

GENDER DIGITAL DIVIDE INDEX REPORT

2022

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Table of Contents

ABOUT THE RESEARCH	2
EXECUTIVE SUMMARY.....	3
INTRODUCTION.....	5
IMPACTS.....	9
ENABLERS.....	12
FOUNDATIONS.....	16
CONCLUSION	18
APPENDIX: METHODOLOGY.....	20

ABOUT THE RESEARCH

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The index and report was prepared jointly by DAKA advisory and WinDt Consulting. The core team and co-authors consisted of Diane Alarcon, Reyn Anderson, Kim Andreasson, Ekaterina Gromova, and Garima Gupta. The extended research team consisted of Lijie Huang, Waleed Al Mutawa, and Trinh Thi Minh Nha.

The team acknowledges the valuable contributions of experts who expressed their views and provided comments and suggestions: Leo Abruzzese, Declan Deasy, Zuhra Halimova, Prasanna Lal Das, Vanesa Sanchez, and Randeep Sudan.

The report was designed by Bonch007, Ekaterina Trishanova and Alexey Polikanin.



Women in Digital Transformation (WinDt Consulting) is a women owned and operated small business, established with the mission to help drive digital transformation in developing countries and support women's full inclusion in the social and economic digital transitions underway worldwide.

Our team brings decades of combined digital development experience and expertise across a broad range of thematic and technical areas that are crucial to the successful design and implementation of digital development strategies and programs.

In collaboration with local partners and stakeholders, WinDt Consulting works to create innovative, effective, secure and sustainable approaches to bridging the gender digital divide.

DAKA advisory

Since 2010, we provide strategic advisory and research services related to the digital economy in areas such as cyber security, e-government, digital divides, measurement of the information society and related topics primarily for the public sector or those interested in it.

Our projects span the globe as we help clients improve their internal effectiveness through strategic reports and assist them in reaching an international audience via white papers, custom research, speaking engagements, and thought leadership distribution.

EXECUTIVE SUMMARY

As life has increasingly moved online, so have the socio-economic gaps between women and men. **This is the gender digital divide.** It is the gap between men’s and women’s ability to access and use the Internet and digital technologies and contribute to and benefit from their development. Digital exclusion can prevent individual women and girls from realizing the benefits of digital technologies.

The Gender Digital Divide Index (GDDI) is a framework that provides a snapshot in time of the current state of gender digital gaps in countries to help decision-makers in government, business, civil society, and donor organizations gain a clearer understanding of the strengths, weaknesses and opportunities for action. The 2022 GDDI pilot studied twenty countries across six global regions with a mix of high-income, upper-middle income, lower-middle income, and low-income countries.¹ The countries selected represent approximately 57% of the world population and 54% of global GDP.

The key findings of the GDDI pilot are:

1. GDDI is highly correlated with the provision of e-government services.

The United Nations e-Government Development Index (EGDI) illustrates the importance of gender inclusive digital development. Access to online government services benefit men and women equally in a transparent manner without bias, highlighting the importance to further develop digital tools and information to all citizens to help bridge gender gaps.

2. Leading countries are geographically diverse. *The top three countries in gender digital inclusion come from Europe, Asia and Latin America, indicating that there can be different approaches to successfully tackling the challenge. Despite their socio-cultural, economic and demographic differences, Sweden, Singapore and Chile hold the top three positions in the GDDI overall rankings. Strengths and areas for improvement vary across these countries. There is no “one size fits all” approach to effectively addressing the gender digital divide.*

3. GDDI is correlated to World Bank income classification. *Four out of the five high-income countries in the study stand at the top of the rankings while all five low-income countries are at the bottom. The gender*

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¹World Bank Country and Lending Groups: <https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups>

The lack of adequate and accurate information is a well-known challenge to addressing gender equality gaps, both off and online.

The lack of women role models and mentors is a well-known factor contributing to the gender digital divide, and the GDDI data bear this out.

digital divide is overall less pronounced in wealthier countries and most acute among poorer countries. This points towards various affordability constraints that can adversely affect digital inclusion, particularly among women.

4. Data dearths skew the picture. *Some countries scored poorly in certain categories because they do not gather and publish gender-disaggregated data or do not report it to international agencies.* The lack of adequate and accurate information is a well-known challenge to addressing gender equality gaps, both off and online. The GDDI findings reflect this challenge. For example, all but three of the countries in the bottom half of the overall rankings scored poorly on the question of whether the national statistics agency publishes gender-disaggregated data on a regular basis that is machine readable. China, Tajikistan, and Vietnam were the exceptions.

5. Good foundations are necessary but not sufficient to overcome gender digital divides. *ICT Infrastructure and readiness is not enough to level the playing field for gender equality in digital development.* Recent analyses have found that Internet availability has been improving around the world, spurred in part by increased demand under the pandemic's quarantine conditions. In the GDDI, China, India, and Saudi Arabia all scored highly on these indicators and placed among the top ten countries in the Foundations category. These strong starting positions did not carry through to the Impacts category, which brought down their overall rankings.

6. Governments and businesses need more women leaders in digital. *Nearly all countries' scores in the Impacts category were negatively affected by insufficient female leadership in key government agencies and businesses.* The lack of women role models and mentors is a well-known factor contributing to the gender digital divide, and the GDDI data bear this out. In all but one of the pilot countries (Sweden), women are missing from important decision-making positions at key regulators and companies.

7. Offline gaps in gender equality follow women online. *GDDI is correlated to indices such as the World Economic Forum's Global Gender Gap and UNDP's Gender Inequality Index.* Countries with greater offline equality such as Sweden, Singapore and the United States appear to also fare better online. Conversely, DRC, Ethiopia, Haiti and Nigeria have both higher offline and inequality. This points towards broader social norms that are expressing themselves in a digital context.

INTRODUCTION

By the end of 2021, nearly two-thirds of the world's population had used the Internet and digital technologies to access social media, education, healthcare, jobs, financial services, civic engagement, government services and much more.² Anyone not online is being left out of work and educational opportunities and missing out on potentially life-saving information and services. In developing countries, evidence suggests that existing socio-economic gaps are deepening as a result of this digital transformation, especially for women. Globally, an average of 62% of men use the Internet compared with 57% of women.³ Increasing the digital inclusion of women and girls could boost global GDP by approximately US\$524 billion by 2025.⁴

Anyone not online is being left out of work and educational opportunities and missing out on potentially life-saving information and services.

The gender digital divide may not be obvious at first glance. Content relevant to women may not exist in local languages. Digital applications and services may not be designed with the particular needs of women and girls



² <https://www.itu.int/en/mediacentre/Pages/PR-2021-11-29-FactsFigures.aspx>

³ <https://www.itu.int/en/mediacentre/Pages/PR-2021-11-29-FactsFigures.aspx>

⁴ <https://webfoundation.org/docs/2021/10/CoE-Report-English.pdf>

The COVID-19 pandemic has laid bare the social and economic costs of digital exclusion generally, including the impact of gender gaps.

Fortunately, the pandemic also has sharpened the focus of governments and businesses on the critical need to overcome these kinds of digital disparities.

in mind. Going online or using social media may pose unique risks to their privacy and safety. Sociocultural norms may make it difficult for them to use and engage with technologies. Educational programs that teach digital skills may not encourage female inclusion. Lack of awareness among government policymakers and business leaders may contribute to such gaps.

Finding effective solutions to overcome such barriers can be country and context-specific. Key factors contributing to the gender digital divide include availability of Internet; affordability of Internet, devices and data packages; digital literacy and skills development; STEM education; access to online banking and finance; relevant content; online privacy, safety, security and trust; legislation, policies and practices; and social and cultural norms.

The COVID-19 pandemic has laid bare the social and economic costs of digital exclusion generally, including the impact of gender gaps. In some parts of the world, for example, girls who have been unable to continue their educational courses online during school closures have been far less likely to return to school upon re-openings.⁵ Similarly, during the pandemic commerce rapidly moved online in many parts of the world; however, a recent study of e-commerce giant Alibaba shows that while women-led firms account for one-half of the sellers, their average sales are lower than their male counterparts due to a confluence of factors, such as their disadvantaged offline starting point.⁶

Fortunately, the pandemic also has sharpened the focus of governments and businesses on the critical need to overcome these kinds of digital disparities. As the world emerges from the pandemic, continuing recovery efforts offer an unprecedented opportunity to effectively address the gender digital divide. The goal of the Gender Digital Divide Index is to help inform and drive these efforts.

The Gender Digital Divide Index (GDDI): A Tool for Change

The GDDI is a benchmarking tool designed to measure progress in bridging the gender digital divide. It takes a theory of change approach that evaluates 20 pilot countries on their Foundations, Enablers, and Impacts across thirty quantitative and custom qualitative data indicators. Foundations measure a country's level of development of overall infrastructure. It looks at Internet

⁵ <https://en.unesco.org/news/girls-education-and-covid-19-new-factsheet-shows-increased-inequalities-education-adolescent>

⁶ <https://asia.fes.de/news/digital-gender-divide/>

coverage, accessibility, and affordability. Enablers assess government policies and programs, considering whether countries have programs that promote digital skills development for girls and women or address gender-based violence. Impact looks at the socio-economic outcomes, measuring the gender gap in access to the Internet, mobile phone usage, and digital payments. The full methodology is available in the Appendix.

The 2022 GDDI pilot study compared gender digital divides among twenty countries with different income levels across the world.

The top five countries in the ranking come from different regions of the world: Sweden (1st) and the United States (4th) from Europe and North America; Singapore (2nd) from Asia; Chile (3rd) from Latin America; and South Africa (5th) from Sub-Saharan Africa. All are high-income countries except South Africa, which is upper-middle income. All are strong performers on indicators such as Internet coverage and affordability, programs to support women's STEM education, and little-to-no gender gaps in use of digital payments systems.

At the bottom of the rankings are all five low-income countries in the study: Uganda (16th), Tajikistan (17th), Ethiopia (18th), Haiti (19th) and the Democratic Republic of Congo (DRC) (20th). All score poorly on Internet coverage and affordability. With the exception of Ethiopia, all lack online government resources directed towards women on topics such as educational and labor opportunities, finance, health and the environment. None has data available on pay gaps for females in the ICT sector.

Most countries score within the same quartile across Foundations, Enablers and Impacts. There were, however, some notable exceptions. Chile falls out of the top quartile in the Foundations category due in part to the lack of a national data protection plan. Brazil (11th overall) scores in the third quartile for both Foundations and Enablers, but reaches the top quartile of the Impacts category; this stronger showing in Impacts appears to be due to Brazil's relatively narrow gender gaps in mobile phone ownership and use of Internet and digital payments. China (14th overall) and India (9th overall) both score in the first or second quartile on Foundations and Enablers

OVERALL		
Rank	Country	Score
1	Sweden	83.32
2	Singapore	77.44
3	Chile	74.99
4	United States	74.15
5	South Africa	70.20
6	Mexico	69.94
7	Ukraine	67.62
8	Russia	65.31
9	India	62.16
10	Saudi Arabia	62.07
11	Brazil	61.89
12	Vietnam	55.82
13	Egypt	55.76
14	China	55.13
15	Nigeria	46.57
16	Uganda	41.19
17	Tajikistan	34.44
18	Ethiopia	31.26
19	Haiti	23.68
20	DRC	23.37

Most countries score within the same quartile across Foundations, Enablers and Impacts. There were, however, some notable exceptions.

but fall to the bottom quartile on Impacts. Data gaps and lack of female leadership among digital policymakers are important negative factors for both countries.

Findings such as these are intended to raise awareness of the gender digital divide and contribute to a better understanding of the necessary foundations, enablers, and impact to close the gaps. With more data-collection on more countries over the coming years, the GDDI will contribute to building the universe of information and data about girls' and women's digital exclusion and help to identify the most useful indicators for measuring changes over time. The GDDI aims to become a tool that can point governments, businesses, civil society and donor organizations towards effective interventions that will ensure women's and girls' full inclusion in the social and economic digital transformations underway in their homes, communities and countries.

BOX 1: SWEDEN AND SINGAPORE LEADING THE WAY

Sweden and Singapore rank number one and two in the GDDI. The leading countries in the pilot index have several things in common: their support for SMEs and digital adoption, government programs to support female entrepreneurs, and limited gender gap in the use of the Internet and digital payments, among other indicators. They are also tackling specific digital divides. For example, public sector services are increasingly delivered via digital channels; however, web accessibility is a challenge for users with disabilities that rely on screen readers. If a website is not properly designed to read an answer option as “Yes/No” it will simply say “Alternative1/Alternative2”. In order to take the gender-neutral web accessibility challenge into account, GDDI used an automated testing tool (Tingtun Checker) to assess progress in this area and in the process developed a new type of benchmarking approach to achieve greater effectiveness in assessments.[1] Sweden and Singapore both scored highly (98.2% and 95.6% respectively), illustrating that greater accessibility to public sector services in an equitable manner can benefit all.

[1] <https://checkers.eiii.eu/>

IMPACTS

This category measures the extent to which countries are succeeding in eliminating the gender digital divide. It captures impact by looking at women's use of digital technologies and success in pursuing digital careers and leadership positions. The category includes indicators that measure the gender gap in access to the Internet, mobile phone usage, and digital payments, as well as gender balance in decision-making in the public and private sectors.

Top-scoring countries in this category hold some surprises. Sweden and the United States, both among the top five overall GDDI countries, fell to the second quartile in Impacts. One factor is gender imbalance in leadership positions at key government agencies. Both Sweden and the United States have become victims of their own success with too few men among the leaders of data protection agencies. Leadership at Sweden's Authority for Privacy Protection (Integritetsskyddsmyndigheten) is especially out of balance: nine out of the top ten positions are held by women. Both Sweden and the United States are also hurt in this category by lack of reporting some data on gender gaps to international organizations.

Both Sweden and the United States have become victims of their own success with too few men among the leaders of data protection agencies.



IMPACTS		
Rank	Country	Score
1	Singapore	83.40
2	Mexico	75.15
3	Chile	70.05
4	Brazil	65.10
5	South Africa	65.05
6	Russia	65.05
7	Sweden	63.45
8	Ukraine	56.75
9	Egypt	55.05
10	United States	50.15
11	Saudi Arabia	41.55
12	Vietnam	35.05
13	Nigeria	34.95
14	Haiti	31.65
15	Uganda	30.00
16	India	29.90
17	China	24.95
18	DRC	21.75
19	Tajikistan	18.35
20	Ethiopia	9.90

As a region, Latin America leads on Impacts. Mexico, Chile, and Brazil rank 2nd, 3rd and 4th, respectively. This is also the only category in the GDDI where Haiti rises out of the bottom quartile to rank 14th. A combination of different factors helps these countries perform well. Brazil, Chile and Mexico have small gender gaps in mobile phone ownership and Internet use. They also are among the leading countries in ensuring a balance between men and women in decision-making positions at the data protection agency. Chile and Mexico appear to be moving in the same direction at the telecommunications regulator (Brazil, by contrast, has no women in leadership positions at its telecommunications regulator). Haiti's private sector is taking female leadership seriously and including women among its top decision-makers at the largest telecommunications company. Critically for the region, Brazil has achieved near gender parity on use of digital payments, with Chile, Haiti and Mexico are reducing the gap.

Ensuring women's equal access to and use of digital payments is a keystone to achieving women's full inclusion in the digital economy and society. Egypt, Ethiopia, India, Nigeria and Saudi Arabia have the greatest gender gaps on this indicator in the GDDI. Notably, women's labor force participation rates are below 50% in all these countries.⁷ Other large, populous countries such as Brazil and China that have closed their gender gaps on use of digital payments might offer some lessons-learned for these countries.



Nearly all countries' scores on Impacts are hurt by a lack of data and reporting. **India**, for example, is the only country in the GDDI to receive a top score for STEM and ICT tertiary graduates, yet it scores a zero for the number of female workers in the ICT sector. This indicates a disconnect between what is likely the reality of India's ICT workforce – at least some measurable female inclusion – and what the data shows.

South Africa is the GDDI leader for gender balance at key government agencies for digital development. Both the telecommunications regulator and data protection agency have enough women in leadership roles.

⁷ https://www.ilo.org/shinyapps/bulkexplorer3/?lang=en&segment=indicator&id=EAP_2WAP_SEX_AGE_RT_A

BOX 2: SPOTLIGHT ON SAUDI ARABIA

Saudi Arabia, a high-income country, ranks 10th overall in the GDDI. The data suggests that Saudi Arabia has many of the necessary foundations and enablers in place to overcome digital gender gaps. Still, it scores below average (41.55) in the Impacts category. A lack of women in leadership roles in the public and private sectors are important factors. Studies have shown that women in leadership positions bring diverse perspectives and can have a positive impact on decision-making that improves the economic and social growth of a country (or organization).[1]

Traditionally, Saudi Arabia has placed significant restrictions on women's involvement in the business sector and public institutions.[2] Over the past several years, driven in part by the goals set in the government's Vision 2030 strategy[3], social and labor reforms have been implemented that have increased female labor force participation from 19% to 34.1%[4]. To build on this progress, Saudi Arabia has launched programs like the Ministry of ICT's Women Empowerment Program in Technology, which aims to increase women's adoption and use of digital technologies and participation in the ICT sector.[5]

Programs such as these will contribute to better representation of women in the ICT workforce. However, without policies designed to encourage promotion of women into leadership roles, it could take many years to bridge this gender digital divide.

[1] <https://hbr.org/2021/04/research-adding-women-to-the-c-suite-changes-how-companies-think>

[2] Before July 2018, Saudi women were banned for driving a vehicle independently. See: <https://www.businessinsider.com/womens-rights-in-saudi-arabia-driving-ban-2018-3#women-took-to-the-streets-when-saudi-arabia-lifted-its-longstanding-ban-on-women-driving-2>

[3] Launched in 2016. See: <https://www.vision2030.gov.sa/v2030/overview/>

[4] The female labor force participation rate in Q3 2016 was 19%. See: https://www.stats.gov.sa/sites/default/files/labour_force_survey_2016_q3en.pdf; https://www.stats.gov.sa/sites/default/files/LMS%20Q03%202021E-Final_0.pdf

[5] <https://www.mcit.gov.sa/en/womens-empowerment>

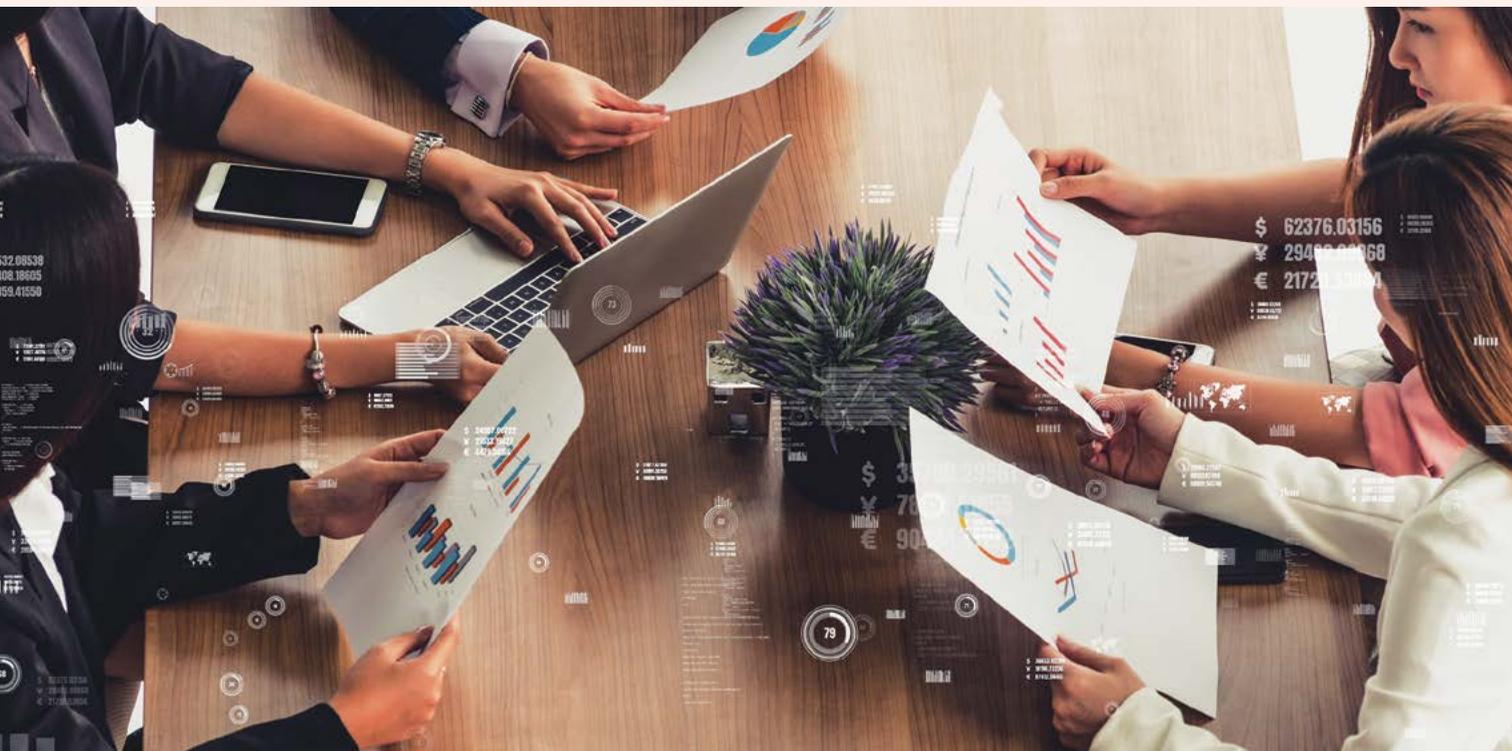
[6] https://www.my.gov.sa/wps/portal/snp/careaboutyou/womenempowering#header2_12

ENABLERS

This category measures how much countries are focusing resources on reducing the gender digital divide. It captures progress by reviewing government policies and initiatives that promote digital inclusion, such as gender-relevant digital content, gender-disaggregated data collection and transparency, as well as digital skills development.

The leaders score highly on programs to support women in STEM at the largest public university and programs to support female entrepreneurs.

Almost all the leading countries in this category are also overall GDDI leaders. India (4th) joins the top quartile in this category alongside Chile (2nd), South Africa (5th), Sweden (1st), and the United States (3rd). All five countries at the bottom of the overall GDDI rankings also are in the bottom quartile of this category. The leaders score highly on programs to support women in STEM at the largest public university and programs to support female entrepreneurs. They also provide gender-relevant content on key government websites (education, environment, finance, health, labor). These findings point to the importance of government focus on and support for women's and girls' digital inclusion.



Regionally, Asia performs best in this category, although Singapore (10th) scores poorly relative to its overall GDDI position. It is hurt by inadequate policies and services to address gender-based violence or gendered crisis response. China and Vietnam rank 7th and 8th, respectively, in this category. All three countries show strong support for digital adoption by MSMEs and for female entrepreneurs. Another important factor is their high scores for collecting and publishing gender-disaggregated data in digital form.

Addressing gaps in gender data is critical for overcoming digital (and non-digital) divides. With one exception, all low income countries in the GDDI score poorly on collecting and publishing gender-disaggregated data. Conversely, all the high-income countries but one score well on this indicator. Lower- and upper-middle income countries vary. Vietnam, Ukraine, China and Russia all score well. Nigeria, Egypt and Mexico do not. India, Brazil and South Africa land in the middle. These findings seem to indicate that countries' resource limitations are an important but not sufficient explanation for gaps in gender data. Governments must recognize the value of gender disaggregated data and prioritize its collection.

Chile is the only country to receive a full score for policies on digital inclusion. To receive this score, countries must have in place a comprehensive female e-inclusion plan, a female digital skills training plan, a female STEM inclusion plan, and a national strategy or policy on Artificial Intelligence that addresses gender differences. Just over half the countries have a female STEM inclusion plan, but fewer than half have plans for female e-inclusion, digital skills training or gender considerations in AI development. These findings carry through to STEM and digital skills training programs.

Most countries score poorly on reskilling and training for the digital economy. This indicator looks at the availability of free technical or vocational programs that target women's inclusion on topics covering ICT or STEM skills. The cost of digital skills training courses

ENABLERS		
Rank	Country	Score
1	Sweden	97.50
2	Chile	84.70
3	United States	78.75
4	India	74.25
5	South Africa	70.95
6	Ukraine	64.80
7	China	61.95
8	Vietnam	60.95
9	Saudi Arabia	58.95
10	Singapore	58.05
11	Mexico	57.25
12	Brazil	48.50
13	Russia	47.75
14	Egypt	44.00
15	Nigeria	43.25
16	Uganda	38.25
17	Ethiopia	34.55
18	Tajikistan	33.30
19	Haiti	15.30
20	DRC	5.30

BOX 3: LOWER-MIDDLE INCOME COUNTRIES IN THE LEAD: UKRAINE AND INDIA

Among the lower-middle countries, Ukraine (ranked 7th) and India (ranked 9th) are the top performers. Both countries have strong foundations[1]. Governments in both countries also have programs focused on strengthening and expanding the number of women entrepreneurs, which can act as a lever for overall economic development.

In India, platforms like the Women Entrepreneurship Platform[2] have registered 21,000+ women. It provides an ecosystem for budding and existing women entrepreneurs by assisting them in e-filing, using social media for business development, skilling and mentoring. To include women entrepreneurs as a part of this digitally enabled world, the platform has collaborated with Cisco to leverage its technology and network. In 2020, to encourage tech-based innovations by women entrepreneurs, the government also launched the Virtual Incubation Program[3].

To support digital adoption by SMEs in Ukraine, the government has launched Diia. Business,[4] which provides information about online work and digital services to SMEs. With relatively secure foundations and enabling environment, Ukraine has been able to support digital adoption among its many small, women-owned businesses.

[1] Together, they scored an average of 81.82.

[2] <https://www.startupindia.gov.in/content/sih/en/government-schemes/Wep.html>

[3] <https://www.startupindia.gov.in/content/sih/en/ams-application/incubator-program.html?applicationId=5f06b1dde4b0f2b258378ee9>

[4] <https://business.diia.gov.ua/en>

and ICT certifications can put up barriers to women's digital inclusion; where budgets are limited, households may prioritize educational opportunities for boys and men. Only three countries score well on this indicator, and all are high-income (Chile, Saudi Arabia and Sweden).

The GDDI data appears to show a stronger correlation between the number of female faculty in STEM and ICT departments and the number of female graduates.

Almost all countries in the top half of the overall GDDI findings score well on programming to support female inclusion in STEM education; support includes scholarships, mentoring, tutoring and/or networking programs. The data does not, however, show a clear connection between programming to support female inclusion in STEM education and the number of female graduates from STEM and ICT tertiary education programs. Russia and Vietnam, for example, have no programming targeting female STEM inclusion but both score relatively well on the number of female graduates. Conversely, Chile, Nigeria and Uganda receive top scores for STEM

inclusion programs but do poorly on the number of female graduates. The GDDI data appears to show a stronger correlation between the number of female faculty in STEM and ICT departments and the number of female graduates. This points towards the powerful effects role models can have, with or without formal program support.

Some developing countries are leading the way by including gender concerns in their national policies on Artificial Intelligence. **Brazil, Mexico** and **Ukraine**'s policies all explicitly recognize the need for ethical standards to ensure that AI does not perpetuate old biases.



Tajikistan stands out among low-income countries as the only one to score highly on collecting and publishing gender-disaggregated data in digital form.

FOUNDATIONS

This category measures how well countries are doing on putting in place the necessary base for digital inclusion. It captures the quality of digital infrastructure, including Internet coverage, accessibility, and affordability, as well as policies for data protection and cybersecurity. It also measures gender gaps in labor force participation and access to health.

Digital access and literacy in primary and secondary education is a priority for them all.

Of the top ten overall GDDI leaders, nine are also leaders in this category: The United States (1st), Singapore (2nd), Sweden (3rd), Saudi Arabia (4th), Russia (5th), India (6th), Ukraine (7th), Mexico (9th), South Africa (10th). China, the only outlier, ranks 8th in Foundations but 14th overall. Four are high-income countries and another four are upper-middle income countries. All have very high scores on affordability and data protection. All but one score well above the GDDI average on Internet coverage. Most are very strong on cybersecurity, with Mexico, South Africa and Ukraine scoring weakest on this indicator. Digital access and literacy in primary and secondary education is a priority for them all.

For countries in the bottom half of the overall GDDI rankings, those rankings are mirrored in this category. Six countries hold the same positions for Foundations and overall: Brazil (11th), Vietnam (12th), Nigeria (15th), Uganda



(16th), Tajikistan (17th), Ethiopia (18th). Unsurprisingly, affordability and coverage is an issue for all the low-income countries. This is where digital exclusion begins for many women. Women have lower average incomes than men, which can make Internet access a low priority for them. Even when women have access to the Internet, the cost of the better-quality devices and data packages needed for successful online educational and economic activity may be out of reach.

The three lower-middle income countries in the bottom half, Egypt, Nigeria and Vietnam, appear to face differing challenges. Nigeria does markedly worse on affordability and coverage. Egypt's web accessibility is very weak. Vietnam had little data protection at the time of the research. The findings are reminders that countries face a broad range of challenges for putting in place the foundations for digital inclusion. There is no one-size-fits-all simple solution.

FOUNDATIONS		
Rank	Country	Score
1	United States	93.56
2	Singapore	90.87
3	Sweden	89.02
4	Saudi Arabia	85.71
5	Russia	83.13
6	India	82.33
7	Ukraine	81.31
8	China	78.49
9	Mexico	77.42
10	South Africa	74.61
11	Brazil	72.07
12	Vietnam	71.45
13	Chile	70.21
14	Egypt	68.23
15	Nigeria	61.51
16	Uganda	55.33
17	Tajikistan	51.66
18	Ethiopia	49.34
19	DRC	43.05
20	Haiti	24.08

Chile is the only high-income country in the lower half of the GDDI in this category. Relatively poor scores on data protection and cybersecurity hurt it. It also performs worse than the other high-income countries on inclusion of ICT in education.



China receives high marks together with Saudi Arabia, Singapore, Sweden and the United States for its commitment to digital access and literacy in primary and secondary education.

CONCLUSION

Digital access and literacy in primary and a Together, these could have the greatest short-term impact on closing the gender digital gaps between rich and poor countries. a priority for them all.

The pilot study of twenty countries for the Gender Digital Divide Index shows gaps remain towards full digital inclusion of women even where foundations, policies and programs are in place to support them. At the same time, the COVID-19 pandemic has helped increase awareness of this issue. This presents an opportunity to achieve significant change over the next several years. The GDDI findings point towards several priorities.

For low- and lower-middle income countries, staying focused on affordability issues is paramount. Affordability applies not only to the cost of Internet access, devices and data packages. Affordability also means ensuring sufficient support for digital skills development and ICT and



STEM education programs. Together, these could have the greatest short-term impact on closing the gender digital gaps between rich and poor countries.

Governments everywhere need to prioritize more and better gender-disaggregated data collection and reporting. The data gaps span the GDDI categories, from availability and affordability of digital skills programs to effective laws and policies on online harassment to relative rates of mobile phone ownership. Collecting, sharing and understanding this well takes a “whole of society” commitment, with cooperation across the government, academia, civil society and private sectors.

Both the public and private sectors need to help women to serve as mentors and role models to each other. This is one of the ways to move past outdated social norms and biases that prevent women from pursuing careers in ICT fields or seeking leadership positions in digital fields. Emphasizing the relatively higher incomes in these fields can also help families accept and encourage women’s inclusion.

The GDDI plans to add many more countries to the study in the coming years, with the goal of developing a comprehensive, annual snapshot of the global gender digital divide. There also is a need to develop tools for deeper dives into individual countries and sub-national regions to gain fuller pictures of each country’s specific strengths and challenges. Together, these tools should help policy and decision makers in the public and private sectors take the actions needed to end the gender digital divide.

Both the public and private sectors need to help women to serve as mentors and role models to each other.

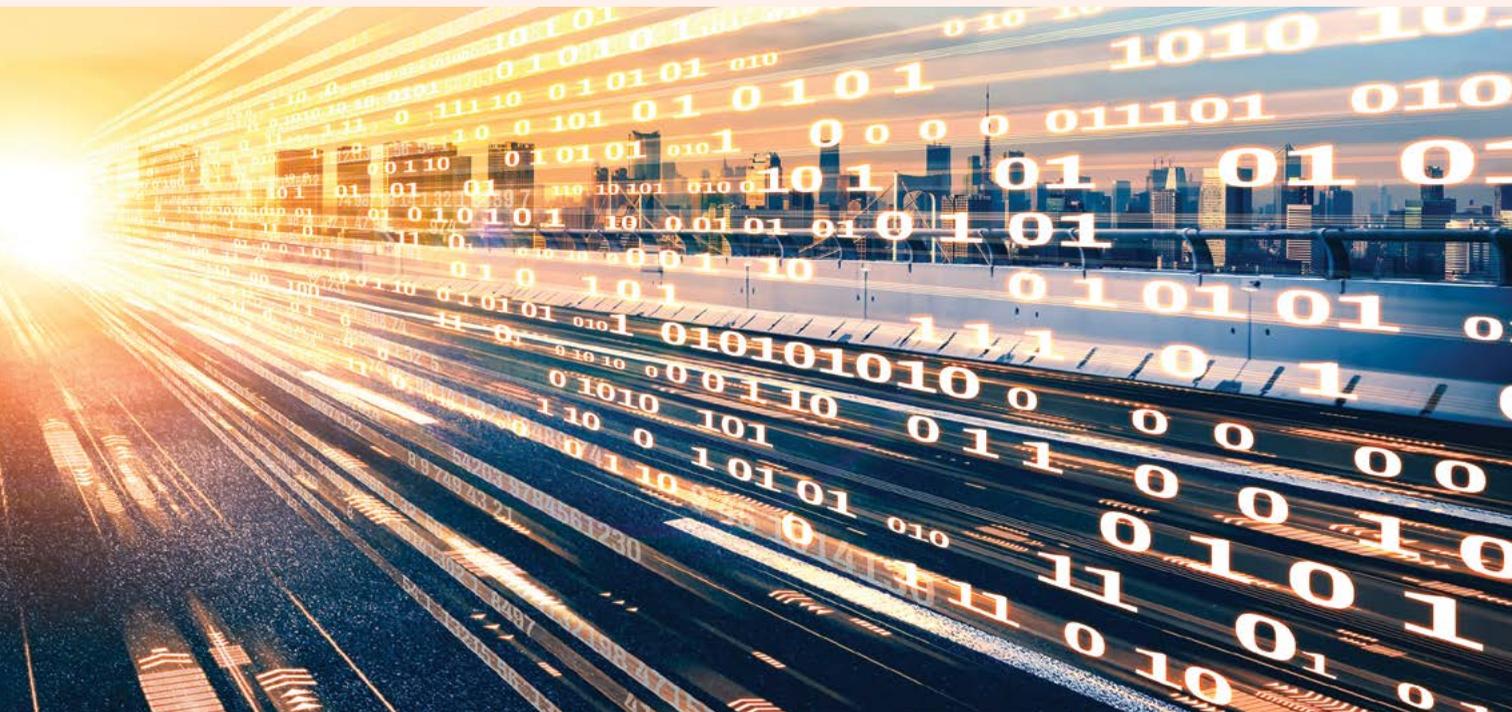
APPENDIX: METHODOLOGY

The Gender Digital Divide Index (GDDI) is a pilot that measures the gender gap in the use and development of information and communications technologies (ICTs).

The Gender Digital Divide Index (GDDI) is a pilot that measures the gender gap in the use and development of information and communications technologies (ICTs). It provides a snapshot in time of the current state of the gender digital divide and aims to help decision-makers in government, business, civil society, and donor organizations gain a clearer understanding of the strengths and weaknesses in a particular economy. The research team collected data from October to December 2021.

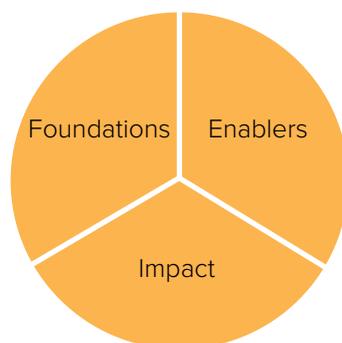
Scoring criteria and categories

The GDDI framework is based on a theory of change model that measures a country's starting point (Foundations), inputs (Enablers) that contribute to reducing the gender digital divide, and the outcomes (Impacts) of such efforts. The categories, indicators, and weights are selected based on a literature review, analysis of gender and digital development indexes, and consultation with experts.



The indicators capture both quantitative and qualitative data. Quantitative data is gathered from open sources for the latest available year. Qualitative scores are derived from publicly available information, such as government policies and other sources of data. The GDDI contains 30 indicators that are organized across three categories: Foundations, Enablers, and Impacts.

Figure 1: Categories of the Gender Digital Divide Index



Foundations: This category measures the starting point of the gender digital divide in a country. It captures the quality of digital infrastructure and includes Internet coverage, accessibility, affordability and policies for data protection and cyber security. It also measures the gender gaps in labor force participation and access to health, two fundamental pillars of the Sustainable Development Goals (SDGs).

Enablers: This category measures inputs that reduce the gender digital divide. It captures progress through government policies and initiatives that promote digital inclusion, gender, transparency, and digital skills. This category includes gender inclusive policies and programs that support digital skills and address gender-based violence.

Impacts: This category measures the outcomes of efforts to reduce the gender digital divide from the starting point. It captures impact through equal access to digital services, careers, and leadership. The category includes indicators that measure the gender gap in access to the Internet, mobile phone usage, and digital payments, as well as gender balance in decision-making in the public and private sectors.

The GDDI contains 30 indicators that are organized across three categories: Foundations, Enablers, and Impacts.

Country selection

The countries selected reflect a globally geographical mix of high-income, upper-middle income, lower-middle income, and low-income countries, according to World Bank Income classifications.⁸ The 20 economies selected for GDDI represent approximately 57% of the world population and 54% of global GDP.⁹

⁸ <https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups>

⁹ <https://databank.worldbank.org/source/world-development-indicators>

Table 1: Pilot countries part of the Gender Digital Divide Index

High income	Upper-middle income	Lower-middle income	Low income
Chile	Brazil	Egypt	Dem. Rep of Congo
Saudi Arabia	China	India	Ethiopia
Singapore	Mexico	Nigeria	Haiti
Sweden	Russia	Ukraine	Tajikistan
United States	South Africa	Vietnam	Uganda

Limitations

The indicators represent a snapshot in time, based on the research and data collection period. Hence, there may be a lag between changes in the environment for reducing the gender digital divide and the scores assigned in the index.

GDDI uses a selection of indicators to capture a broad and dynamic set of variables affecting the gender digital divide.

Data for the quantitative indicators were collected from international statistical sources to ensure comparability. Where there were missing values in quantitative data, the research team assigned a score of 0. This should encourage countries to report data to international sources to promote transparency.

GDDI uses a selection of indicators to capture a broad and dynamic set of variables affecting the gender digital divide. The objective is to begin to examine, in a defined way, how countries are doing and where they can improve at a high level. Future iterations of the GDDI will expand on the number of indicators to improve granularity.

Data modeling

Measuring gender gaps: The pilot index captures any gender gaps in access to resources, instead of the absolute levels. This is the same approach used in the World Economic Forum's Global Gender Gap Index. The gender gap data were classified assigned a score between 0 and 3, where 3 indicates parity or near-parity and lower scores mean higher gender imbalances.

Normalization: Raw indicator scores are normalized on a scale of 100 to 0, where 100 is best, and then aggregated across categories to enable a comparison across countries. Indicators where the raw data range fell between 0 and 100, such as Internet coverage or previously normalized scores were not normalized again. The indicators have been normalized on the basis of:

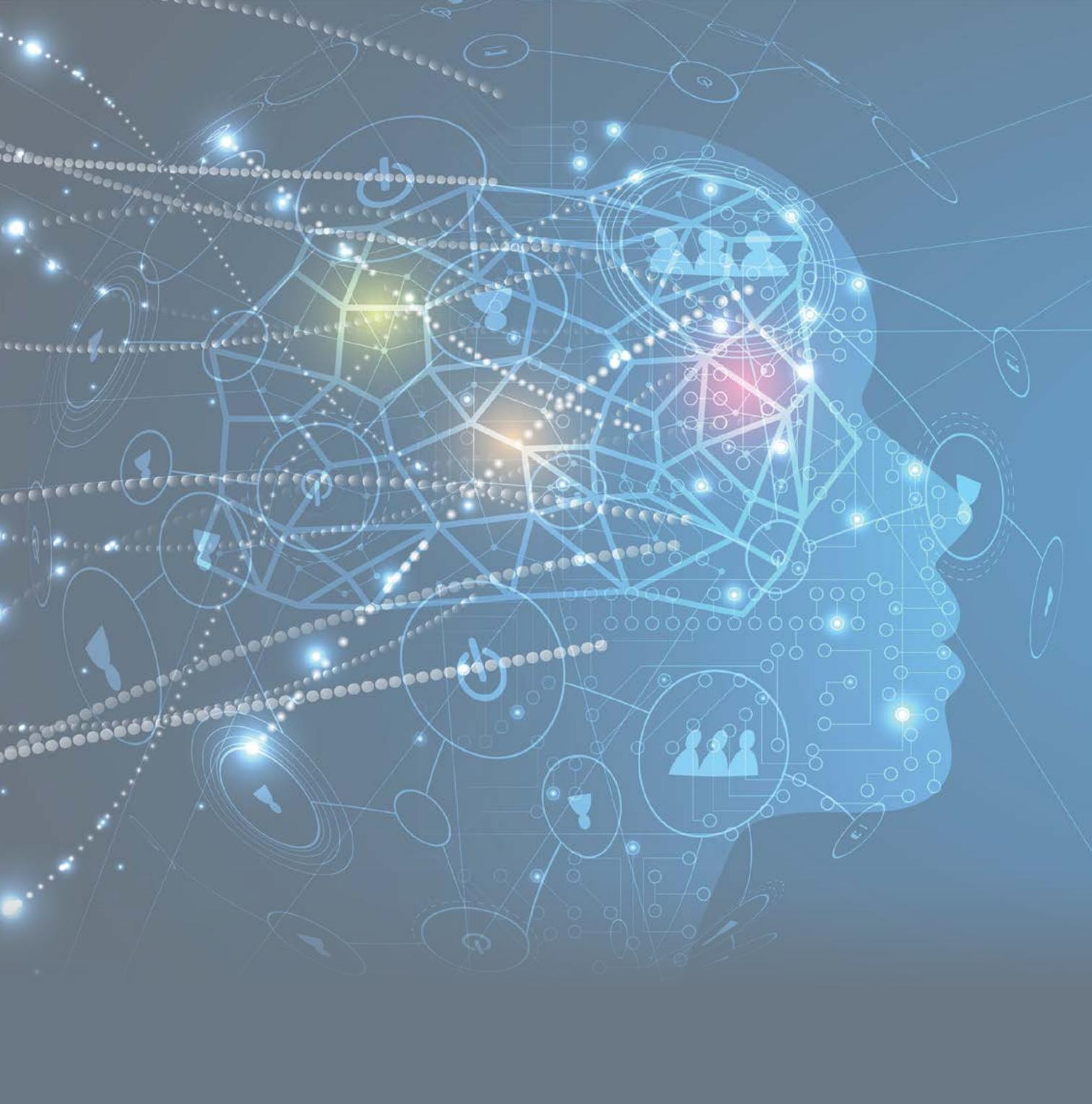
$$x = (x - \text{Min}(x)) / (\text{Max}(x) - \text{Min}(x))$$

where $\text{Min}(x)$ and $\text{Max}(x)$ are, respectively, the lowest and highest values in the 20 economies for any given indicator. The normalized value is then transformed from a 0-1 value to a 0-100 score to make it directly comparable with other indicators.

The pilot index captures any gender gaps in access to resources, instead of the absolute levels.

List of Indicators				
No.	Indicator	Unit	Weight	Source
	OVERALL	0-100		
1	Foundations	0-100	33%	
1.1	Affordability	% of GNI p.c.		ITU
1.2	Internet coverage	0-100		ITU, original research
1.3	Bandwidth capacity	Bits/sec per user		ITU
1.4	Web accessibility	0-100		Tingtun AS
1.5	Cyber security	0-100		ITU
1.6	Data protection	0-2		Inclusive Internet Index (3I)
1.7	ICT in education	0-3		3I, original research
1.8	E-participation	0-100		UN
1.9	Gender and labor	0-100		World Bank, ILO
1.10	Gender and health	0-100		World Bank, WHO
2	Enablers	0-100	33%	
2.1	Policy for gender digital inclusion	0-2		3I, original research, national governments
2.2	Policy for gender and crisis management	0-1		Original research, national governments
2.3	Policy addressing gender-based violence	0-3		Original research, national governments
2.4	Gender disaggregated data	0-2		Original research, national statistics portal

No.	Indicator	Unit	Weight	Source
2.5	Relevant content from government ministries	0-1		Original research, national governments
2.6	Services to address gender-based violence	0-1		Original research, national governments
2.7	Gender STEM programs in academia	0-1		Original research, largest public university
2.8	Reskilling and training	0-2		Original research, national governments
2.9	Government support for SMEs and digital adoption	0-1		Original research, national governments
2.10	Government support to female entrepreneurs	0-1		Original research, national governments
3	Impacts	0-100	33%	
3.1	Female leadership, telecommunications regulator	0-100		Original research, national governments
3.2	Female leadership, data protection agency	0-100		Original research, national governments
3.3	Female technical faculty	0-100		Original research, largest public university
3.4	Gender gap in mobile phone ownership	0-100		ITU
3.5	Gender gap in use of Internet	0-100		ITU
3.6	Gender gap in digital payments	0-100		World Bank
3.7	Female leadership, largest telecommunications company	0-100		Original research
3.8	Female leadership, largest traded company (or largest private)	0-100		Original research
3.9	Female workers in ICT	0-100		ILO
3.10	Female STEM and ICT tertiary graduate	0-100		World Bank



GDDI website: <http://www.gddindex.com>

Contact us: info@gddindex.com

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