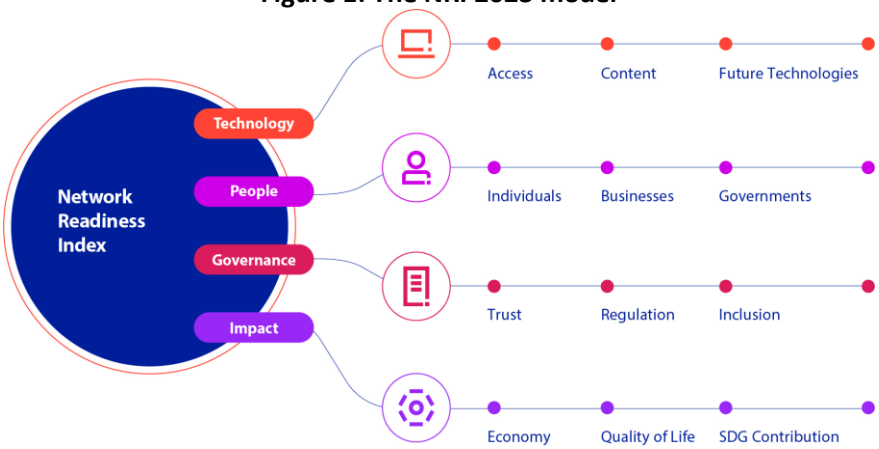
Portugal

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.

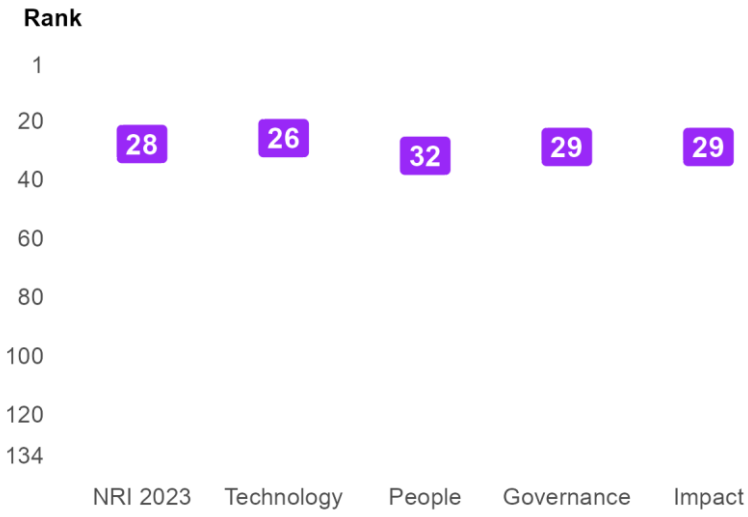
Figure 1: The NRI 2023 model



Global NRI position of Portugal

Portugal ranks 28th 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 People.

Figure 2: Portugal global ranking, overall and by pillar



Performance at sub-pillar level

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

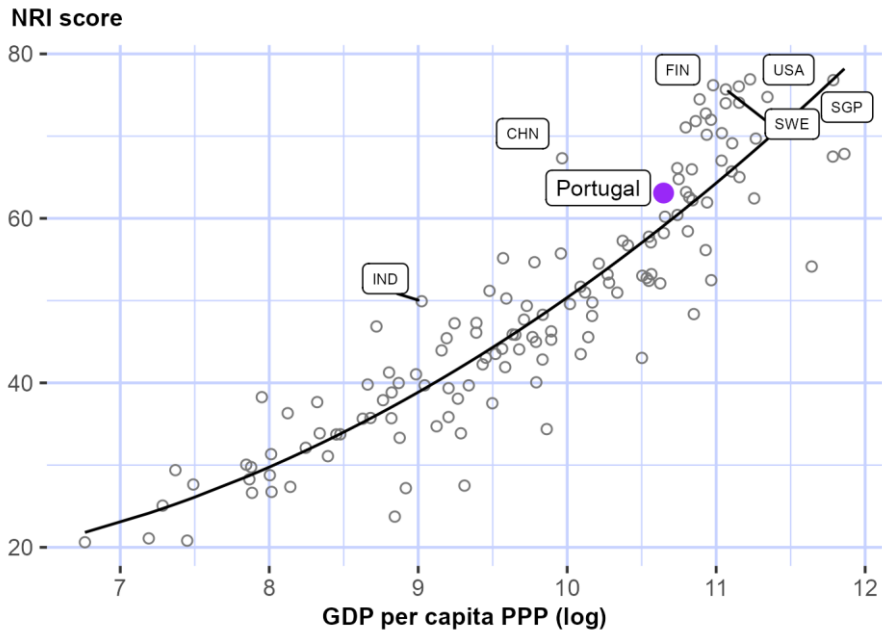
Table 1: Portugal rankings by sub-pillar

Sub-pillar	Rank	Sub-pillar	Rank
SDG Contribution	13	Quality of Life	32
Regulation	14	Access	33
Future Technologies	24	Businesses	34
Content	25	Individuals	43
Governments	31	Trust	43
Inclusion	32	Economy	44

NRI score and income

Figure 3 shows the position of Portugal 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, Portugal is well above the trend line, which suggests that it has a greater network readiness than would be expected given 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). Portugal belongs to the group of high-income countries, where the best performer is United States of America (USA). The top performer of its region-Europe-is Finland (FIN).

Performance against its income group and region

High-income countries

Portugal is ranked 27th in the group of high-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: Technology. At the sub-pillar level, it outperforms high-income countries in four of the twelve sub-pillars: Access, Content, Regulation and SDG Contribution.

Europe

Portugal is ranked 19th within Europe (Figure 4, right panel). It outperforms its region in each of the four pillars. With regard to sub-pillars, it outperforms the average in Europe in eight of the twelve sub-pillars: Access, Content, Future Technologies, Individuals, Regulation, Inclusion, Quality of Life and SDG Contribution.

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

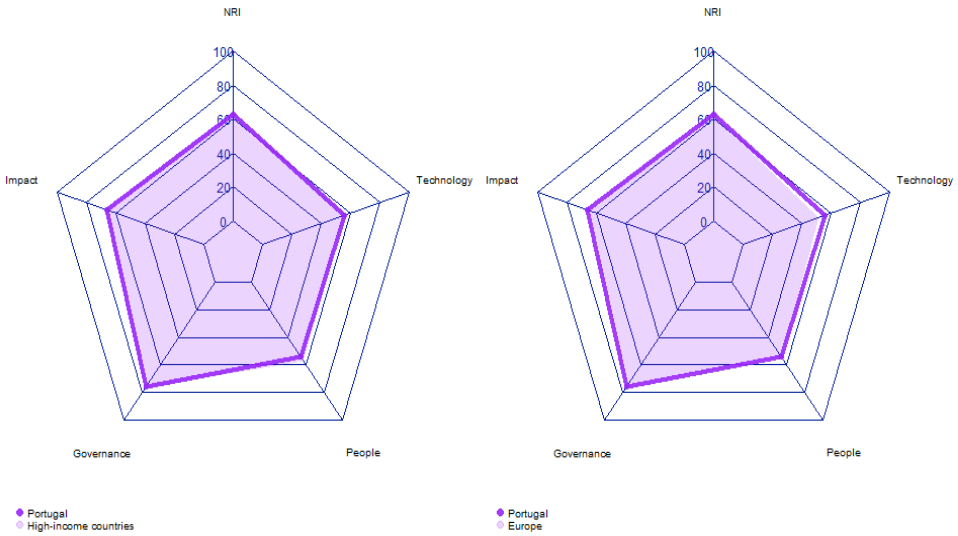


Table 2: Portugal scores vs. averages of its income group and region, overall and by pillar

Dimension	Portugal	High-income countries	Europe
NRI	63.08	64.07	61.25
Technology	56.00	55.76	51.90
People	54.26	56.99	54.16
Governance	75.69	76.81	74.33
Impact	66.37	66.73	64.61

Strongest and weakest indicators

The indicators where Portugal performs particularly well include 1.1.4 Population covered by at least a 3G mobile network, 1.1.6 Internet access in schools, and 3.2.4 E-commerce legislation (Table 3). By contrast, the economy's weakest indicators include 4.1.2 High-tech exports, 1.1.1 Mobile tariffs, and 3.3.4 Gender gap in Internet use.

Table 3: Highlight of Strengths and Opportunities for Portugal

Strongest indicators	Rank	Weakest indicators	Rank
1.1.4 Population covered by at least a 3G mobile network	1	2.1.6 AI talent concentration	31
1.1.6 Internet access in schools	1	3.3.4 Gender gap in Internet use	58
3.2.4 E-commerce legislation	1	1.1.1 Mobile tariffs	65
3.2.5 Privacy protection by law content	1	4.1.2 High-tech exports	68
4.3.3 SDG 5: Women's economic opportunity	1		
1.3.4 Computer software spending	6		
3.2.2 ICT regulatory environment	14		
1.2.2 Internet domain registrations	16		
4.3.1 SDG 3: Good Health and Well-Being	18		
3.1.2 Cybersecurity	20		
4.2.4 Healthy life expectancy at birth	20		
4.3.4 SDG 7: Affordable and Clean Energy	21		

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

NRI 2023 At-A-Glance: Portugal

Network Readiness Index Rank: 28 (out of 134) Score: 63.08

Pillar/sub-pillar	Rank	Score
A. Technology pillar	26	56.00
1st sub-pillar: Access	33	74.04
2nd sub-pillar: Content	25	44.04
3rd sub-pillar: Future Technologies	24	49.91
B. People pillar	32	54.26
1st sub-pillar: Individuals	43	52.21
2nd sub-pillar: Businesses	34	59.42
3rd sub-pillar: Governments	31	51.15

Pillar/sub-pillar	Rank	Score
C. Governance pillar	29	75.69
1st sub-pillar: Trust	43	64.67
2nd sub-pillar: Regulation	14	86.87
3rd sub-pillar: Inclusion	32	75.54
D. Impact pillar	29	66.37
1st sub-pillar: Economy	44	35.21
2nd sub-pillar: Quality of Life	32	78.89
3rd sub-pillar: SDG Contribution	13	85.02

The Network Readiness Index in detail

Indicator	Rank	Score	
A. Technology pillar	26	56.00	
1st sub-pillar: Access	33	74.04	
1.1.1 Mobile tariffs	65	61.35	○
1.1.2 Handset prices	38	65.66	
1.1.3 FTTH/building Internet subscriptions	32	41.90	
1.1.4 Population covered by at least a 3G mobile network	1	100.00	●
1.1.5 International Internet bandwidth	43	75.32	
1.1.6 Internet access in schools	1	100.00	●
2nd sub-pillar: Content	25	44.04	
1.2.1 GitHub commits	27	41.51	
1.2.2 Internet domain registrations	16	48.60	●
1.2.3 Mobile apps development	51	70.85	
1.2.4 AI scientific publications	34	15.19	
3rd sub-pillar: Future Technologies	24	49.91	
1.3.1 Adoption of emerging technologies	27	70.91	
1.3.2 Investment in emerging technologies	39	52.75	

Indicator	Rank	Score	
C. Governance pillar	29	75.69	
1st sub-pillar: Trust	43	64.67	
3.1.1 Secure Internet servers	31	79.85	
3.1.2 Cybersecurity	20	97.27	●
3.1.3 Online access to financial account	53	34.56	
3.1.4 Internet shopping	46	47.00	
2nd sub-pillar: Regulation	14	86.87	
3.2.1 Regulatory quality	40	66.23	
3.2.2 ICT regulatory environment	14	94.12	●
3.2.3 Regulation of emerging technologies	23	74.03	
3.2.4 E-commerce legislation	1	100.00	●
3.2.5 Privacy protection by law content	1	100.00	●
3rd sub-pillar: Inclusion	32	75.54	
3.3.1 E-Participation	32	72.10	
3.3.2 Socioeconomic gap in use of digital payments	48	84.24	
3.3.3 Availability of local online content	37	77.64	

Indicator	Rank	Score	
1.3.3 Robot density	25	12.08	
1.3.4 Computer software spending	6	63.90	●
B. People pillar	32	54.26	
1st sub-pillar: Individuals	43	52.21	
2.1.1 Mobile broadband internet traffic within the country	55	11.16	
2.1.2 ICT skills in the education system	21	74.10	
2.1.3 Use of virtual social networks	37	74.10	
2.1.4 Tertiary enrollment	36	45.67	
2.1.5 Adult literacy rate	39	95.60	
2.1.6 AI talent concentration	31	12.66	○
2nd sub-pillar: Businesses	34	59.42	
2.2.1 Firms with website	49	60.69	
2.2.2 GERD financed by business enterprise	24	64.51	
2.2.3 Knowledge intensive employment	26	63.82	
2.2.4 Annual investment in telecommunication services	38	82.48	
2.2.5 GERD performed by business enterprise	22	25.62	
3rd sub-pillar: Governments	31	51.15	
2.3.1 Government online services	40	77.39	
2.3.2 Publication and use of open data	36	42.65	
2.3.3 Government promotion of investment in emerging tech	30	54.46	
2.3.4 R&D expenditure by governments and higher education	23	30.11	

Indicator	Rank	Score	
3.3.4 Gender gap in Internet use	58	67.88	○
3.3.5 Rural gap in use of digital payments	22	75.82	
D. Impact pillar	29	66.37	
1st sub-pillar: Economy	44	35.21	
4.1.1 High-tech and medium-high-tech manufacturing	40	35.94	
4.1.2 High-tech exports	68	11.09	○
4.1.3 PCT patent applications	32	17.93	
4.1.4 Domestic market size	49	58.77	
4.1.5 Prevalence of gig economy	36	57.85	
4.1.6 ICT services exports	31	29.66	
2nd sub-pillar: Quality of Life	32	78.89	
4.2.1 Happiness	57	66.96	
4.2.2 Freedom to make life choices	24	87.99	
4.2.3 Income inequality	47	71.11	
4.2.4 Healthy life expectancy at birth	20	89.50	●
3rd sub-pillar: SDG Contribution	13	85.02	
4.3.1 SDG 3: Good Health and Well-Being	18	91.85	●
4.3.2 SDG 4: Quality Education	26	64.46	
4.3.3 SDG 5: Women's economic opportunity	1	100.00	●
4.3.4 SDG 7: Affordable and Clean Energy	21	81.00	●
4.3.5 SDG 11: Sustainable Cities and Communities	24	87.79	

NOTE: ● a strength and ○ a weakness.

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