



Senegal

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.

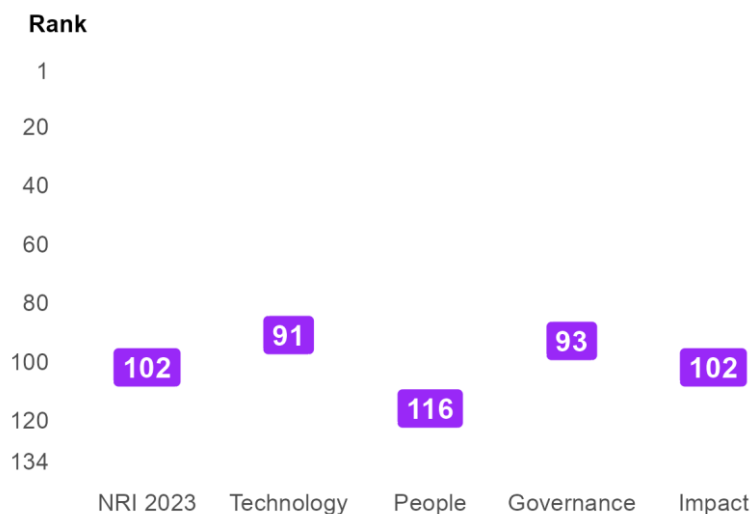
Figure 1: The NRI 2023 model



Global NRI position of Senegal

Senegal ranks 102nd 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: Senegal 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 Senegal relate to Regulation, Future Technologies and Economy, among others (Table 1). More could be done, though, to improve the economy's performances in the Individuals, Businesses and Content sub-pillars.

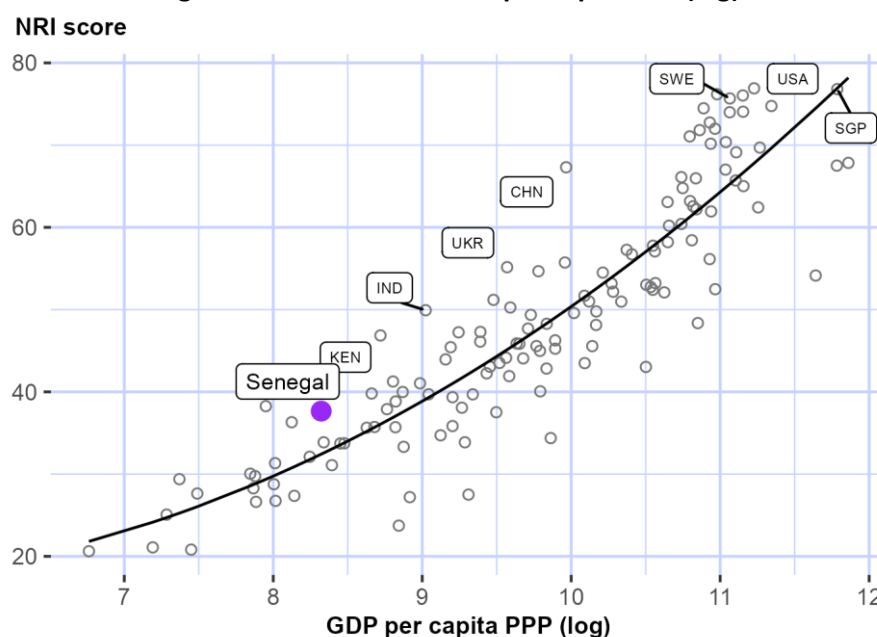
Table 1: Senegal rankings by sub-pillar

| Sub-pillar | Rank | Sub-pillar | Rank |
|---------------------|------|-----------------|------|
| Regulation | 54 | Quality of Life | 100 |
| Future Technologies | 55 | Governments | 103 |
| Economy | 91 | Trust | 106 |
| SDG Contribution | 95 | Individuals | 115 |
| Access | 97 | Businesses | 115 |
| Inclusion | 99 | Content | 116 |

NRI score and income

Figure 3 shows the position of Senegal 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, Senegal 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). Senegal belongs to the group of lower-middle-income countries, where the best performer is Ukraine (UKR). The top performer of its region-Africa-is Kenya (KEN).

Network Readiness Index 2023

Performance against its income group and region

Lower-middle-income countries

Senegal is ranked 22nd in the group of lower-middle-income countries (Figure 4, left panel). In terms of pillar performance, it has a score higher than the income group average in three of the four pillars: Technology, Governance and Impact. At the sub-pillar level, it outperforms lower-middle-income countries in five of the twelve sub-pillars: Future Technologies, Regulation, Inclusion, Quality of Life and SDG Contribution.

Africa

Senegal is ranked 8th within Africa (Figure 4, right panel). It outperforms its region in each of the four pillars. With regard to sub-pillars, it outperforms the average in Africa in ten of the twelve sub-pillars: Access, Content, Future Technologies, Individuals, Governments, Regulation, Inclusion, Economy, Quality of Life and SDG Contribution.

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

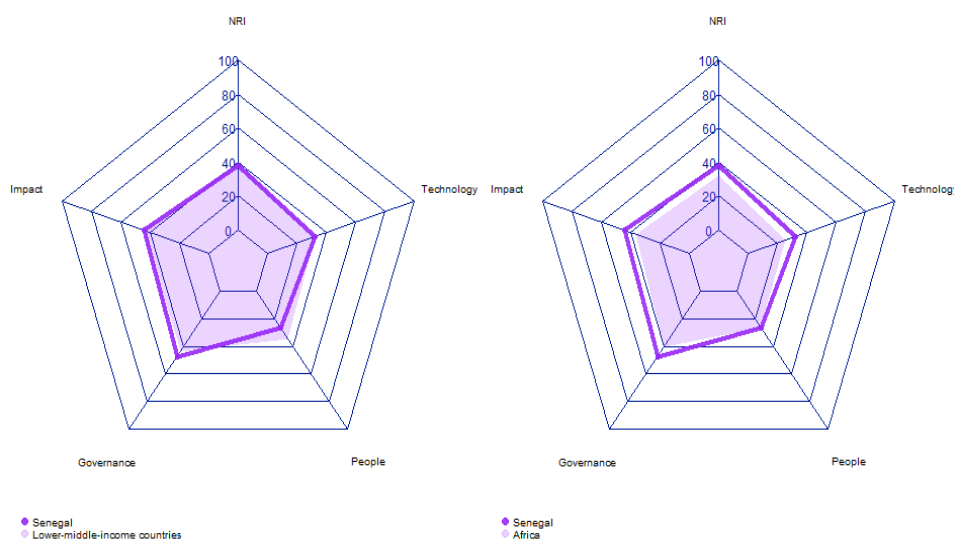


Table 2: Senegal scores vs. averages of its income group and region, overall and by pillar

| Dimension | Senegal | Lower-middle-income countries | Africa |
|------------|---------|-------------------------------|--------|
| NRI | 37.66 | 38.41 | 32.14 |
| Technology | 32.57 | 32.12 | 25.14 |
| People | 26.55 | 34.38 | 26.19 |
| Governance | 47.39 | 43.27 | 40.44 |
| Impact | 44.12 | 43.89 | 36.77 |

Network Readiness Index 2023



Strongest and weakest indicators

The indicators where Senegal performs particularly well include 3.2.4 E-commerce legislation, 2.1.2 ICT skills in the education system, and 3.2.3 Regulation of emerging technologies (Table 3). By contrast, the economy's weakest indicators include 1.1.5 International Internet bandwidth, 2.2.3 Knowledge intensive employment, and 1.2.3 Mobile apps development.

Table 3: Highlight of Strengths and Opportunities for Senegal

| Strongest indicators | Rank | Weakest indicators | Rank |
|---|------|--|------|
| 3.2.4 E-commerce legislation | 1 | 4.1.3 PCT patent applications | 99 |
| 2.1.2 ICT skills in the education system | 41 | 2.1.5 Adult literacy rate | 100 |
| 3.2.3 Regulation of emerging technologies | 44 | 1.2.3 Mobile apps development | 116 |
| 1.1.4 Population covered by at least a 3G mobile network | 54 | 2.2.3 Knowledge intensive employment | 119 |
| 1.3.4 Computer software spending | 54 | 1.1.5 International Internet bandwidth | 126 |
| 3.2.2 ICT regulatory environment | 55 | | |
| 4.1.5 Prevalence of gig economy | 55 | | |
| 2.3.3 Government promotion of investment in emerging technologies | 56 | | |
| 1.3.2 Investment in emerging technologies | 60 | | |
| 4.3.4 SDG 7: Affordable and Clean Energy | 60 | | |
| 3.1.3 Online access to financial account | 61 | | |

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

Network Readiness Index 2023



PORTULANS
INSTITUTE



NRI 2023 At-A-Glance: Senegal

Network Readiness Index

Rank: 102 (out of 134)

Score: 37.66

| Pillar/sub-pillar | Rank | Score | Pillar/sub-pillar | Rank | Score |
|-------------------------------------|------|-------|----------------------------------|------|-------|
| A. Technology pillar | 91 | 32.57 | C. Governance pillar | 93 | 47.39 |
| 1st sub-pillar: Access | 97 | 50.68 | 1st sub-pillar: Trust | 106 | 26.13 |
| 2nd sub-pillar: Content | 116 | 10.40 | 2nd sub-pillar: Regulation | 54 | 69.19 |
| 3rd sub-pillar: Future Technologies | 55 | 36.62 | 3rd sub-pillar: Inclusion | 99 | 46.85 |
| B. People pillar | 116 | 26.55 | D. Impact pillar | 102 | 44.12 |
| 1st sub-pillar: Individuals | 115 | 26.02 | 1st sub-pillar: Economy | 91 | 21.23 |
| 2nd sub-pillar: Businesses | 115 | 27.68 | 2nd sub-pillar: Quality of Life | 100 | 56.16 |
| 3rd sub-pillar: Governments | 103 | 25.96 | 3rd sub-pillar: SDG Contribution | 95 | 54.96 |

The Network Readiness Index in detail

| Indicator | Rank | Score | Indicator | Rank | Score |
|--|------|-------|--|------|--------|
| A. Technology pillar | 91 | 32.57 | C. Governance pillar | 93 | 47.39 |
| 1st sub-pillar: Access | 97 | 50.68 | 1st sub-pillar: Trust | 106 | 26.13 |
| 1.1.1 Mobile tariffs | 98 | 42.90 | 3.1.1 Secure Internet servers | 121 | 26.17 |
| 1.1.2 Handset prices | 110 | 28.20 | 3.1.2 Cybersecurity | 103 | 34.72 |
| 1.1.3 FTTH/building Internet subscriptions | NA | NA | 3.1.3 Online access to financial account | 61 | 30.80 |
| 1.1.4 Population covered by at least a 3G mobile network | 54 | 99.80 | 3.1.4 Internet shopping | 84 | 12.85 |
| 1.1.5 International Internet bandwidth | 126 | 54.13 | 2nd sub-pillar: Regulation | 54 | 69.19 |
| 1.1.6 Internet access in schools | 64 | 28.39 | 3.2.1 Regulatory quality | 86 | 42.55 |
| 2nd sub-pillar: Content | 116 | 10.40 | 3.2.2 ICT regulatory environment | 55 | 85.88 |
| 1.2.1 GitHub commits | 112 | 0.97 | 3.2.3 Regulation of emerging technologies | 44 | 56.62 |
| 1.2.2 Internet domain registrations | 105 | 0.62 | 3.2.4 E-commerce legislation | 1 | 100.00 |
| 1.2.3 Mobile apps development | 116 | 37.52 | 3.2.5 Privacy protection by law content | 78 | 60.88 |
| 1.2.4 AI scientific publications | 81 | 2.50 | 3rd sub-pillar: Inclusion | 99 | 46.85 |
| 3rd sub-pillar: Future Technologies | 55 | 36.62 | 3.3.1 E-Participation | 98 | 32.56 |
| 1.3.1 Adoption of emerging technologies | 74 | 43.93 | 3.3.2 Socioeconomic gap in use of digital payments | 76 | 67.58 |
| 1.3.2 Investment in emerging technologies | 60 | 41.25 | 3.3.3 Availability of local online content | 90 | 49.52 |

Network Readiness Index 2023



PORTULANS
INSTITUTE



| Indicator | Rank | Score | Indicator | Rank | Score |
|--|------|-------|--|------|-------|
| 1.3.3 Robot density | NA | NA | 3.3.4 Gender gap in Internet use | NA | NA |
| 1.3.4 Computer software spending | 54 | 24.69 | 3.3.5 Rural gap in use of digital payments | 105 | 37.75 |
| B. People pillar | | | D. Impact pillar | | |
| <i>1st sub-pillar: Individuals</i> | | | <i>1st sub-pillar: Economy</i> | | |
| 2.1.1 Mobile broadband internet traffic within the country | 70 | 8.63 | 4.1.1 High-tech and medium-high-tech manufacturing | 58 | 26.40 |
| 2.1.2 ICT skills in the education system | 41 | 58.04 | 4.1.2 High-tech exports | 100 | 3.16 |
| 2.1.3 Use of virtual social networks | 111 | 14.37 | 4.1.3 PCT patent applications | 99 | 0.00 |
| 2.1.4 Tertiary enrollment | 103 | 8.71 | 4.1.4 Domestic market size | 96 | 41.05 |
| 2.1.5 Adult literacy rate | 100 | 40.33 | 4.1.5 Prevalence of gig economy | 55 | 45.06 |
| 2.1.6 AI talent concentration | NA | NA | 4.1.6 ICT services exports | 71 | 11.69 |
| <i>2nd sub-pillar: Businesses</i> | | | <i>2nd sub-pillar: Quality of Life</i> | | |
| 2.2.1 Firms with website | 91 | 29.00 | 4.2.1 Happiness | 93 | 47.51 |
| 2.2.2 GERD financed by business enterprise | 87 | 2.58 | 4.2.2 Freedom to make life choices | 91 | 63.90 |
| 2.2.3 Knowledge intensive employment | 119 | 3.06 | 4.2.3 Income inequality | 67 | 62.56 |
| 2.2.4 Annual investment in telecommunication services | 79 | 76.10 | 4.2.4 Healthy life expectancy at birth | 106 | 50.66 |
| 2.2.5 GERD performed by business enterprise | NA | NA | <i>3rd sub-pillar: SDG Contribution</i> | | |
| <i>3rd sub-pillar: Governments</i> | | | 4.3.1 SDG 3: Good Health and Well-Being | 112 | 34.01 |
| 2.3.1 Government online services | 98 | 44.01 | 4.3.2 SDG 4: Quality Education | NA | NA |
| 2.3.2 Publication and use of open data | 91 | 8.82 | 4.3.3 SDG 5: Women's economic opportunity | 108 | 61.06 |
| 2.3.3 Government promotion of investment in emerging tech | 56 | 40.80 | 4.3.4 SDG 7: Affordable and Clean Energy | 60 | 73.70 |
| 2.3.4 R&D expenditure by governments and higher education | 57 | 10.22 | 4.3.5 SDG 11: Sustainable Cities and Communities | 87 | 51.07 |

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>