



**United Nations**

Department of Economic and Social Affairs

# E-Government Survey 2022

The Future of  
Digital Government

## ANNEXES



# Annexes

## Annex A: Survey Methodology

We invite you to use the interactive UNeGovKB to view, sort, and print information from the UN E-Government Survey or download copies of the UN E-Government Surveys since 2001 to the latest 2022 Survey. Interactive e-Government Knowledgebase (UNeGovKB) can be reached by using the link and QR code below:

<https://publicadministration.un.org/egovkb>

<https://bit.ly/EGOVKB>



### A.1 E-Government Development Index: An Overview

Mathematically, the E-Government Development Index (EGDI) is the weighted average of normalized scores on the three most important dimensions of e government, namely: (i) the scope and quality of online services quantified as the Online Service Index (OSI); (ii) the status of the development of telecommunication infrastructure or the Telecommunication Infrastructure Index (TII); and (iii) the inherent human capital or the Human Capital Index (HCI). Each of these indices is a composite measure that can be extracted and analysed independently.

$$EGDI = \frac{1}{3} (OSI_{normalized} + TII_{normalized} + HCI_{normalized})$$

Prior to the normalization of the three component indicators, the Z-score standardization procedure is implemented for each component indicator to ensure that the overall EGDI is equally decided by the three component indices, that is, each component index presents comparable variance subsequent to the Z-score standardization. In the absence of the Z-score standardization treatment, the EGDI would mainly depend on the component index with the greatest dispersion. After the Z-score standardization, the arithmetic average sum becomes a good statistical indicator, where “equal weights” truly means “equal importance.”



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For standard Z-score calculation of each component indicator:

$$X_{new} = \frac{x - \mu}{\sigma}$$

Where:

x is a raw score to be standardized;

$\mu$  is the mean of the population;

$\sigma$  is the standard deviation of the population.

The composite value of each component index is then normalized to fall between the range of 0 to 1 and the overall EGDI is derived by taking the arithmetic average of the three component indices.

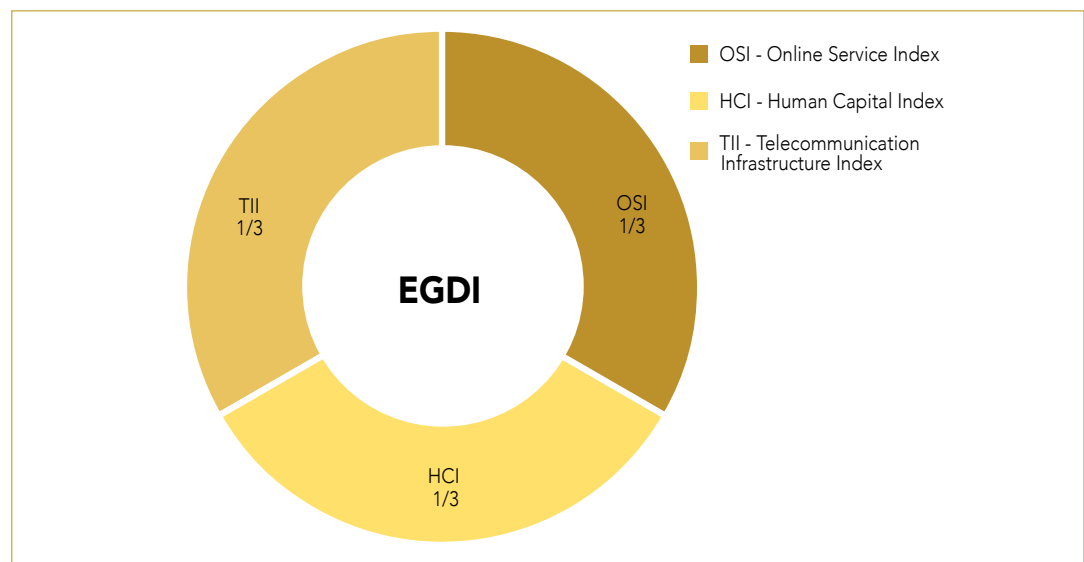
Within 0 to 1 range of EGDI values the countries are then grouped into four levels mathematically defined as follows: very high EGDI values range from 0.75 to 1.00 inclusive, high EGDI group values range from 0.50 to 0.7499 inclusive, middle EGDI values range from 0.25 to 0.4999 inclusive, and low EGDI values range from 0.0 to 0.2499 inclusive. In all references to these ranges in text and graphic elements, the respective values are rounded for clarity and are expressed as follows: 0.75 to 1.00, 0.50 to 0.75, 0.25 to 0.50, and 0.00 to 0.25.

To gain better insight into the situation of subgroups of countries with similar levels of performance within their respective EGDI groups, each EGDI group is further divided into four equally defined intervals, or quartiles<sup>1</sup>. The rating class breakdowns within the respective EGDI groups, in descending order, are as follows: VH, V3, V2 and V1 for the very high group; HV, H3, H2 and H1 for the high group; MH, M3, M2 and M1 for the middle group; and LM, L3, L2 and L1 for the low group.

The EGDI is used as a benchmark to determine a numerical ranking of e-government development of United Nations Member States. While the methodological framework for EGDI has remained consistent across the editions of the *United Nations E-Government Survey*, each edition of the *Survey* has been adjusted to reflect emerging trends of e-government strategies, evolving knowledge of best practices in e-government, changes in technology and other factors. In addition, data collection practices have been periodically refined.

The imputation of missing data is an important step in the construction of a good quality composite indicator. The problem has been studied since 2001; in the EGDI methodology the cold deck imputation or use of older values for the missing data has always been the first choice of action. Nevertheless, there are cases where no data is available at all. In these cases, a combination of

Figure A.1 The three components of the E-Government Development Index (EGDI)



the unconditional mean imputation and the hot deck imputation was used. This combination is based on the “donor imputation” methodology, which replaces missing values in a record with the corresponding values from a complete and valid record.

## A.2 Online Service Index (OSI)

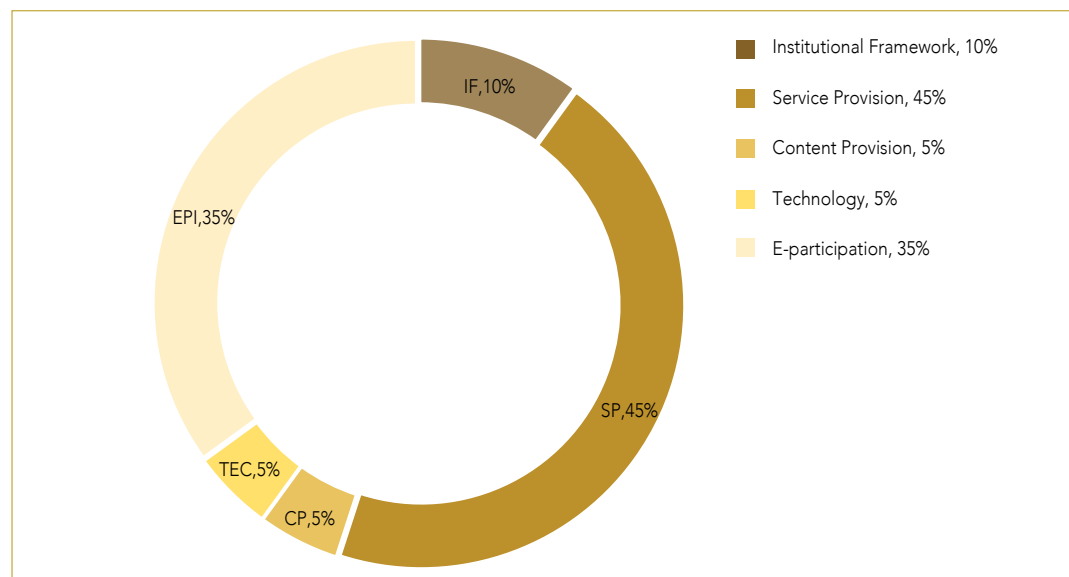
The Online Service Index (OSI) is DESA/DPIDG’s proprietary quantitative tool designed to provide evidence-based data on online e-government service provision across the 193 Member States. The 2022 edition of the OSI features 180 questions calling for binary response, a pattern established in previous editions of the Survey, wherein each assessed country is awarded points for each targeted feature or service available through its official online service channels. The assessed country receives a score of 1 for each service or feature that is readily available and accessible through an official online e-government service channel. If the targeted feature is not present or accessible at the time of the assessment, a score of 0 is awarded.

For the 2022 edition of the Survey, DESA/DPIDG has also introduced a new graded assessment scale to better reflect the observed variability in the provision of transactional services across physical and digital channels. For a subset of questions pertaining to users’ ability to complete transactions with their respective government, points are awarded on a scale of 0-3. The assessed country is assigned a score of 0 assigned if the targeted service is not available through an official online service channel. A score of 1 is assigned if relevant information or an application form is available but other aspects of the transaction must be carried out through channels other than online. A score of 2 is assigned if the full service or application procedure is available online. Finally, if users are, in addition to the above, able to manage the full transaction entirely through an online channel, including potential payment and the receipt of documents, a score of 3 is assigned.

The most comprehensive update to the E-Government Survey assessment in 2022 comes in the form of a refined formula for generating the Online Service Index. The new approach introduces a standardization and normalization regimen to further align the OSI with Local Online Service Index (LOSI) by categorizing the assessment questions into 5 discrete thematic areas forming 5 subindices: institutional framework (IF), services provision (SP), content provision (CP), technology (TEC) and e-participation (EPI)—with the OSI as a whole calculated based on the normalized values for each subindex.

Each of the 5 subindices of OSI are assigned a weight based on the relative proportion of questions belonging to the associated category in the OSI assessment questionnaire, as presented below:

Figure A.2 The five subindices of Online Services Index



The scores for questions belonging to each of these 5 categories are tallied and standardized for each assessed country by generating Z-scores for each category according to the formula below:

$$\begin{aligned} \text{Z Score IF}(i) &= (\text{IF}(i) - \text{MEAN}(\text{IF})) / \text{ST.DEV}(\text{IF}) \\ \text{Z Score SP}(i) &= (\text{SP}(i) - \text{MEAN}(\text{SP})) / \text{ST.DEV}(\text{SP}) \\ \text{Z Score CP}(i) &= (\text{CP}(i) - \text{MEAN}(\text{CP})) / \text{ST.DEV}(\text{CP}) \\ \text{Z Score TEC}(i) &= (\text{TEC}(i) - \text{MEAN}(\text{TEC})) / \text{ST.DEV}(\text{TEC}) \\ \text{Z Score EPI}(i) &= (\text{EPI}(i) - \text{MEAN}(\text{EPI})) / \text{ST.DEV}(\text{EPI}) \end{aligned}$$

The resulting values are a series of standardized subindices of online service provision along its primary thematic dimensions.

The overall total score for a given assessed country then becomes the sum of normalized and weighted scores of each of the five subindices:

$$\begin{aligned} \text{OSI}_{\text{country}(i) \text{ total score}} &= (\text{CP}_{\text{Z-score}} * \text{CP}_{\text{weight}}) + (\text{EPI}_{\text{Z-score}} * \text{EPI}_{\text{weight}}) + (\text{IF}_{\text{Z-score}} * \text{IF}_{\text{weight}}) \\ &+ (\text{SP}_{\text{Z-score}} * \text{SP}_{\text{weight}}) + (\text{TEC}_{\text{Z-score}} * \text{TEC}_{\text{weight}}) + (\text{CP}_{\text{Z-score}} * \text{CP}_{\text{weight}}) \end{aligned}$$

In the final step of the process, the weighted actual scores for each country are normalized, yielding each assessed country an OSI value between 0 and 1 according to the following formula:

$$\text{Online Service Index (Country "X")} = \frac{\text{Actual total score} - \text{Lowest total score}}{(\text{Range of total scores for all countries})}$$

Where:

the online index value for a given country is equal to the actual total score less the lowest total score divided by the range of total score values for all countries.

The renewed approach offers the benefit of increased granularity and the ability to assess, analyse and compare each of the 5 subindices independently of each other. Simultaneously, the combined weighting and standardization procedure provides DESA/DPIDG with a greater degree of control over the OSI assessment by allowing for questions and subindices to be added, removed and modified without compromising the continuity of the assessment. The application of a weighting procedure ensures that any changes to the subindices are proportionally reflected in the final OSI score. Combined with the established normalization procedure, this approach ensures that OSI values remain comparable and internally consistent across subsequent editions of the *Survey*.

The implementation of a new approach to the OSI calculation is the result of extensive research and collaboration with leading academic experts in statistics and complex network analysis. At each stage of the implementation process, changes to the OSI formula were reviewed, analysed and discussed among DPIDG staff and external experts. The validity of the statistical procedures and the sequence in which they were applied to the raw OSI data were validated both in theory and, following the conclusion of the data collection phase of the E-Government Survey 2022 assessment, in practice alongside the conventional OSI approach to rule out methodological errors and inconsistencies between the respective procedures. The comprehensive comparative review of the approaches found that the implementation of the new OSI procedure poses no risk to the internal continuity of the assessment and that the new approach further validates many of the major trends identified in previous editions of the *E-Government Survey*.

After attending the introductory sessions, each participant was assigned with two pilot tasks designed to simulate the data collection phase of the E-Government Survey assessment. The pilot tasks consisted of one mock OSI and one mock LOSI assessment of the e-government portals. Each

volunteer researcher was assigned with the same set of pilot assignments to facilitate quick and efficient quality control and ensure the consistency of the training across the cohort of volunteers. To qualify to take part in the data collection phase of the E-Government Survey 2022 assessment, each participant had to complete and submit the two mock assessments for review.

In the data collection phase of the E-Government Survey 2022 assessment, each qualified participant received a series of personalized research assignments tailored to their specific research capabilities. Each assignment consisted of the OSI and LOSI assessment for one of the 193 United Nations Member States and its most populous city. For each assigned Member State and city, the participants carried out independent research into the online e-government service provision. The online e-government service provision of each UN Member State was assessed independently by two researchers. Each researcher had to be proficient in one or more of the official languages of the assessed Member State to be selected to assess its online presence. The researchers were instructed to rely exclusively on government-affiliated sources in their research and not to share any of their findings or research with third parties, including those affiliated with the government of the assessed Member State. The aim of the research assignments was to assess and verify the existence of an extensive set of features and online services relevant to e-government development. Researchers were advised to assume the role of the targeted user of an online service portal and to base their responses on whether they deemed that the assessed features were readily accessible to an average user of the portal. This was done to ensure that the separate dimensions of service *provision*, referring to the availability of a given set of features, and service *delivery*, referring to the actions taken by the service provider to make services usable and accessible to the targeted users, were assessed.

Following the conclusion of the data collection phase, all submitted research assignment passed through a rigorous review process. At the review stage, each submission was reviewed by an experienced UN DESA-appointed reviewer. The reviewers carried out independent research to verify the submitted responses. As needed, the reviewers also commissioned further research from the volunteer researchers to resolve potential issues and mismatches in the submitted responses. Once an initial review had been carried out, the assignments were forwarded to a Senior reviewer for cross-checking, before the final Data Quality Assurance (QA) review and approval (see Section A.9 of this Annex). This established review approach continues to ensure that each assignment is carried out by trained researchers with the required language skills and familiarity with the social and political circumstances of the assessed Member State and reviewed by a UN DESA expert in e-government development and online service provision.

## List of Features Assessed

Multiple linkages to the Sustainable Development Goals (SDG) have been included in both the OSI and the Member State Questionnaire (MSQ). The MSQ is further discussed in more detail in Section A.6 of this Annex. As has been done in analytical chapters of past editions of the Survey, selected themes or proxy themes related to e-government and sustainable development have been also analysed, for example, open government data, e-participation, mobile-government and whole-of-government approach. Reviews of the OSI were undertaken in 2016, 2018, 2020, and 2022 to include questions related to key services across the SDGs domains, including health, education, social protection, environment, gender equality, and decent work and employment, as well as through the SDG principles highlighted in Goal SDG 16, including effectiveness, inclusion, openness, trustworthiness, and accountability. To be consistent with these principles, and taking into account feedback from various external evaluations, the 2020 OSI introduced questions related to justice systems' online services.

Below is a list of areas assessed in the 2022 edition of the United Nations E-Government Survey. It should be noted that this list is dynamic and is updated for each edition of the Survey.

## TECHNOLOGY

Government portal(s) can be found on the first results page of any search engine typically used in that country | Search features | Sitemap/Index | Help feature/FAQs section | Contact us feature | National portal(s) utilize HTTPS | Responsive web design | Evidence of being updated in the past month | Advanced search options | Mark favorite/most used online services | Access to list of previous interactions/transactions | Availability of Tutorials or guidance to understand and use online services/Help link | Accessibility by citizens to own data | Possibility for citizens to modify own data | Accessibility by businesses to own data | Possibility for Businesses to modify own data | Save part of the transaction and access later | Availability of AI-chat-bot functionality | Compliant with W3C standards (CSS style sheet/markup validity) | Compliant with WCAG2.0

## INSTITUTIONAL FRAMEWORK

Existence of national government portal (s) | Information available on the organizational structure and/or chart of the government | Names/titles of heads of government agencies/departments/ministries available on the national portal(s) | Links to any sub-national/local government institutions/agencies | Privacy statement(s) available | Digital ID to access online services | National e-Government/Digital Government strategy or equivalent available | Information on citizens' rights to access government information | Legislation/law/policy/regulation on personal data protection | Legislation/law/policy/regulation on cybersecurity | Information/contact about a national CIO or equivalent | Legislation/law/policy/regulation on e-participation | Legislation/law/policy/regulation on Open Government Data | Link to the sectoral or ministerial website on HEALTH /EDUCATION/ EMPLOYMENT AND-OR LABOR/ SOCIAL PROTECTION/ ENVIRONMENT/ JUSTICE | Information on policies related to HEALTH /EDUCATION/ EMPLOYMENT AND-OR LABOR/ SOCIAL PROTECTION/ ENVIRONMENT/ JUSTICE | Availability of National Data strategy or Policy.

## CONTENT PROVISION

National portal(s) available in more than ONE official language | Information available about payments for government services through channels other than online | Announcements of forthcoming procurement/bidding processes | Information about results of procurement/bidding processes online | Information about service provision in partnership with the private sector | Evidence of free access to services through kiosks, community centers, post offices, libraries, public spaces, or free Wi-Fi | Web statistics on usage of the online features/services | Information on available scholarships or other forms of government funding for EDUCATION | Links and references for EMPLOYMENT for youth | Information on how older persons can apply for long term care.

## E-PARTICIPATION

E-participation portal(s) | Availability of social networking feature(s) | Live chat support functionality | Leave feedback option to improve usability and/or accessibility of e-services | Report corruption by public servants or institutions | Calendar or announcements about any upcoming public engagement or e-participation activities | Online tools to obtain raw (non-deliberative) inputs for policy deliberation | Evidence of any outcome of e-consultations resulted in new policy decisions/regulations/services | Open government data portal | In Open Data Portal availability of data dictionary or metadata repository | Guidance or toolkit on using Open Government datasets | Possibility to propose/request new open datasets be made available online | Information about the organization of competitions/ hackathons/ events around the use of open government data | Open Government dataset(s) on national government expenditures (budget) | Availability of GIS or other geospatial data | Evidence of user satisfaction of online or mobile services | Information on government expenditures (budget) on HEALTH/ EDUCATION/ EMPLOYMENT/ SOCIAL PROTECTION/ ENVIRONMENT/ JUSTICE | Information about upcoming consultations intended to involve people in the past 12 months (HEALTH/ EDUCATION/ EMPLOYMENT/ SOCIAL PROTECTION/ ENVIRONMENT/ JUSTICE) | Information about having held online consultations via forums, polls, questionnaires etc. intended to involve people in the past 12 months (HEALTH/ EDUCATION/ EMPLOYMENT/ SOCIAL PROTECTION/ ENVIRONMENT/ JUSTICE) | Evidence that people's voices were included in the actual decision-making in the past 12 months (HEALTH/ EDUCATION/ EMPLOYMENT/ SOCIAL PROTECTION/ ENVIRONMENT/ JUSTICE) | Open Government dataset(s) on HEALTH/ EDUCATION/ EMPLOYMENT/ SOCIAL PROTECTION/ ENVIRONMENT/ JUSTICE | Report online a violation of labor laws | Availability of feature for participatory budgeting or similar mechanism | Evidence of open data license for open government datasets | Open Government dataset(s) on budget/expenditure in EDUCATION/ EMPLOYMENT/ ENVIRONMENT/ HEALTH/ JUSTICE /SOCIAL PROTECTION? | Evidence of real time open government dataset(s) | Evidence of any co-creation and/or co-production of e-service (HEALTH/ EDUCATION/ EMPLOYMENT/ SOCIAL PROTECTION/ ENVIRONMENT/ JUSTICE) | Evidence of e-petition or similar mechanism | Evidence that people's voices were included in the policy decision-making on issues related to vulnerable group in the past 12 months (for immigrants, older people, persons living below poverty line, persons with disabilities, women, youth).

## SERVICES PROVISION

Evidence of One-Stop-Shop portal(s) | E-procurement platform for bidding processes/submission of tenders | Service provision on Income taxes | Online provision for: Value Added Tax (VAT), Goods & Services Tax (GST) or equivalent | Apply online for: Visa to enter or transit | Registration or renewal for a: Vehicle (car, truck, motorcycle, and others) | Online declaration to the police | Notify of moving/changing an address online | Registration for a new company or business entity | Apply/request Birth certificates | Death certificates | Marriage certificates | Personal Identity Cards | Driver's license | Land title registration | Environment-related permits | Building permits | Business licenses | Apply for Government vacancy positions | Pay online for government fees or fines | Water utility | Energy (electricity/gas) utility | Digital invoices | provision of GIS or other geospatial related online services | Business tax filing | Mobile service provision available through i) smartphone apps; ii) SMS services; or iii) mobile browser (for HEALTH, EDUCATION, EMPLOYMENT, SOCIAL PROTECTION, ENVIRONMENT, JUSTICE) | Students can apply for government scholarships and fellowships programme | Users can apply for: Social protection programs | Services available to the following vulnerable groups: poor (below poverty line) / persons with disabilities / older persons / immigrants, migrant workers, refugees, and internally displaced persons / women / youth | Eligibility and/or procedure on applying for citizenship or residency | Apply for: Receiving an affidavit of criminal record/background clearance | Access to justice: retrieve information / file (open) online ; / manage of court cases | Services provided to people retiring from job | Apply for benefits due to illness and injury | Apply for child benefits | Apply for disability compensation benefits | Apply online for maternal or newborn benefits | Apply or file for unemployment benefits.



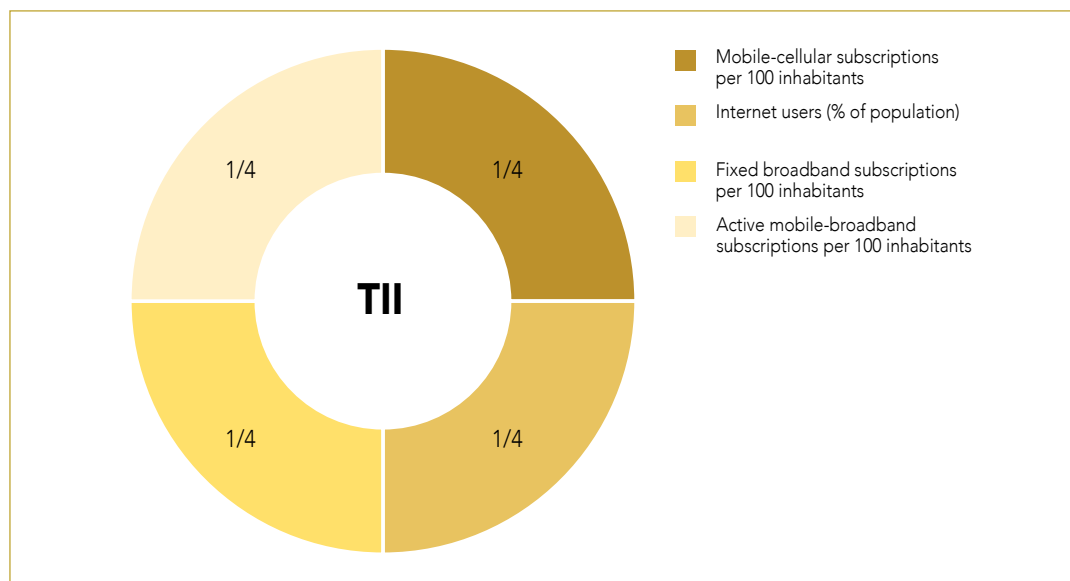
### A.3 Telecommunication Infrastructure Index (TII)

The Telecommunication Infrastructure Index is an arithmetic average composite of four indicators: (i) estimated internet users per 100 inhabitants; (ii) number of mobile subscribers per 100 inhabitants; (iii) number of wireless broadband subscriptions per 100 inhabitants; and (iv) number of fixed broadband subscriptions per 100 inhabitants. The International Telecommunication Union is the primary source of data in each case. (See Figure A.3) Data for each component was extracted from the ITU source on 10 February 2022.

The definitions of the four components of TII<sup>2</sup> are:

- (i) “Internet users (per cent %)” refers to the proportion of individuals who used the Internet from any location in the last three months .
- (ii) “Mobile-cellular subscriptions per 100 inhabitants” is the number of subscriptions to mobile service in the last three months. A mobile/cellular telephone refers to a portable telephone subscribed to a public mobile telephone service using cellular technology, which provides access to the PSTN. This includes analogue and digital cellular systems and technologies such as IMT-2000 (3G) and IMT-Advanced. Users of both post-paid subscriptions and prepaid accounts are included.
- (iii) “Active mobile-broadband subscriptions” refers to the sum of data and voice mobile-broadband subscriptions and data-only mobile-broadband subscriptions to the public Internet. It covers subscriptions being used to access the Internet at broadband speeds, not subscriptions with potential access, even though the latter may have broadband-enabled handsets. Subscriptions must include a recurring subscription fee to access the Internet or pass a usage requirement – users must have accessed the Internet in the previous three months. It includes subscriptions to mobile-broadband networks that provide download speeds of at least 256 kbit/s (e.g. WCDMA, HSPA, CDMA2000 1x EV-DO, WiMAX IEEE 802.16e and LTE), and excludes subscriptions that only have access to GPRS, EDGE and CDMA 1xRTT.<sup>4</sup>
- (iv) “Fixed broadband subscriptions per 100 inhabitants” refers to fixed subscriptions to high-speed access to the public Internet or a TCP/IP connection, at downstream speeds equal to, or greater than, 256 kbit/s. This includes cable modem, DSL, fiber-to-home/building, other fixed/ wired-broadband subscriptions, satellite broadband and terrestrial fixed wireless broadband. This total is measured irrespective of the method of

Figure A.3 Telecommunication Infrastructure Index (TII) and its components



payment. It excludes subscriptions that have access to data communications, including the Internet via mobile-cellular networks. It should include fixed WiMAX and any other fixed wireless technologies. It includes both residential subscriptions and subscriptions for organizations.

Conceptually, the TII has remained largely unchanged since 2002. Please refer to Table A.1 below showing the components that have been used to calculate TII throughout the editions of the *Surveys*. The improvement of data quality and coverage has led to the reduction of data gaps that appeared in prior *Surveys*. However, in cases where gaps still occur, an effort is made to obtain data first from the World Bank data base, and then, if these efforts prove unsuccessful, the most recent ITU data is used. Due to insufficient data at ITU's end, it has been not possible to include other internet indicators into TII. Another measure introduced in 2020 is that a cut-off limit of 120 has been applied to TII components described above.

**Table A.1 Telecommunication infrastructure index (TII) and changes of its components (2001-2022)**

TII (2001,2003,2004,2005)	TII (2008,2010)	TII (2012)	TII (2014,2016)	TII (2018)	TII (2020, 2022)
Internet users	Internet users	Internet users	Internet users	Internet users	Internet users
Online population	Fixed-broadband subscriptions	Fixed-broadband subscriptions	Fixed-broadband subscriptions	Fixed-broadband subscriptions	Fixed-broadband subscriptions
Personal computer (PC) users	Personal computer (PC) users	Fixed Internet subscriptions	Wireless broadband subscriptions	Active mobile-broadband subscriptions	Active mobile-broadband subscriptions
Mobile-cellular subscriptions	Mobile-cellular subscriptions	Mobile-cellular subscriptions	Mobile-cellular subscriptions	Mobile-cellular subscriptions	Mobile-cellular subscriptions
Fixed-telephone subscriptions	Fixed-telephone subscriptions	Fixed-telephone subscriptions	Fixed-telephone subscriptions	Fixed-telephone subscriptions	-
Television sets	-	-	-	-	-

Each of these indicators was standardized through the Z-score procedure to derive the Z score for each component indicator. The telecommunication infrastructure composite value for country "x" is the simple arithmetic mean of the four standardized indicators derived as follows:

$$\begin{aligned} \text{Telecommunication infrastructure composite value} = & \\ & \text{Average (Internet user Z-score} \\ & \quad + \text{ Mobile/Cellular telephone subscription Z-score} \\ & \quad + \text{ Active mobile broadband subscription Z-score} \\ & \quad + \text{ Fixed broadband Z-score)} \end{aligned}$$

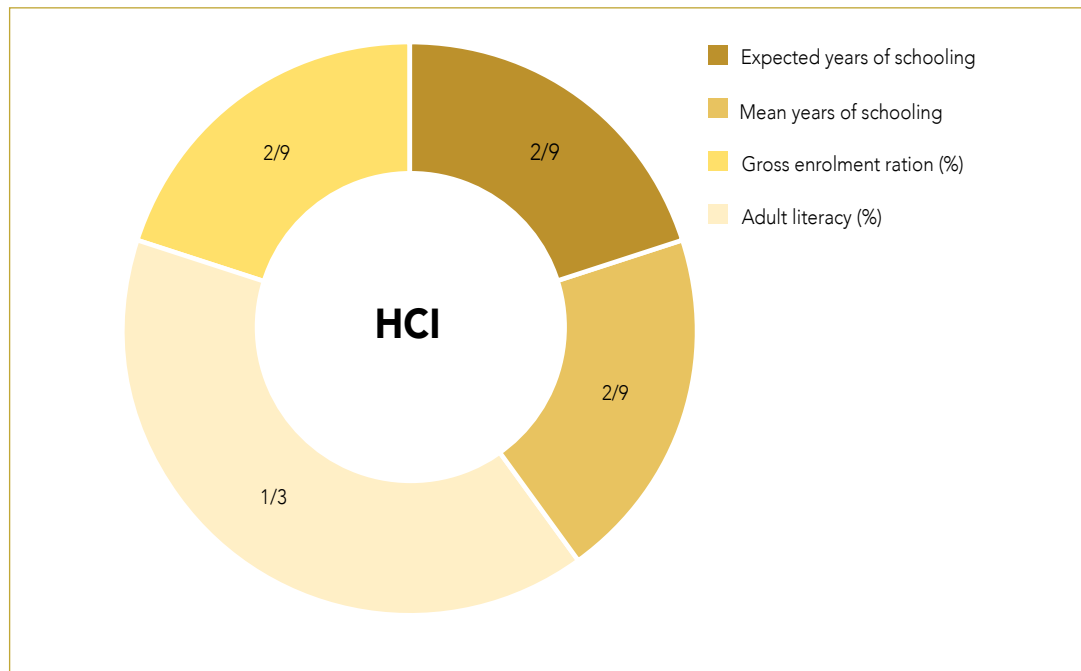
Finally, the TII composite value is normalized by taking its value for a given country, subtracting the lowest composite value in the *Survey* and dividing by the range of composite values for all countries.

$$\text{TII}(\text{Country "x"}) = \frac{\text{Composite Value}(\text{Country "x"}) - \text{Lowest Composite Value}}{\text{Highest Composite Value} - \text{Lowest Composite Value}}$$

#### A.4 Human Capital Index (HCI)

The Human Capital Index (HCI) consists of four components: (i) adult literacy rate; (ii) the combined primary, secondary and tertiary gross enrolment ratio; (iii) expected years of schooling; and (iv) average years of schooling. (See Figure A.3) Data for HCI components was extracted from the UNESCO-UIS source on 28 October 2021.

Figure A.4 Human Capital Index (HCI) and its components



The four indicators of HCI are defined as follows:

1. "Adult literacy" is measured as the percentage of people aged 15 years and above who can, with understanding, both read and write a short simple statement on their everyday life.
2. "Gross enrolment ratio" is the total number of students enrolled at the primary, secondary and tertiary level, regardless of age, as a percentage of the school-age population.
3. Expected years of schooling is the total number of years of schooling that a child of a certain age can expect to receive in the future, assuming that the probability of his or her being in school at any specific age is equal to the current enrolment ratio age.
4. Mean years of schooling (MYS) provides the average number of years of education completed by a country's adult population (25 years and older), excluding the years spent repeating grades.

The first two components, (i.e., the adult literacy rate and the combined primary, secondary and tertiary gross enrolment ratio) have been used in all for the past *Surveys* editions since 2002. Recognizing that education is the fundamental pillar in supporting human capital, the 2014 *Survey* introduced two new components to the human capital index (HCI), namely (i) expected years of schooling; and (ii) mean years of schooling. The preliminary statistical study commissioned by DESA/DPIDG validated the use of the new HCI, accentuating that the two new components has strengthened the HCI without introducing any error<sup>5</sup>. Also a cut-off limit of 100 has been applied to Gross enrolment ratio component. Digital literacy indicators could not be used for this survey due to not having enough data on digital literacy.

**Table A.2 Human Capital Index (HCI) and changes of its components (2001-2022)**

Components of HCI in past Surveys (2001, 2003, 2004, 2005, 2008, 2010, 2012)	Components of HCI since 2014 Survey
Adult literacy	Adult literacy
Gross enrollment ratio	Gross enrollment ratio
-	Expected years of schooling
-	Mean years of schooling

The HCI is a weighted average composite of the four indicators. In the same manner the TII is computed, each of the four component indicators is first standardized through the Z-score procedure to derive the Z-score value for each component indicator. The human capital composite value for country “x” is the weighted arithmetic mean with one-third weight assigned to adult literacy rate and two-ninth weight assigned to the gross enrolment ratio, estimated years of schooling and mean years of schooling derived this way:

Human capital composite value =

$$\begin{aligned} & \frac{1}{3} \times \text{Adult literacy rate Z-score} + \\ & \frac{2}{9} \times \text{Gross enrolment ratio Z-score} + \\ & \frac{2}{9} \times \text{Estimated years of schooling Z-score} + \\ & \frac{2}{9} \times \text{Mean years of schooling Z-score} \end{aligned}$$

The human capital composite value is then normalized by taking its composite value for a given country, subtracting the lowest composite value in the *Survey* and dividing by the range of composite values for all countries.

$$\begin{aligned} & \text{Human Capital Index (Country “x”)} \\ & = \frac{\text{Composite Value (Country “x”) – Lowest Composite Value}}{\text{Highest Composite Value – Lowest Composite Value}} \end{aligned}$$

## A.5 E-Participation Index (EPI)

The E-Participation Index (EPI) is derived as a supplementary index to the *United Nations E-Government Survey*.

Understanding e-participation starts with the process it upholds. It begins, as a sine qua non with the informative level, during which the government provides its constituents with basic information leading to the second, a two-way form, where people are invited to give their inputs to governments and finally, ‘the partnership option’ during which citizens become the protagonist by leading the policy-making process. The latter framework closely relates to the type of three-tiered structure within the UN E-participation framework. Since its inception in the 2003 edition of the *Survey*, the EPI is, therefore, a multifaceted framework, composed of three core components, i.e., e-information, e-consultation and e-decision-making. (See Box A.1)

### Box A.1 E-Participation Framework

- E-information: Enabling participation by providing citizens with public information and access to information without or upon demand
- E-consultation: Engaging citizens in contributions to and deliberation on public policies and services
- E-decision-making: Empowering citizens through co-design of policy options and co-production of service components and delivery modalities.

A country's EPI reflects the e-participation mechanisms that are deployed by the government as compared to all other countries. The purpose of this measure is not to prescribe any specific practice, but rather to offer insight into how different countries are using online tools in promoting interaction between the government and its people, as well as among the people, for the benefit of all. As the EPI is a qualitative assessment based on the availability and relevance of participatory services available on government websites, the comparative ranking of countries is for illustrative purposes and only serves as an indicator of the broad trends in promoting citizen engagement. As with the EGDI, the EPI is not intended as an absolute measurement of e-participation, but rather, as an attempt to capture the e-participation performance of countries relative to one another at a point in time.

In the 2022 *Survey*, the e-participation questions were further reviewed and expanded to reflect current trends and modalities on how governments engage their people in public policy-making, implementation and evaluation. New questions were added to address the complexity along with the different types of interactions that can take place in e-participation services, through its three dimensions further categorised into six sub-dimensions as: e-notification and e-enabling (under e-information), e-discourse and e-dialogue (under e-consultation), and e-collaboration and e-empowerment (under e-decision-making). While EPI provides a useful qualitative analytical tool when comparing the data and ranking of countries for one specific year, caution must be taken in comparing e-participation rankings with past editions of the *Survey*.

Mathematically, the EPI is normalized by taking the total score value for a given country, subtracting the lowest total score for any country in the *Survey* and dividing by the range of total score values for all countries.

$$\text{E-Participation Index (Country "x")} = \frac{\text{Total Score (Country "x")} - \text{Lowest Total Score}}{\text{Highest Total Score} - \text{Lowest Total Score}}$$

The e-participation ranking of countries is determined by the value of EPI through the "standard competition ranking". In standard competition ranking, countries with the same EPI receive the same ranking number and a gap is left in the ranking numbers. This ranking strategy is adopted in view that if two or more countries tie for a position in the ranking, the positions of all those ranked below them are unaffected. For example, if country A ranks ahead of B and C, both of which share the same EPI value and scores ahead of D, then A is ranked first (1<sup>st</sup>), B and C are ranked second (2<sup>nd</sup>) and D is ranked fourth (4<sup>th</sup>). In 2012, the "modified competition ranking" was used and for comparison reasons, all ranks were adjusted in 2014 and 2016 using the standard competition ranking.

There are, however, limitations in above-mentioned e-participation measures. For instance, the UN EPI focuses more on the “supply” rather than the “demand” side of e-participation. In addition, on the one hand, such extrinsic measures are subject to the reality of governments paying lip service or “window dressing” to engage people but not in delivering the expected outcome or development impact. On the other hand, the accelerated development of new communication technologies may mask both the potential and risk of artificial intelligence (AI) and other automation tools driven by big data and sentimental analytics, for instance, in providing anticipatory or more responsive e-participation mechanisms.

Notwithstanding the usefulness and limitations of above measures, e-participation is highly contextual — measuring e-participation does not need to be static and based on established terms as e-participation is not a “once and done” project or process – it will evolve over time in tandem with people’s needs and emerging policies and technologies. For instance, a country’s e-participation approach can also be assessed through other means such as through self-assessments and perception surveys of target recipients.

## A.6 Member State Questionnaire (MSQ)

As has been done for each edition of the *Survey*, United Nations Member States were requested, through the Member State Questionnaire (MSQ) to provide information on the website addresses (URLs) of their respective national portal(s) as well as those of the different government ministries. Information on efforts in support of e-government development, open government data, e-participation and the designated authority in charge of e-government policies was also requested. 129 Member States – 66.84 per cent of United Nations membership - returned a completed MSQ. The appropriate submitted sites were then utilized during the assessment process. Information provided in the MSQs was also used in the case studies included in the *Survey*.

### The Questionnaire

Member State Questionnaire (MSQ) 2022 can be accessed via scanning the QR code below:

[https://bit.ly/MSQ\\_2022](https://bit.ly/MSQ_2022)



### Responding Member States

Afghanistan, Albania, Antigua and Barbuda, Argentina, Armenia, Australia, Austria, Azerbaijan, Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bhutan, Bosnia and Herzegovina, Brazil, Brunei, Bulgaria, Burkina Faso, Cabo Verde, Cambodia, Cameroon, Canada, Chile, China, Colombia, Costa Rica, Cuba, Cyprus, Czech Republic, Democratic Republic of the Congo, Denmark, Djibouti, Dominican Republic, Egypt, El Salvador, Estonia, Eswatini, Ethiopia, Fiji, Finland, France, Gambia, Georgia, Germany, Greece, Hungary, Iceland, India, Indonesia, Iran, Ireland, Israel, Italy, Japan, Jordan, Kazakhstan, Kenya, Kiribati, Kuwait, Kyrgyzstan, Laos, Latvia,

Liechtenstein, Lithuania, Luxembourg, Malaysia, Maldives, Malta, Mauritania, Mauritius, Monaco, Mongolia, Montenegro, Morocco, Myanmar, Namibia, Netherlands, New Zealand, Niger, North Macedonia, Norway, Oman, Pakistan, Panama, Paraguay, Peru, Philippines, Poland, Portugal, Qatar, Republic of Korea, Russia, Rwanda, Sao Tome & Principe, Saudi Arabia, Senegal, Serbia, Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, Solomon Islands, South Africa, Spain, Sri Lanka, Sudan, Sweden, Switzerland, Syria, Thailand, Tonga, Tunisia, Turkey, Tuvalu, Uganda, Ukraine, United Arab Emirates, United Kingdom, United Republic of Tanzania, Uruguay, Uzbekistan, Venezuela, Viet Nam, Zambia

## A.7 Local Online Service Index (LOSI)

For 20 years, the United Nations E-Government Survey has tracked the development of e-government worldwide. Over its eleven editions, the assessment has expanded in both scope and coverage, now observing e-government service provision across all 193 United Nations Member States.

Launched in 2018, the Local Online Service Index (LOSI) represents the latest major addition to the E-Government Survey methodology. The UN DESA-developed LOSI assessment captures the state of the development of e-government service provision at the city level across the United Nations Member States.

The Survey's ongoing expansion presents methodological demands which must be met to ensure the consistency, validity and robustness of the assessment across consecutive editions of the E-Government Survey. The 2022 edition of the LOSI assessment is the first to assess e-government service provision in the most populous city in each of the 193 Member States. Faced with requests from countries that did not have cities represented in LOSI 2018 and LOSI 2020, the decision was made to include the most populous city in each country.

The Local Online Service Index (LOSI) is a score derived on the basis of an online assessment covering 86 indicators. Each question calls for a binary response. Each of the 86 indicators is ascribed a "value 1" if it is found in a city/municipality website, "value 0" if it is absent or not found by researchers. There were some cases where the city portal did not provide certain services since they were provided on the national portal. In such cases, the city portals scored a point only if they provided a link to the national portal. The total number of points scored by each city (a.k.a. "raw score") is divided by the maximum score of 86 to derive the LOSI value for a given city in the range of 0 to 1.

The range of LOSI group values for each level are mathematically defined as follows: very high LOSI values range from 0.75 to 1.00 inclusive, high LOSI group values range from 0.50 to 0.7499 inclusive, middle LOSI values range from 0.25 to 0.4999 inclusive, and low LOSI values range from 0.0 to 0.2499 inclusive. In all references to these ranges in text and graphic elements, the respective values are rounded for clarity and are expressed as follows: 0.75 to 1.00, 0.50 to 0.75, 0.25 to 0.50, and 0.00 to 0.25.

Cities that fall into the same LOSI group are considered to have similar e-government development in local level. This might help policy makers from cities to understand better what is considered a good performance and/or what targets can be achieved in short, middle and long-term.

The LOSI ranking of cities is determined by the value of LOSI through the "standard competition ranking". In standard competition ranking, cities with the same LOSI value receive the same ranking number and a gap is left in the ranking numbers. This ranking strategy is adopted in view that if two or more cities tie for a position in the ranking, the positions of all those ranked below them are unaffected. For example, if city A ranks ahead of B and C, both of which share the same LOSI value and scores ahead of D, then A is ranked first (1<sup>st</sup>), B and C are ranked second (2<sup>nd</sup>) and D is ranked fourth (4<sup>th</sup>).

## Changes introduced to 2022 LOSI methodology

There have been a few changes introduced to the methodology used in 2022 in efforts to continuously improve the study overall and to better align the LOSI features with those of OSI (Online Service Index) component of the EGDI (E-Government Development Index). Thus, it might be difficult to make direct comparison between the current edition i.e. LOSI 2022 and previous edition i.e. LOSI 2020. There are three main changes implemented with this edition of Survey regarding the LOSI study.

- (i) First LOSI pilot study started in 2018 with the assessment of online portals of selected 40 cities, which was scaled to 100 cities in 2020 edition to provide broader coverage of local e-government worldwide. In this current edition of LOSI 2022, the most populous cities from each of the 193 Member States have been included in the study, increasing the number of cities assessed from 100 to 193.
- (ii) Secondly, a number of new indicators have been added to the LOSI Questionnaire in order to better align the features assessed in local level with those assessed in national level. Total number of indicators have increased to 86 in current LOSI 2022 edition, compared to 80 indicators assessed in the LOSI 2020 edition.
- (iii) "Institutional framework" has been introduced as a new criterion in 2022, being added as fifth criterion to the existing four criteria (technology, content provision, services provision and participation) of LOSI 2020. The new five-criteria structure of LOSI 2022 is closely aligned with five sub-components of OSI (Online Service Index).

### Note on the selection of most populous city

One of the key challenges introduced by the launch and subsequent expansion of the LOSI assessment has been the task of identifying one city in each UN Member State to be included in the 2022 edition of the assessment. Following a methodology consistent with previous editions of the LOSI assessment, UN DESA have chosen to include the most populous city, town, settlement or municipality in each of the 193 Member States. Using population as an inclusionary criterion aims to ensure that the selected cities and their assessed e-government services reach the largest possible number of people across the Member States.

The task of identifying the most populous city in each Member State is made challenging by the existence of various, often conflicting approaches to determining the population of an urban settlement. Popular sources varyingly report data and population figures for settlements ranging from cities proper to larger urban agglomerations and sprawling metropolitan areas, depending on their preferred demographic approach.

In the absence of a definitive consensus on what constitutes an urban population, UN DESA has developed its own approach to identifying the most populous city in each Member State for the purposes of the Survey, relying on data provided by the UN DESA Population and Statistics Divisions.

To this end, population data for the E-Government Survey are derived from the most recently published edition of the United Nations Demographic Yearbook and The World's Cities Data Booklet. During the preparations for the biannual data collection activities for the E-Government Survey, UN DESA refers to these sources to identify the most populous city in each Member State for inclusion in the upcoming edition of the Survey.

To ensure that the population figures thus acquired accurately reflect the number of targeted e-government service users in each municipality, UN DESA considers the reported population within the "city proper" as opposed to the populations of "urban" or "metropolitan areas", which



may include people not targeted by the e-government services offered by the central municipal government or authority.

Factors such as capital city status or relative political or economic influence are also not considered when selecting the cities to be included in the LOSI assessment to ensure methodological consistency and replicability of the research. Population within the city proper, as compiled and reported by UN DESA, is thus the only criterion used to determine a city's inclusion in the LOSI assessment.

The lack of a clear geographic and demographic distinction between a state and its most populous urban center presents a conceptual challenge to the assessment. In the case of city states like Monaco and Singapore, among others, any person residing in the city state will conceivably have the same access to both national and local-level e-government services as any other person in the same city state. In accordance with a user-centric perspective on service provision, the LOSI assessment thus acknowledges both national and local services in states where no clear distinction between the two service categories exists.

The figures thus acquired are only used to identify the most populous city in each Member State for inclusion in the Survey. Population figures are not among the indicators observed in the LOSI assessment and thus have no direct bearing on a city's performance in the assessment.

UN DESA will continue to update and revisit its list of most populous cities for each edition of the E-Government Survey to ensure that the assessment accurately reflects the number of users serviced by local e-government services worldwide.

## Assessment Instrument

The Local Online Service Index (LOSI) is a multi-criteria index that captures e-government development at the local level, by assessing information and services provided by local governments through official websites.

The 2022 LOSI comprises 86 indicators relating to 5 criteria: institutional framework (8), content provision (25), services provision (18), participation and engagement (17), and technical technology (18).

- (i) Institutional framework indicators covered the strategy in the city, organizational structure including contact details of municipality departments and links to agencies, presence of portal authentication, and information on legislation on access to information, data privacy, open data and security.
- (ii) The focus of the "Content Provision" criterion is on the availability of basic information for the residents, not only related to the municipality, but also to other core areas for societies at large (namely Open Data, smart cities initiatives and use of emerging technologies). It assesses the quality, availability, relevance, and concise presentation of specific information provided on the website. This criterion includes the assessment of issues such as access to contact information about the organizational structure of the municipal government, access to public documents, access to sectorial information (namely on health, education, social security, economy). The presence of website privacy policies is also included, since it has the potential to improve public perception, trust in government, and to enable greater engagement with government.
- (iii) The criterion of "Services Provision" assesses a set of fundamental services made available by cities through their websites. The emphasis is on the delivery of fundamental electronic services including the analysis of aspects such as online application and delivery of certificates and licenses, employment search/offer, electronic payments, the ability of users to apply or register for municipal events or services online, forms and reports'

submission and registration for services, participation in tenders, and e-Procurement. Issues related to electronic authentication are likewise addressed in this criterion. An additional aspect is assessed in this criterion, which is related with how municipalities respond to email requests for information.

- (iv) The fourth criterion is dedicated to “Participation and Engagement”. The main goal is to assess the existence of relevant online participation mechanisms and initiatives, namely forums, complaint forms and online surveys. Other features considered in this criterion include the availability of social media and the possibility to send comments/suggestions/complaints to the local government, as well as more sophisticated participatory initiatives, such as participatory budget, engagement in online deliberations regarding public policies and services, and empowerment through co-designing of policy options and coproduction of service components and delivery modalities.
- (v) The “Technology” criterion focuses on technical features of the websites with the aim of verifying how the website is made available for users. It encompasses aspects such as ease of navigation, accessibility (when considering different browsers, devices, and languages available), visual attractiveness, functionality, and reliability.

The lists below show the set of indicators considered for each criterion.

## Institutional Framework

Municipal portal | Municipal e-government strategy | Organization structure | Names and contacts of heads of department | Rights to access government information | Privacy policy | Open data policy | Links for government agencies | Portal authentication.

## Content

Foreign language support | Municipality information | Alerts for weather and natural disasters | Procurement announcements | Procurement results | Information about provided services | Services in partnership with civil society | Facilitation of free internet access | Health information | Environmental information | Education information | Social welfare information | Sports and culture information | Information for vulnerable groups | Justice information | Labor information | Evidence of smart cities initiatives | Evidence of emerging technologies use | Statistical data and studies | Public transportation information | Evidence of mobile phone apps | Waste and recycling information | Road safety information | MGP usage statistics | COVID-19 information.

## Services

Police online declaration | Online driver’s license | Online building permit | Online environment-related permit | Online business license | Online residency | Online birth certificate | Online death certificate | Online marriage certificate | Address change notification | Online land title registration | Online vehicle registration | e-Procurement service | Online vacancies | Business tax payment | Online fees payment | Water payment | Electricity/gas payment.

## Participation

Municipality responsiveness emails | Quality of email response | Budget-related information | Open data provision | Open data metadata | Report of any form of discrimination | Real time communication | Feedback/complaint submission | Online deliberation processes | Social networking features | Reporting of incidents in public spaces | Participatory budgeting | Participatory land use plan | Announcement of upcoming e-participation activities | Feedback about consultation processes | e-Voting | Information on the public meetings of the municipal council.

## Technical

Contact details | Browser compatibility | Ease of portal finding | Mobile device accessibility | Navigability | Internal search mechanism | Internal advanced search mechanism | Alignment with markup validation standards | Alignment with display standards | Alignment with accessibility standards | Online user support | Information on online services use | Evidence of portal content update | Personal data accessibility | Personal data updating | Business data accessibility | Business data updating | Helpdesk call number.

## Local Government Questionnaire (LGQ)

In addition to Local Online Service Index (LOSI) 2022, the Local Government Questionnaire (LGQ) was used to gather information to support United Nations E-Government Survey 2022 findings. Of the 146 most populous cities assessed in LOSI 2022, 42 filled the LGQ, corresponding to 28.8% per cent while in 2020 only 3 cities filled out the LGQ.

The LGQ used can be seen below:

[https://bit.ly/LGQ\\_2022](https://bit.ly/LGQ_2022)



## Responding Cities to LGQ

Addis Ababa (Ethiopia), Almaty (Kazakhstan), Amsterdam (Netherlands), Asuncion (Paraguay), Bandar Seri Begawan (Brunei Darussalam), Belgrade (Serbia), Bogota (Colombia), Budapest (Hungary), Dhaka (Bangladesh), Dubai (United Arab Emirates), Jakarta (Indonesia), Kampala (Uganda), Kigali (Rwanda), Kuala Lumpur (Malaysia), Kyiv (Ukraine), Havana (Cuba), Lisbon (Portugal), London (United Kingdom), Madrid (Spain), Manama (Kingdom of Bahrain), Monaco (Monaco), Montevideo (Uruguay), Moscow (Russia), Muscat (Oman), Podgorica (Montenegro), Port Louis (Mauritius), Prague (Czech Republic), Quezon (Philippines), Seoul (South Korea), Singapore (Singapore), Stockholm (Sweden), Tallin (Estonia), Tbilisi (Georgia), Tehran (Iran), Tokyo (Japan), Tunis (Tunisia), Ulaanbaatar (Mongolia), Vienna (Austria), Vientiane (Laos), Yangon (Myanmar), Yerevan (Armenia), Zurich (Switzerland).

## A.8 Country Classifications and Nomenclature in the Survey

Regional groupings are taken from the classification of the United Nations Statistics Division. For details, see <https://unstats.un.org/unsd/methodology/m49/>.

The lists of Least Developed Countries (LDCs), Landlocked Developing Countries (LLDCs) and Small Island Developing States (SIDS) were obtained from the United Nations Office of the High Representative for the Least Developed Countries, Landlocked Developing Countries and Small Island Developing States (UN-OHRLS).

1. For the list of Least Developed Countries (LDCs):  
<https://www.un.org/ohrls/content/profiles-ldcs>
2. For the list of Landlocked Developing Countries (LLDCs):  
<https://www.un.org/ohrls/content/list-lldc>
3. For the list of Small Island Developing States (SIDS):  
<https://www.un.org/ohrls/content/list-sids>

Economies are divided according to 2020 GNI per capita, calculated using the World Bank Atlas method.

For the most recent year of 2020 GNI per capita, Atlas method data, please see <https://data.worldbank.org/indicator/NY.GNP.PCAP.CD> (Date accessed: 5 May 2022)

Where data and statistics are reported by income groups, the *Survey* classifies countries according to the World Bank income classification of high, upper-middle, lower-middle and low-income groups. Venezuela has been temporarily unclassified in July 2021 pending release of revised national accounts statistics. Regardless, Venezuela has been considered as “Upper Middle Income” country when calculating the average data for economic groups, based on UN E-government Survey 2020 classification.

For details, see <https://datahelpdesk.worldbank.org/knowledgebase/articles/906519>. (Date accessed: 5 May 2022)

## A.9 Portal Assessment Phase for Online Service Index and Local Online Service Index

To arrive at a set of Online Service Index and Local Online Service Index values for 2022, a total of 227 online United Nations Volunteer (UNV) researchers from 130 countries covering 66 languages, assessed each country's national website along with its most populous city website in the native language, including the national portal, e-services portal and e-participation portal, as well as the websites of the related ministries of education, labor, social services, health, finance and environment, as applicable. The UNVs included qualified graduate students and volunteers from universities in the field of public administration, and were guided by the UN staff members who prepare the *Survey*

To ensure consistency of assessments, all the researchers were provided with a rigorous training by e-government and online service delivery experts with years of experience in conducting the assessments and were guided by Data Team Coordinators who provided support and guidance throughout the assessment period. Researchers were instructed and trained to assume the mindset of an average citizen user in assessing sites. Thus, responses were generally based on whether the relevant features could be found and accessed easily, not whether they in fact exist but are hidden somewhere in the site(s). The key point is that the average user needs to find information

and features quickly and intuitively for a site to be “usable” with content readily discoverable by the intended beneficiaries.

The data collection and *Survey* research ran from July 2021 until the beginning of November 2021. Each country/city pair was assessed by at least two researchers who conducted the assessment in the country's national language. After the initial assessment, the evaluations by the two researchers on each country/city pair were compared and questions regarding discrepancies were reviewed together and resolved by the researchers. The third phase, from October 2021 to November 2021, was the final review by the Data Team Reviewers who analysed all the answers and, where needed, carried out further review and verification processes using multiple methods and sources. The scores were then sent for approval to a Senior Reviewer. Through this multilevel approach, all surveyed national and local websites were thoroughly assessed by at least three people, one of whom has years of experience in assessing public sector online services, and reviewed by one of the Data Team Coordinators.

Once the evaluation phase was completed, the team produced the first draft of the OSI and LOSI rankings. Data was extracted from the platform and the raw OSI and LOSI scores were created. Rankings were compared with previous OSI and LOSI rankings, and discrepancies were thoroughly reviewed.

## Challenges in reviewing the online presence of a country

### Selecting the appropriate site/URL at the national level

One of the essential decisions for researchers when undertaking the country assessment is identifying the specific site(s) to review as the national government site for each country. Regardless of the sophistication of e-government in a specific country, the priority for users is to identify which of the many potentially available government sites would be deemed as the “official” national government site—the gateway or starting point for national users. A simple, clear statement at the chosen website is sufficient to start an important step towards providing government information and services to the public in an integrated, usable and easy-to-find manner. Many national sites state that it is the “official” Government site, or “Gateway to Government,” or other similar statement.

As has been done for each edition of the Survey, the MSQ asked Member States to provide information on the website addresses (URL) of their national portal(s) and the different government ministries. This information was then utilized during the assessment process.

It is usually the case that not all countries provide the appropriate URLs. Thus, some discretion is exerted in deciding whether to use only the websites provided by the Member State. What is noteworthy in this Survey is that the researchers not only reviewed the national portals but also undertook exhaustive research on e-participation and open government data, where applicable.

One dilemma that researchers encountered was that several countries provided more than one legitimate national access point. While some have simply not yet consolidated their government entry points into a single site or portal that could be clearly distinguished, others have taken this approach intentionally - that is, offering different access points to different audiences. Considering that the use of integrated portals or multi-portals is emerging as a trend in e-government strategies worldwide, researchers would select the integrated website as a national portal or another portal if it was deemed to be the official homepage of the government. However, more than one site could be scored if the sites were clearly part of a tightly integrated “network” of national sites. It should be noted that during the assessment of the national portals, having more than one national entry is neither a disadvantage nor a benefit.

Some countries offer certain public services at the sub-national or local level rather than the federal level. No country is penalized for offering a service at the sub-national level as opposed to the federal level. In fact, when the issue arises, researchers tend to be inclusive in assessing the matter if the information and/or service can be found at the national portal.

A more difficult problem arises when not only a specific service is located at the local level but when the entire ministerial functions are altogether missing at the national level. If researchers are unable to locate a ministry as per the above described method, then the next step is to find out whether the country in question actually has such a ministry at the national level or whether the functions might be locally administered.

### **Integrated Portal and Multi-Portal Approaches**

Some countries have adopted a different approach to their online e-government portal, by utilizing multiple websites for different topics. Instead of centralizing all the e-information, e-services, e-participation, open data and other online features into one portal, they are made available in separate websites for a more audience-targeted approach. Researchers made sure to examine all possible websites when making the assessment, through links or search engines, to ensure coverage of all government websites where relative information can be found.

Even if the norm recommended is a one-stop-shop type of service delivery or an integrated portal approach, countries that opted for a decentralized approach were not penalized in their score, and the assessment was conducted as if an integrated approach was utilized.

### **Accessing in national official languages**

The research team was fully equipped to handle the six official languages of the United Nations, namely Arabic, Chinese, English, French, Russian and Spanish. However, as in previous assessment cycles, the team went beyond this mandate and reviewed each website in the official language of the country, or where that was not possible, in one of the languages available on the site. Translators aided as necessary so that possible errors based on language are reduced to a minimum.

### **Towards a more people-centric approach**

In line with the global trend towards a more people-centric approach and the demand for greater efficiency and cost-effectiveness of the public sector, the MSQ has been designed to reflect this paradigm of e-government. User uptake has been included as a special subject in the Survey, encouraging governments to take account not only of the supply side of e-services but also of what is demanded/needed by the target users. Accordingly, the research team was instructed to enforce this approach consistently throughout the entire assessment. Where features could not be found easily, quickly and intuitively, then a site scores poorly.

### **Data Quality Assurance (QA)**

To ensure data quality, UN DESA has put assessment procedures under close monitoring, including by developing a web-based application platform for data collection and storage, preparing the methodological and training guidelines for researchers, and instituting a training programme for both group training or individual hands-on support for researchers in resolving thorny issues.

Among other tasks, team members were asked to justify the selection of URLs and to indicate whether the URLs had been reviewed in past Surveys. Regular discussions were held to discuss concerns and ensure consistency of evaluation methods.

UN DESA applied the assessment scores to generate an ordering of online service presence of all United Nations Member States and compared them with the historical results in previous Surveys so as to detect possible shortcomings in the process. The new scores are then compared to scores from the previous Surveys by removing the new questions and only considering the ones that remain unchanged. The team was assisted in the research by United Nations interns and volunteers with language skills not otherwise covered by the core group.

### Below is a list of the criteria adopted for data QA:

Three levels of assessment/supervision (volunteers, First Report Officer, Second Report Officer)
First check of consistency of data with data patterns by group ranking (VH, H, M, L OSI)
Tuning of OSI questions to stabilize the dataset and to be consistent with EGDI data model
Second check of consistency of data with data patterns by group ranking (VH, H, M, L OSI)
First calculation of OSI
Two levels of assessment/supervision of the outliers - Compensation with MSQ (if doable)
Second calculation of OSI
Data analysis of target countries (outliers or cases with significant drop/improvement)
Random check of OSI subset of questions / URL - Compensation with MSQ (if doable)
Third calculation of OSI
Second check of consistency of data with data patterns by group ranking (VH, H, M, L OSI)
Check for consistency with other international benchmark reports and 3rd party Sources (MSQ)
Recalculation of OSI (Final)
Data analysis of target countries (those jumping from on group to another)
Final calculation of EGDI

## A.10 Open Government Data Index (Pilot Study)

The Open Government Data Index (OGDI) is derived from one of the three subindices of the UN E-Government Development Index (EGDI), the Online Service Index (OSI). Therefore, it is a supplementary index of the EGDI. The OGDI was first introduced as a pilot index in a 2019 research paper<sup>6</sup> and in the *2020 E-Government Survey*. The 2022 methodology is in essence a continuation of the 2020 Pilot. In 2022, the OGDI is derived from 26 questions – up from twelve questions in 2020 – out of UN DESA's assessment of national e-government portals for the construction of the OSI.

Most questions used in calculating the OGDI are binary of nature, representing either the absence (0) or the presence (1) of a certain feature. However, questions related to the availability of certain types of open data are non-binary, entailing that a score of 0 indicates the absence of the feature in question, while a score of 1 and 2 differ in the extent of the detail of the presence of the feature (e.g. a score of 1 indicates the data being available in any format, while a score of 2 would imply the data is available in an open standard like XML). For computation purposes, these were adjusted to 0.5 and 1 respectively. Following the same computation for OSI, composite scores of OGDI for each Member State were normalized to obtain a range of 0 to 1 using a normalisation formula.

The framework of the OGDI is based on three key Pillars upon which the OGDI is constructed: Policy, Platform and Impact. In order to construct the index, assessed areas (questions) were aggregated across three key Pillars in its current framework using the weighted sum method [35] and considering two criteria: (i) the relative weight of the completed pilot in 2020, based on 2018 data; and (ii) the relative number of assessed areas and questions – including newly introduced ones, for each pillar.

The adjusted weights of each pillar are Policy (30%), Platform (50%) and Impact (20%). As such, the OGD I is calculated based on the weighted average of normalized scores for each Member State.

For the purpose of the assessment, countries were then grouped into OGD I Levels based on their respective composite OGD I scores. In 2022, OGD I levels were redefined to be in line with EGD I Levels, implying groups being cut off each quarter (i.e., 0-0.25-0.50-0.75-1). This is a change from the 2020 Pilot, where levels were cut off at 0-0.4-0.8-1

## Online Services Index (OSI) and Local Online Services Index (LOSI) researchers

The 2022 edition engaged a number of United Nations Volunteers, United Nations staff and interns in the assessments for the Online Services Index (OSI) and the Local Online Services Index (LOSI):

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## Endnotes

- 1 A quartile is a statistical term describing a division of data into four defined intervals. The quartile measures the spread of values above and below the mean by dividing the distribution of data into four groups. A quartile divides data into three points—a lower quartile, median, and upper quartile—to form four groups of the data set. In the 2022 United Nations E-Government Survey, the lower (or first) quartile in each EGDI group is denoted as L1, M1, H1 or V1 and is the middle number that falls between the smallest value of the data set and the median. The second quartile (L2, M2, H2 or V2) is also the median. The upper (or third) quartile, denoted as L3, M3, H3 or V3, is the central point that lies between the median and the highest number of the distribution. LM, MH, HV and VH are the highest data points in each EGDI group
- 1 ITU (2014) Manual for Measuring ICT Access and Use by Households and Individuals. Available at: [http://www.itu.int/dms\\_pub/itu-d/opb/ind/D-IND-ITCMEAS-2014-PDF-E.pdf](http://www.itu.int/dms_pub/itu-d/opb/ind/D-IND-ITCMEAS-2014-PDF-E.pdf)
- 3 Note: The Internet is a worldwide public computer network. It provides access to a number of communication services including the World Wide Web and carries e-mail, news, entertainment and data files, irrespective of the device used (not assumed to be only via a computer - it may also be by mobile telephone, tablet, PDA, games machine, digital TV etc.). Access can be via a fixed or mobile network. (Ibid) [https://www.itu.int/en/ITU-D/Statistics/Documents/publications/manual/ITUMannualHouseholds2020\\_E.pdf](https://www.itu.int/en/ITU-D/Statistics/Documents/publications/manual/ITUMannualHouseholds2020_E.pdf)
- 4 ITU (2017). Measuring the Information Society Report 2017. Volume 2. ICT country profiles. p. 249. Available at: [https://www.itu.int/en/ITU-D/Statistics/Documents/publications/misr2017/MISR2017\\_Volume2.pdf](https://www.itu.int/en/ITU-D/Statistics/Documents/publications/misr2017/MISR2017_Volume2.pdf)
- 5 2014 E Government Survey
- 6 Zheng, L., Kwok, W.M., Aquaro, V., Qi, X., & Lyu, W. (2020). Evaluating global open government data. Proceedings of the 13th International Conference on Theory and Practice of Electronic Governance, 381–291. <https://doi.org/10.1145/3428502.3428553>

Table A.3 E-Government Development Index

Country	Region	Sub-region	EGDI Group	Rating Class	Rank	EGDI 2022	OSI 2022	TII 2022	HCI 2022	"Level of Income"
Afghanistan	Asia	Southern Asia	Middle EGDl	M1	184	0.271	0.277	0.1867	0.3493	LIC
Albania	Europe	Southern Europe	High EGDl	HV	63	0.7413	0.8182	0.6037	0.8022	UMC
Algeria	Africa	Northern Africa	High EGDl	H2	112	0.5611	0.3743	0.6133	0.6956	LMC
Andorra	Europe	Southern Europe	High EGDl	HV	76	0.7177	0.5133	0.8812	0.7585	HIC
Angola	Africa	Middle Africa	Middle EGDl	M3	157	0.3789	0.4716	0.2004	0.4648	LMC
Antigua and Barbuda	Americas	Caribbean	High EGDl	H2	99	0.6113	0.4231	0.5981	0.8128	HIC
Argentina	Americas	South America	Very High EGDl	V2	41	0.8198	0.8089	0.7332	0.9173	UMC
Armenia	Asia	Western Asia	High EGDl	HV	64	0.7364	0.7221	0.6925	0.7945	UMC
Australia	Oceania	Australia and New Zealand	Very High EGDl	VH	7	0.9405	0.938	0.8836	1	HIC
Austria	Europe	Western Europe	Very High EGDl	V3	20	0.8801	0.8827	0.8505	0.907	HIC
Azerbaijan	Asia	Western Asia	High EGDl	H3	83	0.6937	0.6119	0.6761	0.7932	UMC
Bahamas	Americas	Caribbean	High EGDl	HV	66	0.7277	0.6214	0.7976	0.7641	HIC
Bahrain	Asia	Western Asia	Very High EGDl	V1	54	0.7707	0.7523	0.7444	0.8154	HIC
Bangladesh	Asia	Southern Asia	High EGDl	H2	111	0.563	0.6521	0.4469	0.59	LMC
Barbados	Americas	Caribbean	High EGDl	H3	79	0.7117	0.5388	0.7318	0.8645	HIC
Belarus	Europe	Eastern Europe	Very High EGDl	V1	58	0.758	0.5302	0.8426	0.9011	UMC
Belgium	Europe	Western Europe	Very High EGDl	V2	39	0.8269	0.6899	0.8294	0.9614	HIC
Belize	Americas	Central America	High EGDl	H1	133	0.5005	0.4425	0.3882	0.6707	LMC
Benin	Africa	Western Africa	Middle EGDl	M3	149	0.4264	0.5245	0.3156	0.4391	LMC
Bhutan	Asia	Southern Asia	High EGDl	H2	115	0.5521	0.5996	0.5261	0.5305	LMC
Bolivia (Plurinational State of)	Americas	South America	High EGDl	H2	98	0.6165	0.5193	0.5818	0.7483	LMC
Bosnia and Herzegovina	Europe	Southern Europe	High EGDl	H3	96	0.6256	0.4898	0.6382	0.7489	UMC
Botswana	Africa	Southern Africa	High EGDl	H1	118	0.5495	0.274	0.6814	0.6932	UMC
Brazil	Americas	South America	Very High EGDl	V1	49	0.791	0.8964	0.6814	0.7953	UMC

Table A.3 (continued)

Country	Region	Sub-region	EGDI Group	Rating Class	Rank	EGDI 2022	OSI 2022	TII 2022	HCI 2022	"Level of Income"
Brunei Darussalam	Asia	South-Eastern Asia	High EGD	HV	68	0.727	0.5871	0.8372	0.7567	HIC
Bulgaria	Europe	Eastern Europe	Very High EGD	V1	52	0.7766	0.7092	0.7984	0.8221	UMC
Burkina Faso	Africa	Western Africa	Middle EGD	M2	166	0.3476	0.373	0.3931	0.2768	LIC
Burundi	Africa	Eastern Africa	Middle EGD	M2	171	0.3204	0.3376	0.14	0.4837	LIC
Cabo Verde	Africa	Western Africa	High EGD	H2	110	0.566	0.4965	0.5507	0.6507	LMC
Cambodia	Asia	South-Eastern Asia	High EGD	H1	127	0.5056	0.4181	0.5605	0.538	LMC
Cameroon	Africa	Middle Africa	Middle EGD	MH	141	0.4498	0.3916	0.365	0.5928	LMC
Canada	Americas	Northern America	Very High EGD	V2	32	0.8511	0.8504	0.777	0.926	HIC
Central African Republic	Africa	Middle Africa	Low EGD	L2	191	0.1407	0.0962	0.0833	0.2425	LIC
Chad	Africa	Middle Africa	Low EGD	L3	189	0.189	0.2726	0.1191	0.1753	LIC
Chile	Americas	South America	Very High EGD	V2	36	0.8377	0.828	0.7999	0.8853	HIC
China	Asia	Eastern Asia	Very High EGD	V2	43	0.8119	0.8876	0.805	0.7429	UMC
Colombia	Americas	South America	High EGD	HV	70	0.7261	0.7418	0.6498	0.7867	UMC
Comoros	Africa	Eastern Africa	Middle EGD	M1	182	0.2778	0.0326	0.33	0.471	LMC
Congo	Africa	Middle Africa	Middle EGD	M2	161	0.3675	0.3177	0.217	0.5677	LMC
Costa Rica	Americas	Central America	Very High EGD	V1	56	0.7659	0.6812	0.7572	0.8593	UMC
Côte d'Ivoire	Africa	Western Africa	High EGD	H1	120	0.5467	0.5467	0.5186	0.5748	LMC
Croatia	Europe	Southern Europe	Very High EGD	V2	44	0.8106	0.8108	0.7711	0.85	HIC
Cuba	Americas	Caribbean	Middle EGD	MH	136	0.4945	0.2789	0.3663	0.8384	UMC
Cyprus	Asia	Western Asia	Very High EGD	V3	27	0.866	0.7792	0.9253	0.8934	HIC
Czech Republic	Europe	Eastern Europe	Very High EGD	V2	45	0.8088	0.6693	0.8456	0.9114	HIC
Democratic People's Republic of Korea	Asia	Eastern Asia	Middle EGD	M1	180	0.2859	0.1579	0.0508	0.649	LIC
Democratic Republic of the Congo	Africa	Middle Africa	Middle EGD	M1	175	0.3057	0.2341	0.1477	0.5355	LIC
Denmark	Europe	Northern Europe	Very High EGD	VH	1	0.9717	0.9797	0.9795	0.9559	HIC

Djibouti	Africa	Eastern Africa	Middle EGD	M1	181	0.2833	0.2208	0.276	0.3529	LMC
Dominica	Americas	Caribbean	High EGD	H2	109	0.5789	0.2954	0.7604	0.681	UMC
Dominican Republic	Americas	Caribbean	High EGD	H3	92	0.6429	0.6183	0.5567	0.7539	UMC
Ecuador	Americas	South America	High EGD	H3	84	0.6889	0.7651	0.5269	0.7748	UMC
Egypt	Africa	Northern Africa	High EGD	H2	103	0.5895	0.573	0.5579	0.6375	LMC
El Salvador	Americas	Central America	High EGD	H1	117	0.5519	0.467	0.5618	0.6268	LMC
Equatorial Guinea	Africa	Middle Africa	Middle EGD	M1	183	0.2746	0.1845	0.1363	0.5031	UMC
Eritrea	Africa	Eastern Africa	Low EGD	L3	190	0.1709	0	0.0837	0.429	LIC
Estonia	Europe	Northern Europe	Very High EGD	VH	8	0.9393	1	0.8949	0.9231	HIC
Eswatini	Africa	Southern Africa	Middle EGD	MH	141	0.4498	0.324	0.355	0.6703	LMC
Ethiopia	Africa	Eastern Africa	Middle EGD	M1	179	0.2865	0.373	0.1501	0.3364	LIC
Fiji	Oceania	Melanesia	High EGD	H3	97	0.6235	0.4813	0.5935	0.7957	UMC
Finland	Europe	Northern Europe	Very High EGD	VH	2	0.9533	0.9833	0.9127	0.964	HIC
France	Europe	Western Europe	Very High EGD	V3	19	0.8832	0.8768	0.8944	0.8784	HIC
Gabon	Africa	Middle Africa	High EGD	H2	116	0.5521	0.3578	0.6279	0.6706	UMC
Gambia (Republic of The)	Africa	Western Africa	Middle EGD	M1	174	0.3088	0.1455	0.4508	0.3301	LIC
Georgia	Asia	Western Asia	Very High EGD	V1	60	0.7501	0.6111	0.7409	0.8984	UMC
Germany	Europe	Western Europe	Very High EGD	V3	22	0.877	0.7905	0.8957	0.9446	HIC
Ghana	Africa	Western Africa	High EGD	H2	106	0.5824	0.5361	0.5934	0.6176	LMC
Greece	Europe	Southern Europe	Very High EGD	V2	33	0.8455	0.7753	0.8206	0.9405	HIC
Grenada	Americas	Caribbean	High EGD	HV	66	0.7277	0.5507	0.7348	0.8977	UMC
Guatemala	Americas	Central America	High EGD	H1	126	0.5111	0.5409	0.4328	0.5596	UMC
Guinea	Africa	Western Africa	Middle EGD	M2	162	0.3608	0.4421	0.3448	0.2955	LIC
Guinea-Bissau	Africa	Western Africa	Middle EGD	M1	186	0.256	0.0624	0.3472	0.3585	LIC
Guyana	Americas	South America	High EGD	H1	123	0.5233	0.4509	0.4643	0.6546	UMC
Haiti	Americas	Caribbean	Low EGD	LM	187	0.2481	0.0865	0.2646	0.393	LMC
Honduras	Americas	Central America	Middle EGD	M3	155	0.394	0.2417	0.3501	0.5901	LMC
Hungary	Europe	Eastern Europe	Very High EGD	V1	51	0.7827	0.7465	0.7671	0.8345	HIC

Table A.3 (continued)

Country	Region	Sub-region	EGDI Group	Rating Class	Rank	EGDI 2022	OSI 2022	TII 2022	HCI 2022	"Level of Income"
Iceland	Europe	Northern Europe	Very High EGD	VH	5	0.941	0.8867	0.9705	0.9657	HIC
India	Asia	Southern Asia	High EGD	H2	105	0.5883	0.7934	0.3954	0.5761	LMC
Indonesia	Asia	South-Eastern Asia	High EGD	HV	77	0.716	0.7644	0.6397	0.7438	LMC
Iran (Islamic Republic of)	Asia	Southern Asia	High EGD	H3	91	0.6433	0.4196	0.73	0.7804	LMC
Iraq	Asia	Western Asia	Middle EGD	MH	146	0.4383	0.206	0.5201	0.5888	UMC
Ireland	Europe	Northern Europe	Very High EGD	V3	30	0.8567	0.7796	0.8287	0.9618	HIC
Israel	Asia	Western Asia	Very High EGD	V3	16	0.8885	0.8745	0.8915	0.8994	HIC
Italy	Europe	Southern Europe	Very High EGD	V2	37	0.8375	0.8659	0.786	0.8606	HIC
Jamaica	Americas	Caribbean	High EGD	H2	102	0.5906	0.4914	0.5658	0.7148	UMC
Japan	Asia	Eastern Asia	Very High EGD	VH	14	0.9002	0.9094	0.9147	0.8765	HIC
Jordan	Asia	Western Asia	High EGD	H2	100	0.6081	0.6594	0.4681	0.6967	UMC
Kazakhstan	Asia	Central Asia	Very High EGD	V3	28	0.8628	0.9344	0.752	0.9021	UMC
Kenya	Africa	Eastern Africa	High EGD	H2	113	0.5589	0.6821	0.4305	0.5641	LMC
Kiribati	Oceania	Micronesia	Middle EGD	M3	148	0.4334	0.3686	0.253	0.6785	LMC
Kuwait	Asia	Western Asia	High EGD	HV	61	0.7484	0.6973	0.7774	0.7706	HIC
Kyrgyzstan	Asia	Central Asia	High EGD	H3	81	0.6977	0.6176	0.6637	0.8119	LMC
Lao People's Democratic Republic	Asia	South-Eastern Asia	Middle EGD	M3	159	0.3764	0.3005	0.282	0.5468	LMC
Latvia	Europe	Northern Europe	Very High EGD	V3	29	0.8599	0.8135	0.8378	0.9284	HIC
Lebanon	Asia	Western Asia	High EGD	H1	122	0.5273	0.4257	0.4907	0.6656	UMC
Lesotho	Africa	Southern Africa	Middle EGD	MH	145	0.4414	0.3456	0.3836	0.595	LMC
Liberia	Africa	Western Africa	Middle EGD	M1	177	0.2905	0.3417	0.1115	0.4184	LIC
Libya	Africa	Northern Africa	Middle EGD	M2	169	0.3375	0.099	0.1601	0.7534	UMC
Liechtenstein	Europe	Western Europe	Very High EGD	V3	25	0.8685	0.7329	1	0.8726	HIC
Lithuania	Europe	Northern Europe	Very High EGD	V3	24	0.8745	0.8347	0.8636	0.9251	HIC

Luxembourg	Europe	Western Europe	Very High EGGI	V3	26	0.8675	0.8319	0.9462	0.8245	HIC
Madagascar	Africa	Eastern Africa	Middle EGGI	M2	163	0.3565	0.3515	0.182	0.536	LIC
Malawi	Africa	Eastern Africa	Middle EGGI	M2	167	0.3435	0.3607	0.1815	0.4884	LIC
Malaysia	Asia	South-Eastern Asia	Very High EGGI	V1	53	0.774	0.763	0.7945	0.7645	UMC
Maldives	Asia	Southern Asia	High EGGI	H2	104	0.5885	0.4873	0.5845	0.6937	UMC
Mali	Africa	Western Africa	Middle EGGI	M2	168	0.3414	0.3652	0.4398	0.2193	LIC
Malta	Europe	Southern Europe	Very High EGGI	VH	15	0.8943	0.8849	0.9245	0.8734	HIC
Marshall Islands	Oceania	Micronesia	Middle EGGI	M3	160	0.3714	0.3004	0.1236	0.6903	UMC
Mauritania	Africa	Western Africa	Middle EGGI	M2	172	0.3157	0.0952	0.4648	0.3873	LMC
Mauritius	Africa	Eastern Africa	High EGGI	HV	75	0.7201	0.6282	0.7588	0.7733	UMC
Mexico	Americas	Central America	High EGGI	HV	62	0.7473	0.8245	0.63	0.7874	UMC
Micronesia (Federated States of)	Oceania	Micronesia	Middle EGGI	M2	164	0.355	0.2703	0.1102	0.6845	LMC
Monaco	Europe	Western Europe	High EGGI	HV	73	0.7228	0.4588	0.8794	0.8302	HIC
Mongolia	Asia	Eastern Asia	High EGGI	HV	74	0.7209	0.6263	0.6973	0.8391	LMC
Montenegro	Europe	Southern Europe	High EGGI	HV	71	0.726	0.5528	0.7868	0.8383	UMC
Morocco	Africa	Northern Africa	High EGGI	H2	101	0.5915	0.4721	0.6676	0.635	LMC
Mozambique	Africa	Eastern Africa	Middle EGGI	M2	173	0.313	0.3563	0.1537	0.429	LIC
Myanmar	Asia	South-Eastern Asia	Middle EGGI	MH	134	0.4994	0.3073	0.6082	0.5829	LMC
Namibia	Africa	Southern Africa	High EGGI	H1	121	0.5322	0.4316	0.5133	0.6516	UMC
Nauru	Oceania	Micronesia	Middle EGGI	MH	139	0.4548	0.2952	0.4768	0.5925	HIC
Nepal	Asia	Southern Asia	High EGGI	H1	125	0.5117	0.4592	0.5123	0.5636	LMC
Netherlands	Europe	Western Europe	Very High EGGI	VH	9	0.9384	0.9026	0.962	0.9506	HIC
New Zealand	Oceania	Australia and New Zealand	Very High EGGI	VH	4	0.9432	0.9579	0.8896	0.9823	HIC
Nicaragua	Americas	Central America	High EGGI	H1	130	0.5032	0.4809	0.4287	0.6	LMC
Niger	Africa	Western Africa	Low EGGI	LM	188	0.2406	0.3904	0.14	0.1915	LIC
Nigeria	Africa	Western Africa	Middle EGGI	MH	140	0.4525	0.525	0.3886	0.4439	LMC
North Macedonia	Europe	Southern Europe	High EGGI	H3	80	0.7	0.702	0.6417	0.7562	UMC
Norway	Europe	Northern Europe	Very High EGGI	V3	17	0.8879	0.8007	0.9102	0.9528	HIC

Table A.3 (continued)

Country	Region	Sub-region	EGDI Group	Rating Class	Rank	EGDI 2022	OSI 2022	TII 2022	HCI 2022	"Level of Income"
Oman	Asia	Western Asia	Very High EGD	V1	50	0.7834	0.7423	0.8012	0.8067	HIC
Pakistan	Asia	Southern Asia	Middle EGD	M3	150	0.4238	0.5658	0.3122	0.3933	LMC
Palau	Oceania	Micronesia	High EGD	H1	132	0.5018	0.2373	0.3735	0.8946	HIC
Panama	Americas	Central America	High EGD	H3	82	0.6956	0.6741	0.6603	0.7525	UMC
Papua New Guinea	Oceania	Melanesia	Middle EGD	M2	170	0.323	0.3263	0.143	0.4996	LMC
Paraguay	Americas	South America	High EGD	H3	94	0.6332	0.6059	0.5989	0.6947	UMC
Peru	Americas	South America	Very High EGD	V1	59	0.7524	0.8099	0.6267	0.8207	UMC
Philippines	Asia	South-Eastern Asia	High EGD	H3	89	0.6523	0.6303	0.5638	0.7629	LMC
Poland	Europe	Eastern Europe	Very High EGD	V2	34	0.8437	0.7929	0.8348	0.9033	HIC
Portugal	Europe	Southern Europe	Very High EGD	V2	38	0.8273	0.7954	0.8201	0.8665	HIC
Qatar	Asia	Western Asia	High EGD	HV	78	0.7149	0.6094	0.8203	0.715	HIC
Republic of Korea	Asia	Eastern Asia	Very High EGD	VH	3	0.9529	0.9826	0.9674	0.9087	HIC
Republic of Moldova	Europe	Eastern Europe	High EGD	HV	72	0.7251	0.738	0.576	0.8613	UMC
Romania	Europe	Eastern Europe	Very High EGD	V1	57	0.7619	0.6814	0.7954	0.809	UMC
Russian Federation	Europe	Eastern Europe	Very High EGD	V2	42	0.8162	0.7368	0.8053	0.9065	UMC
Rwanda	Africa	Eastern Africa	High EGD	H1	119	0.5489	0.7935	0.3209	0.5322	LIC
Saint Kitts and Nevis	Americas	Caribbean	High EGD	H3	87	0.6775	0.3307	0.8293	0.8724	HIC
Saint Lucia	Americas	Caribbean	High EGD	H2	114	0.558	0.4007	0.5683	0.7049	UMC
Saint Vincent and the Grenadines	Americas	Caribbean	High EGD	H2	107	0.5811	0.4526	0.5486	0.742	UMC
Samoa	Oceania	Polynesia	Middle EGD	M3	152	0.4207	0.3592	0.1558	0.747	LMC
San Marino	Europe	Southern Europe	High EGD	H3	90	0.6454	0.3788	0.811	0.7466	HIC
Sao Tome and Principe	Africa	Middle Africa	Middle EGD	M3	154	0.4138	0.2435	0.3218	0.6759	LMC
Saudi Arabia	Asia	Western Asia	Very High EGD	V2	31	0.8539	0.822	0.8735	0.8662	HIC
Senegal	Africa	Western Africa	Middle EGD	MH	143	0.4479	0.4934	0.5025	0.3478	LMC

Serbia	Europe	Southern Europe	Very High EGD	V2	40	0.8237	0.8514	0.7865	0.8332	UMC
Seychelles	Africa	Eastern Africa	High EGD	H3	85	0.6793	0.4424	0.8198	0.7758	HIC
Sierra Leone	Africa	Western Africa	Middle EGD	M1	185	0.2633	0.2801	0.2639	0.2459	LIC
Singapore	Asia	South-Eastern Asia	Very High EGD	VH	12	0.9133	0.962	0.8758	0.9021	HIC
Slovakia	Europe	Eastern Europe	Very High EGD	V1	47	0.8008	0.726	0.8328	0.8436	HIC
Slovenia	Europe	Southern Europe	Very High EGD	V3	21	0.8781	0.8666	0.8239	0.9439	HIC
Solomon Islands	Oceania	Melanesia	Middle EGD	M2	164	0.353	0.3676	0.1988	0.4925	LMC
Somalia	Africa	Eastern Africa	Low EGD	L2	192	0.134	0.2944	0.1074	0	LIC
South Africa	Africa	Southern Africa	High EGD	HV	65	0.7357	0.7487	0.685	0.7733	UMC
South Sudan	Africa	Eastern Africa	Low EGD	L1	193	0.0852	0.0518	0	0.2038	LIC
Spain	Europe	Southern Europe	Very High EGD	V3	18	0.8842	0.8559	0.8895	0.9072	HIC
Sri Lanka	Asia	Southern Asia	High EGD	H3	95	0.6285	0.5644	0.5483	0.7726	LMC
Sudan	Africa	Northern Africa	Middle EGD	M1	176	0.2972	0.2118	0.3199	0.3599	LIC
Suriname	Americas	South America	High EGD	H2	108	0.5809	0.3418	0.7089	0.6921	UMC
Sweden	Europe	Northern Europe	Very High EGD	VH	5	0.941	0.9002	0.958	0.9649	HIC
Switzerland	Europe	Western Europe	Very High EGD	V3	23	0.8752	0.7677	0.945	0.9128	HIC
Syrian Arab Republic	Asia	Western Asia	Middle EGD	M3	156	0.3872	0.3053	0.3581	0.4983	LIC
Tajikistan	Asia	Central Asia	High EGD	H1	129	0.5039	0.3968	0.377	0.738	LMC
Thailand	Asia	South-Eastern Asia	Very High EGD	V1	55	0.766	0.7763	0.7338	0.7879	UMC
Timor-Leste	Asia	South-Eastern Asia	Middle EGD	M3	147	0.4372	0.3931	0.364	0.5546	LMC
Togo	Africa	Western Africa	Middle EGD	M3	151	0.4231	0.4338	0.2848	0.5508	LIC
Tonga	Oceania	Polynesia	High EGD	H1	124	0.5155	0.3296	0.3496	0.8675	UMC
Trinidad and Tobago	Americas	Caribbean	High EGD	H3	93	0.6339	0.4892	0.6717	0.7409	HIC
Tunisia	Africa	Northern Africa	High EGD	H3	88	0.653	0.6031	0.6646	0.6911	LMC
Türkiye	Asia	Western Asia	Very High EGD	V1	48	0.7983	0.86	0.6626	0.8722	UMC
Turkmenistan	Asia	Central Asia	Middle EGD	MH	137	0.4808	0.298	0.3551	0.7892	UMC
Tuvalu	Oceania	Polynesia	Middle EGD	M3	158	0.3788	0.2265	0.2607	0.6492	UMC
Uganda	Africa	Eastern Africa	Middle EGD	MH	144	0.4424	0.5169	0.2472	0.5631	LIC



Table A.3 (continued)

Country	Region	Sub-region	EGDI Group	Rating Class	Rank	EGDI 2022	OSI 2022	TII 2022	HCI 2022	"Level of Income"
Ukraine	Europe	Eastern Europe	Very High EGD	V1	46	0.8029	0.8148	0.727	0.8669	LMC
United Arab Emirates	Asia	Western Asia	Very High EGD	VH	13	0.901	0.9014	0.9306	0.8711	HIC
United Kingdom of Great Britain and Northern Ireland	Europe	Northern Europe	Very High EGD	VH	11	0.9138	0.8859	0.9186	0.9369	HIC
United Republic of Tanzania	Africa	Eastern Africa	Middle EGD	M3	153	0.4169	0.47	0.2709	0.51	LMC
United States of America	Americas	Northern America	Very High EGD	VH	10	0.9151	0.9304	0.8874	0.9276	HIC
Uruguay	Americas	South America	Very High EGD	V2	35	0.8388	0.7641	0.8543	0.898	HIC
Uzbekistan	Asia	Central Asia	High EGD	HV	69	0.7265	0.744	0.6575	0.7778	LMC
Vanuatu	Oceania	Melanesia	Middle EGD	MH	135	0.4988	0.4228	0.4727	0.6009	LMC
Venezuela, Bolivarian Republic of	Americas	South America	High EGD	H1	128	0.5053	0.3056	0.3923	0.8181	Unclassified
Viet Nam	Asia	South-Eastern Asia	High EGD	H3	86	0.6787	0.6484	0.6973	0.6903	LMC
Yemen	Asia	Western Asia	Middle EGD	M1	178	0.2899	0.3393	0.1671	0.3633	LIC
Zambia	Africa	Eastern Africa	High EGD	H1	131	0.5022	0.4414	0.3909	0.6744	LMC
Zimbabwe	Africa	Eastern Africa	Middle EGD	MH	138	0.4717	0.3845	0.3843	0.6463	LMC

Table A.4 Regional and Economic Groupings for E-Government Development Index (EGDI) and E-Participation (EPI)

Region/Grouping	EGDI Group	EGDI	Online Service Index	Telecommunications Infrastructure Index	Human Capital Index	E-Participation Index
Africa	Middle EGDI	0.4054	0.367	0.3548	0.4945	0.2595
Americas	High EGDI	0.6438	0.5585	0.6139	0.759	0.4253
Asia	High EGDI	0.6493	0.6137	0.6166	0.7175	0.5024
Europe	Very High EGDI	0.8305	0.7699	0.8392	0.8825	0.6631
Oceania	High EGDI	0.5081	0.4201	0.3775	0.7268	0.3474
World	High EGDI	0.6102	0.5554	0.5751	0.7001	0.445
Small Island Developing States	High EGDI	0.5327	0.4026	0.4938	0.7016	0.2766
Land Locked Developing Countries	Middle EGDI	0.4847	0.4642	0.4121	0.5778	0.3622
Least Developed Countries	Middle EGDI	0.3498	0.3308	0.2848	0.4337	0.2483
Levels of Income	EGDI Group	EGDI	Online Service Index	Telecommunications Infrastructure Index	Human Capital Index	E-Participation Index
High income	Very High EGDI	0.8241	0.7542	0.842	0.8762	0.6424
Upper middle income	High EGDI	0.6444	0.5676	0.6001	0.7655	0.4623
Lower middle income	High EGDI	0.5032	0.4562	0.4441	0.6092	0.3232
Low income	Middle EGDI	0.2963	0.3024	0.2139	0.3726	0.2298

Table A.5 E-Government Development Index (EGDI) of Least Developed Countries (LDCs)

Country	Region	Sub-Region	EGDI Group	Rating Class	Rank	EGDI	Online Service Index	Telecommunications Infrastructure Index	Human Capital Index
Afghanistan	Asia	Southern Asia	Middle EGDI	M1	184	0.271	0.277	0.1867	0.3493
Angola*	Africa	Middle Africa	Middle EGDI	M3	157	0.3789	0.4716	0.2004	0.4648
Bangladesh*	Asia	Southern Asia	High EGDI	H2	111	0.563	0.6521	0.4469	0.59
Benin	Africa	Western Africa	Middle EGDI	M3	149	0.4264	0.5245	0.3156	0.4391
Bhutan*	Asia	Southern Asia	High EGDI	H2	115	0.5521	0.5996	0.5261	0.5305
Burkina Faso	Africa	Western Africa	Middle EGDI	M2	166	0.3476	0.373	0.3931	0.2768
Burundi	Africa	Eastern Africa	Middle EGDI	M2	171	0.3204	0.3376	0.14	0.4837
Cambodia*	Asia	South-Eastern Asia	High EGDI	H1	127	0.5056	0.4181	0.5605	0.538
Central African Republic	Africa	Middle Africa	Low EGDI	L2	191	0.1407	0.0962	0.0833	0.2425
Chad	Africa	Middle Africa	Low EGDI	L3	189	0.189	0.2726	0.1191	0.1753
Comoros*	Africa	Eastern Africa	Middle EGDI	M1	182	0.2778	0.0326	0.33	0.471
Democratic Republic of the Congo	Africa	Middle Africa	Middle EGDI	M1	175	0.3057	0.2341	0.1477	0.5355
Djibouti*	Africa	Eastern Africa	Middle EGDI	M1	181	0.2833	0.2208	0.276	0.3529
Eritrea	Africa	Eastern Africa	Low EGDI	L3	190	0.1709	0	0.0837	0.429
Ethiopia	Africa	Eastern Africa	Middle EGDI	M1	179	0.2865	0.373	0.1501	0.3364
Gambia (Republic of The)	Africa	Western Africa	Middle EGDI	M1	174	0.3088	0.1455	0.4508	0.3301
Guinea	Africa	Western Africa	Middle EGDI	M2	162	0.3608	0.4421	0.3448	0.2955
Guinea-Bissau	Africa	Western Africa	Middle EGDI	M1	186	0.256	0.0624	0.3472	0.3585
Haiti	Americas	Caribbean	Low EGDI	LM	187	0.2481	0.0865	0.2646	0.393
Kiribati*	Oceania	Micronesia	Middle EGDI	M3	148	0.4334	0.3686	0.253	0.6785
Lao People's Democratic Republic*	Asia	South-Eastern Asia	Middle EGDI	M3	159	0.3764	0.3005	0.282	0.5468
Lesotho	Africa	Southern Africa	Middle EGDI	MH	145	0.4414	0.3456	0.3836	0.595
Liberia	Africa	Western Africa	Middle EGDI	M1	177	0.2905	0.3417	0.1115	0.4184
Madagascar	Africa	Eastern Africa	Middle EGDI	M2	163	0.3565	0.3515	0.182	0.536
Malawi	Africa	Eastern Africa	Middle EGDI	M2	167	0.3435	0.3607	0.1815	0.4884

Mali	Africa	Western Africa	Middle EGD	M2	168	0.3414	0.3652	0.4398	0.2193
Mauritania	Africa	Western Africa	Middle EGD	M2	172	0.3157	0.0952	0.4648	0.3873
Mozambique	Africa	Eastern Africa	Middle EGD	M2	173	0.313	0.3563	0.1537	0.429
Myanmar*	Asia	South-Eastern Asia	Middle EGD	MH	134	0.4994	0.3073	0.6082	0.5829
Nepal*	Asia	Southern Asia	High EGD	H1	125	0.5117	0.4592	0.5123	0.5636
Niger	Africa	Western Africa	Low EGD	LM	188	0.2406	0.3904	0.14	0.1915
Rwanda	Africa	Eastern Africa	High EGD	H1	119	0.5489	0.7935	0.3209	0.5322
Sao Tome and Principe*	Africa	Middle Africa	Middle EGD	M3	154	0.4138	0.2435	0.3218	0.6759
Senegal*	Africa	Western Africa	Middle EGD	MH	143	0.4479	0.4934	0.5025	0.3478
Sierra Leone	Africa	Western Africa	Middle EGD	M1	185	0.2633	0.2801	0.2639	0.2459
Solomon Islands*	Oceania	Melanesia	Middle EGD	M2	164	0.353	0.3676	0.1988	0.4925
Somalia	Africa	Eastern Africa	Low EGD	L2	192	0.134	0.2944	0.1074	0
South Sudan	Africa	Eastern Africa	Low EGD	L1	193	0.0852	0.0518	0	0.2038
Sudan	Africa	Northern Africa	Middle EGD	M1	176	0.2972	0.2118	0.3199	0.3599
Timor-Leste*	Asia	South-Eastern Asia	Middle EGD	M3	147	0.4372	0.3931	0.364	0.5546
Togo	Africa	Western Africa	Middle EGD	M3	151	0.4231	0.4338	0.2848	0.5508
Tuvalu*	Oceania	Polynesia	Middle EGD	M3	158	0.3788	0.2265	0.2607	0.6492
Uganda	Africa	Eastern Africa	Middle EGD	MH	144	0.4424	0.5169	0.2472	0.5631
United Republic of Tanzania	Africa	Eastern Africa	Middle EGD	M3	153	0.4169	0.47	0.2709	0.51
Yemen	Asia	Western Asia	Middle EGD	M1	178	0.2899	0.3393	0.1671	0.3633
Zambia*	Africa	Eastern Africa	High EGD	H1	131	0.5022	0.4414	0.3909	0.6744

(\*) Graduating countries

Table A.6 E-Government Development Index (EGDI) of Landlocked Developing Countries (LLDCs)

Country	Region	Sub-Region	EGDI Group	Rating Class	Rank	EGDI	Online Service Index	Telecommunications Infrastructure Index	Human Capital Index
Afghanistan	Asia	Southern Asia	Middle EGDI	M1	184	0.271	0.277	0.1867	0.3493
Armenia	Asia	Western Asia	High EGDI	HV	64	0.7364	0.7221	0.6925	0.7945
Azerbaijan	Asia	Western Asia	High EGDI	H3	83	0.6937	0.6119	0.6761	0.7932
Bhutan	Asia	Southern Asia	High EGDI	H2	115	0.5521	0.5996	0.5261	0.5305
Bolivia (Plurinational State of)	Americas	South America	High EGDI	H2	98	0.6165	0.5193	0.5818	0.7483
Botswana	Africa	Southern Africa	High EGDI	H1	118	0.5495	0.274	0.6814	0.6932
Burkina Faso	Africa	Western Africa	Middle EGDI	M2	166	0.3476	0.373	0.3931	0.2768
Burundi	Africa	Eastern Africa	Middle EGDI	M2	171	0.3204	0.3376	0.14	0.4837
Central African Republic	Africa	Middle Africa	Low EGDI	L2	191	0.1407	0.0962	0.0833	0.2425
Chad	Africa	Middle Africa	Low EGDI	L3	189	0.189	0.2726	0.1191	0.1753
Eswatini	Africa	Southern Africa	Middle EGDI	MH	141	0.4498	0.324	0.355	0.6703
Ethiopia	Africa	Eastern Africa	Middle EGDI	M1	179	0.2865	0.373	0.1501	0.3364
Kazakhstan	Asia	Central Asia	Very High EGDI	V3	28	0.8628	0.9344	0.752	0.9021
Kyrgyzstan	Asia	Central Asia	High EGDI	H3	81	0.6977	0.6176	0.6637	0.8119
Lao People's Democratic Republic	Asia	South-Eastern Asia	Middle EGDI	M3	159	0.3764	0.3005	0.282	0.5468
Lesotho	Africa	Southern Africa	Middle EGDI	MH	145	0.4414	0.3456	0.3836	0.595
Malawi	Africa	Eastern Africa	Middle EGDI	M2	167	0.3435	0.3607	0.1815	0.4884
Mali	Africa	Western Africa	Middle EGDI	M2	168	0.3414	0.3652	0.4398	0.2193
Mongolia	Asia	Eastern Asia	High EGDI	HV	74	0.7209	0.6263	0.6973	0.8391
Nepal	Asia	Southern Asia	High EGDI	H1	125	0.5117	0.4592	0.5123	0.5636
Niger	Africa	Western Africa	Low EGDI	LM	188	0.2406	0.3904	0.14	0.1915
North Macedonia	Europe	Southern Europe	High EGDI	H3	80	0.7	0.702	0.6417	0.7562
Paraguay	Americas	South America	High EGDI	H3	94	0.6332	0.6059	0.5989	0.6947
Republic of Moldova	Europe	Eastern Europe	High EGDI	HV	72	0.7251	0.738	0.576	0.8613

Rwanda	Africa	Eastern Africa	High EGDI	H1	119	0.5489	0.7935	0.3209	0.5322
South Sudan	Africa	Eastern Africa	Low EGDI	L1	193	0.0852	0.0518	0	0.2038
Tajikistan	Asia	Central Asia	High EGDI	H1	129	0.5039	0.3968	0.377	0.738
Turkmenistan	Asia	Central Asia	Middle EGDI	MH	137	0.4808	0.298	0.3551	0.7892
Uganda	Africa	Eastern Africa	Middle EGDI	MH	144	0.4424	0.5169	0.2472	0.5631
Uzbekistan	Asia	Central Asia	High EGDI	HV	69	0.7265	0.744	0.6575	0.7778
Zambia	Africa	Eastern Africa	High EGDI	H1	131	0.5022	0.4414	0.3909	0.6744
Zimbabwe	Africa	Eastern Africa	Middle EGDI	MH	138	0.4717	0.3845	0.3843	0.6463

Table A.7 E-Government Development Index (EGDI) of Small Island Developing States (SIDS)

Country	Region	Sub-Region	EGDI Group	Rating Class	Rank	EGDI	Online Service Index	Telecommunications Infrastructure Index	Human Capital Index
Antigua and Barbuda	Americas	Caribbean	High EGDI	H2	99	0.6113	0.4231	0.5981	0.8128
Bahamas	Americas	Caribbean	High EGDI	HV	66	0.7277	0.6214	0.7976	0.7641
Bahrain	Asia	Western Asia	Very High EGDI	V1	54	0.7707	0.7523	0.7444	0.8154
Barbados	Americas	Caribbean	High EGDI	H3	79	0.7117	0.5388	0.7318	0.8645
Belize	Americas	Central America	High EGDI	H1	133	0.5005	0.4425	0.3882	0.6707
Cabo Verde	Africa	Western Africa	High EGDI	H2	110	0.566	0.4965	0.5507	0.6507
Comoros	Africa	Eastern Africa	Middle EGDI	M1	182	0.2778	0.0326	0.33	0.471
Cuba	Americas	Caribbean	Middle EGDI	MH	136	0.4945	0.2789	0.3663	0.8384
Dominica	Americas	Caribbean	High EGDI	H2	109	0.5789	0.2954	0.7604	0.681
Dominican Republic	Americas	Caribbean	High EGDI	H3	92	0.6429	0.6183	0.5567	0.7539
Fiji	Oceania	Melanesia	High EGDI	H3	97	0.6235	0.4813	0.5935	0.7957
Grenada	Americas	Caribbean	High EGDI	HV	66	0.7277	0.5507	0.7348	0.8977
Guinea-Bissau	Africa	Western Africa	Middle EGDI	M1	186	0.256	0.0624	0.3472	0.3585
Guyana	Americas	South America	High EGDI	H1	123	0.5233	0.4509	0.4643	0.6546
Haiti	Americas	Caribbean	Low EGDI	LM	187	0.2481	0.0865	0.2646	0.393
Jamaica	Americas	Caribbean	High EGDI	H2	102	0.5906	0.4914	0.5658	0.7148
Kiribati	Oceania	Micronesia	Middle EGDI	M3	148	0.4334	0.3686	0.253	0.6785
Maldives	Asia	Southern Asia	High EGDI	H2	104	0.5885	0.4873	0.5845	0.6937
Marshall Islands	Oceania	Micronesia	Middle EGDI	M3	160	0.3714	0.3004	0.1236	0.6903
Mauritius	Africa	Eastern Africa	High EGDI	HV	75	0.7201	0.6282	0.7588	0.7733
Micronesia (Federated States of)	Oceania	Micronesia	Middle EGDI	M2	164	0.355	0.2703	0.1102	0.6845
Nauru	Oceania	Micronesia	Middle EGDI	MH	139	0.4548	0.2952	0.4768	0.5925
Palau	Oceania	Micronesia	High EGDI	H1	132	0.5018	0.2373	0.3735	0.8946
Papua New Guinea	Oceania	Melanesia	Middle EGDI	M2	170	0.323	0.3263	0.143	0.4996

Saint Kitts and Nevis	Americas	Caribbean	High EGD	H3	87	0.6775	0.3307	0.8293	0.8724
Saint Lucia	Americas	Caribbean	High EGD	H2	114	0.558	0.4007	0.5683	0.7049
Saint Vincent and the Grenadines	Americas	Caribbean	High EGD	H2	107	0.5811	0.4526	0.5486	0.742
Samoa	Oceania	Polynesia	Middle EGD	M3	152	0.4207	0.3592	0.1558	0.747
Sao Tome and Principe	Africa	Middle Africa	Middle EGD	M3	154	0.4138	0.2435	0.3218	0.6759
Seychelles	Africa	Eastern Africa	High EGD	H3	85	0.6793	0.4424	0.8198	0.7758
Singapore	Asia	South-Eastern Asia	Very High EGD	VH	12	0.9133	0.962	0.8758	0.9021
Solomon Islands	Oceania	Melanesia	Middle EGD	M2	165	0.353	0.3676	0.1988	0.4925
Suriname	Americas	South America	High EGD	H2	108	0.5809	0.3418	0.7089	0.6921
Timor-Leste	Asia	South-Eastern Asia	Middle EGD	M3	147	0.4372	0.3931	0.364	0.5546
Tonga	Oceania	Polynesia	High EGD	H1	124	0.5155	0.3296	0.3496	0.8675
Trinidad and Tobago	Americas	Caribbean	High EGD	H3	93	0.6339	0.4892	0.6717	0.7409
Tuvalu	Oceania	Polynesia	Middle EGD	M3	158	0.3788	0.2265	0.2607	0.6492
Vanuatu	Oceania	Melanesia	Middle EGD	MH	135	0.4988	0.4228	0.4727	0.6009



Table A.8 Online Service Index (OSI) and its components

Country	OSI Group	OSI 2022	IF	CP	SP	EPI	TEC	EGDI Group	EGDI 2022
Afghanistan	Middle OSI	0.277	0.7692	0.5	0.1867	0.1932	0.3529	Middle EGD	0.271
Albania	Very High OSI	0.8182	0.9615	1	0.7733	0.7614	0.7647	High EGD	0.7413
Algeria	Middle OSI	0.3743	0.6154	0.6	0.3867	0.2273	0.5294	High EGD	0.5611
Andorra	High OSI	0.5133	0.7308	0.7	0.5333	0.375	0.5294	High EGD	0.7177
Angola	Middle OSI	0.4716	0.6923	0.8	0.5867	0.1705	0.6471	Middle EGD	0.3789
Antigua and Barbuda	Middle OSI	0.4231	0.7692	0.6	0.32	0.4205	0.3529	High EGD	0.6113
Argentina	Very High OSI	0.8089	1	0.9	0.8133	0.6477	1	Very High EGD	0.8198
Armenia	High OSI	0.7221	0.8077	1	0.7333	0.5795	0.8824	High EGD	0.7364
Australia	Very High OSI	0.938	1	0.9	0.8533	0.9886	0.8235	Very High EGD	0.9405
Austria	Very High OSI	0.8827	1	0.9	0.8933	0.7727	0.8824	Very High EGD	0.8801
Azerbaijan	High OSI	0.6119	0.8462	0.6	0.7067	0.3864	0.6471	High EGD	0.6937
Bahamas	High OSI	0.6214	0.7308	0.8	0.7067	0.3977	0.8235	High EGD	0.7277
Bahrain	Very High OSI	0.7523	1	0.9	0.8933	0.4432	0.6471	Very High EGD	0.7707
Bangladesh	High OSI	0.6521	0.9615	0.9	0.6267	0.5227	0.5882	High EGD	0.563
Barbados	High OSI	0.5388	0.8077	0.6	0.5467	0.3977	0.6471	High EGD	0.7117
Belarus	High OSI	0.5302	0.8077	0.8	0.5067	0.4318	0.4118	Very High EGD	0.758
Belgium	High OSI	0.6899	0.9615	0.7	0.7733	0.4545	0.7059	Very High EGD	0.8269
Belize	Middle OSI	0.4425	0.7692	0.4	0.5867	0.2045	0.1176	High EGD	0.5005
Benin	High OSI	0.5245	0.9231	0.8	0.48	0.3409	0.8235	Middle EGD	0.4264
Bhutan	High OSI	0.5996	1	0.8	0.5333	0.4659	0.7647	High EGD	0.5521
Bolivia (Plurinational State of)	High OSI	0.5193	0.8846	0.8	0.52	0.3182	0.6471	High EGD	0.6165
Bosnia and Herzegovina	Middle OSI	0.4898	0.8077	0.5	0.3867	0.5341	0.2941	High EGD	0.6256
Botswana	Middle OSI	0.274	0.5385	0.5	0.28	0.1705	0.2353	High EGD	0.5495
Brazil	Very High OSI	0.8964	1	1	0.8133	0.8977	0.8824	Very High EGD	0.791
Brunei Darussalam	High OSI	0.5871	0.8077	0.7	0.5867	0.4773	0.5882	High EGD	0.727
Bulgaria	High OSI	0.7092	1	0.7	0.5733	0.7386	0.7647	Very High EGD	0.7766

Burkina Faso	Middle OSI	0.373	0.8846	0.6	0.32	0.2273	0.4118	Middle EGD	0.3476
Burundi	Middle OSI	0.3376	0.6538	0.6	0.2267	0.3409	0.3529	Middle EGD	0.3204
Cabo Verde	Middle OSI	0.4965	0.6923	0.7	0.6133	0.25	0.4706	High EGD	0.566
Cambodia	Middle OSI	0.4181	0.8462	0.8	0.3333	0.2841	0.6471	High EGD	0.5056
Cameroon	Middle OSI	0.3916	0.7308	1	0.3067	0.2841	0.4706	Middle EGD	0.4498
Canada	Very High OSI	0.8504	0.9615	0.8	0.8	0.8295	0.8824	Very High EGD	0.8511
Central African Republic	Low LOSI	0.0962	0.3846	0.2	0	0.1364	0.1765	Low EGD	0.1407
Chad	Middle OSI	0.2726	0.6923	0.4	0.12	0.3182	0.2941	Low EGD	0.189
Chile	Very High OSI	0.828	0.9615	0.9	0.8533	0.6932	0.8235	Very High EGD	0.8377
China	Very High OSI	0.8876	1	0.9	0.84	0.8636	0.8235	Very High EGD	0.8119
Colombia	High OSI	0.7418	1	0.9	0.64	0.7159	0.7647	High EGD	0.7261
Comoros	Low LOSI	0.0326	0.1923	0.2	0.0133	0.0114	0.1765	Middle EGD	0.2778
Congo	Middle OSI	0.3177	0.6923	0.6	0.2	0.2386	0.7647	Middle EGD	0.3675
Costa Rica	High OSI	0.6812	0.9231	0.8	0.68	0.5568	0.6471	Very High EGD	0.7659
Côte d'Ivoire	High OSI	0.5467	1	0.7	0.5067	0.375	0.7059	High EGD	0.5467
Croatia	Very High OSI	0.8108	0.9615	0.9	0.7867	0.7386	0.7647	Very High EGD	0.8106
Cuba	Middle OSI	0.2789	0.7692	0.4	0.24	0.1364	0.4118	Middle EGD	0.4945
Cyprus	Very High OSI	0.7792	1	0.8	0.6933	0.75	0.8824	Very High EGD	0.866
Czech Republic	High OSI	0.6693	0.9231	0.7	0.6	0.6023	0.8824	Very High EGD	0.8088
Democratic Peoples Republic of Korea	Low LOSI	0.1579	0.3077	0.6	0.16	0.0568	0.2941	Middle EGD	0.2859
Democratic Republic of the Congo	Low LOSI	0.2341	0.4615	0.5	0.1067	0.25	0.5882	Middle EGD	0.3057
Denmark	Very High OSI	0.9797	1	1	1	0.8864	0.9412	Very High EGD	0.9717
Djibouti	Low LOSI	0.2208	0.5769	0.3	0.2267	0.1136	0.1765	Middle EGD	0.2833
Dominica	Middle OSI	0.2954	0.5	0.6	0.36	0.0909	0.4706	High EGD	0.5789
Dominican Republic	High OSI	0.6183	1	1	0.56	0.4545	0.7647	High EGD	0.6429
Ecuador	Very High OSI	0.7651	1	0.9	0.6933	0.7045	0.8235	High EGD	0.6889
Egypt	High OSI	0.573	0.7692	0.8	0.6533	0.3523	0.5882	High EGD	0.5895

Table A.8 (continued)

Country	OSI Group	OSI 2022	IF	CP	SP	EPI	TEC	EGDI Group	EGDI 2022
El Salvador	Middle OSI	0.467	0.8462	0.4	0.48	0.3523	0.2941	High EGD	0.5519
Equatorial Guinea	Low OSI	0.1845	0.4615	0.2	0.1333	0.1591	0.3529	Middle EGD	0.2746
Eritrea	Low OSI	0	0	0.1	0	0.0227	0.1765	Low EGD	0.1709
Estonia	Very High OSI	1	1	1	0.9733	0.9773	0.9412	Very High EGD	0.9393
Eswatini	Middle OSI	0.324	0.8077	0.6	0.2667	0.1477	0.6471	Middle EGD	0.4498
Ethiopia	Middle OSI	0.373	0.6923	0.5	0.4	0.1932	0.5294	Middle EGD	0.2865
Fiji	Middle OSI	0.4813	0.7692	0.5	0.56	0.2386	0.7059	High EGD	0.6235
Finland	Very High OSI	0.9833	1	0.9	0.9733	0.9545	0.8824	Very High EGD	0.9533
France	Very High OSI	0.8768	0.9615	1	0.9467	0.7159	0.7059	Very High EGD	0.8832
Gabon	Middle OSI	0.3578	0.7692	0.3	0.3733	0.2045	0.4118	High EGD	0.5521
Gambia (Republic of The)	Low OSI	0.1455	0.3462	0.1	0.0667	0.2386	0.0588	Middle EGD	0.3088
Georgia	High OSI	0.6111	0.9231	0.7	0.5467	0.5341	0.7059	Very High EGD	0.7501
Germany	Very High OSI	0.7905	1	0.6	0.76	0.7273	0.8824	Very High EGD	0.877
Ghana	High OSI	0.5361	0.9231	0.8	0.4533	0.4545	0.5294	High EGD	0.5824
Greece	Very High OSI	0.7753	0.8462	0.9	0.84	0.6136	0.7647	Very High EGD	0.8455
Grenada	High OSI	0.5507	0.6538	0.8	0.7467	0.2045	0.6471	High EGD	0.7277
Guatemala	High OSI	0.5409	0.7692	0.7	0.6267	0.3295	0.4706	High EGD	0.5111
Guinea	Middle OSI	0.4421	0.7692	0.3	0.4533	0.2841	0.7647	Middle EGD	0.3608
Guinea-Bissau	Low OSI	0.0624	0.1538	0.1	0.0267	0.0795	0.3529	Middle EGD	0.256
Guyana	Middle OSI	0.4509	0.8077	0.8	0.4933	0.2159	0.4706	High EGD	0.5233
Haiti	Low OSI	0.0865	0.4231	0	0.04	0.1023	0	Low EGD	0.2481
Honduras	Low OSI	0.2417	0.5385	0.5	0.24	0.1023	0.4118	Middle EGD	0.394
Hungary	High OSI	0.7465	1	1	0.8	0.5114	0.7647	Very High EGD	0.7827
Iceland	Very High OSI	0.8867	1	1	0.88	0.7955	0.8235	Very High EGD	0.941
India	Very High OSI	0.7934	1	1	0.8267	0.5909	0.8824	High EGD	0.5883
Indonesia	Very High OSI	0.7644	1	1	0.6933	0.7159	0.6471	High EGD	0.716

Iran (Islamic Republic of)	Middle OSI	0.4196	0.6923	0.5	0.52	0.1818	0.4706	High EGD	0.6433
Iraq	Low OSI	0.206	0.5385	0.5	0.0933	0.2159	0.2353	Middle EGD	0.4383
Ireland	Very High OSI	0.7796	0.9231	0.8	0.8	0.6818	0.6471	Very High EGD	0.8567
Israel	Very High OSI	0.8745	1	0.8	0.9467	0.7159	0.7647	Very High EGD	0.8885
Italy	Very High OSI	0.8659	1	1	0.88	0.7273	0.8824	Very High EGD	0.8375
Jamaica	Middle OSI	0.4914	0.7692	0.8	0.5333	0.2841	0.5294	High EGD	0.5906
Japan	Very High OSI	0.9094	1	1	0.7467	1	1	Very High EGD	0.9002
Jordan	High OSI	0.6594	0.8846	0.8	0.6667	0.5455	0.5294	High EGD	0.6081
Kazakhstan	Very High OSI	0.9344	0.9615	1	0.9733	0.8068	0.9412	Very High EGD	0.8628
Kenya	High OSI	0.6821	0.8077	0.6	0.7067	0.5795	0.7647	High EGD	0.5589
Kiribati	Middle OSI	0.3686	0.6923	0.6	0.32	0.2955	0.3529	Middle EGD	0.4334
Kuwait	High OSI	0.6973	1	0.8	0.68	0.5455	0.8235	High EGD	0.7484
Kyrgyzstan	High OSI	0.6176	0.9231	0.6	0.6	0.5	0.7059	High EGD	0.6977
Lao People's Democratic Republic	Middle OSI	0.3005	0.6923	0.5	0.2	0.2614	0.4118	Middle EGD	0.3764
Latvia	Very High OSI	0.8135	0.9615	0.9	0.8	0.7386	0.7059	Very High EGD	0.8599
Lebanon	Middle OSI	0.4257	0.7692	0.5	0.3333	0.3977	0.5294	High EGD	0.5273
Lesotho	Middle OSI	0.3456	0.6538	0.5	0.2533	0.3068	0.5882	Middle EGD	0.4414
Liberia	Middle OSI	0.3417	0.5385	0.3	0.3333	0.2955	0.4118	Middle EGD	0.2905
Libya	Low OSI	0.099	0.4231	0.1	0.08	0.0341	0.2353	Middle EGD	0.3375
Liechtenstein	High OSI	0.7329	0.9615	0.9	0.7733	0.5455	0.7059	Very High EGD	0.8685
Lithuania	Very High OSI	0.8347	1	1	0.9467	0.5455	0.9412	Very High EGD	0.8745
Luxembourg	Very High OSI	0.8319	1	1	0.7867	0.75	0.8824	Very High EGD	0.8675
Madagascar	Middle OSI	0.3515	0.6538	0.6	0.28	0.2841	0.5294	Middle EGD	0.3565
Malawi	Middle OSI	0.3607	0.6154	0.6	0.24	0.375	0.5294	Middle EGD	0.3435
Malaysia	Very High OSI	0.763	1	1	0.68	0.6818	0.9412	Very High EGD	0.774
Maldives	Middle OSI	0.4873	0.6154	0.6	0.56	0.3068	0.6471	High EGD	0.5885
Mali	Middle OSI	0.3652	0.6923	0.5	0.32	0.2727	0.5294	Middle EGD	0.3414
Malta	Very High OSI	0.8849	0.9615	0.9	0.9333	0.7614	0.7647	Very High EGD	0.8943

Table A.8 (continued)

Country	OSI Group	OSI 2022	IF	CP	SP	EPI	TEC	EGDI Group	EGDI 2022
Marshall Islands	Middle OSI	0.3004	0.6154	0.3	0.2533	0.2614	0.3529	Middle EGD	0.3714
Mauritania	Low LOSI	0.0952	0.5769	0.3	0.0267	0.0227	0.1176	Middle EGD	0.3157
Mauritius	High OSI	0.6282	1	0.8	0.64	0.4205	0.7059	High EGD	0.7201
Mexico	Very High OSI	0.8245	1	0.9	0.8	0.7273	0.8824	High EGD	0.7473
Micronesia (Federated States of)	Middle OSI	0.2703	0.6923	0.3	0.2	0.2159	0.3529	Middle EGD	0.355
Monaco	Middle OSI	0.4588	0.8846	0.7	0.5333	0.1364	0.7059	High EGD	0.7228
Mongolia	High OSI	0.6263	0.9615	0.7	0.56	0.6023	0.3529	High EGD	0.7209
Montenegro	High OSI	0.5528	0.9231	0.6	0.52	0.4659	0.4118	High EGD	0.726
Morocco	Middle OSI	0.4721	0.8462	0.5	0.52	0.2727	0.4706	High EGD	0.5915
Mozambique	Middle OSI	0.3563	0.6923	0.4	0.36	0.1932	0.6471	Middle EGD	0.313
Myanmar	Middle OSI	0.3073	0.6923	0.5	0.1867	0.3068	0.3529	Middle EGD	0.4994
Namibia	Middle OSI	0.4316	0.7308	0.5	0.4667	0.25	0.5882	High EGD	0.5322
Nauru	Middle OSI	0.2952	0.5	0.5	0.2533	0.25	0.4118	Middle EGD	0.4548
Nepal	Middle OSI	0.4592	0.9615	0.7	0.4533	0.2386	0.5294	High EGD	0.5117
Netherlands	Very High OSI	0.9026	1	1	0.7733	0.9659	0.8824	Very High EGD	0.9384
New Zealand	Very High OSI	0.9579	1	0.9	0.9467	0.9545	0.6471	Very High EGD	0.9432
Nicaragua	Middle OSI	0.4809	0.7308	0.8	0.5333	0.25	0.6471	High EGD	0.5032
Niger	Middle OSI	0.3904	0.8846	0.6	0.3333	0.25	0.4706	Low EGD	0.2406
Nigeria	High OSI	0.525	0.9231	0.5	0.5733	0.3068	0.5882	Middle EGD	0.4525
North Macedonia	High OSI	0.702	0.9615	0.9	0.5733	0.6932	0.8235	High EGD	0.7
Norway	Very High OSI	0.8007	0.9615	0.9	0.8	0.6932	0.7647	Very High EGD	0.8879
Oman	High OSI	0.7423	1	1	0.6667	0.6591	0.8235	Very High EGD	0.7834
Pakistan	High OSI	0.5658	0.9231	1	0.56	0.3636	0.5882	Middle EGD	0.4238
Palau	Low LOSI	0.2373	0.4615	0.4	0.1733	0.2273	0.3529	High EGD	0.5018
Panama	High OSI	0.6741	0.9615	0.8	0.6667	0.5114	0.8235	High EGD	0.6956

Papua New Guinea	Middle OSI	0.3263	0.7692	0.4	0.3333	0.1705	0.2941	Middle EGD	0.323
Paraguay	High OSI	0.6059	0.8846	0.9	0.5333	0.5114	0.7647	High EGD	0.6332
Peru	Very High OSI	0.8099	1	0.7	0.7867	0.7614	0.7059	Very High EGD	0.7524
Philippines	High OSI	0.6303	0.9231	0.7	0.64	0.4886	0.5882	High EGD	0.6523
Poland	Very High OSI	0.7929	1	0.9	0.8	0.6477	0.8235	Very High EGD	0.8437
Portugal	Very High OSI	0.7954	0.9615	0.9	0.7467	0.7273	0.8824	Very High EGD	0.8273
Qatar	High OSI	0.6094	1	0.7	0.6533	0.375	0.6471	High EGD	0.7149
Republic of Korea	Very High OSI	0.9826	1	0.9	0.9733	0.9432	0.9412	Very High EGD	0.9529
Republic of Moldova	High OSI	0.738	0.9615	0.7	0.6933	0.6818	0.7647	High EGD	0.7251
Romania	High OSI	0.6814	1	1	0.5733	0.625	0.7059	Very High EGD	0.7619
Russian Federation	High OSI	0.7368	1	0.7	0.72	0.6023	0.9412	Very High EGD	0.8162
Rwanda	Very High OSI	0.7935	1	1	0.8133	0.6364	0.7059	High EGD	0.5489
Saint Kitts and Nevis	Middle OSI	0.3307	0.7308	0.5	0.2933	0.2045	0.4706	High EGD	0.6775
Saint Lucia	Middle OSI	0.4007	0.7308	0.5	0.28	0.4091	0.5294	High EGD	0.558
Saint Vincent and the Grenadines	Middle OSI	0.4526	0.9231	0.3	0.3733	0.3864	0.5882	High EGD	0.5811
Samoa	Middle OSI	0.3592	0.6923	0.6	0.28	0.2727	0.6471	Middle EGD	0.4207
San Marino	Middle OSI	0.3788	0.8077	0.3	0.4133	0.1705	0.5882	High EGD	0.6454
Sao Tome and Principe	Low OSI	0.2435	0.7308	0.4	0.2667	0.0455	0.2353	Middle EGD	0.4138
Saudi Arabia	Very High OSI	0.822	0.9615	1	0.8133	0.6932	0.9412	Very High EGD	0.8539
Senegal	Middle OSI	0.4934	0.8846	0.6	0.52	0.3409	0.2353	Middle EGD	0.4479
Serbia	Very High OSI	0.8514	1	1	0.8	0.8068	0.7647	Very High EGD	0.8237
Seychelles	Middle OSI	0.4424	0.6923	0.5	0.52	0.2273	0.5882	High EGD	0.6793
Sierra Leone	Middle OSI	0.2801	0.8077	0.5	0.1733	0.2045	0.3529	Middle EGD	0.2633
Singapore	Very High OSI	0.962	1	0.8	0.92	0.9773	0.8824	Very High EGD	0.9133
Slovakia	High OSI	0.726	0.9615	0.8	0.84	0.4659	0.6471	Very High EGD	0.8008
Slovenia	Very High OSI	0.8666	1	0.8	0.88	0.75	0.9412	Very High EGD	0.8781
Solomon Islands	Middle OSI	0.3676	0.6154	0.5	0.4	0.2159	0.4706	Middle EGD	0.353
Somalia	Middle OSI	0.2944	0.6923	0.5	0.1733	0.25	0.5882	Low EGD	0.134

Table A.8 (continued)

Country	OSI Group	OSI 2022	IF	CP	SP	EPI	TEC	EGDI Group	EGDI 2022
South Africa	High OSI	0.7487	1	0.9	0.7467	0.5909	0.8235	High EGDI	0.7357
South Sudan	Low LOSI	0.0518	0.1154	0.1	0.1067	0	0.1176	Low EGDI	0.0852
Spain	Very High OSI	0.8559	1	1	0.84	0.75	0.8824	Very High EGDI	0.8842
Sri Lanka	High OSI	0.5644	0.8462	0.6	0.6133	0.3523	0.7647	High EGDI	0.6285
Sudan	Low LOSI	0.2118	0.6923	0.6	0.1467	0.0455	0.5294	Middle EGDI	0.2972
Suriname	Middle OSI	0.3418	0.7692	0.3	0.36	0.2045	0.2353	High EGDI	0.5809
Sweden	Very High OSI	0.9002	0.9615	1	0.96	0.7273	0.9412	Very High EGDI	0.941
Switzerland	Very High OSI	0.7677	1	0.9	0.7067	0.7045	0.7647	Very High EGDI	0.8752
Syrian Arab Republic	Middle OSI	0.3053	0.7692	0.9	0.2933	0.0682	0.4118	Middle EGDI	0.3872
Tajikistan	Middle OSI	0.3968	0.6538	0.6	0.4	0.25	0.5882	High EGDI	0.5039
Thailand	Very High OSI	0.7763	0.9615	0.8	0.6933	0.7841	0.7059	Very High EGDI	0.766
Timor-Leste	Middle OSI	0.3931	0.6923	0.8	0.2	0.4773	0.4118	Middle EGDI	0.4372
Togo	Middle OSI	0.4338	0.8462	0.7	0.3067	0.3864	0.5882	Middle EGDI	0.4231
Tonga	Middle OSI	0.3296	0.5385	0.8	0.2667	0.2614	0.4706	High EGDI	0.5155
Trinidad and Tobago	Middle OSI	0.4892	0.9615	0.7	0.52	0.2386	0.5294	High EGDI	0.6339
Tunisia	High OSI	0.6031	0.9231	0.6	0.5467	0.5455	0.5882	High EGDI	0.653
Türkiye	Very High OSI	0.86	1	0.9	0.8267	0.7841	0.9412	Very High EGDI	0.7983
Turkmenistan	Middle OSI	0.298	0.6923	0.4	0.3467	0.1023	0.2941	Middle EGDI	0.4808
Tuvalu	Low LOSI	0.2265	0.4615	0.4	0.1867	0.1705	0.4118	Middle EGDI	0.3788
Uganda	High OSI	0.5169	0.8846	0.8	0.48	0.4091	0.3529	Middle EGDI	0.4424
Ukraine	Very High OSI	0.8148	1	1	0.88	0.6023	0.7647	Very High EGDI	0.8029
United Arab Emirates	Very High OSI	0.9014	1	1	0.9067	0.7841	0.9412	Very High EGDI	0.901
United Kingdom of Great Britain and Northern Ireland	Very High OSI	0.8859	1	1	0.76	0.9545	0.7647	Very High EGDI	0.9138
United Republic of Tanzania	Middle OSI	0.47	0.9615	0.6	0.44	0.2727	0.7059	Middle EGDI	0.4169
United States of America	Very High OSI	0.9304	1	1	0.88	0.9091	0.8824	Very High EGDI	0.9151

Uruguay	Very High OSI	0.7641	1	0.9	0.7733	0.5909	0.8824	Very High EGD	0.8388
Uzbekistan	High OSI	0.744	0.9231	0.9	0.7333	0.6136	0.8824	High EGD	0.7265
Vanuatu	Middle OSI	0.4228	0.7692	0.8	0.3733	0.3409	0.2353	Middle EGD	0.4988
Venezuela, Bolivarian Republic of	Middle OSI	0.3056	0.5769	0.5	0.36	0.125	0.3529	High EGD	0.5053
Viet Nam	High OSI	0.6484	0.9231	0.9	0.6133	0.5341	0.6471	High EGD	0.6787
Yemen	Middle OSI	0.3393	0.7308	0.6	0.3467	0.1932	0.1765	Middle EGD	0.2899
Zambia	Middle OSI	0.4414	0.8077	0.5	0.36	0.375	0.6471	High EGD	0.5022
Zimbabwe	Middle OSI	0.3845	0.7692	0.3	0.4	0.2273	0.5294	Middle EGD	0.4717



Table A.9 Telecommunications Infrastructure Index (TII) and its components

Country	TII Group	TII 2022	Mobile cellular telephone subscriptions per 100 inhabitants	Percentage of Individuals using the Internet	Fixed (wired) broadband subscriptions per 100 inhabitants	Active mobile-broadband subscriptions per 100 inhabitants	EGDI Group	EGDI 2022
Afghanistan	Low TII	0.1867	58.26	18.4	0.07	19.07	Middle EGDl	0.271
Albania	High TII	0.6037	91	72.24	17.68	69.45	High EGDl	0.7413
Algeria	High TII	0.6133	103.89	62.9	8.64	90.63	High EGDl	0.5611
Andorra	Very High TII	0.8812	120	91.57	47.89	69.89	High EGDl	0.7177
Angola	Low TII	0.2004	44.56	36	0.7	20.19	Middle EGDl	0.3789
Antigua and Barbuda	High TII	0.5981	120	73	8.17	49.02	High EGDl	0.6113
Argentina	High TII	0.7332	120	85.5	21.18	68.65	Very High EGDl	0.8198
Armenia	High TII	0.6925	117.74	76.51	14.52	79.22	High EGDl	0.7364
Australia	Very High TII	0.8836	107.66	89.6	35.68	120	Very High EGDl	0.9405
Austria	Very High TII	0.8505	119	87.53	28.93	107.02	Very High EGDl	0.8801
Azerbaijan	High TII	0.6761	102.02	84.6	19.68	69.57	High EGDl	0.6937
Bahamas	Very High TII	0.7976	118.5	87	21.11	100.96	High EGDl	0.7277
Bahrain	High TII	0.7444	102.77	99.67	8.75	109.38	Very High EGDl	0.7707
Bangladesh	Medium TII	0.4469	107.04	24.8	6.1	59.09	High EGDl	0.563
Barbados	High TII	0.7318	102.65	81.76	44.54	40.02	High EGDl	0.7117
Belarus	Very High TII	0.8426	120	85.09	34.45	91.58	Very High EGDl	0.758
Belgium	Very High TII	0.8294	99.48	91.53	40.85	89.2	Very High EGDl	0.8269
Belize	Medium TII	0.3882	66.39	50.8	9.05	44.51	High EGDl	0.5005
Benin	Medium TII	0.3156	91.9	25.8	0.25	27.22	Middle EGDl	0.4264
Bhutan	High TII	0.5261	96.57	53.5	0.41	89.29	High EGDl	0.5521
Bolivia (Plurinational State of)	High TII	0.5818	101.13	59.94	7.98	84.13	High EGDl	0.6165
Bosnia and Herzegovina	High TII	0.6382	106.98	73.21	23.48	49.49	High EGDl	0.6256
Botswana	High TII	0.6814	120	64	11.04	95.26	High EGDl	0.5495

Brazil	High TII	0.6814	96.84	81.34	17.1	89.73	Very High EGD	0.791
Brunei Darussalam	Very High TII	0.8372	120	95	16.25	120	High EGD	0.727
Bulgaria	Very High TII	0.7984	114.35	70.16	30.44	106.37	Very High EGD	0.7766
Burkina Faso	Medium TII	0.3931	105.81	22	0.07	52.16	Middle EGD	0.3476
Burundi	Low TII	0.14	55.77	9.4	0.04	10.96	Middle EGD	0.3204
Cabo Verde	High TII	0.5507	97.98	64.5	4.47	75.5	High EGD	0.566
Cambodia	High TII	0.5605	120	32.9	1.4	98.81	High EGD	0.5056
Cameroon	Medium TII	0.365	84.2	37.8	2.72	40.77	Middle EGD	0.4498
Canada	Very High TII	0.777	85.74	96.97	41.93	72.18	Very High EGD	0.8511
Central African Republic	Low TII	0.0833	37.91	10.4	0.01	5.9	Low EGD	0.1407
Chad	Low TII	0.1191	52.89	10.4	0	3.3	Low EGD	0.189
Chile	Very High TII	0.7999	120	88.3	19.69	101.8	Very High EGD	0.8377
China	Very High TII	0.805	119.39	70.4	33.6	94.83	Very High EGD	0.8119
Colombia	High TII	0.6498	120	69.79	15.26	61.82	High EGD	0.7261
Comoros	Medium TII	0.33	89.88	8.48	0.12	59.95	Middle EGD	0.2778
Congo	Low TII	0.217	88.62	8.65	0.02	5.42	Middle EGD	0.3675
Costa Rica	Very High TII	0.7572	120	80.53	19.49	91.12	Very High EGD	0.7659
Côte d'Ivoire	High TII	0.5186	120	36.29	0.99	74.5	High EGD	0.5467
Croatia	Very High TII	0.7711	106.59	78.32	25.11	105.67	Very High EGD	0.8106
Cuba	Medium TII	0.3663	58.82	74	2.05	30.71	Middle EGD	0.4945
Cyprus	Very High TII	0.9253	120	90.8	37.4	118.22	Very High EGD	0.866
Czech Republic	Very High TII	0.8456	120	81.34	35.91	94.4	Very High EGD	0.8088
Democratic People's Republic of Korea	Low TII	0.0508	23.27	0	0	23.27	Middle EGD	0.2859
Democratic Republic of the Congo	Low TII	0.1477	45.55	13.6	0.03	23.31	Middle EGD	0.3057
Denmark	Very High TII	0.9795	120	96.55	44.72	120	Very High EGD	0.9717
Djibouti	Medium TII	0.276	43.93	59	2.54	24.41	Middle EGD	0.2833
Dominica	Very High TII	0.7604	105.58	69.62	22.23	120	High EGD	0.5789
Dominican Republic	High TII	0.5567	82.87	76.9	9.51	70.87	High EGD	0.6429
Ecuador	High TII	0.5269	87.77	64.6	13.44	55.8	High EGD	0.6889

Table A.9 (continued)

Country	TII Group	TII 2022	Mobile cellular telephone subscriptions per 100 inhabitants	Percentage of Individuals using the Internet	Fixed (wired) broadband subscriptions per 100 inhabitants	Active mobile-broadband subscriptions per 100 inhabitants	EGDI Group	EGDI 2022
Egypt	High TII	0.5579	93.18	71.91	9.14	64.76	High EGDI	0.5895
El Salvador	High TII	0.5618	120	54.6	9.03	52.77	High EGDI	0.5519
Equatorial Guinea	Low TII	0.1363	45.97	26.24	0.07	0.57	Middle EGDI	0.2746
Eritrea	Low TII	0.0837	50.78	1.31	0.14	0	Low EGDI	0.1709
Estonia	Very High TII	0.8949	120	89.06	31.33	120	Very High EGDI	0.9393
Eswatini	Medium TII	0.355	107.14	30.3	1.03	18.27	Middle EGDI	0.4498
Ethiopia	Low TII	0.1501	38.71	24	0.18	20.01	Middle EGDI	0.2865
Fiji	High TII	0.5935	110.6	68.9	2.57	78.44	High EGDI	0.6235
Finland	Very High TII	0.9127	120	92.17	33.32	120	Very High EGDI	0.9533
France	Very High TII	0.8944	111.46	84.8	46.92	99.26	Very High EGDI	0.8832
Gabon	High TII	0.6279	120	62	2	93.07	High EGDI	0.5521
Gambia (Republic of The)	Medium TII	0.4508	110.81	36.5	0.21	54.91	Middle EGDI	0.3088
Georgia	High TII	0.7409	120	72.53	24.37	81.6	Very High EGDI	0.7501
Germany	Very High TII	0.8957	120	89.81	43.22	90.69	Very High EGDI	0.877
Ghana	High TII	0.5934	120	58	0.25	85.32	High EGDI	0.5824
Greece	Very High TII	0.8206	109.5	78.12	40.84	88.57	Very High EGDI	0.8455
Grenada	High TII	0.7348	108.42	56.9	28.44	104.87	High EGDI	0.7277
Guatemala	Medium TII	0.4328	113.82	49.97	3.42	16.54	High EGDI	0.5111
Guinea	Medium TII	0.3448	105.04	26	0.01	24.14	Middle EGDI	0.3608
Guinea-Bissau	Medium TII	0.3472	97.25	22.9	0.12	39.71	Middle EGDI	0.256
Guyana	Medium TII	0.4643	108.83	37.33	12.08	34.58	High EGDI	0.5233
Haiti	Medium TII	0.2646	64.19	34.5	0.27	28.34	Low EGDI	0.2481
Honduras	Medium TII	0.3501	70.28	42.05	4.01	43.73	Middle EGDI	0.394

Hungary	Very High TII	0.7671	106.96	84.77	33.8	73.77	Very High EGD	0.7827
Iceland	Very High TII	0.9705	120	99	41.56	120	Very High EGD	0.941
India	Medium TII	0.3954	83.6	43	1.66	52.54	High EGD	0.5883
Indonesia	High TII	0.6397	120	53.73	4.29	104.19	High EGD	0.716
Iran (Islamic Republic of)	High TII	0.73	120	84.11	11.39	92.52	High EGD	0.6433
Iraq	High TII	0.5201	93.17	60	15.55	45.89	Middle EGD	0.4383
Ireland	Very High TII	0.8287	106	92	30.71	103.82	Very High EGD	0.8567
Israel	Very High TII	0.8915	120	90.13	30.06	120	Very High EGD	0.8885
Italy	Very High TII	0.786	120	70.48	29.98	93.17	Very High EGD	0.8375
Jamaica	High TII	0.5658	97.03	68.21	13.02	58.83	High EGD	0.5906
Japan	Very High TII	0.9147	120	90.22	34.79	120	Very High EGD	0.9002
Jordan	Medium TII	0.4681	68.49	66.1	6.18	68.49	High EGD	0.6081
Kazakhstan	Very High TII	0.752	120	85.94	13.96	94.9	Very High EGD	0.8628
Kenya	Medium TII	0.4305	114.2	29.5	1.25	46.76	High EGD	0.5589
Kiribati	Medium TII	0.253	45.76	38	0.15	43.52	Middle EGD	0.4334
Kuwait	Very High TII	0.7774	120	99.11	1.73	120	High EGD	0.7484
Kyrgyzstan	High TII	0.6637	120	51	4.43	119.33	High EGD	0.6977
Lao People's Democratic Republic	Medium TII	0.282	56.35	33.8	1.76	45.01	Middle EGD	0.3764
Latvia	Very High TII	0.8378	108.76	88.9	26.01	120	Very High EGD	0.8599
Lebanon	Medium TII	0.4907	62.83	84.1	6.33	63.71	High EGD	0.5273
Lesotho	Medium TII	0.3836	72.94	43	0.24	64.67	Middle EGD	0.4414
Liberia	Low TII	0.1115	32.68	25.6	0.26	6.76	Middle EGD	0.2905
Libya	Low TII	0.1601	42.52	17.76	4.83	16.62	Middle EGD	0.3375
Liechtenstein	Very High TII	1	120	99.55	47.34	120	Very High EGD	0.8685
Lithuania	Very High TII	0.8636	120	83.06	29.27	117.2	Very High EGD	0.8745
Luxembourg	Very High TII	0.9462	120	98.82	37.57	117.8	Very High EGD	0.8675
Madagascar	Low TII	0.182	57.31	15	0.12	22.3	Middle EGD	0.3565
Malawi	Low TII	0.1815	52.3	9.9	0.06	35.66	Middle EGD	0.3435
Malaysia	Very High TII	0.7945	120	89.56	10.38	119.99	Very High EGD	0.774

Table A.9 (continued)

Country	TII Group	TII 2022	Mobile cellular telephone subscriptions per 100 inhabitants	Percentage of Individuals using the Internet	Fixed (wired) broadband subscriptions per 100 inhabitants	Active mobile-broadband subscriptions per 100 inhabitants	EGDI Group	EGDI 2022
Maldives	High TII	0.5845	120	62.93	11.78	46.62	High EGDI	0.5885
Mali	Medium TII	0.4398	120	27.4	1.2	46.28	Middle EGDI	0.3414
Malta	Very High TII	0.9245	120	86.86	48.33	96.5	Very High EGDI	0.8943
Marshall Islands	Low TII	0.1236	27.03	38.7	1.69	0	Middle EGDI	0.3714
Mauritania	Medium TII	0.4648	106.08	40.8	0.4	62.29	Middle EGDI	0.3157
Mauritius	Very High TII	0.7588	120	64.88	25.41	97.94	High EGDI	0.7201
Mexico	High TII	0.63	95.32	71.97	17.01	78.63	High EGDI	0.7473
Micronesia (Federated States of)	Low TII	0.1102	19.13	35.3	5.22	0	Middle EGDI	0.355
Monaco	Very High TII	0.8794	90.43	97.05	53.2	89.44	High EGDI	0.7228
Mongolia	High TII	0.6973	120	62.5	9.37	109.2	High EGDI	0.7209
Montenegro	Very High TII	0.7868	120	77.61	29.32	85.91	High EGDI	0.726
Morocco	High TII	0.6676	120	84.12	5.7	75.16	High EGDI	0.5915
Mozambique	Low TII	0.1537	49.47	16.5	0.22	16.75	Middle EGDI	0.313
Myanmar	High TII	0.6082	120	35.1	1.27	120	Middle EGDI	0.4994
Namibia	High TII	0.5133	114.06	41	2.8	69.49	High EGDI	0.5322
Nauru	Medium TII	0.4768	92.39	62.39	9.5	36.95	Middle EGDI	0.4548
Nepal	High TII	0.5123	120	37.7	4.36	61.4	High EGDI	0.5117
Netherlands	Very High TII	0.962	120	91.33	43.92	120	Very High EGDI	0.9384
New Zealand	Very High TII	0.8896	120	91.5	36.6	101.43	Very High EGDI	0.9432
Nicaragua	Medium TII	0.4287	90.22	45.2	4.38	50.68	High EGDI	0.5032
Niger	Low TII	0.14	58.82	10.22	0.05	5.69	Low EGDI	0.2406
Nigeria	Medium TII	0.3886	99.07	35.5	0.03	41.69	Middle EGDI	0.4525
North Macedonia	High TII	0.6417	89.38	81.41	22.83	66.21	High EGDI	0.7

Norway	Very High TII	0.9102	107.46	97	44.04	103.71	Very High EGD	0.8879
Oman	Very High TII	0.8012	120	95.23	10.85	114.85	Very High EGD	0.7834
Pakistan	Medium TII	0.3122	79.51	25	1.14	41.33	Middle EGD	0.4238
Palau	Medium TII	0.3735	120	26.97	6.93	0	High EGD	0.5018
Panama	High TII	0.6603	120	64.25	13.03	79.63	High EGD	0.6956
Papua New Guinea	Low TII	0.143	53.85	11.21	0.23	12.29	Middle EGD	0.323
Paraguay	High TII	0.5989	110.27	73.96	7.88	62.2	High EGD	0.6332
Peru	High TII	0.6267	120	65.25	9.23	70.8	Very High EGD	0.7524
Philippines	High TII	0.5638	120	49.8	7.24	64.34	High EGD	0.6523
Poland	Very High TII	0.8348	120	83.18	22.11	120	Very High EGD	0.8437
Portugal	Very High TII	0.8201	116.26	78.26	40.81	78.95	Very High EGD	0.8273
Qatar	Very High TII	0.8203	120	99.65	10.28	120	High EGD	0.7149
Republic of Korea	Very High TII	0.9674	120	96.51	43.55	116.9	Very High EGD	0.9529
Republic of Moldova	High TII	0.576	84.79	76.12	17.82	58.78	High EGD	0.7251
Romania	Very High TII	0.7954	117.44	78.46	29.55	92.01	Very High EGD	0.7619
Russian Federation	Very High TII	0.8053	120	84.99	23.23	100.22	Very High EGD	0.8162
Rwanda	Medium TII	0.3209	81.95	26.5	0.14	42.84	High EGD	0.5489
Saint Kitts and Nevis	Very High TII	0.8293	120	80.71	56.39	37.59	High EGD	0.6775
Saint Lucia	High TII	0.5683	110.55	53.3	17.97	49.01	High EGD	0.558
Saint Vincent and the Grenadines	High TII	0.5486	87.49	56	22.29	56.77	High EGD	0.5811
Samoa	Low TII	0.1558	34.78	33.61	0.85	14.11	Middle EGD	0.4207
San Marino	Very High TII	0.811	114.94	60.18	32.42	120	High EGD	0.6454
Sao Tome and Principe	Medium TII	0.3218	79.49	33	1.15	35.76	Middle EGD	0.4138
Saudi Arabia	Very High TII	0.8735	120	97.86	22.66	118.86	Very High EGD	0.8539
Senegal	High TII	0.5025	113.95	42.6	0.92	66.7	Middle EGD	0.4479
Serbia	Very High TII	0.7865	120	78.37	25.18	94.79	Very High EGD	0.8237
Seychelles	Very High TII	0.8198	120	79	35.55	85.45	High EGD	0.6793
Sierra Leone	Medium TII	0.2639	86.3	18	0	19.88	Middle EGD	0.2633
Singapore	Very High TII	0.8758	120	92	25.81	120	Very High EGD	0.9133

Table A.9 (continued)

Country	TII Group	TII 2022	Mobile cellular telephone subscriptions per 100 inhabitants	Percentage of Individuals using the Internet	Fixed (wired) broadband subscriptions per 100 inhabitants	Active mobile-broadband subscriptions per 100 inhabitants	EGDI Group	EGDI 2022
Slovakia	Very High TII	0.8328	120	89.92	31.17	88.35	Very High EGDI	0.8008
Slovenia	Very High TII	0.8239	120	86.6	31.34	87.81	Very High EGDI	0.8781
Solomon Islands	Low TII	0.1988	69.01	11.92	0.15	18.63	Middle EGDI	0.353
Somalia	Low TII	0.1074	55.65	2	0.75	2.8	Low EGDI	0.134
South Africa	High TII	0.685	120	70	2.2	110.65	High EGDI	0.7357
South Sudan	Low TII	0	12.01	6.5	0	4.91	Low EGDI	0.0852
Spain	Very High TII	0.8895	119.02	93.21	34.62	105.3	Very High EGDI	0.8842
Sri Lanka	High TII	0.5483	120	35	8.32	73.27	High EGDI	0.6285
Sudan	Medium TII	0.3199	80.26	28.4	0.07	42.34	Middle EGDI	0.2972
Suriname	High TII	0.7089	120	70.06	15.73	89.75	High EGDI	0.5809
Sweden	Very High TII	0.958	120	94.54	41.38	120	Very High EGDI	0.941
Switzerland	Very High TII	0.945	120	94.2	46.54	101.48	Very High EGDI	0.8752
Syrian Arab Republic	Medium TII	0.3581	95.2	35.78	8.85	10.12	Middle EGDI	0.3872
Tajikistan	Medium TII	0.377	120	21.96	0.06	24.86	High EGDI	0.5039
Thailand	High TII	0.7338	120	77.84	16.44	90.34	Very High EGDI	0.766
Timor-Leste	Medium TII	0.364	104.51	29.1	0.01	30.4	Middle EGDI	0.4372
Togo	Medium TII	0.2848	78.71	24	0.64	31.31	Middle EGDI	0.4231
Tonga	Medium TII	0.3496	58.66	41.25	4.73	58.66	High EGDI	0.5155
Trinidad and Tobago	High TII	0.6717	120	70.6	26.92	43.47	High EGDI	0.6339
Tunisia	High TII	0.6646	120	71.9	11.29	76.05	High EGDI	0.653
Türkiye	High TII	0.6626	97.38	77.67	19.84	77.82	Very High EGDI	0.7983
Turkmenistan	Medium TII	0.3551	120	21.25	0.17	14.61	Middle EGDI	0.4808
Tuvalu	Medium TII	0.2607	76.32	35.2	3.96	0	Middle EGDI	0.3788

Uganda	Low TII	0.2472	60.53	19.9	0.13	43.98	Middle EGD	0.4424
Ukraine	High TII	0.727	120	75.04	18.62	85.3	Very High EGD	0.8029
United Arab Emirates	Very High TII	0.9306	120	100	32.81	120	Very High EGD	0.901
United Kingdom of Great Britain and Northern Ireland	Very High TII	0.9186	116.38	94.82	40.26	107.68	Very High EGD	0.9138
United Republic of Tanzania	Medium TII	0.2709	85.75	22	1.9	14.31	Middle EGD	0.4169
United States of America	Very High TII	0.8874	106.19	90.9	36.61	120	Very High EGD	0.9151
Uruguay	Very High TII	0.8543	120	86.1	30.62	105.32	Very High EGD	0.8388
Uzbekistan	High TII	0.6575	99.75	71.1	14.4	93.71	High EGD	0.7265
Vanuatu	Medium TII	0.4727	80.17	25.72	0.91	120	Middle EGD	0.4988
Venezuela, Bolivarian Republic of	Medium TII	0.3923	58.18	61.6	9.01	43.83	High EGD	0.5053
Viet Nam	High TII	0.6973	120	70.3	17.16	80.23	High EGD	0.6787
Yemen	Low TII	0.1671	50.89	26.72	1.31	5.53	Middle EGD	0.2899
Zambia	Medium TII	0.3909	103.92	19.8	0.45	55.59	High EGD	0.5022
Zimbabwe	Medium TII	0.3843	88.76	29.3	1.37	58.5	Middle EGD	0.4717



Table A.10 Human Capital Index (HCI) and its components

Country	HCI Group	HCI 2022	Adult Literacy (%)			Gross Enrollment Ratio			Expected Year of Schooling			Mean Year of Schooling		
			Index Value	Year	Source	Index Value	Year	Source	Index Value	Year	Source	Index Value	Year	Source
Afghanistan	Middle HCI	0.3493	37.27	2021	UNESCO	64.43	2018	UNESCO	10.2	2018	UNESCO	3.9	2019	UNDP
Albania	Very High HCI	0.8022	98.14	2018	UNESCO	83	2020	UNESCO	14.45	2020	UNESCO	10.1	2019	UNDP
Algeria	High HCI	0.6956	81.41	2018	UNESCO	80.87	2011	UNESCO	14.33	2011	UNESCO	8	2019	UNDP
Andorra	Very High HCI	0.7585	100	2016	UNESCO	69	2014	UNESCO	13.3	2019	UNDP*	10.5	2019	UNDP
Angola	Middle HCI	0.4648	66.03	2014	UNESCO	61.3	2011	UNESCO	9.56	2011	UNESCO	5.2	2019	UNDP
Antigua and Barbuda	Very High HCI	0.8128	98.95	2015	UNESCO	87.76	2012	UNESCO	14.86	2012	UNESCO	9.3	2019	UNDP
Argentina	Very High HCI	0.9173	99	2018	UNESCO	100	2019	UNESCO	17.87	2019	UNESCO	10.9	2019	UNDP
Armenia	Very High HCI	0.7945	99.79	2020	UNESCO	78.48	2020	UNESCO	13.12	2020	UNESCO	11.3	2019	UNDP
Australia	Very High HCI	1	99	2014	UNESCO	100	2019	UNESCO	21.58	2019	UNESCO	12.7	2019	UNDP
Austria	Very High HCI	0.907	99	2014	UNESCO	97.43	2019	UNESCO	16.01	2019	UNESCO	12.5	2019	UNDP
Azerbaijan	Very High HCI	0.7932	99.8	2019	UNESCO	79.8	2020	UNESCO	13.5	2020	UNESCO	10.6	2019	UNDP
Bahamas	Very High HCI	0.7641	95.8	2014	UNESCO	74	2014	UNESCO	12.9	2019	UNDP*	11.4	2019	UNDP
Bahrain	Very High HCI	0.8154	90.98	2010	UNESCO	91.19	2019	UNESCO	16.3	2019	UNESCO	9.5	2019	UNDP
Bangladesh	High HCI	0.59	74.91	2020	UNESCO	72.46	2020	UNESCO	12.44	2020	UNESCO	6.2	2019	UNDP
Barbados	Very High HCI	0.8645	99.6	2014	UNESCO	95.69	2011	UNESCO	15.29	2011	UNESCO	10.6	2019	UNDP
Belarus	Very High HCI	0.9011	99.87	2019	UNESCO	98.38	2018	UNESCO	15.4	2018	UNESCO	12.3	2019	UNDP
Belgium	Very High HCI	0.9614	99	2014	UNESCO	100	2019	UNESCO	19.6	2019	UNESCO	12.1	2019	UNDP
Belize	High HCI	0.6707	76.9	2000	UNESCO	75.12	2020	UNESCO	12.99	2020	UNESCO	9.9	2019	UNDP
Benin	Middle HCI	0.4391	42.36	2018	UNESCO	76.82	2016	UNESCO	12.61	2016	UNESCO	3.8	2019	UNDP
Bhutan	High HCI	0.5305	66.56	2017	UNESCO	71.11	2018	UNESCO	13.1	2018	UNESCO	4.1	2019	UNDP
Bolivia (Plurinational State of)	High HCI	0.7483	92.46	2015	UNESCO	79.25	2007	UNESCO	14.2	2019	UNDP*	9	2019	UNDP
Bosnia and Herzegovina	High HCI	0.7489	96.99	2013	UNESCO	71	2014	UNESCO	13.8	2019	UNDP*	9.8	2019	UNDP
Botswana	High HCI	0.6932	86.82	2013	UNESCO	73.83	2008	UNESCO	12.42	2008	UNESCO	9.6	2019	UNDP

Brazil	Very High HCI	0.7953	93.23	2018	UNESCO	92.72	2019	UNESCO	15.6	2019	UNESCO	8	2019	UNDP
Brunei Darussalam	Very High HCI	0.7567	97.21	2018	UNESCO	76.39	2020	UNESCO	13.95	2020	UNESCO	9.1	2019	UNDP
Bulgaria	Very High HCI	0.8221	98.35	2011	UNESCO	85.52	2019	UNESCO	13.9	2019	UNESCO	11.4	2019	UNDP
Burkina Faso	Middle HCI	0.2768	39.35	2018	UNESCO	54.11	2020	UNESCO	9.14	2020	UNESCO	1.6	2019	UNDP
Burundi	Middle HCI	0.4837	68.38	2017	UNESCO	68.55	2018	UNESCO	10.78	2018	UNESCO	3.3	2019	UNDP
Cabo Verde	High HCI	0.6507	86.79	2015	UNESCO	75.32	2018	UNESCO	12.7	2018	UNESCO	6.3	2019	UNDP
Cambodia	High HCI	0.538	80.53	2015	UNESCO	62.75	2008	UNESCO	10.55	2008	UNESCO	5	2019	UNDP
Cameroon	High HCI	0.5928	77.07	2018	UNESCO	71.64	2016	UNESCO	12.1	2016	UNESCO	6.3	2019	UNDP
Canada	Very High HCI	0.926	99	2014	UNESCO	97.2	2019	UNESCO	16.4	2019	UNESCO	13.4	2019	UNDP
Central African Republic	Low HCI	0.2425	37.4	2018	UNESCO	42.18	2012	UNESCO	6.85	2012	UNESCO	4.3	2019	UNDP
Chad	Low HCI	0.1753	22.31	2016	UNESCO	46.66	2015	UNESCO	7.35	2015	UNESCO	2.5	2019	UNDP
Chile	Very High HCI	0.8853	96.4	2017	UNESCO	99.93	2019	UNESCO	16.73	2019	UNESCO	10.6	2019	UNDP
China	High HCI	0.7429	96.84	2018	UNESCO	85.32	2020	UNESCO	12.43	2010	UNESCO	8.1	2019	UNDP
Colombia	Very High HCI	0.7867	95.64	2020	UNESCO	89.3	2019	UNESCO	14.52	2019	UNESCO	8.5	2019	UNDP
Comoros	Middle HCI	0.471	58.82	2018	UNESCO	65.29	2014	UNESCO	11.24	2014	UNESCO	5.1	2019	UNDP
Congo	High HCI	0.5677	80.3	2018	UNESCO	64.46	2012	UNESCO	10.73	2012	UNESCO	6.5	2019	UNDP
Costa Rica	Very High HCI	0.8593	97.86	2018	UNESCO	100	2019	UNESCO	16.55	2019	UNESCO	8.7	2019	UNDP
Côte d'Ivoire	High HCI	0.5748	89.89	2019	UNESCO	61.42	2019	UNESCO	10.48	2019	UNESCO	5.3	2019	UNDP
Croatia	Very High HCI	0.85	99.13	2011	UNESCO	87.91	2019	UNESCO	15.11	2019	UNESCO	11.4	2019	UNDP
Cuba	Very High HCI	0.8384	99.75	2012	UNESCO	84.33	2020	UNESCO	14.44	2020	UNESCO	11.8	2019	UNDP
Cyprus	Very High HCI	0.8934	98.68	2011	UNESCO	96.59	2019	UNESCO	15.65	2019	UNESCO	12.2	2019	UNDP
Czech Republic	Very High HCI	0.9114	99	2014	UNESCO	93.82	2017	UNESCO	16.8	2019	UNDP*	12.7	2019	UNDP
Democratic People's Republic of Korea	High HCI	0.649	100	2008	UNESCO	70.75	2015	UNESCO	10.8	2019	UNDP*	5.47	2017	estimation
Democratic Republic of the Congo	High HCI	0.5355	77.04	2016	UNESCO	61.9	2013	UNESCO	9.61	2013	UNESCO	6.8	2019	UNDP
Denmark	Very High HCI	0.9559	99	2014	UNESCO	100	2019	UNESCO	18.71	2019	UNESCO	12.6	2019	UNDP
Djibouti	Middle HCI	0.3529	70.3	2014	UNESCO	38.32	2011	UNESCO	6.46	2011	UNESCO	4.1	2019	UNDP
Dominica	High HCI	0.681	88	2014	UNESCO	73	2014	UNESCO	13	2019	UNDP*	8.1	2019	UNDP
Dominican Republic	Very High HCI	0.7539	93.78	2016	UNESCO	84.11	2017	UNESCO	14.22	2017	UNESCO	8.1	2019	UNDP

Table A.10 (continued)

Country	HCI Group	HCI 2022	Adult Literacy (%)			Gross Enrollment Ratio			Expected Year of Schooling			Mean Year of Schooling		
			Index Value	Year	Source	Index Value	Year	Source	Index Value	Year	Source	Index Value	Year	Source
Egypt	High HCI	0.6375	71.17	2017	UNESCO	81.68	2018	UNESCO	13.61	2018	UNESCO	7.4	2019	UNDP
El Salvador	High HCI	0.6268	89.14	2019	UNESCO	66.25	2018	UNESCO	11.59	2018	UNESCO	6.9	2019	UNDP
Equatorial Guinea	High HCI	0.5031	94.37	2010	UNESCO	44.55	2000	UNESCO	7.08	2000	UNESCO	5.9	2019	UNDP
Eritrea	Middle HCI	0.429	76.57	2018	UNESCO	49.14	2015	UNESCO	8.03	2015	UNESCO	3.9	2019	UNDP
Estonia	Very High HCI	0.9231	99.89	2011	UNESCO	99.01	2019	UNESCO	15.93	2019	UNESCO	13.1	2019	UNDP
Eswatini	High HCI	0.6703	88.42	2018	UNESCO	76.22	2013	UNESCO	12.79	2013	UNESCO	6.9	2019	UNDP
Ethiopia	Middle HCI	0.3364	51.77	2017	UNESCO	54.53	2012	UNESCO	8.41	2012	UNESCO	2.9	2019	UNDP
Fiji	Very High HCI	0.7957	99.08	2017	UNESCO	77.9	2004	UNESCO	13.92	2004	UNESCO	10.9	2019	UNDP
Finland	Very High HCI	0.964	99	2014	UNESCO	100	2019	UNESCO	19.05	2019	UNESCO	12.8	2019	UNDP
France	Very High HCI	0.8784	99	2014	UNESCO	93.86	2019	UNESCO	15.81	2019	UNESCO	11.5	2019	UNDP
Gabon	High HCI	0.6706	84.67	2018	UNESCO	74.93	2001	UNESCO	12.19	2001	UNESCO	8.7	2019	UNDP
Gambia (Republic of The)	Middle HCI	0.3301	50.78	2015	UNESCO	50.65	2010	UNESCO	7.96	2010	UNESCO	3.9	2019	UNDP
Georgia	Very High HCI	0.8984	99.56	2019	UNESCO	92.71	2020	UNESCO	15.57	2020	UNESCO	13.1	2019	UNDP
Germany	Very High HCI	0.9446	99	2014	UNESCO	96.24	2019	UNESCO	17.01	2019	UNESCO	14.2	2019	UNDP
Ghana	High HCI	0.6176	79.04	2018	UNESCO	72.47	2020	UNESCO	12.05	2020	UNESCO	7.3	2019	UNDP
Greece	Very High HCI	0.9405	97.94	2018	UNESCO	100	2019	UNESCO	20.03	2019	UNESCO	10.6	2019	UNDP
Grenada	Very High HCI	0.8977	98.6	2014	UNESCO	100	2018	UNESCO	18.63	2018	UNESCO	9	2019	UNDP
Guatemala	High HCI	0.5596	80.81	2018	UNESCO	61.26	2019	UNESCO	10.56	2019	UNESCO	6.6	2019	UNDP
Guinea	Middle HCI	0.2955	39.62	2018	UNESCO	54.49	2014	UNESCO	9.01	2014	UNESCO	2.8	2019	UNDP
Guinea-Bissau	Middle HCI	0.3585	45.58	2014	UNESCO	62.98	2006	UNESCO	9.19	2006	UNESCO	3.6	2019	UNDP
Guyana	High HCI	0.6546	85.64	2014	UNESCO	73.01	2012	UNESCO	11.43	2012	UNESCO	8.5	2019	UNDP
Haiti	Middle HCI	0.393	61.69	2016	UNESCO	39.4	2014	UNESCO	9.7	2019	UNDP*	5.6	2019	UNDP
Honduras	High HCI	0.5901	88.51	2019	UNESCO	62.61	2019	UNESCO	10.3	2019	UNESCO	6.6	2019	UNDP

Hungary	Very High HCI	0.8345	99.1	2014	UNESCO	89.26	2019	UNESCO	13.19	2019	UNESCO	12	2019	UNDP
Iceland	Very High HCI	0.9657	99	2014	UNESCO	100	2019	UNESCO	19.16	2019	UNESCO	12.8	2019	UNDP
India	High HCI	0.5761	74.37	2018	UNESCO	69.67	2020	UNESCO	11.87	2020	UNESCO	6.5	2019	UNDP
Indonesia	High HCI	0.7438	96	2020	UNESCO	80.16	2018	UNESCO	13.61	2018	UNESCO	8.2	2019	UNDP
Iran (Islamic Republic of)	Very High HCI	0.7804	85.54	2016	UNESCO	89.88	2017	UNESCO	14.81	2017	UNESCO	10.3	2019	UNDP
Iraq	High HCI	0.5888	85.6	2017	UNESCO	63.14	2004	UNESCO	10.16	2004	UNESCO	7.3	2019	UNDP
Ireland	Very High HCI	0.9618	99.2	2015	UNDP (HDI)	100	2019	UNESCO	18.95	2019	UNESCO	12.7	2019	UNDP
Israel	Very High HCI	0.8994	97.76	2011	UNESCO	93.61	2019	UNESCO	16.05	2019	UNESCO	13	2019	UNDP
Italy	Very High HCI	0.8606	99.16	2018	UNESCO	91.15	2019	UNESCO	16.23	2019	UNESCO	10.4	2019	UNDP
Jamaica	High HCI	0.7148	88.1	2014	UNESCO	79.03	2005	UNESCO	12.42	2005	UNESCO	9.7	2019	UNDP
Japan	Very High HCI	0.8765	99	2014	UNESCO	88.88	2018	UNESCO	15.19	2018	UNESCO	12.9	2019	UNDP
Jordan	High HCI	0.6967	98.23	2018	UNESCO	63.59	2020	UNESCO	10.65	2020	UNESCO	10.5	2019	UNDP
Kazakhstan	Very High HCI	0.9021	99.78	2018	UNESCO	99.09	2020	UNESCO	15.77	2020	UNESCO	11.9	2019	UNDP
Kenya	High HCI	0.5641	81.53	2018	UNESCO	63.34	2009	UNESCO	10.27	2009	UNESCO	6.6	2019	UNDP
Kiribati	High HCI	0.6785	93	2014	UN E-GOV Survey	71.85	2008	UNESCO	11.82	2008	UNESCO	8	2019	UNDP
Kuwait	Very High HCI	0.7706	96.46	2020	UNESCO	88.11	2015	UNESCO	14.69	2015	UNESCO	7.3	2019	UNDP
Kyrgyzstan	Very High HCI	0.8119	99.59	2018	UNESCO	85.47	2020	UNESCO	13.2	2020	UNESCO	11.1	2019	UNDP
Lao People's Democratic Republic	High HCI	0.5468	84.66	2015	UNESCO	60.64	2020	UNESCO	10.14	2020	UNESCO	5.3	2019	UNDP
Latvia	Very High HCI	0.9284	99.89	2018	UNESCO	100	2019	UNESCO	16.2	2019	UNESCO	13	2019	UNDP
Lebanon	High HCI	0.6656	95.07	2018	UNESCO	63.43	2015	UNESCO	11.3	2019	UNDP*	8.7	2019	UNDP
Lesotho	High HCI	0.595	76.64	2014	UNESCO	71.78	2017	UNESCO	12.13	2017	UNESCO	6.5	2019	UNDP
Liberia	Middle HCI	0.4184	48.3	2017	UNESCO	65.41	2000	UNESCO	10.79	2000	UNESCO	4.8	2019	UNDP
Libya	Very High HCI	0.7534	86.1	2004	UNESCO	90.88	2003	UNESCO	15.45	2003	UNESCO	7.6	2019	UNDP
Liechtenstein	Very High HCI	0.8726	99	2014	UN E-GOV Survey	89.73	2019	UNESCO	15.18	2019	UNESCO	12.5	2019	UNDP
Lithuania	Very High HCI	0.9251	99.82	2011	UNESCO	97.95	2019	UNESCO	16.29	2019	UNESCO	13.1	2019	UNDP
Luxembourg	Very High HCI	0.8245	99	2014	UNESCO	78.03	2019	UNESCO	14.4	2019	UNESCO	12.3	2019	UNDP
Madagascar	High HCI	0.536	76.68	2018	UNESCO	63.43	2018	UNESCO	10.17	2018	UNESCO	6.1	2019	UNDP
Malawi	Middle HCI	0.4884	62.14	2015	UNESCO	70.63	2011	UNESCO	10.91	2011	UNESCO	4.7	2019	UNDP

Table A.10 (continued)

Country	HCI Group	HCI 2022	Adult Literacy (%)			Gross Enrollment Ratio			Expected Year of Schooling			Mean Year of Schooling		
			Index Value	Year	Source	Index Value	Year	Source	Index Value	Year	Source	Index Value	Year	Source
Maldives	High HCI	0.6937	97.73	2016	UNESCO	71.74	2019	UNESCO	12.64	2019	UNESCO	7	2019	UNDP
Mali	Low HCI	0.2193	30.76	2020	UNESCO	50.3	2017	UNESCO	7.46	2017	UNESCO	2.4	2019	UNDP
Malta	Very High HCI	0.8734	94.5	2018	UNESCO	94.09	2019	UNESCO	16.84	2019	UNESCO	11.3	2019	UNDP
Marshall Islands	High HCI	0.6903	98.27	2011	UNESCO	61.26	2019	UNESCO	10.24	2019	UNESCO	10.9	2019	UNDP
Mauritania	Middle HCI	0.3873	53.5	2017	UNESCO	55.2	2019	UNESCO	9.38	2019	UNESCO	4.7	2019	UNDP
Mauritius	Very High HCI	0.7733	91.33	2018	UNESCO	82.43	2017	UNESCO	15.06	2017	UNESCO	9.5	2019	UNDP
Mexico	Very High HCI	0.7874	95.25	2020	UNESCO	86.71	2019	UNESCO	14.86	2019	UNESCO	8.8	2019	UNDP
Micronesia (Federated States of)	High HCI	0.6845	94	2014	UNESCO	75.28	2004	UNESCO	11.5	2019	UNESCO	7.8	2019	UNDP
Monaco	Very High HCI	0.8302	99	2014	UN E-GOV Survey	99	2014	UNDP	11.8	2015	UNDP (HDI)	11.27	2017	estimation
Mongolia	Very High HCI	0.8391	99.18	2020	UNESCO	90.62	2019	UNESCO	14.98	2019	UNESCO	10.3	2019	UNDP
Montenegro	Very High HCI	0.8383	98.85	2018	UNESCO	83.3	2020	UNESCO	15.08	2020	UNESCO	11.6	2019	UNDP
Morocco	High HCI	0.635	73.75	2018	UNESCO	84.11	2020	UNESCO	14.15	2020	UNESCO	5.6	2019	UNDP
Mozambique	Middle HCI	0.429	60.66	2017	UNESCO	63.25	2017	UNESCO	9.97	2017	UNESCO	3.5	2019	UNDP
Myanmar	High HCI	0.5829	89.07	2019	UNESCO	65.98	2018	UNESCO	10.67	2018	UNESCO	5	2019	UNDP
Namibia	High HCI	0.6516	91.53	2018	UNESCO	71.31	2006	UNESCO	11.54	2006	UNESCO	7	2019	UNDP
Nauru	High HCI	0.5925	92	2014	UN E-GOV Survey	59.59	2008	UNESCO	9.57	2008	UNESCO	7.12	2017	estimation
Nepal	High HCI	0.5636	67.91	2018	UNESCO	75.69	2019	UNESCO	13.15	2019	UNESCO	5	2019	UNDP
Netherlands	Very High HCI	0.9506	99	2014	UNESCO	100	2018	UNESCO	18.56	2018	UNESCO	12.4	2019	UNDP
New Zealand	Very High HCI	0.9823	99	2014	UNESCO	100	2019	UNESCO	20.28	2019	UNESCO	12.8	2019	UNDP
Nicaragua	High HCI	0.6	82.61	2015	UNESCO	69.69	2002	UNESCO	10.86	2002	UNESCO	6.9	2019	UNDP
Niger	Low HCI	0.1915	35.05	2018	UNESCO	41.71	2017	UNESCO	6.41	2017	UNESCO	2.1	2019	UNDP
Nigeria	Middle HCI	0.4439	62.02	2018	UNESCO	56.06	2011	UNESCO	8.68	2011	UNESCO	6.7	2019	UNDP
North Macedonia	Very High HCI	0.7562	98.36	2020	UNESCO	73.15	2018	UNESCO	13.51	2018	UNESCO	9.8	2019	UNDP

Norway	Very High HCI	0.9528	99	2014	UNESCO	100	2019	UNESCO	18.19	2019	UNESCO	12.9	2019	UNDP
Oman	Very High HCI	0.8067	95.65	2018	UNESCO	89.57	2020	UNESCO	14.57	2020	UNESCO	9.7	2019	UNDP
Pakistan	Middle HCI	0.3933	58	2019	UNESCO	52.12	2019	UNESCO	8.66	2019	UNESCO	5.2	2019	UNDP
Palau	Very High HCI	0.8946	96.59	2015	UNESCO	93.42	2013	UNESCO	16.59	2013	UNESCO	12.5	2019	UNDP
Panama	Very High HCI	0.7525	95.74	2019	UNESCO	76.43	2016	UNESCO	12.91	2016	UNESCO	10.2	2019	UNDP
Papua New Guinea	Middle HCI	0.4996	61.6	2010	UNESCO	78.93	2012	UNESCO	10.2	2019	UNDP*	4.7	2019	UNDP
Paraguay	High HCI	0.6947	94.54	2020	UNESCO	70.77	2010	UNESCO	12.19	2010	UNESCO	8.5	2019	UNDP
Peru	Very High HCI	0.8207	94.5	2020	UNESCO	93.84	2017	UNESCO	14.99	2017	UNESCO	9.7	2019	UNDP
Philippines	Very High HCI	0.7629	96.28	2019	UNESCO	82.35	2017	UNESCO	13.15	2017	UNESCO	9.4	2019	UNDP
Poland	Very High HCI	0.9033	98.74	2008	UNESCO	96.39	2019	UNESCO	16.03	2019	UNESCO	12.5	2019	UNDP
Portugal	Very High HCI	0.8665	96.14	2018	UNESCO	100	2019	UNESCO	16.87	2019	UNESCO	9.3	2019	UNDP
Qatar	High HCI	0.715	93.46	2017	UNESCO	70.56	2020	UNESCO	12.64	2020	UNESCO	9.7	2019	UNDP
Republic of Korea	Very High HCI	0.9087	97.97	2008	UNESCO	98.4	2019	UNESCO	16.52	2019	UNESCO	12.2	2019	UNDP
Republic of Moldova	Very High HCI	0.8613	99.36	2014	UNESCO	93.45	2020	UNESCO	14.43	2020	UNESCO	11.7	2019	UNDP
Romania	Very High HCI	0.809	98.84	2018	UNESCO	80.18	2019	UNESCO	14.23	2019	UNESCO	11.1	2019	UNDP
Russian Federation	Very High HCI	0.9065	99.73	2018	UNESCO	99.1	2019	UNESCO	15.77	2019	UNESCO	12.2	2019	UNDP
Rwanda	High HCI	0.5322	73.22	2018	UNESCO	70.54	2019	UNESCO	11.23	2019	UNESCO	4.4	2019	UNDP
Saint Kitts and Nevis	Very High HCI	0.8724	97.8	2014	UNESCO	100	2015	UNESCO	17.45	2015	UNESCO	8.7	2019	UNDP
Saint Lucia	High HCI	0.7049	94.8	2014	UNESCO	70.47	2020	UNESCO	12.87	2020	UNESCO	8.5	2019	UNDP
Saint Vincent and the Grenadines	High HCI	0.742	88.1	2014	UNESCO	83.56	2015	UNESCO	14.32	2015	UNESCO	8.8	2019	UNDP
Samoa	High HCI	0.747	99.1	2018	UNESCO	71.33	2000	UNESCO	12	2000	UNESCO	10.8	2019	UNDP
San Marino	High HCI	0.7466	99.92	2018	UNESCO	68.94	2020	UNESCO	12.27	2020	UNESCO	10.75	2018	UNESCO
Sao Tome and Principe	High HCI	0.6759	92.82	2018	UNESCO	76.9	2015	UNESCO	12.38	2015	UNESCO	6.4	2019	UNDP
Saudi Arabia	Very High HCI	0.8662	97.59	2020	UNESCO	96.81	2020	UNESCO	16.14	2020	UNESCO	10.2	2019	UNDP
Senegal	Middle HCI	0.3478	51.9	2017	UNESCO	53.85	2020	UNESCO	8.96	2020	UNESCO	3.2	2019	UNDP
Serbia	Very High HCI	0.8332	99.48	2019	UNESCO	86.33	2020	UNESCO	14.4	2020	UNESCO	11.2	2019	UNDP
Seychelles	Very High HCI	0.7758	95.87	2018	UNESCO	80.12	2020	UNESCO	13.94	2020	UNESCO	10	2019	UNDP
Sierra Leone	Low HCI	0.2459	43.21	2018	UNESCO	41.15	2001	UNESCO	6.35	2001	UNESCO	3.7	2019	UNDP

Table A.10 (continued)

Country	HCI Group	HCI 2022	Adult Literacy (%)			Gross Enrollment Ratio			Expected Year of Schooling			Mean Year of Schooling		
			Index Value	Year	Source	Index Value	Year	Source	Index Value	Year	Source	Index Value	Year	Source
Slovakia	Very High HCI	0.8436	99.6	2015	UNDP (HDI)	81.15	2019	UNESCO	14.51	2019	UNESCO	12.7	2019	UNDP
Slovenia	Very High HCI	0.9439	99.7	2014	UNESCO	99.77	2019	UNESCO	17.65	2019	UNESCO	12.7	2019	UNDP
Solomon Islands	Middle HCI	0.4925	76.6	2009	UNESCO	55.39	2007	UNESCO	9.23	2007	UNESCO	5.7	2019	UNDP
Somalia	Low HCI	0	24	2014	UN E-Gov Survey	17	2014	UNDP	2.4	2013	UNDP (HDI)	0.97	2017	estimation
South Africa	Very High HCI	0.7733	95.02	2019	UNESCO	80.91	2019	UNESCO	13.64	2019	UNESCO	10.2	2019	UNDP
South Sudan	Low HCI	0.2038	34.52	2018	UNESCO	38	2014	UNESCO	5.3	2019	UNDP*	4.8	2019	UNDP
Spain	Very High HCI	0.9072	98.59	2020	UNESCO	100	2019	UNESCO	17.92	2019	UNESCO	10.3	2019	UNDP
Sri Lanka	Very High HCI	0.7726	92.25	2019	UNESCO	79.92	2018	UNESCO	14.11	2018	UNESCO	10.6	2019	UNDP
Sudan	Middle HCI	0.3599	60.7	2018	UNESCO	49.69	2015	UNESCO	7.61	2015	UNESCO	3.8	2019	UNDP
Suriname	High HCI	0.6921	94.38	2018	UNESCO	70.03	2002	UNESCO	11.37	2002	UNESCO	9.3	2019	UNDP
Sweden	Very High HCI	0.9649	99	2014	UNESCO	100	2019	UNESCO	19.42	2019	UNESCO	12.5	2019	UNDP
Switzerland	Very High HCI	0.9128	99	2014	UNESCO	92.09	2019	UNESCO	16.5	2019	UNESCO	13.4	2019	UNDP
Syrian Arab Republic	Middle HCI	0.4983	80.84	2004	UNESCO	55.11	2013	UNESCO	9.16	2013	UNESCO	5.1	2019	UNDP
Tajikistan	High HCI	0.738	99.8	2014	UNESCO	70.93	2013	UNESCO	11.39	2013	UNESCO	10.7	2019	UNDP
Thailand	Very High HCI	0.7879	93.77	2018	UNESCO	90.87	2016	UNESCO	15.42	2016	UNESCO	7.9	2019	UNDP
Timor-Leste	High HCI	0.5546	68.07	2018	UNESCO	77.01	2010	UNESCO	12.45	2010	UNESCO	4.8	2019	UNDP
Togo	High HCI	0.5508	66.54	2019	UNESCO	75.88	2017	UNESCO	12.72	2017	UNESCO	4.9	2019	UNDP
Tonga	Very High HCI	0.8675	99.41	2018	UNESCO	89.85	2020	UNESCO	16.05	2020	UNESCO	11.2	2019	UNDP
Trinidad and Tobago	High HCI	0.7409	98.7	2010	UNESCO	67.3	2004	UNESCO	12.27	2004	UNESCO	11	2019	UNDP
Tunisia	High HCI	0.6911	79.04	2014	UNESCO	82.74	2016	UNESCO	15.13	2016	UNESCO	7.2	2019	UNDP
Türkiye	Very High HCI	0.8722	96.74	2019	UNESCO	100	2019	UNESCO	18.34	2019	UNESCO	8.1	2019	UNDP
Turkmenistan	Very High HCI	0.7892	99.7	2014	UNESCO	81.66	2020	UNESCO	13.21	2020	UNESCO	10.3	2019	UNDP
Tuvalu	High HCI	0.6492	98	2014	UN E-Gov Survey	65.37	2001	UNESCO	10.87	2001	UNESCO	6.93	2017	estimation

Uganda	High HCI	0.5631	76.53	2018	UNESCO	68.94	2004	UNESCO	10.87	2004	UNESCO	6.2	2019	UNDP
Ukraine	Very High HCI	0.8669	99.97	2012	UNESCO	93.95	2014	UNESCO	14.86	2014	UNESCO	11.4	2019	UNDP
United Arab Emirates	Very High HCI	0.8711	97.56	2019	UNESCO	90.53	2020	UNESCO	15.72	2020	UNESCO	12.1	2019	UNDP
United Kingdom of Great Britain and Northern Ireland	Very High HCI	0.9369	99	2014	UNESCO	97.37	2019	UNESCO	17.31	2019	UNESCO	13.2	2019	UNDP
United Republic of Tanzania	High HCI	0.51	77.89	2015	UNESCO	57.59	2020	UNESCO	9.22	2020	UNESCO	6.1	2019	UNDP
United States of America	Very High HCI	0.9276	99	2014	UNESCO	98.37	2019	UNESCO	16.28	2019	UNESCO	13.4	2019	UNDP
Uruguay	Very High HCI	0.898	98.77	2019	UNESCO	100	2019	UNESCO	18.71	2019	UNESCO	8.9	2019	UNDP
Uzbekistan	Very High HCI	0.7778	100	2019	UNESCO	72.99	2019	UNESCO	12.48	2019	UNESCO	11.8	2019	UNDP
Vanuatu	High HCI	0.6009	87.51	2018	UNESCO	63.5	2004	UNESCO	10.6	2004	UNESCO	7.1	2019	UNDP
Venezuela, Bolivarian Republic of	Very High HCI	0.8181	97.13	2016	UNESCO	89.57	2009	UNESCO	14.32	2009	UNESCO	10.3	2019	UNDP
Viet Nam	High HCI	0.6903	95.75	2019	UNESCO	66	2014	UNESCO	12.7	2019	UNDP*	8.3	2019	UNDP
Yemen	Middle HCI	0.3633	54.1	2004	UNESCO	55.52	2011	UNESCO	9.1	2011	UNESCO	3.2	2019	UNDP
Zambia	High HCI	0.6744	86.75	2018	UNESCO	85		UNDP	11.5	2019	UNDP*	7.2	2019	UNDP
Zimbabwe	High HCI	0.6463	88.69	2014	UNESCO	66.25	2013	UNESCO	11.36	2013	UNESCO	8.5	2019	UNDP

**DATA SOURCE:**

UNESCO: "Adult literacy rate, population 15+ years, both sexes (%)" : Sustainable Development Goals: 4.6.2 Youth/adult literacy rate. Available: <http://data.uis.unesco.org/index.aspx?queryid=3784#>

UNESCO: "Gross enrolment ratio, primary to tertiary, both sexes (%)" : Other policy relevant indicators : Gross enrolment ratio by level of education. Available: <http://data.uis.unesco.org/index.aspx?queryid=3812#>

UNESCO: "School life expectancy, primary to tertiary, both sexes (years)" : Other policy relevant indicators: School life expectancy by level of education. Available: <http://data.uis.unesco.org/index.aspx?queryid=3802#Data> marked with an asterisk (\*) are retrieved from the UNDP Human Development Report 2020. The next frontier: Human development and the Anthropocene (print version). Available: <http://hdr.undp.org/en/2020-report>

UNDP: Human Development Report 2020. The next frontier: Human development and the Anthropocene. Table 4., SDG 4.4, "Mean Years of Schooling". Available: [http://hdr.undp.org/sites/default/files/2020\\_statistical\\_annex\\_all.xlsx](http://hdr.undp.org/sites/default/files/2020_statistical_annex_all.xlsx)



Table A.11 E-Participation Index (EPI) and its components

Country	EPI Group	EPI 2022	Rank	E-information	E-consultation	E-decisionmaking
Afghanistan	Low EPI	0.1932	163	0.2727	0.1429	0
Albania	Very High EPI	0.7614	22	0.7091	0.8571	0.8
Algeria	Low EPI	0.2273	148	0.2909	0.2857	0
Andorra	Middle EPI	0.375	101	0.5091	0.2143	0.1
Angola	Low EPI	0.1705	168	0.2	0.2143	0.05
Antigua and Barbuda	Middle EPI	0.4205	91	0.6545	0.0714	0
Argentina	High EPI	0.6477	51	0.8182	0.5	0.25
Armenia	High EPI	0.5795	64	0.6909	0.5	0.3
Australia	Very High EPI	0.9886	2	0.9818	1	0.95
Austria	Very High EPI	0.7727	21	0.9091	0.5714	0.5
Azerbaijan	Middle EPI	0.3864	98	0.5455	0.2857	0
Bahamas	Middle EPI	0.3977	95	0.5818	0.0714	0.1
Bahrain	Middle EPI	0.4432	89	0.6	0.3571	0.05
Bangladesh	High EPI	0.5227	75	0.6727	0.5714	0.05
Barbados	Middle EPI	0.3977	95	0.5091	0.3571	0.1
Belarus	Middle EPI	0.4318	90	0.6364	0.1429	0.05
Belgium	Middle EPI	0.4545	86	0.6182	0.1429	0.2
Belize	Low EPI	0.2045	157	0.3091	0.0714	0
Benin	Middle EPI	0.3409	110	0.4182	0.2143	0.2
Bhutan	Middle EPI	0.4659	83	0.5818	0.3571	0.2
Bolivia (Plurinational State of)	Middle EPI	0.3182	115	0.4545	0.2143	0
Bosnia and Herzegovina	High EPI	0.5341	72	0.7091	0.5714	0
Botswana	Low EPI	0.1705	168	0.2727	0	0
Brazil	Very High EPI	0.8977	11	0.9636	1	0.6
Brunei Darussalam	Middle EPI	0.4773	81	0.7091	0.2143	0
Bulgaria	High EPI	0.7386	29	0.8545	0.8571	0.3

Burkina Faso	Low EPI	0.2273	148	0.3273	0.0714	0.05
Burundi	Middle EPI	0.3409	110	0.4182	0.0714	0.3
Cabo Verde	Middle EPI	0.25	135	0.3455	0.2143	0
Cambodia	Middle EPI	0.2841	123	0.4364	0	0.05
Cameroon	Middle EPI	0.2841	123	0.4	0.1429	0.05
Canada	Very High EPI	0.8295	14	0.9636	0.7857	0.45
Central African Republic	Low EPI	0.1364	175	0.2182	0	0
Chad	Middle EPI	0.3182	115	0.4545	0	0.15
Chile	High EPI	0.6932	43	0.8909	0.5714	0.2
China	Very High EPI	0.8636	13	0.8545	0.8571	0.85
Colombia	High EPI	0.7159	37	0.8545	0.4286	0.5
Comoros	Low EPI	0.0114	192	0.0182	0	0
Congo	Low EPI	0.2386	143	0.3818	0	0
Costa Rica	High EPI	0.5568	66	0.7818	0.3571	0.05
Côte d'Ivoire	Middle EPI	0.375	101	0.5273	0.1429	0.1
Croatia	High EPI	0.7386	29	0.8364	0.6429	0.5
Cuba	Low EPI	0.1364	175	0.1636	0.2143	0
Cyprus	Very High EPI	0.75	25	0.9273	0.7143	0.25
Czech Republic	High EPI	0.6023	57	0.8545	0.2857	0.1
Democratic People's Republic of Korea	Low EPI	0.0568	186	0.0909	0	0
Democratic Republic of the Congo	Middle EPI	0.25	135	0.4	0	0
Denmark	Very High EPI	0.8864	12	0.9636	0.9286	0.6
Djibouti	Low EPI	0.1136	179	0.1818	0	0
Dominica	Low EPI	0.0909	183	0.1273	0.0714	0
Dominican Republic	Middle EPI	0.4545	86	0.6727	0.2143	0
Ecuador	High EPI	0.7045	41	0.7091	0.7143	0.65
Egypt	Middle EPI	0.3523	107	0.4545	0.3571	0.05
El Salvador	Middle EPI	0.3523	107	0.4727	0.2857	0.05
Equatorial Guinea	Low EPI	0.1591	173	0.2364	0.0714	0

Table A.11 (continued)

Country	EPI Group	EPI 2022	Rank	E-information	E-consultation	E-decisionmaking
Eritrea	Low EPI	0.0227	190	0.0364	0	0
Estonia	Very High EPI	0.9773	3	1	0.9286	0.9
Eswatini	Low EPI	0.1477	174	0.2	0.1429	0
Ethiopia	Low EPI	0.1932	163	0.2727	0.0714	0.05
Fiji	Low EPI	0.2386	143	0.3091	0.2143	0.05
Finland	Very High EPI	0.9545	6	0.9636	0.9286	0.9
France	High EPI	0.7159	37	0.8909	0.5714	0.3
Gabon	Low EPI	0.2045	157	0.2727	0	0.15
Gambia (Republic of The)	Low EPI	0.2386	143	0.3818	0	0
Georgia	High EPI	0.5341	72	0.7091	0.4286	0.1
Germany	High EPI	0.7273	32	0.8182	0.4286	0.65
Ghana	Middle EPI	0.4545	86	0.6	0.2857	0.15
Greece	High EPI	0.6136	55	0.8364	0.5	0.05
Grenada	Low EPI	0.2045	157	0.3091	0.0714	0
Guatemala	Middle EPI	0.3295	114	0.4545	0.2143	0.05
Guinea	Middle EPI	0.2841	123	0.4545	0	0
Guinea-Bissau	Low EPI	0.0795	184	0.1273	0	0
Guyana	Low EPI	0.2159	153	0.3273	0	0.05
Haiti	Low EPI	0.1023	180	0.1636	0	0
Honduras	Low EPI	0.1023	180	0.1091	0.1429	0.05
Hungary	High EPI	0.5114	76	0.6182	0.2143	0.4
Iceland	Very High EPI	0.7955	17	0.8364	0.6429	0.75
India	High EPI	0.5909	61	0.8182	0.3571	0.1
Indonesia	High EPI	0.7159	37	0.7636	0.5714	0.65
Iran (Islamic Republic of)	Low EPI	0.1818	167	0.2364	0.2143	0
Iraq	Low EPI	0.2159	153	0.2909	0.2143	0

Ireland	High EPI	0.6818	47	0.8545	0.4286	0.35
Israel	High EPI	0.7159	37	0.7455	0.5714	0.7
Italy	High EPI	0.7273	32	0.9455	0.6429	0.15
Jamaica	Middle EPI	0.2841	123	0.2909	0.1429	0.35
Japan	Very High EPI	1	1	0.9818	1	1
Jordan	High EPI	0.5455	67	0.7636	0.4286	0
Kazakhstan	Very High EPI	0.8068	15	0.9273	0.9286	0.35
Kenya	High EPI	0.5795	64	0.7636	0.2857	0.25
Kiribati	Middle EPI	0.2955	121	0.4182	0.0714	0.1
Kuwait	High EPI	0.5455	67	0.6909	0.4286	0.2
Kyrgyzstan	High EPI	0.5	79	0.6182	0.6429	0.05
Lao People's Democratic Republic	Middle EPI	0.2614	132	0.4	0	0.05
Latvia	High EPI	0.7386	29	0.8727	0.7143	0.35
Lebanon	Middle EPI	0.3977	95	0.5636	0.1429	0.1
Lesotho	Middle EPI	0.3068	117	0.4727	0.0714	0
Liberia	Middle EPI	0.2955	121	0.4545	0.0714	0
Libya	Low EPI	0.0341	189	0.0364	0.0714	0
Liechtenstein	High EPI	0.5455	67	0.6909	0.2143	0.35
Lithuania	High EPI	0.5455	67	0.6909	0.5714	0.1
Luxembourg	Very High EPI	0.75	25	0.8727	0.4286	0.6
Madagascar	Middle EPI	0.2841	123	0.3636	0.2143	0.1
Malawi	Middle EPI	0.375	101	0.5818	0	0.05
Malaysia	High EPI	0.6818	47	0.8182	0.3571	0.5
Maldives	Middle EPI	0.3068	117	0.4545	0.1429	0
Mali	Middle EPI	0.2727	128	0.4	0.1429	0
Malta	Very High EPI	0.7614	22	0.8909	0.6429	0.45
Marshall Islands	Middle EPI	0.2614	132	0.4	0.0714	0
Mauritania	Low EPI	0.0227	190	0.0182	0	0.05
Mauritius	Middle EPI	0.4205	91	0.5636	0.2143	0.15

Table A.11 (continued)

Country	EPI Group	EPI 2022	Rank	E-information	E-consultation	E-decisionmaking
Mexico	High EPI	0.7273	32	0.8364	0.6429	0.45
Micronesia (Federated States of)	Low EPI	0.2159	153	0.3455	0	0
Monaco	Low EPI	0.1364	175	0.2	0.0714	0
Mongolia	High EPI	0.6023	57	0.8364	0.3571	0.1
Montenegro	Middle EPI	0.4659	83	0.6364	0.3571	0.05
Morocco	Middle EPI	0.2727	128	0.3818	0.1429	0.05
Mozambique	Low EPI	0.1932	163	0.3091	0	0
Myanmar	Middle EPI	0.3068	117	0.4545	0.1429	0
Namibia	Middle EPI	0.25	135	0.3091	0.2857	0.05
Nauru	Middle EPI	0.25	135	0.4	0	0
Nepal	Low EPI	0.2386	143	0.3455	0.0714	0.05
Netherlands	Very High EPI	0.9659	5	1	0.9286	0.85
New Zealand	Very High EPI	0.9545	6	0.9636	0.9286	0.9
Nicaragua	Middle EPI	0.25	135	0.4	0	0
Niger	Middle EPI	0.25	135	0.3818	0.0714	0
Nigeria	Middle EPI	0.3068	117	0.4364	0.2143	0
North Macedonia	High EPI	0.6932	43	0.8	0.5714	0.45
Norway	High EPI	0.6932	43	0.9091	0.5	0.2
Oman	High EPI	0.6591	50	0.6909	0.5	0.65
Pakistan	Middle EPI	0.3636	106	0.5091	0.1429	0.1
Palau	Low EPI	0.2273	148	0.3273	0.1429	0
Panama	High EPI	0.5114	76	0.7091	0.2857	0.1
Papua New Guinea	Low EPI	0.1705	168	0.2545	0.0714	0
Paraguay	High EPI	0.5114	76	0.5818	0.5714	0.25
Peru	Very High EPI	0.7614	22	0.9455	0.7857	0.2
Philippines	Middle EPI	0.4886	80	0.7091	0.2143	0.05

Poland	High EPI	0.6477	51	0.6727	0.5714	0.6
Portugal	High EPI	0.7273	32	0.9455	0.6429	0.15
Qatar	Middle EPI	0.375	101	0.5273	0.2857	0
Republic of Korea	Very High EPI	0.9432	9	0.9636	1	0.8
Republic of Moldova	High EPI	0.6818	47	0.8182	0.6429	0.3
Romania	High EPI	0.625	54	0.8	0.5	0.2
Russian Federation	High EPI	0.6023	57	0.7636	0.5	0.2
Rwanda	High EPI	0.6364	53	0.7455	0.5	0.4
Saint Kitts and Nevis	Low EPI	0.2045	157	0.3091	0	0.05
Saint Lucia	Middle EPI	0.4091	93	0.6182	0.0714	0.05
Saint Vincent and the Grenadines	Middle EPI	0.3864	98	0.6182	0	0
Samoa	Middle EPI	0.2727	128	0.4	0.1429	0
San Marino	Low EPI	0.1705	168	0.2545	0.0714	0
Sao Tome and Principe	Low EPI	0.0455	187	0.0364	0.1429	0
Saudi Arabia	High EPI	0.6932	43	0.9273	0.5	0.15
Senegal	Middle EPI	0.3409	110	0.5273	0	0.05
Serbia	Very High EPI	0.8068	15	0.8727	0.7857	0.6
Seychelles	Low EPI	0.2273	148	0.3091	0.1429	0.05
Sierra Leone	Low EPI	0.2045	157	0.3091	0.0714	0
Singapore	Very High EPI	0.9773	3	1	0.9286	0.9
Slovakia	Middle EPI	0.4659	83	0.5455	0.2143	0.4
Slovenia	Very High EPI	0.75	25	0.8909	1	0.15
Solomon Islands	Low EPI	0.2159	153	0.3273	0	0.05
Somalia	Middle EPI	0.25	135	0.2727	0.2143	0.2
South Africa	High EPI	0.5909	61	0.6727	0.3571	0.5
South Sudan	Low EPI	0	193	0	0	0
Spain	Very High EPI	0.75	25	0.9455	0.7143	0.2
Sri Lanka	Middle EPI	0.3523	107	0.4364	0.5	0
Sudan	Low EPI	0.0455	187	0.0727	0	0

Table A.11 (continued)

Country	EPI Group	EPI 2022	Rank	E-information	E-consultation	E-decisionmaking
Suriname	Low EPI	0.2045	157	0.3273	0	0
Sweden	High EPI	0.7273	32	0.9636	0.7143	0.05
Switzerland	High EPI	0.7045	41	0.9091	0.2857	0.4
Syrian Arab Republic	Low EPI	0.0682	185	0.0545	0.2143	0
Tajikistan	Middle EPI	0.25	135	0.3818	0	0.05
Thailand	Very High EPI	0.7841	18	0.8364	0.8571	0.55
Timor-Leste	Middle EPI	0.4773	81	0.6727	0.2143	0.1
Togo	Middle EPI	0.3864	98	0.4545	0.2857	0.25
Tonga	Middle EPI	0.2614	132	0.4	0.0714	0
Trinidad and Tobago	Low EPI	0.2386	143	0.3455	0.1429	0
Tunisia	High EPI	0.5455	67	0.6	0.0714	0.7
Türkiye	Very High EPI	0.7841	18	0.8	0.8571	0.65
Turkmenistan	Low EPI	0.1023	180	0.1636	0	0
Tuvalu	Low EPI	0.1705	168	0.2727	0	0
Uganda	Middle EPI	0.4091	93	0.6182	0.1429	0
Ukraine	High EPI	0.6023	57	0.7818	0.4286	0.2
United Arab Emirates	Very High EPI	0.7841	18	0.9091	0.5	0.6
United Kingdom of Great Britain and Northern Ireland	Very High EPI	0.9545	6	0.9091	1	1
United Republic of Tanzania	Middle EPI	0.2727	128	0.4	0.1429	0
United States of America	Very High EPI	0.9091	10	0.9273	1	0.75
Uruguay	High EPI	0.5909	61	0.8182	0.3571	0.1
Uzbekistan	High EPI	0.6136	55	0.7636	0.5	0.25
Vanuatu	Middle EPI	0.3409	110	0.4182	0.2857	0.15
Venezuela, Bolivarian Republic of	Low EPI	0.125	178	0.2	0	0
Viet Nam	High EPI	0.5341	72	0.6545	0.5714	0.15
Yemen	Low EPI	0.1932	163	0.2727	0.1429	0
Zambia	Middle EPI	0.375	101	0.5818	0	0.05
Zimbabwe	Low EPI	0.2273	148	0.3091	0.0714	0.1

Table A.12 Local Online Service Index (LOSI) and its components

City	Country	Region	LOSI Group	Rank	LOSI 2022	IF	CP	SP	EPI	TEC	OSI Group	OSI 2022
Berlin	Germany	Europe	Very High LOSI	1	0.9767	1.0000	1.0000	0.9444	1.0000	0.9412	Very High OSI	0.7905
Madrid	Spain	Europe	Very High LOSI	1	0.9767	1.0000	0.9200	1.0000	1.0000	1.0000	Very High OSI	0.8559
Tallinn	Estonia	Europe	Very High LOSI	3	0.9535	1.0000	0.9600	0.8889	0.9412	1.0000	Very High OSI	1
Copenhagen	Denmark	Europe	Very High LOSI	4	0.9419	1.0000	1.0000	1.0000	0.8824	0.8235	Very High OSI	0.9797
Dubai	United Arab Emirates	Asia	Very High LOSI	5	0.9186	1.0000	1.0000	1.0000	0.6471	0.9412	Very High OSI	0.9014
Moscow	Russian Federation	Europe	Very High LOSI	5	0.9186	1.0000	0.9600	0.9444	0.8235	0.8824	High OSI	0.7368
New York	United States of America	Americas	Very High LOSI	5	0.9186	1.0000	1.0000	0.9444	0.7647	0.8824	Very High OSI	0.9304
Paris	France	Europe	Very High LOSI	5	0.9186	1.0000	0.9200	0.7778	1.0000	0.9412	Very High OSI	0.8768
Singapore	Singapore	Asia	Very High LOSI	9	0.907	0.8889	0.9200	0.9444	0.8824	0.8824	Very High OSI	0.962
Shanghai	China	Asia	Very High LOSI	10	0.8837	0.8889	0.9200	0.9444	0.7059	0.9412	Very High OSI	0.8876
Bogota	Colombia	Americas	Very High LOSI	11	0.8721	1.0000	0.9200	0.7778	0.8824	0.8235	High OSI	0.7418
Buenos Aires	Argentina	Americas	Very High LOSI	11	0.8721	1.0000	0.8800	0.8333	0.8824	0.8235	Very High OSI	0.8089
Istanbul	Türkiye	Asia	Very High LOSI	11	0.8721	1.0000	0.9600	0.5556	1.0000	0.8824	Very High OSI	0.86
Tokyo	Japan	Asia	Very High LOSI	14	0.8605	0.8889	0.9600	0.6111	0.8235	1.0000	Very High OSI	0.9094
Zurich	Switzerland	Europe	Very High LOSI	14	0.8605	1.0000	0.9600	0.7778	0.8824	0.7059	Very High OSI	0.7677
Roma	Italy	Europe	Very High LOSI	16	0.8488	1.0000	0.9200	0.6667	0.8235	0.8824	Very High OSI	0.8659
Sao Paulo	Brazil	Americas	Very High LOSI	16	0.8488	1.0000	0.9600	0.5000	0.8824	0.9412	Very High OSI	0.8964
Vienna	Austria	Europe	Very High LOSI	16	0.8488	1.0000	0.9200	0.8333	0.8824	0.6471	Very High OSI	0.8827
Auckland	New Zealand	Oceania	Very High LOSI	19	0.8372	1.0000	0.9600	0.6111	0.8235	0.8235	Very High OSI	0.9579
Reykjavik	Iceland	Europe	Very High LOSI	19	0.8372	1.0000	1.0000	0.3889	1.0000	0.8235	Very High OSI	0.8867
Helsinki	Finland	Europe	Very High LOSI	21	0.8256	1.0000	0.9200	0.3889	0.9412	0.9412	Very High OSI	0.9833
Kyiv	Ukraine	Europe	Very High LOSI	21	0.8256	0.8889	0.9200	0.6111	0.9412	0.7647	Very High OSI	0.8148
Riga	Latvia	Europe	Very High LOSI	21	0.8256	0.8889	0.8800	0.7222	0.7059	0.9412	Very High OSI	0.8135
Stockholm	Sweden	Europe	Very High LOSI	21	0.8256	1.0000	0.8800	0.6111	0.7647	0.9412	Very High OSI	0.9002
Manama	Bahrain	Asia	Very High LOSI	25	0.814	0.8889	0.8800	0.8333	0.6471	0.8235	Very High OSI	0.7523
Almaty	Kazakhstan	Asia	Very High LOSI	26	0.8023	0.8889	0.8400	0.8333	0.7059	0.7647	Very High OSI	0.9344



Table A.12 (continued)

City	Country	Region	LOSI Group	Rank	LOSI 2022	IF	CP	SP	EPI	TEC	OSI Group	OSI 2022
Luxembourg City	Luxembourg	Europe	Very High LOSI	26	0.8023	0.6667	0.9200	0.6667	0.8235	0.8235	Very High OSI	0.8319
Vilnius	Lithuania	Europe	Very High LOSI	26	0.8023	0.7778	0.9600	0.6667	0.7647	0.7647	Very High OSI	0.8347
Montevideo	Uruguay	Americas	Very High LOSI	29	0.7907	1.0000	0.8000	0.7222	0.7059	0.8235	Very High OSI	0.7641
Seoul	Republic of Korea	Asia	Very High LOSI	30	0.7674	1.0000	0.9600	0.3889	0.8235	0.7059	Very High OSI	0.9826
Tel Aviv	Israel	Asia	Very High LOSI	30	0.7674	1.0000	0.9600	0.4444	0.7647	0.7059	Very High OSI	0.8745
Toronto	Canada	Americas	Very High LOSI	30	0.7674	1.0000	0.9600	0.4444	0.8235	0.6471	Very High OSI	0.8504
Warsaw	Poland	Europe	Very High LOSI	30	0.7674	0.8889	0.8800	0.6667	0.8235	0.5882	Very High OSI	0.7929
Brussels	Belgium	Europe	Very High LOSI	34	0.7558	0.7778	0.9600	0.5556	0.7059	0.7059	High OSI	0.6899
Oslo	Norway	Europe	Very High LOSI	34	0.7558	1.0000	0.9200	0.5556	0.5882	0.7647	Very High OSI	0.8007
Riyadh	Saudi Arabia	Asia	Very High LOSI	34	0.7558	0.8889	0.8400	0.5000	0.6471	0.9412	Very High OSI	0.822
Sydney	Australia	Oceania	Very High LOSI	34	0.7558	1.0000	0.8800	0.5556	0.7647	0.6471	Very High OSI	0.938
Zagreb	Croatia	Europe	Very High LOSI	34	0.7558	1.0000	0.9200	0.4444	0.7059	0.7647	Very High OSI	0.8108
Lisbon	Portugal	Europe	High LOSI	39	0.7326	0.8889	0.7600	0.3333	0.8824	0.8824	Very High OSI	0.7954
Jakarta	Indonesia	Asia	High LOSI	40	0.7209	0.7778	0.9200	0.4444	0.7059	0.7059	Very High OSI	0.7644
London	United Kingdom of Great Britain and Northern Ireland	Europe	High LOSI	40	0.7209	1.0000	0.9200	0.1667	0.8235	0.7647	Very High OSI	0.8859
Amsterdam	Netherlands	Europe	High LOSI	42	0.6977	0.8889	0.8800	0.6667	0.5294	0.5294	Very High OSI	0.9026
Guayaquil	Ecuador	Americas	High LOSI	42	0.6977	0.6667	0.7200	0.7222	0.5294	0.8235	Very High OSI	0.7651
Prague	Czech Republic	Europe	High LOSI	42	0.6977	1.0000	0.8800	0.3889	0.6471	0.6471	High OSI	0.6693
Sofia	Bulgaria	Europe	High LOSI	42	0.6977	1.0000	0.8000	0.4444	0.7059	0.6471	High OSI	0.7092
Dublin	Ireland	Europe	High LOSI	46	0.686	0.7778	0.8000	0.2222	0.8235	0.8235	Very High OSI	0.7796
Mexico City	Mexico	Americas	High LOSI	47	0.6744	0.8889	0.8400	0.4444	0.7059	0.5294	Very High OSI	0.8245
Santo Domingo	Dominican Republic	Americas	High LOSI	47	0.6744	0.8889	0.6400	0.8889	0.5294	0.5294	High OSI	0.6183
Bratislava	Slovakia	Europe	High LOSI	49	0.6628	0.7778	0.7600	0.5556	0.6471	0.5882	High OSI	0.726
Lima	Peru	Americas	High LOSI	50	0.6512	1.0000	0.8000	0.2222	0.5882	0.7647	Very High OSI	0.8099
Monaco	Monaco	Europe	High LOSI	50	0.6512	0.7778	0.8000	0.4444	0.2941	0.9412	Middle OSI	0.4588

Tbilisi	Georgia	Asia	High LOSI	50	0.6512	0.6667	0.7600	0.6111	0.5294	0.6471	High OSI	0.6111
Yerevan	Armenia	Asia	High LOSI	53	0.6395	0.8889	0.7600	0.6667	0.2941	0.6471	High OSI	0.7221
Belgrade	Serbia	Europe	High LOSI	54	0.6279	0.5556	0.7200	0.5556	0.7647	0.4706	Very High OSI	0.8514
Ho Chi Minh City	Viet Nam	Asia	High LOSI	54	0.6279	0.8889	0.8400	0.2778	0.5294	0.6471	High OSI	0.6484
Ljubljana	Slovenia	Europe	High LOSI	54	0.6279	0.7778	0.8400	0.1667	0.7647	0.5882	Very High OSI	0.8666
Bangkok	Thailand	Asia	High LOSI	57	0.6163	0.8889	0.8000	0.2778	0.5294	0.6471	Very High OSI	0.7763
Johannesburg	South Africa	Africa	High LOSI	57	0.6163	1.0000	0.8000	0.2778	0.2941	0.8235	High OSI	0.7487
Budapest	Hungary	Europe	High LOSI	59	0.6047	0.8889	0.5200	0.3889	0.6471	0.7647	High OSI	0.7465
Nairobi	Kenya	Africa	High LOSI	60	0.593	0.6667	0.4800	0.8333	0.4118	0.6471	High OSI	0.6821
Athens	Greece	Europe	High LOSI	61	0.5814	0.7778	0.7200	0.5000	0.2941	0.6471	Very High OSI	0.7753
San Jose	Costa Rica	Americas	High LOSI	61	0.5814	0.8889	0.6000	0.2778	0.6471	0.6471	High OSI	0.6812
Nicosia	Cyprus	Asia	High LOSI	63	0.5698	0.8889	0.5200	0.3333	0.5294	0.7647	Very High OSI	0.7792
Quezon	Philippines	Asia	High LOSI	63	0.5698	0.7778	0.6800	0.3333	0.3529	0.7647	High OSI	0.6303
Thimphu Thromde	Bhutan	Asia	High LOSI	63	0.5698	0.7778	0.6000	0.2778	0.5294	0.7647	High OSI	0.5996
Tirana	Albania	Europe	High LOSI	63	0.5698	0.7778	0.6800	0.0556	0.8235	0.5882	Very High OSI	0.8182
Ulaanbaatar	Mongolia	Asia	High LOSI	63	0.5698	0.6667	0.8400	0.3889	0.2941	0.5882	High OSI	0.6263
Amman	Jordan	Asia	High LOSI	68	0.5581	0.7778	0.5200	0.2222	0.5294	0.8824	High OSI	0.6594
Panama City	Panama	Americas	High LOSI	69	0.5465	0.5556	0.6800	0.1667	0.8235	0.4706	High OSI	0.6741
Kuala Lumpur	Malaysia	Asia	High LOSI	70	0.5349	0.8889	0.5600	0.3333	0.4118	0.6471	Very High OSI	0.763
Minsk	Belarus	Europe	High LOSI	71	0.5233	0.4444	0.7600	0.2222	0.4706	0.5882	High OSI	0.5302
Muscat	Oman	Asia	High LOSI	71	0.5233	0.6667	0.6400	0.3333	0.2941	0.7059	High OSI	0.7423
Bishkek	Kyrgyzstan	Asia	High LOSI	73	0.5	0.7778	0.5600	0.2778	0.4118	0.5882	High OSI	0.6176
Bucharest	Romania	Europe	High LOSI	73	0.5	0.6667	0.6000	0.2222	0.5294	0.5294	High OSI	0.6814
Santiago	Chile	Americas	High LOSI	73	0.5	0.4444	0.7600	0.2778	0.4118	0.4706	Very High OSI	0.828
Andorra La Vella	Andorra	Europe	Middle LOSI	76	0.4884	0.5556	0.5600	0.0000	0.7059	0.6471	High OSI	0.5133
Damascus	Syrian Arab Republic	Asia	Middle LOSI	76	0.4884	0.5556	0.4400	0.4444	0.4118	0.6471	Middle OSI	0.3053
Kampala	Uganda	Africa	Middle LOSI	76	0.4884	0.7778	0.6800	0.1667	0.2941	0.5882	High OSI	0.5169
Asuncion	Paraguay	Americas	Middle LOSI	79	0.4767	0.5556	0.6000	0.2222	0.4118	0.5882	High OSI	0.6059
Mumbai	India	Asia	Middle LOSI	80	0.4651	0.6667	0.5200	0.2778	0.2353	0.7059	Very High OSI	0.7934

Table A.12 (continued)

City	Country	Region	LOSI Group	Rank	LOSI 2022	IF	CP	SP	EPI	TEC	OSI Group	OSI 2022
Tunis	Tunisia	Africa	Middle LOSI	80	0.4651	0.5556	0.6400	0.0556	0.5294	0.5294	High OSI	0.6031
Casablanca	Morocco	Africa	Middle LOSI	82	0.4535	0.6667	0.5600	0.1667	0.2941	0.6471	Middle OSI	0.4721
Kabul	Afghanistan	Asia	Middle LOSI	82	0.4535	0.5556	0.5200	0.1111	0.5294	0.5882	Middle OSI	0.277
Chisinau (Kishinev)	Republic of Moldova	Europe	Middle LOSI	84	0.4419	0.4444	0.7200	0.1111	0.4706	0.3529	High OSI	0.738
Vaduz	Liechtenstein	Europe	Middle LOSI	84	0.4419	0.5556	0.6000	0.1667	0.3529	0.5294	High OSI	0.7329
Santa Cruz (de la Sierra)	Bolivia	Americas	Middle LOSI	86	0.4302	0.7778	0.5200	0.0556	0.4706	0.4706	High OSI	0.5193
Tashkent	Uzbekistan	Asia	Middle LOSI	87	0.4186	0.7778	0.3600	0.1667	0.4706	0.5294	High OSI	0.744
Cairo	Egypt	Africa	Middle LOSI	88	0.407	0.6667	0.5200	0.0556	0.2353	0.6471	High OSI	0.573
Podgorica	Montenegro	Europe	Middle LOSI	88	0.407	0.6667	0.5600	0.1111	0.3529	0.4118	High OSI	0.5528
Abidjan	Côte d'Ivoire	Africa	Middle LOSI	90	0.3953	0.5556	0.6000	0.0556	0.2353	0.5294	High OSI	0.5467
Colombo	Sri Lanka	Asia	Middle LOSI	90	0.3953	0.4444	0.6400	0.2222	0.0000	0.5882	High OSI	0.5644
Kathmandu	Nepal	Asia	Middle LOSI	90	0.3953	0.5556	0.6000	0.1111	0.2353	0.4706	Middle OSI	0.4592
Skopje	North Macedonia	Europe	Middle LOSI	90	0.3953	0.5556	0.3200	0.2778	0.3529	0.5882	High OSI	0.702
Cotonou	Benin	Africa	Middle LOSI	94	0.3837	0.5556	0.2800	0.2778	0.3529	0.5882	High OSI	0.5245
Monrovia	Liberia	Africa	Middle LOSI	94	0.3837	0.5556	0.3600	0.5556	0.1176	0.4118	Middle OSI	0.3417
Belmopan	Belize	Americas	Middle LOSI	96	0.3721	0.2222	0.3600	0.3333	0.3529	0.5294	Middle OSI	0.4425
Dar Es Salaam	United Republic of Tanzania	Africa	Middle LOSI	96	0.3721	0.5556	0.3600	0.2778	0.2941	0.4706	Middle OSI	0.47
Dhaka	Bangladesh	Asia	Middle LOSI	96	0.3721	0.5556	0.3600	0.2778	0.2941	0.4706	High OSI	0.6521
Havana	Cuba	Americas	Middle LOSI	96	0.3721	0.5556	0.4400	0.3333	0.1765	0.4118	Middle OSI	0.2789
Caracas	Venezuela, Bolivarian Republic of	Americas	Middle LOSI	100	0.3605	0.5556	0.4000	0.4444	0.0588	0.4118	Middle OSI	0.3056
Guatemala City	Guatemala	Americas	Middle LOSI	100	0.3605	0.6667	0.4800	0.1667	0.1765	0.4118	High OSI	0.5409
Freetown	Sierra Leone	Africa	Middle LOSI	100	0.3605	0.6667	0.4400	0.2222	0.1176	0.4706	Middle OSI	0.2801
Addis Ababa	Ethiopia	Africa	Middle LOSI	103	0.3256	0.7778	0.2400	0.2778	0.1765	0.4118	Middle OSI	0.373
Kuwait City	Kuwait	Asia	Middle LOSI	103	0.3256	0.4444	0.2400	0.1111	0.2353	0.7059	High OSI	0.6973

Tehran	Iran (Islamic Republic of)	Asia	Middle LOSI	103	0.3256	0.5556	0.3600	0.1667	0.1176	0.5294	Middle OSI	0.4196
Kigali	Rwanda	Africa	Middle LOSI	106	0.314	0.4444	0.3200	0.1111	0.2353	0.5294	Very High OSI	0.7935
Sarajevo	Bosnia and Herzegovina	Europe	Middle LOSI	106	0.314	0.5556	0.4400	0.0000	0.2941	0.3529	Middle OSI	0.4898
San Salvador	El Salvador	Americas	Middle LOSI	108	0.3023	0.6667	0.2400	0.0556	0.2353	0.5294	Middle OSI	0.467
Brazzaville	Democratic Republic of the Congo	Africa	Middle LOSI	109	0.2907	0.4444	0.2400	0.0556	0.1765	0.6471	Low LOSI	0.2341
Port Louis	Mauritius	Africa	Middle LOSI	109	0.2907	0.5556	0.2800	0.1667	0.0588	0.5294	High OSI	0.6282
Vientiane	Laos People's Democratic Republic	Asia	Middle LOSI	109	0.2907	0.3333	0.3200	0.1111	0.2941	0.4118	Middle OSI	0.3005
Dushanbe	Tajikistan	Asia	Middle LOSI	112	0.2791	0.5556	0.3200	0.0000	0.1176	0.5294	Middle OSI	0.3968
Karachi	Pakistan	Asia	Middle LOSI	112	0.2791	0.4444	0.3600	0.0556	0.2353	0.3529	High OSI	0.5658
Managua	Nicaragua	Americas	Middle LOSI	112	0.2791	0.2222	0.2800	0.1667	0.1176	0.5882	Middle OSI	0.4809
Suva	Fiji	Oceania	Middle LOSI	112	0.2791	0.3333	0.3600	0.1111	0.1765	0.4118	Middle OSI	0.4813
Kingston	Jamaica	Americas	Middle LOSI	116	0.2674	0.4444	0.2000	0.0000	0.2941	0.5294	Middle OSI	0.4914
Lusaka	Zambia	Africa	Middle LOSI	116	0.2674	0.2222	0.4000	0.0556	0.1176	0.4706	Middle OSI	0.4414
Mogadishu	Somalia	Africa	Middle LOSI	116	0.2674	0.3333	0.3600	0.0556	0.1765	0.4118	Middle OSI	0.2944
Honiara	Solomon Islands	Oceania	Middle LOSI	119	0.2558	0.3333	0.3600	0.0556	0.1765	0.3529	Middle OSI	0.3676
Yangon	Myanmar	Asia	Middle LOSI	119	0.2558	0.1111	0.3600	0.2222	0.1765	0.2941	Middle OSI	0.3073
Yaounde	Cameroon	Africa	Low LOSI	121	0.2442	0.2222	0.4000	0.1111	0.0588	0.3529	Middle OSI	0.3916
Antananarivo	Madagascar	Africa	Low LOSI	122	0.2326	0.2222	0.2400	0.2222	0.0588	0.4118	Middle OSI	0.3515
Harare	Zimbabwe	Africa	Low LOSI	122	0.2326	0.2222	0.3200	0.0000	0.1765	0.4118	Middle OSI	0.3845
Windhoek	Namibia	Africa	Low LOSI	122	0.2326	0.4444	0.2400	0.0000	0.2353	0.3529	Middle OSI	0.4316
Algiers	Algeria	Africa	Low LOSI	125	0.2209	0.3333	0.4400	0.0000	0.0000	0.2941	Middle OSI	0.3743
Ashkhabad	Turkmenistan	Asia	Low LOSI	125	0.2209	0.2222	0.2400	0.1111	0.0588	0.4706	Middle OSI	0.298
Baku	Azerbaijan	Asia	Low LOSI	125	0.2209	0.4444	0.2800	0.0000	0.0588	0.4118	High OSI	0.6119
Port Moresby	Papua New Guinea	Oceania	Low LOSI	125	0.2209	0.2222	0.3600	0.0556	0.1176	0.2941	Middle OSI	0.3263
Bandar Seri Begawan	Brunei Darussalam	Asia	Low LOSI	129	0.2093	0.5556	0.0400	0.0000	0.2353	0.4706	High OSI	0.5871
Port-Au-Prince	Haiti	Americas	Low LOSI	129	0.2093	0.1111	0.1200	0.2778	0.1176	0.4118	Low LOSI	0.0865
Male	Maldives	Asia	Low LOSI	131	0.1977	0.2222	0.1200	0.0000	0.1765	0.5294	Middle OSI	0.4873

Table A.12 (continued)

City	Country	Region	LOSI Group	Rank	LOSI 2022	IF	CP	SP	EPI	TEC	OSI Group	OSI 2022
Bujumbura	Burundi	Africa	Low LOSI	132	0.186	0.3333	0.2000	0.0000	0.1176	0.3529	Middle OSI	0.3376
Dakar	Senegal	Africa	Low LOSI	132	0.186	0.4444	0.2800	0.0000	0.0588	0.2353	Middle OSI	0.4934
Kumasi	Ghana	Africa	Low LOSI	132	0.186	0.1111	0.3200	0.0000	0.1176	0.2941	High OSI	0.5361
Mbabane	Eswatini	Africa	Low LOSI	132	0.186	0.2222	0.1600	0.0000	0.2353	0.3529	Middle OSI	0.324
Conakry	Guinea	Africa	Low LOSI	136	0.1744	0.4444	0.1600	0.0000	0.0588	0.3529	Middle OSI	0.4421
Praia	Cabo Verde	Africa	Low LOSI	136	0.1744	0.4444	0.0000	0.2778	0.0588	0.2941	Middle OSI	0.4965
Tegucigalpa	Honduras	Americas	Low LOSI	136	0.1744	0.3333	0.0800	0.0556	0.0588	0.4706	Low LOSI	0.2417
Baghdad	Iraq	Asia	Low LOSI	139	0.1628	0.1111	0.1600	0.0000	0.1176	0.4118	Low LOSI	0.206
Georgetown	Guyana	Americas	Low LOSI	139	0.1628	0.4444	0.1600	0.0000	0.0588	0.2941	Middle OSI	0.4509
Libreville	Gabon	Africa	Low LOSI	139	0.1628	0.4444	0.1600	0.0000	0.0000	0.3529	Middle OSI	0.3578
Lilongwe	Malawi	Africa	Low LOSI	139	0.1628	0.1111	0.2000	0.0000	0.1176	0.3529	Middle OSI	0.3607
Phnom Penh	Cambodia	Asia	Low LOSI	139	0.1628	0.2222	0.1200	0.0000	0.0588	0.4706	Middle OSI	0.4181
Kinshasa	Democratic Republic of the Congo	Africa	Low LOSI	144	0.1163	0.2222	0.0000	0.0000	0.1176	0.3529	Middle OSI	0.3177
Port Vila	Vanuatu	Oceania	Low LOSI	144	0.1163	0.2222	0.0800	0.0556	0.0000	0.2941	Middle OSI	0.4228
Maseru	Lesotho	Africa	Low LOSI	146	0.093	0.1111	0.0400	0.0000	0.0000	0.3529	Middle OSI	0.3456
Apia	Samoa	Oceania	Not Assessed	147	0	0.0000	0.0000	0.0000	0.0000	0.0000	Middle OSI	0.3592
Asmara	Eritrea	Africa	Not Assessed	147	0	0.0000	0.0000	0.0000	0.0000	0.0000	Low LOSI	0
Bamako	Mali	Africa	Not Assessed	147	0	0.0000	0.0000	0.0000	0.0000	0.0000	Middle OSI	0.3652
Bangui	Central African Republic	Africa	Not Assessed	147	0	0.0000	0.0000	0.0000	0.0000	0.0000	Low LOSI	0.0962
Banjul	Gambia	Africa	Not Assessed	147	0	0.0000	0.0000	0.0000	0.0000	0.0000	Low LOSI	0.1455
Basseterre	Saint Kitts and Nevis	Americas	Not Assessed	147	0	0.0000	0.0000	0.0000	0.0000	0.0000	Middle OSI	0.3307
Beirut	Lebanon	Asia	Not Assessed	147	0	0.0000	0.0000	0.0000	0.0000	0.0000	Middle OSI	0.4257
Bissau	Guinea-Bissau	Africa	Not Assessed	147	0	0.0000	0.0000	0.0000	0.0000	0.0000	Low LOSI	0.0624
Bridgetown	Barbados	Americas	Not Assessed	147	0	0.0000	0.0000	0.0000	0.0000	0.0000	High OSI	0.5388
Castries	Saint Lucia	Americas	Not Assessed	147	0	0.0000	0.0000	0.0000	0.0000	0.0000	Middle OSI	0.4007

Dili	Timor-Leste	Asia	Not Assessed	147	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	Middle OSI	0.3931
Djibouti	Djibouti	Africa	Not Assessed	147	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	Low OSI	0.2208
Doha	Qatar	Asia	Not Assessed	147	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	High OSI	0.6094
Funafuti	Tuvalu	Oceania	Not Assessed	147	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	Low OSI	0.2265
Gaborone	Botswana	Africa	Not Assessed	147	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	Middle OSI	0.274
Juba	South Sudan	Africa	Not Assessed	147	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	Low OSI	0.0518
Khartoum	Sudan	Africa	Not Assessed	147	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	Low OSI	0.2118
Kingstown	Saint Vincent and the Grenadines	Americas	Not Assessed	147	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	Middle OSI	0.4526
Koror	Palau	Oceania	Not Assessed	147	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	Low OSI	0.2373
Lagos	Nigeria	Africa	Not Assessed	147	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	High OSI	0.525
Lome	Togo	Africa	Not Assessed	147	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	Middle OSI	0.4338
Luanda	Angola	Africa	Not Assessed	147	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	Middle OSI	0.4716
Majuro	Marshall Islands	Oceania	Not Assessed	147	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	Middle OSI	0.3004
Malabo	Equatorial Guinea	Africa	Not Assessed	147	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	Low OSI	0.1845
Maputo	Mozambique	Africa	Not Assessed	147	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	Middle OSI	0.3563
Moroni	Comoros	Africa	Not Assessed	147	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	Low OSI	0.0326
Nassau	Bahamas	Americas	Not Assessed	147	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	High OSI	0.6214
N'Djamena	Chad	Africa	Not Assessed	147	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	Middle OSI	0.2726
Niamey	Niger	Africa	Not Assessed	147	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	Middle OSI	0.3904
Nouakchott	Mauritania	Africa	Not Assessed	147	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	Low OSI	0.0952
Nuku'Alofa	Tonga	Oceania	Not Assessed	147	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	Middle OSI	0.3296
Ouagadougou	Burkina Faso	Africa	Not Assessed	147	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	Middle OSI	0.373
Palikir	Micronesia (Federated States of)	Oceania	Not Assessed	147	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	Middle OSI	0.2703
Paramaribo	Suriname	Americas	Not Assessed	147	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	Middle OSI	0.3418
Port-Of-Spain	Trinidad and Tobago	Americas	Not Assessed	147	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	Middle OSI	0.4892
Pyongyang	Democratic People's Republic of Korea	Asia	Not Assessed	147	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	Low OSI	0.1579

Table A.12 (continued)

City	Country	Region	LOSI Group	Rank	LOSI 2022	IF	CP	SP	EPI	TEC	OSI Group	OSI 2022
Roseau	Dominica	Americas	Not Assessed	147	0	0.0000	0.0000	0.0000	0.0000	0.0000	Middle OSI	0.2954
San Marino	San Marino	Europe	Not Assessed	147	0	0.0000	0.0000	0.0000	0.0000	0.0000	Middle OSI	0.3788
Sana'a	Yemen	Asia	Not Assessed	147	0	0.0000	0.0000	0.0000	0.0000	0.0000	Middle OSI	0.3393
Sao Tome	Sao Tome and Principe	Africa	Not Assessed	147	0	0.0000	0.0000	0.0000	0.0000	0.0000	Low LOSI	0.2435
South Tarawa	Kiribati	Oceania	Not Assessed	147	0	0.0000	0.0000	0.0000	0.0000	0.0000	Middle OSI	0.3686
St. George's	Grenada	Americas	Not Assessed	147	0	0.0000	0.0000	0.0000	0.0000	0.0000	High OSI	0.5507
St. John	Antigua and Barbuda	Americas	Not Assessed	147	0	0.0000	0.0000	0.0000	0.0000	0.0000	Middle OSI	0.4231
St. Paul's Bay/San Pawl il-Banar	Malta	Europe	Not Assessed	147	0	0.0000	0.0000	0.0000	0.0000	0.0000	Very High OSI	0.8849
Tripoli	Libya	Africa	Not Assessed	147	0	0.0000	0.0000	0.0000	0.0000	0.0000	Low LOSI	0.099
Victoria	Seychelles	Africa	Not Assessed	147	0	0.0000	0.0000	0.0000	0.0000	0.0000	Middle OSI	0.4424
Yaren	Nauru	Oceania	Not Assessed	147	0	0.0000	0.0000	0.0000	0.0000	0.0000	Middle OSI	0.2952

Table A.13 Open Government Data Index (OGDI)

Country	OGDI Group	OGDI 2022
Afghanistan	Low OGDI	0.2085
Albania	High OGDI	0.6873
Algeria	Low OGDI	0.1972
Andorra	Middle OGDI	0.4338
Angola	Low OGDI	0.1296
Antigua and Barbuda	Very High OGDI	0.7859
Argentina	Very High OGDI	0.8930
Armenia	Middle OGDI	0.4479
Australia	Very High OGDI	1.0000
Austria	Very High OGDI	0.9437
Azerbaijan	High OGDI	0.5859
Bahamas	Middle OGDI	0.3831
Bahrain	Very High OGDI	0.7887
Bangladesh	High OGDI	0.7296
Barbados	Middle OGDI	0.2563
Belarus	High OGDI	0.5408
Belgium	High OGDI	0.7296
Belize	Middle OGDI	0.4169
Benin	High OGDI	0.6169
Bhutan	High OGDI	0.6225
Bolivia (Plurinational State of)	High OGDI	0.5437
Bosnia and Herzegovina	Middle OGDI	0.4817
Botswana	Middle OGDI	0.2648
Brazil	Very High OGDI	0.9493
Brunei Darussalam	High OGDI	0.7127
Bulgaria	Very High OGDI	0.9155
Burkina Faso	High OGDI	0.5465
Burundi	Middle OGDI	0.3915
Cabo Verde	Middle OGDI	0.3803
Cambodia	Middle OGDI	0.4282
Cameroon	Middle OGDI	0.2620
Canada	Very High OGDI	0.9718
Central African Republic	Low OGDI	0.0986
Chad	Middle OGDI	0.4423
Chile	Very High OGDI	0.7915
China	Very High OGDI	0.8873
Colombia	Very High OGDI	0.9014
Comoros	Low OGDI	0.0000
Congo	Middle OGDI	0.3352
Costa Rica	Very High OGDI	0.9437
Côte d'Ivoire	Very High OGDI	0.7606
Croatia	Very High OGDI	0.9014
Cuba	Low OGDI	0.1296
Cyprus	Very High OGDI	0.9718



Table A.13 (continued)

Country	OGDI Group	OGDI 2022
Czech Republic	Very High OGDI	0.9718
Democratic People's Republic of Korea	Low OGDI	0.1718
Democratic Republic of the Congo	Low OGDI	0.2113
Denmark	Very High OGDI	0.9859
Djibouti	Low OGDI	0.0704
Dominica	Low OGDI	0.0282
Dominican Republic	Very High OGDI	0.7634
Ecuador	Very High OGDI	0.8451
Egypt	Middle OGDI	0.3127
El Salvador	Middle OGDI	0.4282
Equatorial Guinea	Low OGDI	0.2141
Eritrea	Low OGDI	0.0141
Estonia	Very High OGDI	1.0000
Eswatini	Low OGDI	0.1944
Ethiopia	Middle OGDI	0.4958
Fiji	Low OGDI	0.2423
Finland	Very High OGDI	0.8704
France	Very High OGDI	0.9859
Gabon	Low OGDI	0.2141
Gambia (Republic of The)	Low OGDI	0.2254
Georgia	Very High OGDI	0.7718
Germany	Very High OGDI	0.9437
Ghana	Very High OGDI	0.8310
Greece	Very High OGDI	0.8056
Grenada	Low OGDI	0.1127
Guatemala	High OGDI	0.5211
Guinea	Middle OGDI	0.4056
Guinea-Bissau	Low OGDI	0.0141
Guyana	Middle OGDI	0.4901
Haiti	Low OGDI	0.0930
Honduras	Low OGDI	0.0845
Hungary	High OGDI	0.6197
Iceland	High OGDI	0.7127
India	Very High OGDI	0.9859
Indonesia	Very High OGDI	0.9014
Iran (Islamic Republic of)	Low OGDI	0.2479
Iraq	Low OGDI	0.1268
Ireland	Very High OGDI	0.9014
Israel	Very High OGDI	0.8873
Italy	Very High OGDI	0.9859
Jamaica	Middle OGDI	0.3211
Japan	Very High OGDI	0.9859
Jordan	Very High OGDI	0.7915
Kazakhstan	Very High OGDI	0.8563

Table A.13 (continued)

Country	OGDI Group	OGDI 2022
Kenya	High OGDI	0.7268
Kiribati	Middle OGDI	0.4282
Kuwait	High OGDI	0.6282
Kyrgyzstan	High OGDI	0.5944
Lao People's Democratic Republic	Middle OGDI	0.3127
Latvia	Very High OGDI	0.9718
Lebanon	High OGDI	0.5352
Lesotho	Middle OGDI	0.3972
Liberia	Middle OGDI	0.3183
Libya	Low OGDI	0.1155
Liechtenstein	High OGDI	0.6901
Lithuania	Very High OGDI	0.7887
Luxembourg	Very High OGDI	0.9859
Madagascar	High OGDI	0.5099
Malawi	Middle OGDI	0.4535
Malaysia	Very High OGDI	0.8592
Maldives	Middle OGDI	0.2761
Mali	Middle OGDI	0.2620
Malta	Very High OGDI	0.7915
Marshall Islands	Middle OGDI	0.2761
Mauritania	Low OGDI	0.1155
Mauritius	High OGDI	0.7296
Mexico	Very High OGDI	0.9296
Micronesia (Federated States of)	Middle OGDI	0.2620
Monaco	Middle OGDI	0.2507
Mongolia	Very High OGDI	0.7690
Montenegro	High OGDI	0.6366
Morocco	Middle OGDI	0.4366
Mozambique	Middle OGDI	0.4958
Myanmar	Middle OGDI	0.2901
Namibia	Low OGDI	0.1775
Nauru	Middle OGDI	0.3915
Nepal	Middle OGDI	0.4451
Netherlands	Very High OGDI	1.0000
New Zealand	Very High OGDI	1.0000
Nicaragua	Middle OGDI	0.3211
Niger	Middle OGDI	0.4000
Nigeria	High OGDI	0.5662
North Macedonia	Very High OGDI	0.8732
Norway	Very High OGDI	0.8563
Oman	High OGDI	0.7014
Pakistan	High OGDI	0.7099
Palau	Low OGDI	0.1831
Panama	Very High OGDI	0.9014

Table A.13 (continued)

Country	OGDI Group	OGDI 2022
Papua New Guinea	Middle OGDl	0.3296
Paraguay	High OGDl	0.6085
Peru	Very High OGDl	1.0000
Philippines	High OGDl	0.7296
Poland	Very High OGDl	0.7606
Portugal	Very High OGDl	1.0000
Qatar	High OGDl	0.7437
Republic of Korea	Very High OGDl	0.9718
Republic of Moldova	Very High OGDl	0.8282
Romania	Very High OGDl	0.8732
Russian Federation	Very High OGDl	0.8873
Rwanda	High OGDl	0.7070
Saint Kitts and Nevis	Low OGDl	0.2141
Saint Lucia	High OGDl	0.7127
Saint Vincent and the Grenadines	High OGDl	0.6366
Samoa	Middle OGDl	0.3127
San Marino	Middle OGDl	0.2507
Sao Tome and Principe	Low OGDl	0.1521
Saudi Arabia	Very High OGDl	1.0000
Senegal	High OGDl	0.5268
Serbia	Very High OGDl	0.9437
Seychelles	Middle OGDl	0.3296
Sierra Leone	Middle OGDl	0.3718
Singapore	Very High OGDl	1.0000
Slovakia	Very High OGDl	0.7521
Slovenia	Very High OGDl	0.9296
Solomon Islands	Low OGDl	0.1690
Somalia	Middle OGDl	0.2507
South Africa	Very High OGDl	0.7662
South Sudan	Low OGDl	0.0000
Spain	Very High OGDl	1.0000
Sri Lanka	Middle OGDl	0.4648
Sudan	Low OGDl	0.0282
Suriname	Middle OGDl	0.2563
Sweden	Very High OGDl	1.0000
Switzerland	Very High OGDl	1.0000
Syrian Arab Republic	Low OGDl	0.0648
Tajikistan	Middle OGDl	0.3634
Thailand	Very High OGDl	0.9296
Timor-Leste	High OGDl	0.5380
Togo	Middle OGDl	0.3718
Tonga	Middle OGDl	0.3493
Trinidad and Tobago	High OGDl	0.5465
Tunisia	Very High OGDl	0.7606

Table A.13 (continued)

Country	OGDI Group	OGDI 2022
Türkiye	Very High OGDI	0.9296
Turkmenistan	Low OGDI	0.2282
Tuvalu	Low OGDI	0.2423
Uganda	Very High OGDI	0.7634
Ukraine	Very High OGDI	0.9211
United Arab Emirates	Very High OGDI	0.9718
United Kingdom of Great Britain and Northern Ireland	Very High OGDI	0.9437
United Republic of Tanzania	High OGDI	0.5521
United States of America	Very High OGDI	0.9437
Uruguay	Very High OGDI	0.9859
Uzbekistan	Very High OGDI	0.8085
Vanuatu	Middle OGDI	0.3915
Venezuela, Bolivarian Republic of	Middle OGDI	0.3380
Viet Nam	High OGDI	0.6423
Yemen	Low OGDI	0.2423
Zambia	High OGDI	0.5493
Zimbabwe	Middle OGDI	0.3211

Table A.14 Country ISO codes

Country	ISO Code
Afghanistan	AFG
Albania	ALB
Algeria	DZA
Andorra	AND
Angola	AGO
Antigua and Barbuda	ATG
Argentina	ARG
Armenia	ARM
Australia	AUS
Austria	AUT
Azerbaijan	AZE
Bahamas	BHS
Bahrain	BHR
Bangladesh	BGD
Barbados	BRB
Belarus	BLR
Belgium	BEL
Belize	BLZ
Benin	BEN
Bhutan	BTN
Bolivia (Plurinational State of)	BOL
Bosnia and Herzegovina	BIH
Botswana	BWA
Brazil	BRA
Brunei Darussalam	BRN
Bulgaria	BGR
Burkina Faso	BFA
Burundi	BDI
Cabo Verde	CPV
Cambodia	KHM
Cameroon	CMR
Canada	CAN
Central African Republic	CAF
Chad	TCD
Chile	CHL
China	CHN
Colombia	COL
Comoros	COM
Congo	COG
Costa Rica	CRI
Côte d'Ivoire	CIV
Croatia	HRV
Cuba	CUB
Cyprus	CYP

Table A.14 (continued)

Country	ISO Code
Czech Republic	CZE
Democratic People's Republic of Korea	PRK
Democratic Republic of the Congo	COD
Denmark	DNK
Djibouti	DJI
Dominica	DMA
Dominican Republic	DOM
Ecuador	ECU
Egypt	EGY
El Salvador	SLV
Equatorial Guinea	GNQ
Eritrea	ERI
Estonia	EST
Eswatini	SWZ
Ethiopia	ETH
Fiji	FJI
Finland	FIN
France	FRA
Gabon	GAB
Gambia (Republic of The)	GMB
Georgia	GEO
Germany	DEU
Ghana	GHA
Greece	GRC
Grenada	GRD
Guatemala	GTM
Guinea	GIN
Guinea-Bissau	GNB
Guyana	GUY
Haiti	HTI
Honduras	HND
Hungary	HUN
Iceland	ISL
India	IND
Indonesia	IDN
Iran (Islamic Republic of)	IRN
Iraq	IRQ
Ireland	IRL
Israel	ISR
Italy	ITA
Jamaica	JAM
Japan	JPN
Jordan	JOR
Kazakhstan	KAZ

Table A.14 (continued)

Country	ISO Code
Kenya	KEN
Kiribati	KIR
Kuwait	KWT
Kyrgyzstan	KGZ
Lao People's Democratic Republic	LAO
Latvia	LVA
Lebanon	LBN
Lesotho	LSO
Liberia	LBR
Libya	LBY
Liechtenstein	LIE
Lithuania	LTU
Luxembourg	LUX
Madagascar	MDG
Malawi	MWI
Malaysia	MYS
Maldives	MDV
Mali	MLI
Malta	MLT
Marshall Islands	MHL
Mauritania	MRT
Mauritius	MUS
Mexico	MEX
Micronesia (Federated States of)	FSM
Monaco	MCO
Mongolia	MNG
Montenegro	MNE
Morocco	MAR
Mozambique	MOZ
Myanmar	MMR
Namibia	NAM
Nauru	NRU
Nepal	NPL
Netherlands	NLD
New Zealand	NZL
Nicaragua	NIC
Niger	NER
Nigeria	NGA
North Macedonia	MKD
Norway	NOR
Oman	OMN
Pakistan	PAK
Palau	PLW
Panama	PAN

Table A.14 (continued)

Country	ISO Code
Papua New Guinea	PNG
Paraguay	PRY
Peru	PER
Philippines	PHL
Poland	POL
Portugal	PRT
Qatar	QAT
Republic of Korea	KOR
Republic of Moldova	MDA
Romania	ROU
Russian Federation	RUS
Rwanda	RWA
Saint Kitts and Nevis	KNA
Saint Lucia	LCA
Saint Vincent and the Grenadines	VCT
Samoa	WSM
San Marino	SMR
Sao Tome and Principe	STP
Saudi Arabia	SAU
Senegal	SEN
Serbia	SRB
Seychelles	SYC
Sierra Leone	SLE
Singapore	SGP
Slovakia	SVK
Slovenia	SVN
Solomon Islands	SLB
Somalia	SOM
South Africa	ZAF
South Sudan	SSD
Spain	ESP
Sri Lanka	LKA
Sudan	SDN
Suriname	SUR
Sweden	SWE
Switzerland	CHE
Syrian Arab Republic	SYR
Tajikistan	TJK
Thailand	THA
Timor-Leste	TLS
Togo	TGO
Tonga	TON
Trinidad and Tobago	TTO
Tunisia	TUN



Table A.14 (continued)

Country	ISO Code
Türkiye	TUR
Turkmenistan	TKM
Tuvalu	TUV
Uganda	UGA
Ukraine	UKR
United Arab Emirates	ARE
United Kingdom of Great Britain and Northern Ireland	GBR
United Republic of Tanzania	TZA
United States of America	USA
Uruguay	URY
Uzbekistan	UZB
Vanuatu	VUT
Venezuela, Bolivarian Republic of	VEN
Viet Nam	VNM
Yemen	YEM
Zambia	ZMB
Zimbabwe	ZWE

## Annex B

### B.1 Complex Network Analysis (Pilot Study)

In 2022, UN DESA hired a consultant to conduct a pilot study using the science of complex systems to expand the analysis of factors affecting countries' e-government development beyond income level and test a complex network analysis model to address possible inequalities and biases adherent to rankings and find as yet unidentified similarities and differences between the Member States. The following section provides details on the methodology of the complex networks model used for the UN DESA pilot study conducted by Roberto Bellotti, Professor in Applied Physics and Director of the Physics Department of the University of Bari, Italy. More detailed information on the study and its findings is available on [UNDESA Egovknowledge base](#).

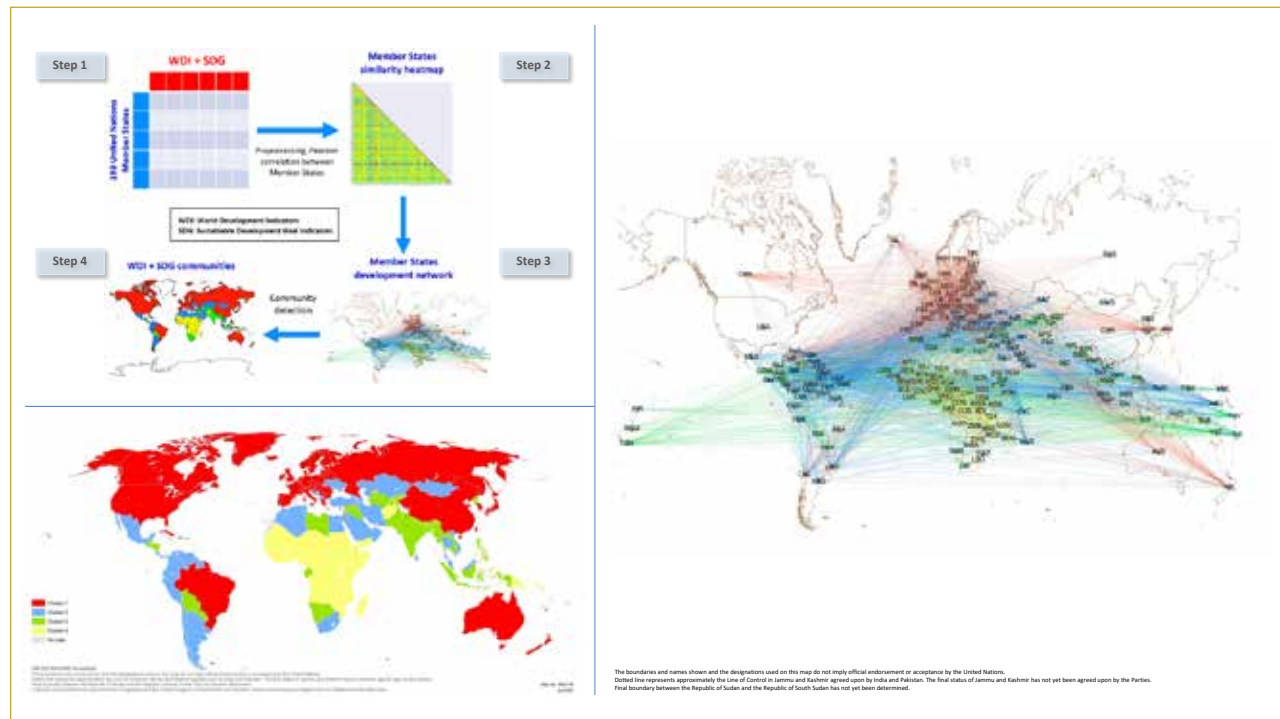
The data set used for the analysis consisted of 305 World Development Indicators (WDIs) relating to health, economy, society and environment and 214 Sustainable Development Goal (SDG) indicators characterizing the general development level of each Member State. The SDG indicators have acquired a decisive role in the characterization of the 193 UN Member States as they represent the general conditions for development in a multifaceted way, providing additional and complementary information to the WDIs, especially in strategic areas relevant to the E-Government Development Index (EGDI): access to electricity, mobile networks coverage, and the number of fixed internet broadband subscriptions, to name a few. The selection of indicators followed the criteria of data availability, consistency, and non-redundancy. The reference year for this data was 2020, with any missing values filled with data from 2019 and 2018 to represent a snapshot of the current situation.

As presented in the methodological workflow (figure B.1) the UN Member States represent the nodes of the complex network, and the connections between each pair of countries are determined by their mutual similarity, measured by the correlation between their performance on SDG indicators and WDIs.

These indicators were used to compute the Pearson correlation between the lists of values pertaining each pair of countries, which provide the basis to construct a complex network with 193 nodes, each representing a UN Member State. The nodes are linked by edges, weighted by the aforementioned pairwise correlations. Thus, weight values, ranging between -1 and 1, quantify the similarity between connected countries. For example, Portugal has a strong correlation (0.93) with Spain, while Somalia has a negative correlation (-0.46) with the United States.

The UN Member States have been then classified in development clusters using an automated algorithm providing a stable and reliable partition of the UN Member States into 4 non-overlapping groups (table B.1). The results of such grouping are remarkably consistent with the findings derived from literature review of studies for the past three years that used solely WDI data. The overall stability of cluster detection procedure used in the UN DESA pilot study corroborates the reliability and consistency of the findings on countries' development levels.

Figure B.1 Scheme representing the workflow of the complex network analysis, and map representing grouping of countries into four development clusters



Source: Complex Network Analysis Pilot Study for the 2022 United Nations E-Government Survey.

Grouping the countries into four development clusters using complex network analysis enables a reinterpretation of the levels of e-government development of the UN Member States and their EGDI ranking considering their starting conditions, as well as their mutual similarities and differences. By comparing the countries EGDI values both within the same cluster, and between different clusters it is possible to identify *top-of-the-class* countries, whose performance goes beyond the expectations based on their development status, and *room-for-improvement countries*, that have the potential to reach their cluster peers in the EGDI ranking by increasing their efforts. For top-of-the-class countries their EGDI values are above the 75<sup>th</sup> percentile of the cluster they belong to, and, at the same time, they are above the 25<sup>th</sup> percentile of at least one development cluster above. By the same token, for room-for-improvement countries the EGDI values are below the 25<sup>th</sup> percentile of the cluster they belong to and, at the same time, are below the 75<sup>th</sup> percentile of at least one developed cluster below.

The study also identified the *benchmark countries*, regarded as the best cases compared to the rest of the world, and *trailing countries*, which would need specific support to improve their condition in areas relevant for EDGI ranking. Benchmark countries are characterized by EGDI values above the 75<sup>th</sup> percentile of the distribution within cluster I, while trailing countries have EGDI values falling below the 25<sup>th</sup> percentile of the distribution within cluster IV.

## References

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Table B.1 The list of countries grouped by development clusters according to the pilot study

Country	Cluster ID	Country	Cluster ID	Country	Cluster ID	Country	Cluster ID
Andorra	I	Albania	II	Bangladesh	III	Afghanistan	IV
Australia	I	Algeria	II	Bhutan	III	Angola	IV
Austria	I	Antigua and Barbuda	II	Bohiva (Plurinational State of)	III	Benin	IV
Belarus	I	Argentina	II	Bolivia (Plurinational State of)	III	Burkina Faso	IV
Belgium	I	Armenia	II	Cambodia	III	Burundi	IV
Brazil	I	Azerbaijan	II	Cameroon	III	Cameroon	IV
Bulgaria	I	Bahamas	II	Central African Republic	III	Central African Republic	IV
Canada	I	Bahrain	II	Djibouti	III	Chad	IV
China	I	Barbados	II	Eswatini	III	Chad	IV
Croatia	I	Belize	II	Fiji	III	Comoros	IV
Cyprus	I	Bosnia and Herzegovina	II	Gabon	III	Congo	IV
Czech Republic	I	Brunei Darussalam	II	Guatemala	III	Cote d'Ivoire	IV
Denmark	I	Cabo Verde	II	Honduras	III	Democratic Republic of the Congo	IV
Estonia	I	Chile	II	India	III	Equatorial Guinea	IV
Finland	I	Colombia	II	Indonesia	III	Eritrea	IV
France	I	Costa Rica	II	Iraq	III	Ethiopia	IV
Germany	I	Dominica	II	Kiribati	III	Gambia (Republic of The)	IV
Greece	I	Dominican Republic	II	Kyrgyzstan	III	Ghana	IV
Hungary	I	Ecuador	II	Lao People's Democratic Republic	III	Guinea	IV
Iceland	I	Egypt	II	Libya	III	Guinea-Bissau	IV
Ireland	I	El Salvador	II	Marshall Islands	III	Haiti	IV
Israel	I	Georgia	II	Micronesia (Federated States of)	III	Kenya	IV
Italy	I	Grenada	II	Myanmar	III	Lesotho	IV
Japan	I	Guyana	II	Namibia	III	Liberia	IV
Latvia	I	Iran (Islamic Republic of)	II	Nepal	III	Madagascar	IV
Liechtenstein	I	Jamaica	II	Nicaragua	III	Malawi	IV
Lithuania	I	Jordan	II	Pakistan	III	Mali	IV
Luxembourg	I	Kazakhstan	II	Paraguay	III	Mauritania	IV
Malta	I	Kuwait	II	Philippines	III	Mozambique	IV
Monaco	I	Lebanon	II	Sao Tome and Principe	III	Niger	IV
Netherlands	I	Malaysia	II	Solomon Islands	III	Nigeria	IV
New Zealand	I	Maldives	II	Syrian Arab Republic	III	Papua New Guinea	IV
Norway	I	Mauritius	II	Tajikistan	III	Rwanda	IV
Poland	I	Mexico	II	Timor-Leste	III	Senegal	IV
Portugal	I	Mongolia	II	Togo	III	Sierra Leone	IV
Republic of Korea	I	Montenegro	II	Turkmenistan	III	Somalia	IV
Romania	I	Morocco	II	Tuvalu	III	South Sudan	IV
Russian Federation	I	Nauru	II	Uzbekistan	III	Sudan	IV
San Marino	I	North Macedonia	II	Vanuatu	III	Togo	IV
Serbia	I	Oman	II			Uganda	IV
Singapore	I	Palau	II			United Republic of Tanzania	IV
Slovakia	I	Panama	II			Yemen	IV
Slovenia	I	Peru	II			Zambia	IV
Spain	I	Qatar	II			Zimbabwe	IV
Sweden	I	Republic of Moldova	II				
Switzerland	I	Saint Kitts and Nevis	II				
United Kingdom of Great Britain and Northern Ireland	I	Saint Lucia	II				
United States	I	Saint Vincent and the Grenadines	II				
		Saudi Arabia	II				
		Seychelles	II				
		South Africa	II				
		Sri Lanka	II				
		Suriname	II				
		Thailand	II				
		Trinidad and Tobago	II				
		Tunisia	II				
		Turkiye	II				
		Ukraine	II				
		United Arab Emirates	II				
		Uruguay	II				
		Venezuela, Bolivarian Republic of	II				
		Viet Nam	II				

**Legends:**  
 Benchmark countries  
 Top of the class countries  
 Room for improvement countries  
 Trailing countries

Sources: 2020 and 2022 United Nations E-Government Surveys.

Note: The internationally recognized three-letter country codes can be found [here](#) and in Survey annex table 12.

The United Nations E-Government Survey 2022 is the 12th edition of the United Nations' assessment of the digital government landscape across all 193 Member States. The E-Government Survey is informed by over two decades of longitudinal research, with a ranking of countries based on the United Nations E-Government Development Index (EGDI), a combination of primary data (collected and owned by the United Nations Department of Economic and Social Affairs) and secondary data from other UN agencies.

This edition of the Survey includes data analysis in global and regional contexts, a study of local e-government development based on the United Nations Local Online Service Index (LOSI), consideration of inclusion in the hybrid digital society, and a concluding chapter that outlines the trends and developments related to the future of digital government. As with all editions, it features extensive annexes on its data, methodology and related pilot study initiatives.

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