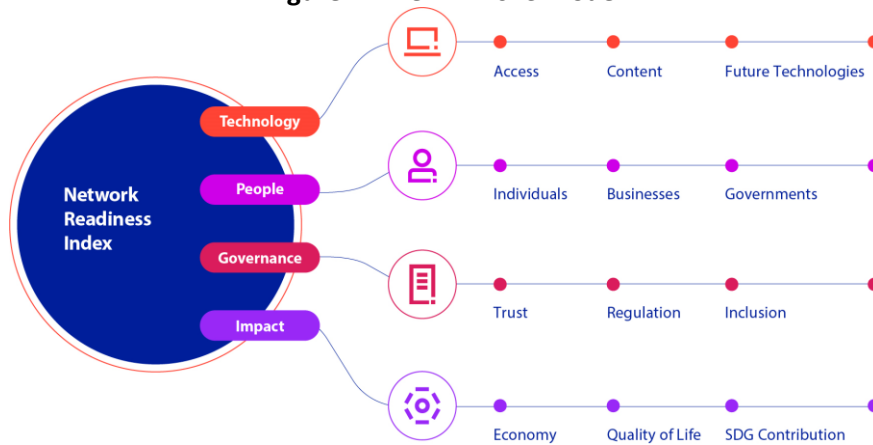




## Panama

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.

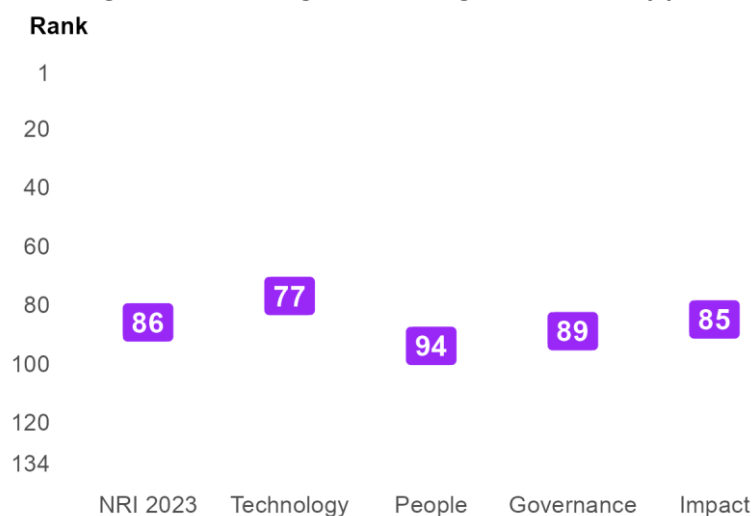
Figure 1: The NRI 2023 model



### Global NRI position of Panama

Panama ranks 86th 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: Panama global ranking, overall and by pillar



# Network Readiness Index 2023

## Performance at sub-pillar level

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

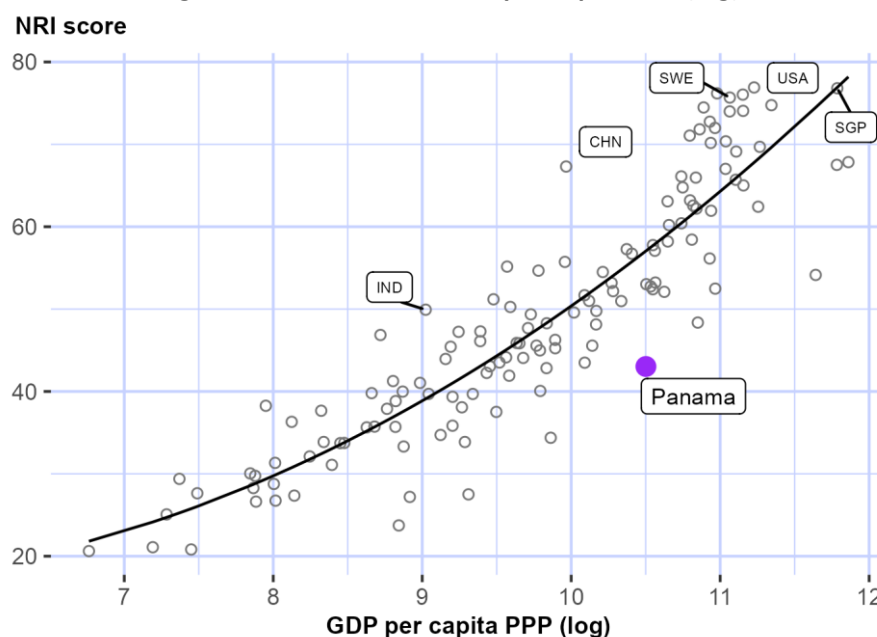
**Table 1: Panama rankings by sub-pillar**

Sub-pillar	Rank	Sub-pillar	Rank
Individuals	51	Regulation	83
SDG Contribution	58	Inclusion	88
Future Technologies	60	Governments	89
Content	70	Trust	100
Quality of Life	74	Economy	109
Access	83	Businesses	123

## NRI score and income

Figure 3 shows the position of Panama 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, Panama 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). Panama belongs to the group of high-income countries, where the best performer is United States of America (USA). The top performer of its region-The Americas-is also United States of America (USA).

# Network Readiness Index 2023



## Performance against its income group and region

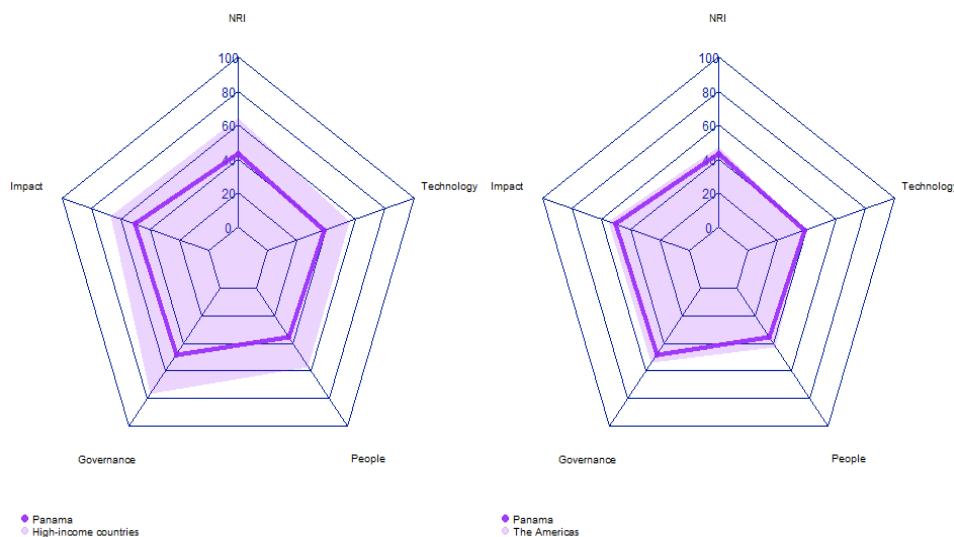
### High-income countries

Panama is ranked 48th 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 trails high-income countries in all of them.

### The Americas

Panama is ranked 14th within The Americas (Figure 4, right panel). It has a score above the regional average in one of the four pillars: Technology. With regard to sub-pillars, it outperforms the average in The Americas in two of the twelve sub-pillars: Future Technologies and Individuals.

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



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

Dimension	Panama	High-income countries	The Americas
NRI	43.03	64.07	47.41
Technology	38.25	55.76	38.24
People	35.34	56.99	42.35
Governance	48.36	76.81	54.12
Impact	50.17	66.73	54.93

# Network Readiness Index 2023



## Strongest and weakest indicators

The indicators where Panama performs particularly well include 4.3.4 SDG 7: Affordable and Clean Energy, 3.3.4 Gender gap in Internet use, and 1.1.2 Handset prices (Table 3). By contrast, the economy's weakest indicators include 4.1.2 High-tech exports, 1.2.4 AI scientific publications, and 2.1.2 ICT skills in the education system.

**Table 3: Highlight of Strengths and Opportunities for Panama**

Strongest indicators	Rank	Weakest indicators	Rank
4.3.4 SDG 7: Affordable and Clean Energy	4	4.3.2 SDG 4: Quality Education	73
3.3.4 Gender gap in Internet use	23	2.2.5 GERD performed by business enterprise	92
1.1.2 Handset prices	24	2.1.2 ICT skills in the education system	98
4.2.2 Freedom to make life choices	26	1.2.4 AI scientific publications	122
4.3.5 SDG 11: Sustainable Cities and Communities	33	4.1.2 High-tech exports	129
1.2.2 Internet domain registrations	37		
4.2.4 Healthy life expectancy at birth	37		
4.3.1 SDG 3: Good Health and Well-Being	42		
2.1.5 Adult literacy rate	45		
4.2.1 Happiness	55		

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

# Network Readiness Index 2023



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## NRI 2023 At-A-Glance: Panama

Network Readiness Index

Rank: 86 (out of 134)

Score: 43.03

Pillar/sub-pillar	Rank	Score	Pillar/sub-pillar	Rank	Score
A. Technology pillar	77	38.25	C. Governance pillar	89	48.36
1st sub-pillar: Access	83	57.85	1st sub-pillar: Trust	100	29.91
2nd sub-pillar: Content	70	22.22	2nd sub-pillar: Regulation	83	61.97
3rd sub-pillar: Future Technologies	60	34.68	3rd sub-pillar: Inclusion	88	53.19
B. People pillar	94	35.34	D. Impact pillar	85	50.17
1st sub-pillar: Individuals	51	51.04	1st sub-pillar: Economy	109	16.80
2nd sub-pillar: Businesses	123	22.98	2nd sub-pillar: Quality of Life	74	66.77
3rd sub-pillar: Governments	89	32.00	3rd sub-pillar: SDG Contribution	58	66.95

### The Network Readiness Index in detail

Indicator	Rank	Score	Indicator	Rank	Score
<b>A. Technology pillar</b>	77	38.25	<b>C. Governance pillar</b>	89	48.36
1st sub-pillar: Access	83	57.85	1st sub-pillar: Trust	100	29.91
1.1.1 Mobile tariffs	74	58.47	3.1.1 Secure Internet servers	61	58.27
1.1.2 Handset prices	24	72.51	3.1.2 Cybersecurity	104	32.95
1.1.3 FTTH/building Internet subscriptions	112	6.83	3.1.3 Online access to financial account	99	13.18
1.1.4 Population covered by at least a 3G mobile network	93	98.31	3.1.4 Internet shopping	80	15.26
1.1.5 International Internet bandwidth	102	64.40	2nd sub-pillar: Regulation	83	61.97
1.1.6 Internet access in schools	54	46.58	3.2.1 Regulatory quality	60	53.95
2nd sub-pillar: Content	70	22.22	3.2.2 ICT regulatory environment	77	77.06
1.2.1 GitHub commits	78	4.21	3.2.3 Regulation of emerging technologies	64	44.16
1.2.2 Internet domain registrations	37	17.46	3.2.4 E-commerce legislation	87	66.67
1.2.3 Mobile apps development	62	66.94	3.2.5 Privacy protection by law content	59	68.04
1.2.4 AI scientific publications	122	0.26	3rd sub-pillar: Inclusion	88	53.19
3rd sub-pillar: Future Technologies	60	34.68	3.3.1 E-Participation	75	50.01
1.3.1 Adoption of emerging technologies	66	47.02	3.3.2 Socioeconomic gap in use of digital payments	110	44.45
1.3.2 Investment in emerging technologies	65	40.25	3.3.3 Availability of local online content	74	56.01



# Network Readiness Index 2023



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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	23	72.59 ●
1.3.4 Computer software spending	77	16.76	3.3.5 Rural gap in use of digital payments	99	42.90
<b>B. People pillar</b>			<b>D. Impact pillar</b>		
<i>1st sub-pillar: Individuals</i>	94	35.34	<i>1st sub-pillar: Economy</i>	85	50.17
2.1.1 Mobile broadband internet traffic within the country	51	51.04	4.1.1 High-tech and medium-high-tech manufacturing	109	16.80
2.1.2 ICT skills in the education system	NA	NA	4.1.2 High-tech exports	94	7.52
2.1.3 Use of virtual social networks	98	21.76 ○	4.1.3 PCT patent applications	129	0.22 ○
2.1.4 Tertiary enrollment	74	60.12	4.1.4 Domestic market size	72	2.04
2.1.5 Adult literacy rate	71	28.12	4.1.5 Prevalence of gig economy	76	48.98
2.1.6 AI talent concentration	45	94.18 ●	4.1.6 ICT services exports	89	31.98
<i>2nd sub-pillar: Businesses</i>			<i>2nd sub-pillar: Quality of Life</i>		
2.2.1 Firms with website	NA	NA	4.2.1 Happiness	74	10.04
2.2.2 GERD financed by business enterprise	55	67.46 ●	4.2.2 Freedom to make life choices	26	87.34 ●
2.2.3 Knowledge intensive employment	91	1.41	4.2.3 Income inequality	107	30.40
2.2.4 Annual investment in telecommunication services	101	13.28	4.2.4 Healthy life expectancy at birth	37	81.88 ●
2.2.5 GERD performed by business enterprise	72	77.22	<i>3rd sub-pillar: SDG Contribution</i>		
<i>3rd sub-pillar: Governments</i>			4.3.1 SDG 3: Good Health and Well-Being	58	66.95
2.3.1 Government online services	89	32.00	4.3.2 SDG 4: Quality Education	42	80.25 ●
2.3.2 Publication and use of open data	71	63.98	4.3.3 SDG 5: Women's economic opportunity	73	12.53 ○
2.3.3 Government promotion of investment in emerging tech	55	32.35	4.3.4 SDG 7: Affordable and Clean Energy	85	70.80
2.3.4 R&D expenditure by governments and higher education	93	28.86	4.3.5 SDG 11: Sustainable Cities and Communities	4	89.96 ●
	94	2.80		33	81.21 ●

NOTE: ● a strength and ○ a weakness.

# Network Readiness Index 2023



## Sources

- Dutta, S., & Lanvin, B. (eds.) (2022). *The Network Readiness Index 2022: Benchmarking the Future of the Network Economy*. Washington DC: Portulans Institute.
- Berry, B. (2019). *berryFunctions: Function Collection Related to Plotting and Hydrology*. R package version 1.18.2. URL: <https://CRAN.R-project.org/package=berryFunctions>
- Dutta, S., & Lanvin, B. (eds.) (2019). *The Network Readiness Index 2019: Towards a Future-Ready Society*. Washington DC: Portulans Institute.
- Dutta, S., & Lanvin, B. (eds.) (2020). *The Network Readiness Index 2020: Fostering Digital Transformation in a post-COVID Global Economy*. Washington DC: Portulans Institute.
- Dutta, S., & Lanvin, B. (eds.) (2021). *The Network Readiness Index 2021: Shaping the Global Recovery. How digital technologies can make the post-COVID world more equal*. Washington DC: Portulans Institute.
- Gohel, D. (2019). *officer: Manipulation of Microsoft Word and PowerPoint Documents*. R package version 0.3.6. URL: <https://CRAN.R-project.org/package=officer>
- Gohel, D. (2019). *flextable: Functions for Tabular Reporting*. R package version 0.5.6. URL: <https://CRAN.R-project.org/package=flextable>
- Milton Bache, S. & Wickham, H. (2014). *magrittr: A Forward-Pipe Operator for R*. R package version 1.5. URL: <https://CRAN.R-project.org/package=magrittr>
- Nakazawa, M. (2019). *fmsb: Functions for Medical Statistics Book with some Demographic Data*. R package version 0.7.0. URL: <https://CRAN.R-project.org/package=fmsb>
- R Core Team (2018). *R: A language and environment for statistical computing*. R Foundation for Statistical Computing, Vienna, Austria. URL: <https://www.R-project.org/>.
- Slowikowski, K. (2019). *ggrepel: Automatically Position Non-Overlapping Text Labels with 'ggplot2'*. R package version 0.8.1. URL: <https://CRAN.R-project.org/package=ggrepel>
- Wickham, H. (2007). Reshaping Data with the reshape Package. *Journal of Statistical Software*, 21(12), 1-20. URL: <http://www.jstatsoft.org/v21/i12/>.
- Wickham, H. (2016). *ggplot2: Elegant Graphics for Data Analysis*. Springer-Verlag. New York.
- Wickham et al., (2019). Welcome to the tidyverse. *Journal of Open Source Software*, 4(43), 1686, URL: <https://doi.org/10.21105/joss.01686>