile tariffs	101	41.55
1.1.2 Handset prices	100	36.13
1.1.3 Households with internet access	58	80.02
1.1.4 SMS sent by population 15-69	104	69.93 ○
1.1.5 Population covered by at least a 3G mobile network	34	99.97 ●
1.1.6 International Internet bandwidth	74	0.31 ○
1.1.7 Internet access in schools	NA	NA
2nd sub-pillar: Content	53	38.95
1.2.1 GitHub commits	51	7.03
1.2.2 Wikipedia edits	40	71.12 ●
1.2.3 Internet domain registrations	*	*
1.2.4 Mobile apps development	54	80.08
1.2.5 AI scientific publications	81	29.74
3rd sub-pillar: Future Technologies	107	20.81
1.3.1 Adoption of emerging technologies	96	32.55
1.3.2 Investment in emerging technologies	122	17.45 ○
1.3.3 Robot density	NA	NA
1.3.4 Computer software spending	79	12.42
B. People pillar	72	45.97
1st sub-pillar: Individuals	82	57.40
2.1.1 Active mobile broadband subscriptions	112	65.29 ○
2.1.2 ICT skills	48	37.79
2.1.3 Use of virtual social networks	82	56.96
2.1.4 Tertiary enrollment	67	29.78
2.1.5 Adult literacy rate	32	97.20 ●
2nd sub-pillar: Businesses	62	42.00
2.2.1 Firms with website	48	62.49
2.2.2 GERD financed by business enterprise	61	29.16
2.2.3 Professionals	45	38.05
2.2.4 Technicians and associate professionals	44	48.57 ●
2.2.5 Annual investment in telecommunication services	98	71.54
2.2.6 GERD performed by business enterprise	61	2.20
3rd sub-pillar: Governments	80	38.51
2.3.1 Government online services	57	73.34
2.3.2 Publication and use of open data	49	32.39
2.3.3 Government promotion of investment in emerging tech	94	27.20
2.3.4 R&D expenditure by governments and higher education	73	21.11

Indicator	Rank	Score
C. Governance pillar	61	56.92
1st sub-pillar: Trust	63	45.86
3.1.1 Secure Internet servers	63	55.26
3.1.2 Cybersecurity	46	89.74 ●
3.1.3 Online access to financial account	85	16.85
3.1.4 Internet shopping	55	21.59
2nd sub-pillar: Regulation	70	63.36
3.2.1 Regulatory quality	48	54.98
3.2.2 ICT regulatory environment	45	87.06
3.2.3 Legal framework's adaptability to emerging technologies	91	28.51
3.2.4 E-commerce legislation	76	75.00 ○
3.2.5 Privacy protection by law content	54	71.24
3rd sub-pillar: Inclusion	68	61.53
3.3.1 E-Participation	38	82.71 ●
3.3.2 Socioeconomic gap in use of digital payments	70	54.76
3.3.3 Availability of local online content	80	52.34
3.3.4 Gender gap in Internet use	67	58.31
3.3.5 Rural gap in use of digital payments	78	59.52
D. Impact pillar	43	61.48
1st sub-pillar: Economy	46	44.19
4.1.1 High-tech and medium-high-tech manufacturing	22	54.23 ●
4.1.2 High-tech exports	49	36.81
4.1.3 PCT patent applications	54	42.35
4.1.4 Growth rate of GDP per person engaged	83	52.62
4.1.5 Prevalence of gig economy	66	40.36
4.1.6 ICT services exports	40	38.75 ●
2nd sub-pillar: Quality of Life	39	75.75
4.2.1 Happiness	NA	NA
4.2.2 Freedom to make life choices	NA	NA
4.2.3 Income inequality	38	78.12 ●
4.2.4 Healthy life expectancy at birth	64	73.37
3rd sub-pillar: SDG Contribution	57	64.51
4.3.1 SDG 3: Good Health and Well-Being	63	72.13
4.3.2 SDG 4: Quality Education	65	26.92
4.3.3 Females employed with advanced degrees	47	50.42
4.3.4 SDG 7: Affordable and Clean Energy	60	78.04
4.3.5 SDG 11: Sustainable Cities and Communities	22	95.05 ●

NOTE: * Indicates confidential data; ● a strength and ○ a weakness.

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