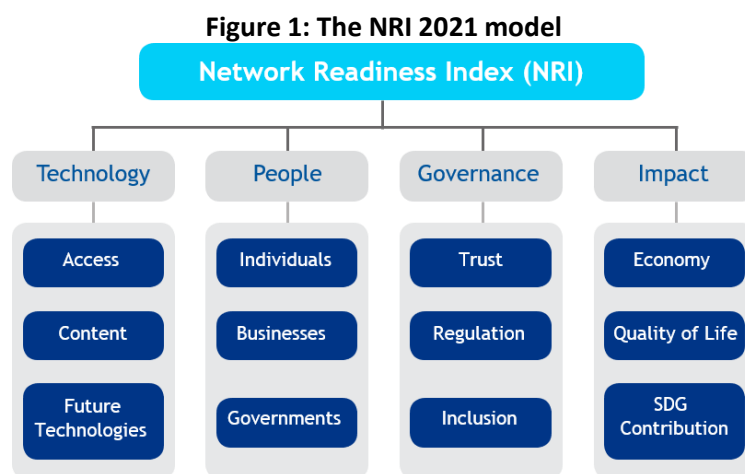


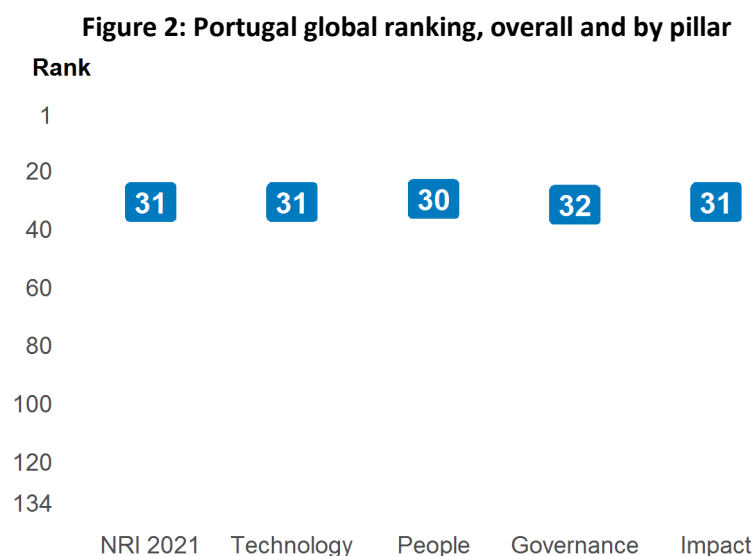
Network Readiness Index 2021 Portugal

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 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 Portugal

Portugal ranks 31st out of the 130 economies included in the NRI 2021 (Figure 2). Its main strength relates to People. The greatest scope for improvement, meanwhile, concerns Governance.



Performance at sub-pillar level

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

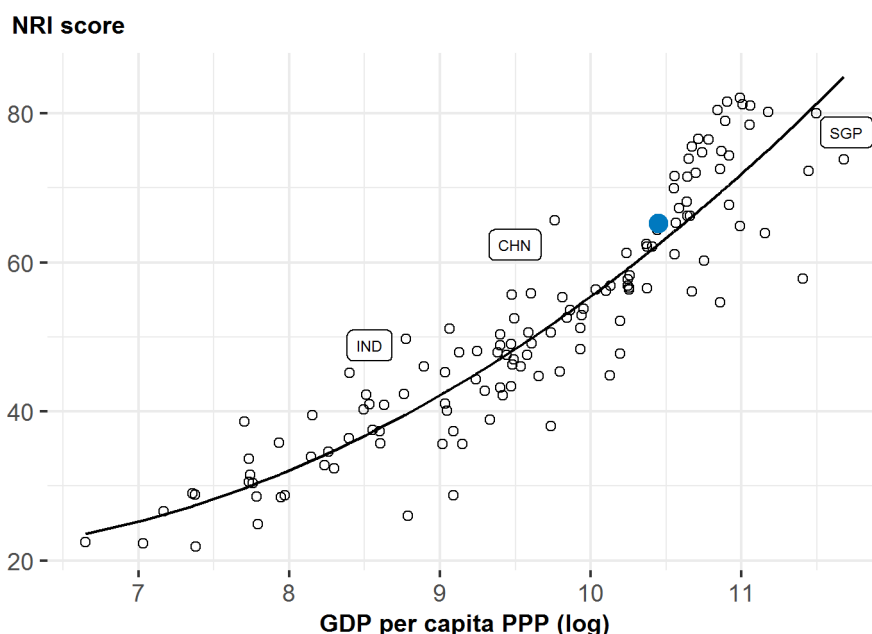
Table 1: Portugal rankings by sub-pillar

Sub-pillar	Rank	Sub-pillar	Rank
Regulation	12	Inclusion	35
Content	26	Individuals	38
Governments	27	Economy	39
Future Technologies	28	Businesses	40
Quality of Life	31	Trust	43
SDG Contribution	31	Access	45

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: NLD = Netherlands (rank: 1), SWE = Sweden (2), DNK = Denmark (3), CHN = China (29), IND = India (67). USA is ranked 4th. Portugal belongs to the group of high-income countries, where the best performer is Netherlands (NLD). The top performer of its region-Europe-is also Netherlands (NLD).

Performance against its income group and region

High-income countries

Portugal is ranked 30th in the group of high-income countries (Figure 4, left panel). In terms of pillar performance, it has a score below the income group average in each of the four pillars. At the sub-pillar level, it outperforms high-income countries in two of the twelve sub-pillars: Regulation and SDG Contribution.

Europe

Portugal is ranked 23rd within Europe (Figure 4, right panel). It has a score above the regional average in one of the four pillars: governance. With regard to sub-pillars, it outperforms the average in Europe in six of the twelve sub-pillars: Future Technologies, Individuals, Governments, Regulation, Inclusion 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	65.20	67.45	65.45
Technology	59.36	62.99	59.78
People	60.38	62.65	60.83
Governance	73.59	75.52	73.31
Impact	67.48	68.63	67.86

Strongest and weakest indicators

The indicators where Portugal performs particularly well include 1.1.7 Internet access in schools, 3.2.4 E-commerce legislation, and 3.2.5 Privacy protection by law content (Table 3). By contrast, the economy's weakest indicators include 4.1.4 Growth rate of GDP per person engaged, 2.1.1 Active mobile broadband subscriptions, and 4.2.1 Happiness.

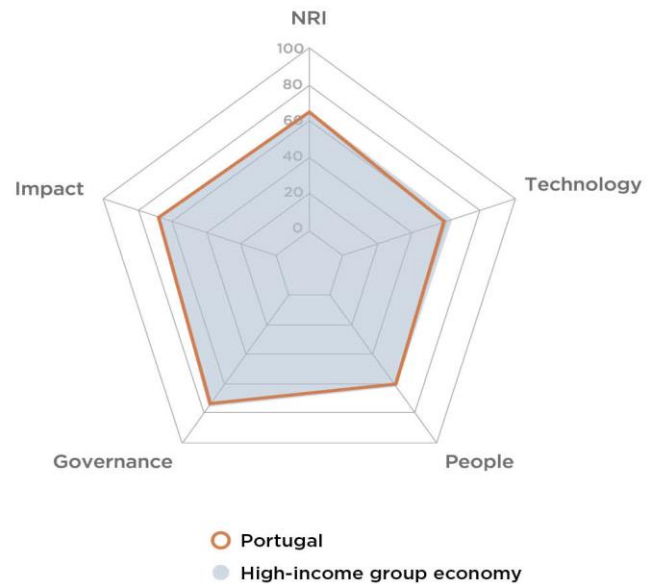
Table 3: Strongest and weakest indicators of Portugal

Strongest indicators	Rank	Weakest indicators	Rank
1.1.7 Internet access in schools	1	3.3.4 Gender gap in Internet use	56
3.2.4 E-commerce legislation	1	4.2.1 Happiness	64
3.2.5 Privacy protection by law content	1	2.1.1 Active mobile broadband subscriptions	65
1.3.4 Computer software spending	8	4.1.4 Growth rate of GDP per person engaged	88
3.2.2 ICT regulatory environment	14		
4.3.1 SDG 3: Good Health and Well-Being	18		
1.2.3 Internet domain registrations	20		
3.1.2 Cybersecurity	20		
4.2.4 Healthy life expectancy at birth	20		
2.3.4 R&D expenditure by governments and higher education	22		
2.2.3 Professionals	23		
1.2.5 AI scientific publications	25		

Portugal

Network Readiness Index Rank (out of 130) **31** Score **65.20**

Pillar/sub-pillar	Rank	Score
A. Technology pillar	31	59.36
1st sub-pillar: Access	45	73.06
2nd sub-pillar: Content	26	57.47
3rd sub-pillar: Future Technologies	28	47.53
B. People pillar	30	60.38
1st sub-pillar: Individuals	38	70.04
2nd sub-pillar: Businesses	40	51.85
3rd sub-pillar: Governments	27	59.27
C. Governance pillar	32	73.59
1st sub-pillar: Trust	43	60.98
2nd sub-pillar: Regulation	12	84.85
3rd sub-pillar: Inclusion	35	74.95
D. Impact pillar	31	67.48
1st sub-pillar: Economy	39	47.35
2nd sub-pillar: Quality of Life	31	78.19
3rd sub-pillar: SDG Contribution	31	76.91



Network Readiness Index in detail

Indicator	Rank	Score
A. Technology pillar	31	59.36
1st sub-pillar: Access	45	73.06
1.1.1 Mobile tariffs	57	63.35
1.1.2 Handset prices	28	73.29
1.1.3 Households with internet access	47	84.62
1.1.4 SMS sent by population 15-69	25	83.12
1.1.5 Population covered by at least a 3G mobile network	24	99.97
1.1.6 International Internet bandwidth	29	7.10
1.1.7 Internet access in schools	1	100.00 ●
2nd sub-pillar: Content	26	57.47
1.2.1 GitHub commits	28	28.40
1.2.2 Wikipedia edits	44	66.94
1.2.3 Internet domain registrations	*	* ●
1.2.4 Mobile apps development	34	88.61
1.2.5 AI scientific publications	25	63.22 ●
3rd sub-pillar: Future Technologies	28	47.53
1.3.1 Adoption of emerging technologies	27	70.91
1.3.2 Investment in emerging technologies	39	52.88
1.3.3 Robot density	25	18.27
1.3.4 Computer software spending	8	48.09 ●
B. People pillar	30	60.38
1st sub-pillar: Individuals	38	70.04
2.1.1 Active mobile broadband subscriptions	65	75.29 ○
2.1.2 ICT skills	31	57.47
2.1.3 Use of virtual social networks	38	76.72
2.1.4 Tertiary enrollment	38	45.65
2.1.5 Adult literacy rate	39	95.06
2nd sub-pillar: Businesses	40	51.85
2.2.1 Firms with website	53	60.23
2.2.2 GERD financed by business enterprise	30	59.73
2.2.3 Professionals	23	46.70 ●
2.2.4 Technicians and associate professionals	47	47.38
2.2.5 Annual investment in telecommunication services	44	80.43
2.2.6 GERD performed by business enterprise	31	16.61
3rd sub-pillar: Governments	27	59.27
2.3.1 Government online services	35	83.03
2.3.2 Publication and use of open data	34	41.73
2.3.3 Government promotion of investment in emerging tech	29	54.68
2.3.4 R&D expenditure by governments and higher education	22	57.63 ●

Indicator	Rank	Score
C. Governance pillar	32	73.59
1st sub-pillar: Trust	43	60.98
3.1.1 Secure Internet servers	31	79.84
3.1.2 Cybersecurity	20	97.27 ●
3.1.3 Online access to financial account	52	34.56
3.1.4 Internet shopping	41	32.24
2nd sub-pillar: Regulation	12	84.85
3.2.1 Regulatory quality	37	67.54
3.2.2 ICT regulatory environment	14	94.12 ●
3.2.3 Legal framework's adaptability to emerging technologies	28	62.61
3.2.4 E-commerce legislation	1	100.00 ●
3.2.5 Privacy protection by law content	1	100.00 ●
3rd sub-pillar: Inclusion	35	74.95
3.3.1 E-Participation	41	81.48
3.3.2 Socioeconomic gap in use of digital payments	35	78.50
3.3.3 Availability of local online content	36	77.58
3.3.4 Gender gap in Internet use	56	61.36 ○
3.3.5 Rural gap in use of digital payments	25	75.82
D. Impact pillar	31	67.48
1st sub-pillar: Economy	39	47.35
4.1.1 High-tech and medium-high-tech manufacturing	43	36.92
4.1.2 High-tech exports	44	40.25
4.1.3 PCT patent applications	30	63.78
4.1.4 Growth rate of GDP per person engaged	88	51.70 ○
4.1.5 Prevalence of gig economy	36	60.68
4.1.6 ICT services exports	61	30.80
2nd sub-pillar: Quality of Life	31	78.19
4.2.1 Happiness	64	55.14 ○
4.2.2 Freedom to make life choices	26	91.28
4.2.3 Income inequality	43	76.82
4.2.4 Healthy life expectancy at birth	20	89.50 ●
3rd sub-pillar: SDG Contribution	31	76.91
4.3.1 SDG 3: Good Health and Well-Being	18	88.52 ●
4.3.2 SDG 4: Quality Education	26	64.46
4.3.3 Females employed with advanced degrees	40	56.41
4.3.4 SDG 7: Affordable and Clean Energy	30	84.98
4.3.5 SDG 11: Sustainable Cities and Communities	40	90.17

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

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