Montenegro

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.
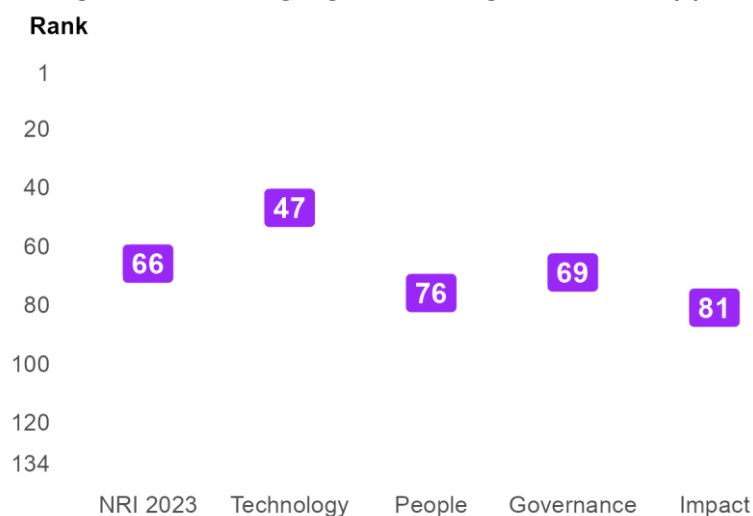
Figure 1: The NRI 2023 model

Global NRI position of Montenegro

Montenegro ranks 66th out of the 134 economies included in the NRI 2023 (Figure 2). Its main strength relates to Technology. The greatest scope for improvement, meanwhile, concerns Impact.

Figure 2: Montenegro global ranking, overall and by pillar

Performance at sub-pillar level

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

Table 1: Montenegro rankings by sub-pillar

Sub-pillar	Rank	Sub-pillar	Rank
Content	20	Businesses	74
Individuals	45	SDG Contribution	82
Inclusion	55	Economy	83
Future Technologies	59	Trust	88
Quality of Life	64	Access	92
Regulation	70	Governments	94

NRI score and income

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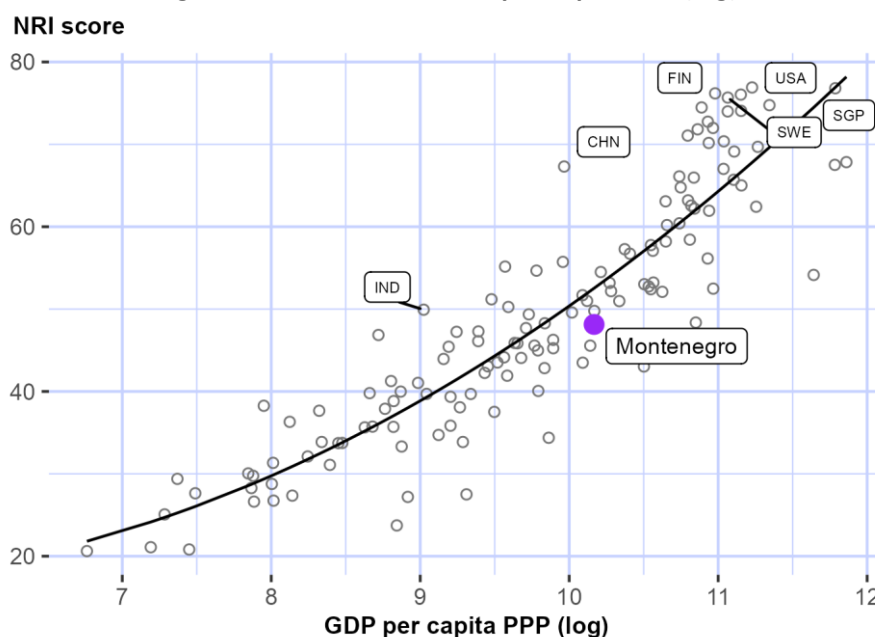
Note: USA = United States (rank: 1), SGP = Singapore (rank: 2), FIN = Finland (3), NLD = Netherlands (4), SWE = Sweden (5), CHN = China (20), IND = India (61). Montenegro belongs to the group of upper-middle-income countries, where the best performer is China (CHN). The top performer of its region-Europe-is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

Performance against its income group and region

Upper-middle-income countries
Montenegro is ranked 16th 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 one of the four pillars: NRI and Technology. At the sub-pillar level, it outperforms upper-middle-income countries in seven of the twelve sub-pillars: Content, Future Technologies, Individuals, Businesses, Regulation, Inclusion and Quality of Life.

Europe
Montenegro is ranked 36th within Europe (Figure 4, right panel). It lags behind its region in each of the four pillars. With regard to sub-pillars, it outperforms the average in Europe in two of the twelve sub-pillars: Content and Individuals.

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

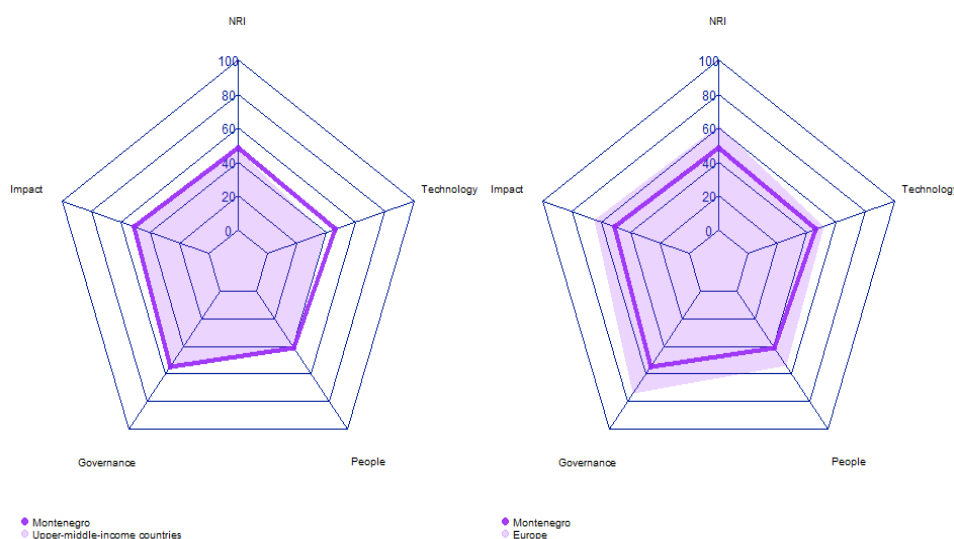**Table 2: Montenegro scores vs. averages of its income group and region, overall and by pillar**

Dimension	Montenegro	Upper-middle-income countries	Europe
NRI	48.14	47.35	61.25
Technology	45.88	38.48	51.90
People	41.00	42.59	54.16
Governance	55.08	55.90	74.33
Impact	50.58	52.43	64.61

Strongest and weakest indicators

The indicators where Montenegro performs particularly well include 1.2.2 Internet domain registrations, 3.3.5 Rural gap in use of digital payments, and 2.1.5 Adult literacy rate (Table 3). By contrast, the economy's weakest indicators include 4.1.4 Domestic market size, 1.2.4 AI scientific publications, and 2.2.4 Annual investment in telecommunication services.

Table 3: Highlight of Strengths and Opportunities for Montenegro

Strongest indicators	Rank	Weakest indicators	Rank
1.2.2 Internet domain registrations	1	3.2.4 E-commerce legislation	87
3.3.5 Rural gap in use of digital payments	4	2.1.1 Mobile broadband internet traffic within the country	102
2.1.5 Adult literacy rate	21	2.2.4 Annual investment in telecommunication services	109
3.2.2 ICT regulatory environment	26	1.2.4 AI scientific publications	112
4.1.6 ICT services exports	26	4.1.4 Domestic market size	129
2.2.3 Knowledge intensive employment	37		
1.2.1 GitHub commits	38		
4.1.3 PCT patent applications	38		
2.1.3 Use of virtual social networks	43		
3.2.1 Regulatory quality	50		

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

Network Readiness Index 2023

NRI 2023 At-A-Glance: Montenegro

Network Readiness Index   Rank: 66 (out of 134)   Score: 48.14

Pillar/sub-pillar	Rank	Score	Pillar/sub-pillar	Rank	Score
A. Technology pillar	47	45.88	C. Governance pillar	69	55.08
1st sub-pillar: Access	92	54.27	1st sub-pillar: Trust	88	34.21
2nd sub-pillar: Content	20	48.55	2nd sub-pillar: Regulation	70	64.68
3rd sub-pillar: Future Technologies	59	34.83	3rd sub-pillar: Inclusion	55	66.36
B. People pillar	76	41.00	D. Impact pillar	81	50.58
1st sub-pillar: Individuals	45	51.79	1st sub-pillar: Economy	83	22.70
2nd sub-pillar: Businesses	74	42.93	2nd sub-pillar: Quality of Life	64	68.94
3rd sub-pillar: Governments	94	28.26	3rd sub-pillar: SDG Contribution	82	60.11

The Network Readiness Index in detail

Indicator	Rank	Score		Indicator	Rank	Score	
A. Technology pillar	47	45.88		**C. Governance pillar**	69	55.08	
1st sub-pillar: Access	92	54.27		*1st sub-pillar: Trust*	88	34.21	
1.1.1 Mobile tariffs	104	36.22		3.1.1 Secure Internet servers	67	53.17	
1.1.2 Handset prices	56	54.44		3.1.2 Cybersecurity	92	52.41	
1.1.3 FTTH/building Internet subscriptions	97	14.79		3.1.3 Online access to financial account	90	16.36	
1.1.4 Population covered by at least a 3G mobile network	80	99.33		3.1.4 Internet shopping	81	14.90	
1.1.5 International Internet bandwidth	93	66.57		*2nd sub-pillar: Regulation*	70	64.68	
1.1.6 Internet access in schools	NA	NA		3.2.1 Regulatory quality	50	59.33	●
2nd sub-pillar: Content	20	48.55		3.2.2 ICT regulatory environment	26	92.94	●
1.2.1 GitHub commits	38	25.12	●	3.2.3 Regulation of emerging technologies	79	35.32	
1.2.2 Internet domain registrations	1	100.00	●	3.2.4 E-commerce legislation	87	66.67	○
1.2.3 Mobile apps development	57	68.50		3.2.5 Privacy protection by law content	57	69.12	
1.2.4 AI scientific publications	112	0.57	○	*3rd sub-pillar: Inclusion*	55	66.36	
3rd sub-pillar: Future Technologies	59	34.83		3.3.1 E-Participation	80	45.35	
1.3.1 Adoption of emerging technologies	71	44.68		3.3.2 Socioeconomic gap in use of digital payments	72	71.40	
1.3.2 Investment in emerging technologies	89	33.50		3.3.3 Availability of local online content	57	65.62	

Indicator	Rank	Score	
1.3.3 Robot density	NA	NA	
1.3.4 Computer software spending	48	26.30	
B. People pillar	76	41.00	
1st sub-pillar: Individuals	45	51.79	
2.1.1 Mobile broadband internet traffic within the country	102	1.78	○
2.1.2 ICT skills in the education system	NA	NA	
2.1.3 Use of virtual social networks	43	71.07	●
2.1.4 Tertiary enrollment	58	35.72	
2.1.5 Adult literacy rate	21	98.61	●
2.1.6 AI talent concentration	NA	NA	
2nd sub-pillar: Businesses	74	42.93	
2.2.1 Firms with website	82	36.39	
2.2.2 GERD financed by business enterprise	48	46.76	
2.2.3 Knowledge intensive employment	37	55.33	●
2.2.4 Annual investment in telecommunication services	109	71.32	○
2.2.5 GERD performed by business enterprise	54	4.85	
3rd sub-pillar: Governments	94	28.26	
2.3.1 Government online services	89	50.57	
2.3.2 Publication and use of open data	79	14.71	
2.3.3 Government promotion of investment in emerging tech	55	41.40	
2.3.4 R&D expenditure by governments and higher education	71	6.37	

Indicator	Rank	Score	
3.3.4 Gender gap in Internet use	55	68.39	
3.3.5 Rural gap in use of digital payments	4	81.06	●
D. Impact pillar	81	50.58	
1st sub-pillar: Economy	83	22.70	
4.1.1 High-tech and medium-high-tech manufacturing	88	11.02	
4.1.2 High-tech exports	51	16.89	
4.1.3 PCT patent applications	38	9.31	●
4.1.4 Domestic market size	129	24.40	○
4.1.5 Prevalence of gig economy	63	41.57	
4.1.6 ICT services exports	26	33.00	●
2nd sub-pillar: Quality of Life	64	68.94	
4.2.1 Happiness	73	62.67	
4.2.2 Freedom to make life choices	70	71.12	
4.2.3 Income inequality	59	65.83	
4.2.4 Healthy life expectancy at birth	53	76.15	
3rd sub-pillar: SDG Contribution	82	60.11	
4.3.1 SDG 3: Good Health and Well-Being	82	63.72	
4.3.2 SDG 4: Quality Education	52	35.86	
4.3.3 SDG 5: Women's economic opportunity	60	78.76	
4.3.4 SDG 7: Affordable and Clean Energy	52	75.14	
4.3.5 SDG 11: Sustainable Cities and Communities	98	47.07	

NOTE: ● a strength and ○ a weakness.

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