DEVELOPMENT AND ACCESS TO INFORMATION 2019

QUALITY EDUCATION • DECENT WORK AND ECONOMIC GROWTH • REDUCED INEQUALITIES • CLIMATE ACTION • PEACE, JUSTICE AND STRONG INSTITUTIONS

IFLA
International Federation of Library Associations and Institutions

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Foreword

The **International Federation of Library Associations and Institutions (IFLA)** is the leading international body representing the interests of library and information services and their users. It works to promote a strong and globally united library field as a driver of literate, informed and participatory societies, and places the importance of access to information at the heart of its values. With members in almost 150 countries, it is both the global voice of the library and information profession, and the primary hub for developing standards, sharing good practices, and empowering and building connections between libraries and library associations globally.

The **Technology & Social Change Group (TASCHA)** at the University of Washington Information School explores the role of digital technologies in building more open, inclusive, and equitable societies. TASCHA is a nexus for multidisciplinary research whose work has helped international organizations, governments, civil society organizations, and public libraries in the United States and more than 50 other countries.

> The role of information in our societies has never been greater. It is an enabler, a raw material, a source of innovation and creativity. To give everyone access to it is to ensure that everyone has the opportunity to learn, grow, and take better decisions for themselves and for those around them.

GLÒRIA PÉREZ-SALMERÓN
President, International Federation of Library Associations and Institutions

In an information age, this is a necessity. Those who lack access are left behind, deprived of a key means of improving their own situation, cut off from cultural, economic, social and civic life.

This is why I am so convinced of the power of libraries as motors of change. They are guarantors of this access, not only through the physical possibility to find a book or get online, but by providing the space and support to ensure that everyone can realise the potential of information.

I believe strongly that even as more and more of our lives take place online, libraries have become more vital – as physical meeting points, as places to ask for advice, as institutions with a clear vocation to help their communities.

Through their work, we can ensure that information becomes a force for equality, and an accelerator of development both around the world and across different policy areas.

I therefore very much welcome this second edition of the Development and Access to Information report. I am grateful to all of our authors – in particular our guest authors – for their contributions. I hope that their work will contribute to greater recognition of, and support for, the access to information for all that can make for better lives.

Introduction

GERALD LEITNER
Secretary General, International Federation of
Library Associations and Institutions

Access to information is essential for the empowerment of individuals, the effectiveness of policies, and the accountability of governments. When everyone can enjoy it, it is a driver of sustainable development across all of its dimensions. When it is absent, insufficient or unequal, opportunities are missed, decisions are poorer, and progress is stifled. Libraries are vital in ensuring that everyone can benefit from access to information, making stronger, fairer societies a reality for all.

This report – the second in the series following the first edition in 2017[1] – provides further evidence, examples and analysis of this contribution, and of the role of libraries in achieving it. It is explicitly focused on the United Nations 2030 Agenda and its Sustainable Development Goals (SDG), which provide both an affirmation of the importance of access to information for development, and a framework for thinking about how to realise its potential.

The goal of this report is to provide an exploration of access to information as a driver of development. In doing so, it seeks to inform decision-making about the implementation of the SDGs. It is designed to be applicable at all levels about how best to build stronger, fairer, more sustainable societies, from the discussions taking place at the UN High Level Political Forum to those at the national and local level. It is therefore intended for policymakers and advisers, as well as anyone who is seeking more effective ways to support development, and the librarians and library workers who can help deliver it.

This introduction therefore offers a refresher on the understanding of access to information applied in this report, a discussion of key issues emerging since the last edition, and an overview of the chapters that follow.

Meaningful access to information and the role of libraries

When referring to access to information, this report takes a deliberately broad approach, underlining the importance of "meaningful" access. This reflects an understanding that the physical and legal availability of information – the supply side – cannot make a difference when people do not have the skills, confidence and social and cultural conditions to apply it – the demand side.

In other words, a physical internet connection, or laws that ensure transparency of public data or open access to publicly funded research, can only have their full effect if everyone is able to use this information fully.

This is an approach that finds its roots in the United Nations 2030 Agenda. The Agenda makes reference to access to information, more or less explicitly, in 20 targets, including commitments to develop infrastructure, promote skills, tackle inequalities and promote freedoms.

A key part of this report is therefore based on a basket of indicators that explore these four facets, or "pillars," of access to information: physical internet connectivity, skills, social and cultural context, and laws. These

> A failure to guarantee meaningful access to information hurts the individual, first and foremost. They miss out on information that can help them make better decisions, or on opportunities to learn and communicate.

pillars are explained in more detail in Chapter 1, but in short illustrate the conditions that need to be met to allow for the potential of access to information to be realised.

In a situation where all the pieces are in place, anyone can get online, without undue practical, financial or cultural barriers. They can find a full range of undistorted information, and have the ability to take this, evaluate it, and apply it in order to improve their own life or the lives of those around them.

Where even one element is missing, this cannot be the case. Without an internet connection, there is less opportunity to learn, to communicate, and to create. Without favourable social and cultural conditions, whole groups can be excluded – in particular women, but also those affected by poverty or who have a lower legal status (such as refugees). Without the right laws, the content available online is skewed, and people are unable to create their own materials or share their opinions. And without skills, information cannot be found or applied effectively.

A failure to guarantee meaningful access to information hurts the individual, first and foremost. They miss out on information that can help them make better decisions, or on opportunities to learn and communicate.

However, it also brings costs in terms of reduced policy effectiveness. If a population is not informed about development schemes and programmes, cannot understand or engage with public health information, or cannot engage with online public services, government is less able to reach its goals. Those who govern also rely on good access to information to guide their own policy-making, while their accountability to people and parliaments requires access in order to work.

The inability to find, understand, use and create information can therefore lead to a variety of negative outcomes. In contrast, those individuals and societies that can access and make use of information are in a much stronger position to succeed now and into the future. In order to avoid different levels of meaningful access to information leading to sustained or widening development divides, there is a need for intervention.

In policy terms, governments can act to improve their scores on each of the indicators identified in this report, through reforms favouring connectivity, equality, education and fundamental freedoms.

As part of this, supporting effective library systems can be a uniquely powerful step. Connected libraries can provide a stepping stone toward, and complement to, widespread home internet connections. They can work alongside schools as providers of skills, from basic literacy to higher critical thinking, and represent a gateway to lifelong learning opportunities. They are open to all, and so provide a place where social and cultural barriers can be overcome, and where individuals can start to engage in civic life.

Developments since 2017

It is worth reflecting on the changes we have seen in the information landscape since the first report in July 2017. Clearly, two years is a relatively short period of time. However, three changes seem particularly relevant in the context of a report focusing on access to information.

A first issue concerns the rate of progress in connecting people to the internet. While there is general consensus that over 50 percent of internet connectivity was achieved in 2018,[2] this still leaves much to do. Moreover, the rate of increase of connections appears to be falling, meaning that it risks being many decades before everyone who wants to access information through the internet can do so.

This is a major worry, given that even if internet connectivity is not a sufficient condition for meaningful access to information, it is a necessary one. Connections are also essential for libraries to deliver many of the services through which they contribute to development. New approaches, and full use of existing infrastructures, are essential.

A second question relates to the emergence of deliberate misinformation as a political issue. This has had significant implications for confidence in information found on the internet, and has led to calls for greater government intervention.

More positively, this phenomenon has also underlined the need to develop greater skills in using the internet. These can help people not only understand and evaluate the information they find, but also apply, share and create it. There is, arguably, a greater understanding of the need to build the knowledge, capabilities and attitudes to be effective internet users than ever before.

Linked to the second question is that of content regulation in general. The power of the internet as a means of sharing and accessing information has encouraged efforts to control it, for political, security or social ends. The emergence of new tools such as filtering technologies

makes this a more feasible prospect than might have been the case in the past.

As such, we have seen calls – including sometimes from major platforms themselves – for regulation. Beyond the risk of simply consolidating the position of major players as the only actors who can apply new rules, disproportionate regulations pose a threat to the free expression and access to information that have made the internet such a driver of change.

The second edition

As the second edition of the Development and Access to Information report, this publication provides further evidence of the contribution of access to development. It places a particular emphasis on the place of libraries in achieving this.

For the first time, however, it provides some insights over time, based on the basket of indicators of access to information identified above. Chapter 1 explores these evolutions, highlighting concern that growth in the number of individuals using the internet is too often not being matched by progress in education, gender equality and freedoms.

Chapter 2 takes the library perspective, drawing on a range of new examples of where libraries are making the difference. It underlines in particular the multiple benefits of many library activities, which can lead to positive results in a variety of fields. Frequently, these examples show what can be achieved when an internet connection is paired with additional initiatives.

Chapters 3 to 7 focus, in turn, on five of the Sustainable Development Goals that are in focus in 2019 – SDG 4 (education), SDG 8 (decent work and economic growth), SDG 10 (reducing inequalities), SDG 13 (climate action) and SDG 16 (peace, justice and strong institutions). Each explores the information-related aspects of a Goal and its associated targets, setting out how these contribute both to the effectiveness of policies and the achievement of results. In each case, the ways in which libraries can help are explained. A conclusion then brings together some of the lessons learned from the different chapters.

Together, these perspectives offer a clear message. Meaningful access to information is a powerful development accelerator, and in providing this, libraries are essential partners for development. We call on governments and all those involved in sustainable development policy-making to help them realise their potential.

1.   Garrido, M and Wyber, S. (Eds.). (2017). Development and Access to Information Report, da2i.ifla.org
2.   See for example: https://news.itu.int/itu-statistics-leaving-no-one-offline/

Contents

Chapter 1
Progress toward meaningful A2I, and emerging threats

This chapter provides an overview of the progress various countries have made toward achieving meaningful access to information between 2015 and 2018, in the context of the United Nations (UN) 2030 Agenda and the Sustainable Development Goals (SDGs). The baseline year, 2015, was chosen to correspond with the year the SDGs were established by the UN General Assembly.[1]

Throughout this report, **meaningful access to information** is defined as "the rights and capabilities to use, create, and share information in ways that are meaningful to each individual, community, or organisation."[2] This rights-based approach recognises how a combination of structural factors at the social, political, and economic levels manifest in local and global contexts to advance (or impede) the ability of meaningful access to information to contribute to more equitable and sustainable development.[3]

Why we measure progress on meaningful access to information

The UN 2030 Agenda "is a plan of action for people, planet and prosperity" with the pledge that "no one will be left behind."[4] Meaningful access to information can advance the types of progress envisioned across the 17 Goals included in the Agenda.

The rise of the internet and the social web have profoundly expanded the range of possible interactions between individuals, communities, organisations, and governments, providing growing opportunities to collaborate to combat poverty and inequality, produce and consume civic information, and participate in social and political action.[5]

Yet there is no guarantee that access to information and communication technologies (ICTs), or the opportunities they enable, will lead to equitable or inclusive social change. This is particularly true when considering the enabling conditions required for information access to address key societal challenges meaningfully – as outlined in the **Development and Access to Information Framework:**[6] (1) the availability of physical connectivity infrastructure, (2) the capabilities to use ICTs, (3) the social context of information, and (4) the legal and political environment. Indeed, given the barriers many of the world's most vulnerable and isolated populations continue to face in these areas, it is very possible that an inequitable distribution of information access will contribute to types of marginalisation that hinder development efforts.

Here are some of the reasons we measure progress:

Meaningful access to information enables bottom-up change that supports a broad range of the sustainable development goals as enshrined in the UN 2030 Agenda.

There is extensive evidence[7] on how information and communication technologies, and the social dynamics they engender, have been leveraged to promote sustainable development in highly diverse contexts and across a wide variety of domains, such as workforce development, gender equality, social justice, and economic growth. In 2019, the High-

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Level Political Forum on Sustainable Development (HLPF) will focus its annual thematic reviews on SDGs related to education, employment, inequality, and good governance, so these domains are of particular interest in this chapter.

Meaningful access to information must be made more equitable and inclusive.

In a world increasingly driven by interconnectedness and ubiquitous communication, meaningful access to information is a necessity and a right. In the past two decades, we have made great strides toward increasing connectivity and digital literacy for billions of people. Yet for many communities around the world, progress has been thwarted by foundational social and economic inequalities that remain in place.[8] We are still far from achieving a truly inclusive and equitable information society.

Technological advances will increasingly affect the progress of the SDGs, not only in terms of how people access and use information, but also the social, cultural, and political ramifications of related issues that emerge.

In today's evolving complex information ecosystem, achieving equitable, meaningful access to information is more important than ever. Emerging challenges such as disinformation, online security and data privacy, the monopolisation of information access and curation, and new restrictions on freedom of information further exacerbate deeply rooted social and economic inequalities, which impede progress across multiple fronts.

How we measure progress on meaningful access to information
To monitor the progress countries make toward meaningful access to information, we selected 17 indicators across the four dimensions of the *Development and Access to Information Framework.*[9] This framework was developed by the authors in 2017 and reflects a general consensus among researchers, development practitioners, and informed policymakers that physical access to information technology on its own is not sufficient to build a more equitable and participatory society. The social, political, and cultural context of information creation and use is critical for unlocking the transformational nature of information resources and improving the well-being of people and their communities.

Measuring the contribution of meaningful access to information to sustainable development is a complex endeavour, determined in part by the availability of data across countries from year to year.[10] Summarising the data also presents challenges; for instance, we group countries by region or income level to highlight trends, yet doing so can mask differences between countries within a region. Regional classifications reflect those used in the *Sustainable Development Goals Report 2016*.[11] Under this system, countries are divided into 10 distinct regions – nine geographic regions and one economic region, which is a group of 55 "developed" countries (out of 228 countries total). Income classifications apply four income categories established by the World Bank: low, lower-middle, upper-middle, and high.[12]

For a more comprehensive view of the progress toward meaningful access to information at a country level, we encourage readers to utilise other tools related to the DA2I initiative, including the DA2I Dashboards[13] and IFLA's Library Map of the World and its SDG Stories (a monitoring tool that provides case studies of how libraries are advancing the SDGs with their work).

Looking ahead
This chapter is divided into three sections, with each corresponding to a dimension of the aforementioned *Development and Access to Information Framework*.

- Section 1 – Connectivity Infrastructure and Use – shows the strides the world has made toward establishing more inclusive connectivity infrastructure, as evidenced by expanded mobile broadband network coverage and a growing proportion of internet users.
- Section 2 – The Social Context of Adoption and Use – shows how educational attainment for youth has changed in recent years, including an upward trend in completion of upper secondary education and an ongoing decrease in the gender gap between men and women across four educational levels.
- Section 3 – The Legal and Policy Environment – shows how online and offline freedoms are declining in many countries.

1. Connectivity infrastructure and use
In the context of the SDGs, physical connectivity infrastructure (specifically for mobile and landline internet) plays a substantial role in supporting economic inclusion and providing a route to a more equitable distribution of knowledge and resources. For this dimension, we include indicators in two connectivity areas: 1) Availability and reach of the technical infrastructure; and 2) Use of that infrastructure. The indicators used (and their sources) include:

1. *Population covered by at least a 3G mobile network (ITU)*
2. *Percentage of households with internet access (ITU)*
3. *Active mobile broadband subscriptions per 100 inhabitants (ITU)*
4. *Fixed broadband subscriptions per 100 inhabitants (ITU)*
5. *Percentage of individuals using the internet (ITU)*

Looking at the changes in connectivity from 2015 to 2016, we see a clear pattern of improved connectivity across all regions, and on nearly every indicator, continuing a trend of sustained growth. Lower-middle-income and low-income countries achieved some of the most significant progress.

1.1 Coverage of 3G wireless networks reached 82% of the world's population
Between 2015 and 2016, the coverage of 3G wireless networks expanded to reach almost 82% of the population in the world, or more than 6 billion people. At a regional level,[14] Southeastern Asia, Northern Africa, the Caucasus and Central Asia, Southern Asia, and Sub-Saharan Africa showed the greatest progress in terms of coverage. Although low-income countries reached nearly 50% 3G coverage (by population) in 2016, they still lagged far behind the world average. At a country level, connectivity infrastructure in Bolivia, Ukraine, Greenland, Sierra Leone, Algeria, and Nepal showed the highest percentage increase of 3G network coverage in 2016 compared with 2015.

### 1.2 Almost half of households worldwide have access to the internet
The number of households with internet access at home through fixed or mobile networks increased from 45% (2015) to 48% (2016) worldwide. Despite this modest improvement, there are very significant differences across the regions. While in Latin America and the Caribbean 46% of the population had home internet access, in Sub-Saharan Africa and Oceania only 16% and 14%, respectively, had this connectivity resource in place. According to the ITU (2018), the increase in households with internet access may be partly driven by an increase in the use of mobile devices for accessing the internet at home rather than by any change in fixed broadband connections.[15] While indicators on home internet access, mobile-broadband subscriptions, and 3G coverage increased from 2015 to 2016, fixed broadband showed a negligible drop (0.3 percentage point) in the number of subscriptions. A possible explanation for the larger increase in mobile broadband than fixed broadband subscriptions may be that fixed broadband continues to be relatively expensive in low-income countries, where, as the Broadband Commission has found, fixed broadband costs more than twice as much as mobile broadband on average.[16]

1.3 More than half of the population in the world is using the internet

Compared with other indicators on connectivity infrastructure, internet use showed the most dramatic change, going from 47.1% (2015) to 51.6% (2016) of the population, a 9.6% increase. Between 2015 and 2016, the highest percentage increase of internet users was in low-income (24.9%) and lower-middle-income (11.2%) countries. At a regional level, Oceania, Southeastern Asia, and Southern Asia experienced the highest percentage increase of internet users compared to 2015. Although many of the countries in these regions are still below the world average, they continue to make positive strides toward universal physical access to information in some of the most economically challenged areas worldwide. (See Figure 1: Regional progress in connectivity infrastructure and use from 2015-2016).

At a country level, nine out of the 10 countries that experienced the largest growth in the internet-using population are in Sub-Saharan Africa. Of these nine countries, Sierra Leone, Tanzania, Guinea, Gabon, and Mozambique saw the largest increase in individuals using the internet compared with the previous year. Gabon, for example, increased the share of its population using the internet from 7% in 2010 to almost 50% in 2016. According to the World Bank (2018), through a combination of investments in broadband infrastructure and the design of a digital strategy that established a regulatory environment more conducive to investment and competition in the country, the cost of internet access in Gabon has fallen from an average of US$18 to US$2.80 per month.[17]

Figure 1: Regional progress in connectivity infrastructure and use from 2015 to 2016 (percent of the population)
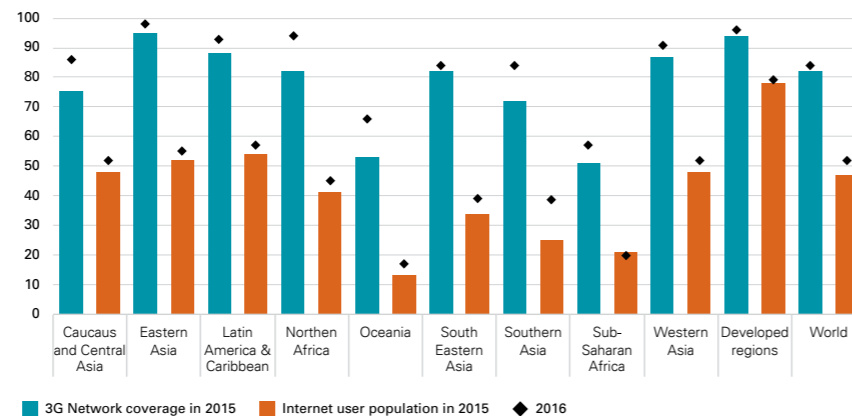
Source: ITU Technology & Social Change Group, University of Washington

1.4 The percentage of internet users has steadily increased, but challenges related to gender disparities and internet affordability still remain

The gender internet gap increased from 11% in 2015 to 12% in 2016

When aiming for truly inclusive and equitable participation, it is important to look at connectivity in relation to different populations, especially historically excluded groups such as women and girls. Research has shown women and girls frequently face particularly difficult challenges related to social and cultural norms that make them less likely than men and boys to access, use, own, and create digital technology and further develop their digital skills.[18] For example, a recently published comprehensive study on the state of gender equality in ICT access, skills, and leadership challenged the commonly held assumption that high levels of mobile phone adoption had shrunk the digital gender gap. It showed, rather, that the gap persists across all three domains in several countries,[19] and this situation is further exacerbated for women living in rural areas.[20]

According to the ITU (2016), the proportion of men using the internet continues to be higher than the proportion of women in two-thirds of countries where data is available, yet it is unclear to what extent the situation has improved in recent years. ITU estimates indicate a growing divide over a one-year period, with the internet gender gap increasing from 11% in 2015 to 12% in 2016 (ITU, 2016). At a regional level, ITU estimates showed that the gender gap was largest in Africa (23%), and the Arab States (18%) and smallest in the Americas (2%) for the reporting countries.[21]

Affordability is an important determinant of people's access to information

Analysis by the Alliance for Affordable Internet (A4AI) suggests considerable progress in the past 10 years on issues related to internet affordability, especially with price reductions for mobile services.[22] Yet the inability of people to afford a basic internet connection remains one of the biggest barriers to access.[23] A4AI defines affordability as 1GB of mobile data costing 2% or less of the average person's monthly income, calculated based on GNI per capita.[24] A4AI's latest report shows that in 2017 more than 2 billion people around the world still lived in countries where mobile data was unaffordable. A4AI found considerable price differences across regions. For instance, mobile data was the most affordable in Asia (1.54% of income) versus, for example, Latin America and the Caribbean (3.58% of income) and Africa (8.76% of income). Only four African countries met the affordability target (Tunisia, Nigeria, Mauritius, and Egypt).[25]

2. The social context of adoption and use: educational opportunities for youth

Whereas physical connectivity infrastructure provides communities with the technological foundations for information access, the social context of adoption and use shapes how individuals engage with this infrastructure. A multiplicity of factors – including social dynamics around poverty, race, ethnicity, gender inequality, and a variety of social and cultural norms – influence people's ability to access and use information meaningfully in their everyday lives.

In many countries in the world, young people experience higher levels of poverty, unemployment, underemployment, and overall marginalisation than older adults,[26] justifying the UN 2030 Agenda's targetting of youth in SDGs 4 (education for all) and 8 (decent employment). The following analysis focuses on youth to illustrate how the social context affects meaningful access to information. Specifically, we consider educational attainment and its effect on opportunities for youth.

Education is key to improving the livelihood of individuals, families, and communities, and it is a critical vehicle through which children and youth can feasibly aspire to improve their livelihoods. Yet education can manifest the inequities that exist in many countries, hampering the prospects of young people.

Meaningful access to information is closely intertwined with education. Clearly the possibility to connect to the internet can open up exciting new possibilities to access materials and tools for learning. However – crucially – the relationship also runs in the other direction, with a range of skills, from basic literacy to higher order critical information literacy necessary in order to make optimal use of access to information.

In this way, we see that some youth – those with the skills to use technology and information in a meaningful way – may find resources and opportunities online to supplement their livelihoods or job prospects, while others miss out. Physical connectivity alone cannot overcome the barriers imposed to meaningful access to information is if opportunities

for education and training, do not exist or are only available to the few.

For this report, our analysis draws on data from one indicator:

1. *Educational attainment, i.e., the highest level of education obtained by individuals aged 25 years and above – secondary school and college (UNESCO)*

Overall, looking at the changes in the social context from 2006 to 2015,[27] we see an upward trend in completion of upper secondary education for the reporting countries, and are closer to achieving gender parity in primary and lower secondary education, with the share of women obtaining a bachelor's degree actually surpassing that of men.

2.1 Completion of upper secondary education for individuals 25 years and above increased to 34% worldwide

Measures of educational attainment – the highest level of education an individual has completed – provide a picture of the opportunities children and youth have to progress along the education pathway. Our analysis shows an increased upward trend in attainment of upper secondary education at a world level. Between 2006 and 2015 (the latest year with available data), the educational attainment rates for upper secondary education as the highest level obtained increased from 25.5% to 34.4%. Meanwhile, levels of attainment of lower secondary education as the highest level obtained slightly fluctuated from 15.6% to 16.9%. Attainment of a bachelor's degree as the highest level obtained, however, decreased from 17.8% in 2011 to 14.2% in 2015. (See Figure 2: Trends in educational attainment by level of education, 2010-2015.)
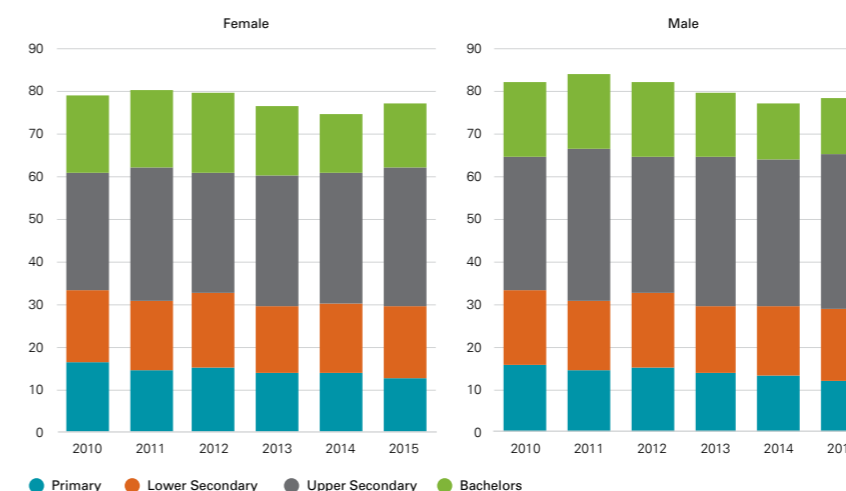
Figure 2: Trends in educational attainment by level of education, 2010-2015 (percent of the population)
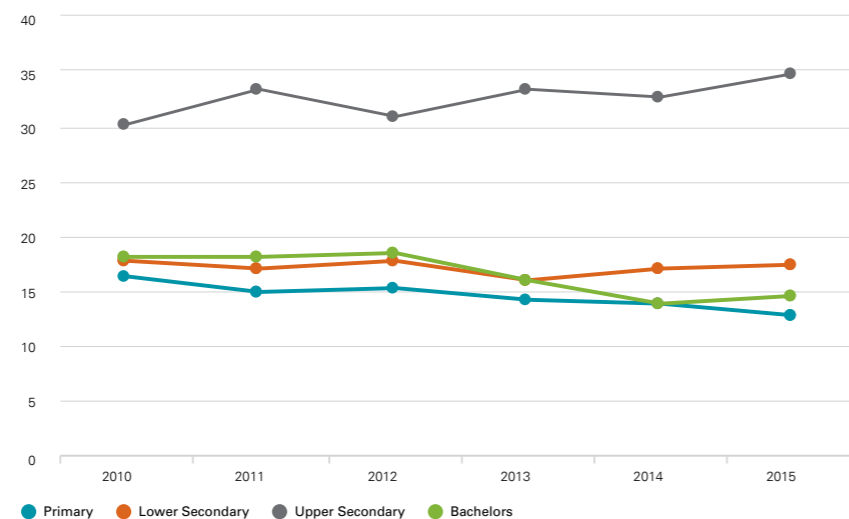
Source: UNESCO
Note: Number of reporting countries varies year by year
Technology & Social Change Group, University of Washington

An important trend observed in the past 10 years in the reporting countries is that gender parity for educational attainment rates has been achieved at the primary and lower secondary educational levels.[28] There remains a gap at the upper secondary level, but women have surpassed men in the proportion completing bachelor's degrees (as the highest degree obtained) since 2006. (See Figure 3: Trends in educational attainment by gender, 2010-2015.)

Figure 3: Trends in educational attainment by gender, 2010-2015 (percent of the population)

Source: UNESCO
Note: Number of reporting countries varies year by year
Technology & Social Change Group, University of Washington

Studies show that national income levels are directly correlated with the level of educational attainment[29] and recent trends show positive progress, particularly in low-middle-income countries. From 2014 to 2015, the highest level of educational attainment for low-middle-income countries increased both when it came to the upper secondary level (from 22% to 36%) and at the bachelor's level (from 9% to 14%).

At a regional level, countries in Sub-Saharan Africa made the most significant progress in increasing educational attainment rates at the upper secondary level between 2014 and 2015 (from 12% to 26%). The share of people obtaining a bachelor's degree as the highest level of educational attainment in the region dropped from 5% to 3% over the same period. Bachelor's degree attainment also decreased from 17% to 11% in Western Asia but grew slightly from 2014 to 2015 in the Caucasus and Central Asia, "developed" regions, Eastern Asia, Latin America and the Caribbean, and Southeastern Asia. However, looking at "developed" countries over a two-year period shows a downward trend in bachelor's degree attainment from 20% in 2013 to 15% in 2015.

3. The legal and policy environment: political rights, civil rights, and freedom on the net

The legal and policy environment pillar of the DA2I Framework relates to the extent to which countries have implemented the kinds of rights-based goals and equitable and participatory practices that support meaningful access to information. This includes guaranteeing the rights of people to freedom of expression, association, political participation, civic action, and online privacy and safety.

The relationship between freedoms and information access is enshrined in the Universal Declaration of Human Rights and Goal 16 of the SDGs, and particularly Target 16.10, which seeks to "ensure public access to information and protect fundamental freedoms, in accordance with national legislation and international agreements."[30]

When these freedoms are restricted, people are unable to make full use of access to information, not only to participate in civic life, but also to

communicate and create relevant content for the benefit of others. Such strict controls can have a chilling effect on journalism, research, and readiness to seek personal information.

This section presents the state of the world as it relates to political rights, civil liberties, and online freedoms. It relies on indices from Freedom House, whose comprehensive data collection efforts evaluate the state of the world (and trends over time) on a range of issues, including the right to information.[31]

The two indices used are:

1. *Freedom in the World*
2. *Freedom on the Net.*

3.1 Freedom in the world continues to decline
Freedom House's Freedom in the World index is composed of two separate ratings on political rights and civil liberties.

- Political Rights Rating: Assesses people's ability to participate in the electoral process, ensure political pluralism, and hold government accountable.
- Civil Liberties Rating: Assesses the extent to which people can exercise freedom of expression and belief, whether they can freely associate and assemble, and whether there exists an equitable rule of law that protects social and economic freedoms.

The combined Freedom in the World index paints a bleak picture of the state of the world regarding the right to information for all people, with glaring implications for the future of democracy. According to Freedom House,[32] 2018 marks the 12th consecutive year with falling ratings in political rights and civil liberties around the world. Today, almost 40% of people in the world live in countries that are rated as not free and a quarter live in countries that are rated only partially free.[33]

Our analysis shows that between 2010 and 2018, freedom declined across most regions in the world and almost all country income levels. Between 2017 and 2018, high-income and upper-middle-income countries experienced the greatest declines in their combined freedom score – including mature democracies where many might expect freedoms would not falter. At a regional level, of the 10 UN subregions, only three (Eastern Asia, the Caucasus and Central Asia, and Oceania) experienced an increase in freedom in the past two years, and yet even these slight regional increases were driven by just a handful of countries, and almost all of the countries within these regions remain partially free or not free.[34]

Countries experiencing improvements in political rights and civil liberties often saw only minor improvements in their scores, although several countries – such as in Angola, Ethiopia, and Ecuador[35] – had significantly improved scores that resulted in major developments that resulted in expansions of freedoms. (See Figure 4 for the countries that experienced the biggest gains and losses in freedom in 2018.)
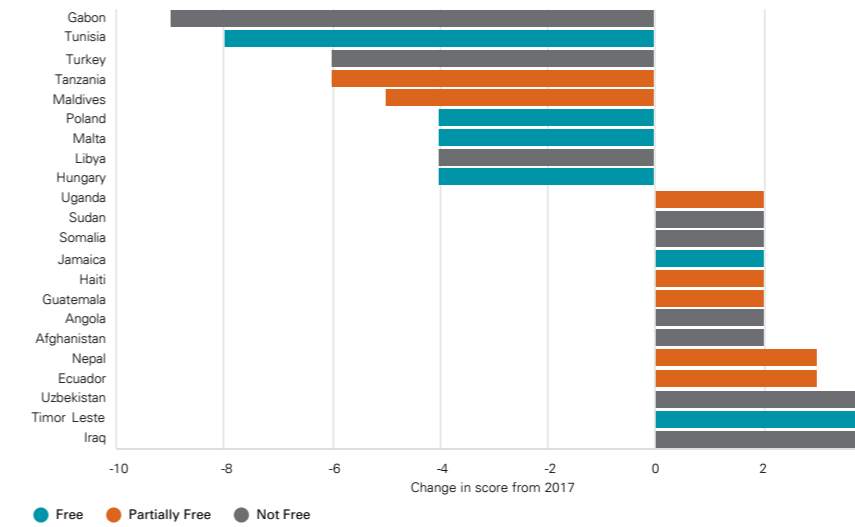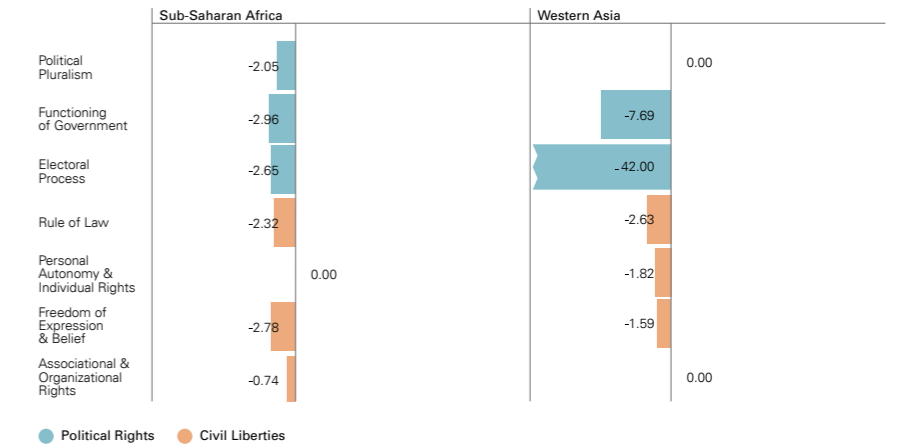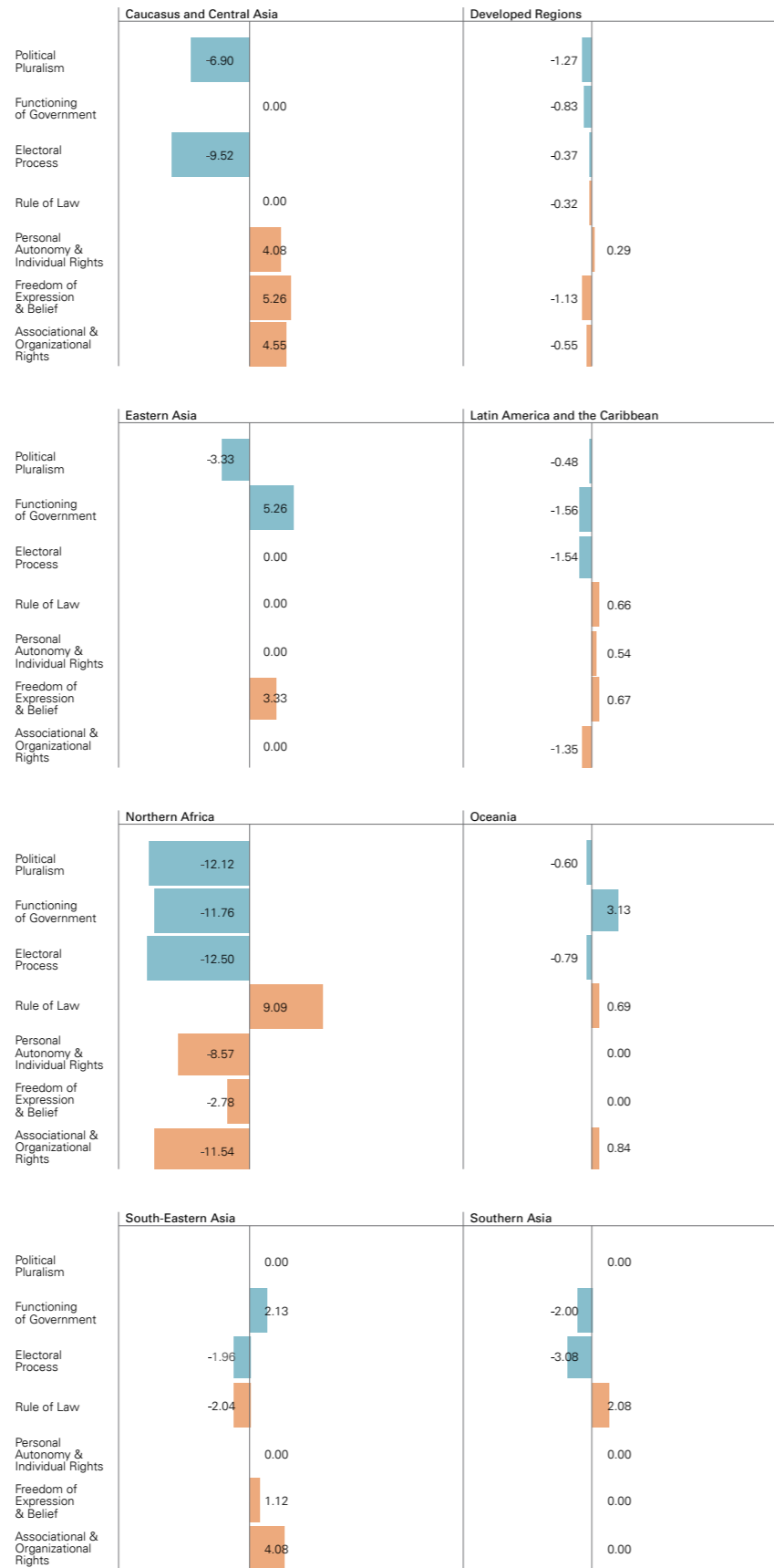
Source: Freedom House
Note: Score reflects improvements or deterioration of political rights and civil liberties.
Technology & Social Change Group, University of Washington.

3.2 Freedom in the world: political rights and civil liberties
Looking at the different components that make up the Freedom House political rights and civil liberties sub-indexes, we see that in Western Asia and the Caucasus and Central Asia, authoritarian regimes further limited the ability of people to have fair and free elections.[36] (See Figure 5: Regional declines and gains in civil liberties and political rights, 2017-2018). In 2018, compared with the previous year and relative to other regions, Northern Africa experienced the largest declines in multiple areas, including: rights of association and organisation; guarantees of people's autonomy and individual rights; political pluralism and a proper functioning of government by implementing safeguards against corruption and cronyism; and openness and transparency in govenrment.

Although the root cause of this decrease in freedoms varies by region and country, some emerging trends have affected countries across different levels of social, economic, and political development. Perhaps the most worrisome trend is the rise of authoritarianism and populist governments in many countries in the world, including in states with a long and established democratic tradition.[37] Fuelled by increasing social and economic inequality, people's overall distrust of a political system they deem corrupt and inefficient, along with the current wave of disinformation and manipulation of information in social media, is setting the ground for authoritarian forces to gain political power at the expense of our political rights and civil liberties.[38]

Figure 5: Regional declines and gains in civil liberties and political rights, 2017-2018, expressed as a percentage change

	Caucasus and Central Asia	Developed Regions	Eastern Asia	Latin America and the Caribbean	Northern Africa	Oceania	South-Eastern Asia	Southern Asia	Sub-Saharan Africa	Western Asia
Political Pluralism	-6.90	-1.27	-3.33	-0.48	-12.12	-0.60	0.00	0.00	-2.05	0.00
Functioning of Government	0.00	-0.83	5.26	-1.56	-11.76	3.13	2.13	-2.00	-2.96	-7.69
Electoral Process	-9.52	-0.37	0.00	-1.54	-12.50	-0.79	-1.96	-3.08	-2.65	-42.00
Rule of Law	0.00	-0.32	0.00	0.66	9.09	0.69	-2.04	2.08	-2.32	-2.63
Personal Autonomy & Individual Rights	4.08	0.29	0.00	0.54	-8.57	0.00	0.00	0.00	0.00	-1.82
Freedom of Expression & Belief	5.26	-1.13	3.33	0.67	-2.78	0.00	1.12	0.00	-2.78	-1.59
Associational & Organizational Rights	4.55	-0.55	0.00	-1.35	-11.54	0.84	4.08	0.00	-0.74	0.00

● Political Rights   ● Civil Liberties

Source: Freedom House
Technology & Social Change Group, University of Washington.

3.3 Freedom on the net

The Freedom on the Net rating tracks obstacles to internet access, limits on internet content and violations of user rights in 65 countries. According to the latest Freedom House Freedom on the Net report (2018), 34% of the world's population lived in countries rated as "not free" and 33% in countries rated as "partly free." Only 20% of people lived in countries where their rights online were guaranteed.[39]

Our freedoms online had already been declining for seven consecutive years, and in 2018, this trend continued for an eighth year. According to the latest Freedom on the Net report:

Of the 65 countries assessed, 26 have been on an overall decline since June 2017, compared with 19 that registered net improvements. [Overall], 17 governments approved or proposed laws restricting online media in the name of fighting "fake news" and online manipulation, and 18 countries increased surveillance, often eschewing independent oversight and weakening encryption to gain unfettered access to data. (Freedom House, FON 2018)

Our analysis suggests that low-income countries suffered the biggest losses in online freedoms from 2015 to 2016, followed by upper-middle-income countries. Countries in Northern Africa and the Caucasus/Central Asia experienced the greatest decrease in online freedoms in 2016. The Philippines, Turkey, and Saudi Arabia were among 30 countries where governments attempted to manipulate political and civic dialogue and spread disinformation by employing armies of "opinion shapers" to promote certain political agendas and curtail opposition on social media.[40] China, Iran, Syria, Ethiopia, Saudi Arabia, Bahrain, Pakistan, Cuba, Uzbekistan, and Vietnam were the 10 countries with the most restrictions on online freedoms in the world in 2016.

The road ahead

As we look at the progress regions and countries made toward achieving meaningful access to and use of information between 2015 and 2018, we see mixed results. Gains in connectivity and education are offset by losses in individual freedom. Rather than making serious inroads toward achieving meaningful access to information for everyone, our indicators show that, for the most part, we are running on the spot. Seemingly for every step forward, the world has taken a step backward. For example:

There was significant progress in building connectivity infrastructure, particularly in low-income and low-middle-income countries, but this infrastructure remains underutilised.

The existence of physical connectivity infrastructure is fundamental to guaranteeing the right to meaningful access to information. However, people's actual ability to access and use that infrastructure is determined by many social factors, including poverty, access to equitable educational opportunities and decent jobs for both women and men, and the presence of a legal and policy framework that protects the rights of all people. Despite significant strides in the availability of information and communications technologies, there has been negligible progress toward solving the significant gender gap that persists in their use. And while connectivity, particularly through mobile connections, has become cheaper in most countries, price remains a barrier that many people around the world cannot overcome.

On a positive note, educational attainment continues to increase across all regions of the world.

Education is key to improving the livelihoods of individuals, families and communities, and it is a critical vehicle through which children and youth can feasibly aspire to decent employment. Yet educational performance can reflect the inequities that exist in many countries, hampering the prospects of young people. In this way, we see that some youth – those with the physical access, financial means and digital skills to use technology and information in a meaningful way – may find resources and opportunities online to support their livelihoods or job prospects. However, when opportunities for education, training and employment are not equitably distributed, youth face obstacles that access to information alone cannot overcome.

Meanwhile, a widespread decline in freedoms spells trouble for the future of democracy around the world.

Excessive limits on freedoms have glaring consequences for democracy as societies lose the power of people's voices to decide the political direction of their countries. Freedom of expression is the cornerstone of political participation and civil rights and embodies a set of democratic values that affect every aspect of meaningful access to information. A rights-based approach to access to information recognises that the right to information impacts all other rights as well. These rights are interdependent and indivisible.

As the lives of people become even more intertwined with our interactions online, guaranteeing the rights of people to freely and safely participate in different online spaces is more critical than ever. The notion of the internet as a liberation technology is dwindling as governments around the world are increasingly surveilling their citizens, using social media to spread disinformation and manipulate their constituents for political gains, and failing to protect their people against violations of privacy.

Scarcity of data on key indicators remains an obstacle to our efforts.

Our efforts to track the progress of countries and regions toward achieving meaningful access to and use of information are severely hampered by the lack of availability of relevant data. During the period between 2015 and 2018, data for many of the 17 indicators included in the DA2I framework was not updated or made publicly available. In a world that is supposedly overflowing with data, the reality is that there exist significant data gaps in key social and economic indicators. The scarcity of data not only limits our ability to assess the progress of countries but, perhaps most importantly, significantly constrains the design of evidence-based policies that truly address the needs of different communities in each country.

1. This chapter is the second installment, following the DA2I report released in 2017. See: Garrido, M. & Wyber, S. Eds. (2017)
2. See: Garrido & Fellows, 2017: 11
3. For a more thorough discussion on the importance of the rights-based approach in relationship with the UN 2030 Agenda, see for example: Nussbaum, (2001) Esterhuysen, A., (2016) and Souter, D., (2016)
4. https://sustainabledevelopment.un.org/post2015/transformingourworld
5. There is an extensive and well-established body of research committed to studying the contributions of access to information for the purpose of advancing social and economic goals. Numerous studies in the fields of communication, particularly development communication (for example, Castells, 1996; Melkote, 2000; Wilkins, 2000; Castells, Fernandez, & Sey, 2009; Toyama, 2011 Heeks, 2010; Sey et al., 2015; Donner, 2016) and information sciences (for example, Burnett & Jaeger, 2011), and more recently in the field of human-centered design and engineering (for example, Starbird, 2018) have shed light on different ways in which communities, civil society organizations, governments, and international bodies used a variety of information and communication resources to advance social change.
6. See Garrido & Fellows, (2017)
7. See footnote 5
8. See Pew Internet Research (2016); ITU, (2016 ,2017, 2018); Garrido & Fellows (2017); and EQUALS Research Group, (2019); among others.
9. See: Appendix 3 (Glossary of DA2I indicators) here: https://da2i.ifla.org/
10. For information on our methodology and a discussion of the challenges faced, see Appendix 1 (Research Process) and Appendix 2 (Data Curation, Processing, and Analysis Strategy) here: https://da2i.ifla.org/node/50
11. A list of countries and their regional classification is available in Appendix 2 (Data Curation, Processing, and Analysis Strategy) here: https://da2i.ifla.org/node/51
12. Information on the World Bank's income group classification can be found here: https://datahelpdesk.worldbank.org/knowledgebase/articles/378834-how-does-the-world-bank-classify-countries
13. The DA2i dashboards will be released in July 2019. Please see our website for updates: http://tascha.uw.edu/
14. Regional averages are weighted by country population.
15. See: ITU (2018)
16. See: Broadband Commission (2018)
17. For information on the World Bank's Central African Backbone Communications Project see: http://projects.worldbank.org/P108368/central-african-backbone-apl1a?lang=en
18. See for example: EQUALS Research Group (2019) and ITU (2016, 2017, and 2018)
19. For a comprehensive analysis on the state of the ICT gender gap please see: EQUALS Research Group (2019)
20. See: Web Foundation (2016)
21. See: ITU (2016)
22. See: Affordability Report (2018)
23. Ibid
24. More information on this definition of affordability, as well as a list of mobile broadband costs by country, is available at https://a4ai.org/mobile-broadband-pricing-data/.
25. Ibid
26. See for example: ILO (2017, 2018); UNESCO (2017, 2018); and UNDP (2016)
27. Data for 2016 was not included in the analysis due to the small number of countries reporting data for this indicator on that year (n=2)
28. UNESCO (2016 & 2017)
29. See for example: ILO (2017, 2018), UNDP (2016)
30. See Garrido, Fellows & Koepke (2017)
31. See Freedom House's Methodology: https://freedomhouse.org/report/methodology-freedom-world-2019
32. Freedom House (2018)
33. Ibid
34. Ibid
35. Ibid
36. Freedom House (2018)
37. Mozilla Foundation (2018)
38. See: Freedom House (2017 & 2018)
39. Freedom House (2018b)
40. Ibid

Chapter 2
Making it meaningful, making it equitable: the role of libraries in delivering development

The provision of access to information is the core mission of libraries. By acquiring, preserving and organising information and allowing users to read and apply it, libraries have long been at the heart of the our cultural and research infrastructure. They are guardians of much of the world's documentary heritage, as well as the source of the raw materials for innovation.

They also have an important social mission. In the 19th century, the building of libraries formed part of the effort to educate and enable those who were not among the elite. Complementing the move to develop labour rights and universal education, they formed a part of a new offering of services – and opportunities – to everyone.

While the world has changed, the core mission of libraries remains relevant, and arguably more so than ever. As it becomes clearer and clearer what can be achieved with information, it becomes more and more imperative that everyone has the possibility to benefit.

The costs of non-access are clear. As detailed in the previous chapter, those who lack meaningful access to information miss out on opportunities for employment or entrepreneurship, cannot engage in research and innovation or in civic life, and are prevented from communicating with friends, family and those who share their interests.

Moreover, a lack of access can cut people off from their cultures and, at the most basic level, from the information they need to make the right decisions for themselves and their communities.

Not having the ability to find, access, apply and create information can too often reinforce social and economic disadvantage, which in turn can raise further barriers to accessing information. This, in effect, creates a bottleneck to equitable development, making it harder to achieve the objectives of the UN 2030 Agenda. As this chapter looks to show, libraries can provide an effective way out of this situation.

As IFLA's Library Map of the World shows, there are at least 2.3 million libraries worldwide. While many serve specific communities (such as school, academic and special libraries – e.g., institutional or parliamentary libraries), this includes more than 357 000 public libraries, with a mission to help all of their users. This represents a huge potential resource.

Yet libraries do not exist in a vacuum. They depend on a number of conditions to exist, and to be able to fulfil their missions. Clearly funding is crucial, not only for an adequate building and staff, but also for collections and other infrastructure.

Libraries have a two-way relationship with the different elements of the Development and Access to Information (DA2I) Framework. They benefit from good performance in each of the four pillars of the Framework, but, crucially, also support them. Indeed, there is strong potential for a virtuous circle.

This chapter will explore these issues and illustrate the contribution that properly enabled libraries can make. Finally, it will relate the examples discussed to the Sustainable Development Goals.

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Libraries and connectivity

The first pillar of the DA2I Framework focuses on individuals' ability to connect to the internet, be it though a wire or cable connection (or a combination of this and Wi-Fi), or through mobile broadband. Clearly library users also benefit from connectivity, and indeed libraries increasingly require it in order to carry out their missions.

However, this section makes the case that the provision of public access to the internet in libraries is a key part of any connectivity strategy, including in the most advanced countries. This is because internet access in libraries represents a unique value proposition, not only as a stepping stone toward a greater share of home connections, but also as a complement to this even as some countries approach 100 percent internet use. In short, there is a strong two-way relationship between libraries and good performance on the first pillar of the DA2I Framework.

As highlighted in the first chapter, cost remains an important barrier to internet use. Public access in libraries provides a response to this, especially when an effort is made to ensure that costs are either zero or minimal for those who could not afford it otherwise.

Yet cost is relative. Where someone sees great value in something, they will be ready to pay a high price. In contrast, if they feel a product or service has little worth, they will not even be ready to pay small sums. By offering free or very low-cost access, libraries can help overcome this situation, giving new users an opportunity to experience the internet for themselves. Having discovered what is available, users may be readier, sooner or later, to pay for a home connection.

It also remains the case that even in the best-connected countries, many people remain disconnected, by necessity or by choice. For all of the reasons set out in the introduction describing the impacts of information poverty, the presence of libraries as a "fall-back" option is crucial. As will be discussed later in the chapter, libraries also offer key complementary support and training that is usually unavailable to a home user.

Case study 1: libraries and community networks, Perafita, Spain

One promising way in which libraries can support connectivity is through acting as hubs and meeting centres for community networks. These are local internet networks that are owned and run by the community, rather than big internet service providers. With their focus on the needs of a local area, they have proved to be an effective means of delivering better and broader connectivity than the market will provide.

In the case of the guifi.net project in Catalonia, Spain, the library in the village of Perafita became the node for an extension of the network. Given the central position of the library, and the fact that it was already connected to high-speed internet, it was an ideal place to site a transmitter. Crucially, however, it already offered a telecentre, and so was a good location to organise workshops and discussions. The library itself saw greater use of its own resources, while internet usage in the community as a whole rose sharply.[1]

Case study 2: 'kids on the tab,' Kibera, Kenya

While phones may be increasingly ubiquitous, they are often not suitable for learning or other deeper forms of interaction with information. For example, access to technology is still rare in the informal Kenyan settlement of Kibera, which is home to around a million people. Young people there also struggle with education, with none from the settlement ever having gained entry to prestigious "national" schools, to which entry depends on performance in exams.[2]

To combat this, the Kenya National Library Service set up "Kids on the Tab," a programme giving local children access to tablets preloaded with educational content, as well as support to learn how to make the most of the internet as a whole. Working with an educational agency, the programme complemented the formal education system, aiming to make learning more interactive, engaging and effective – something that would not have otherwise been possible even for those who did have access to smartphones.

The results were impressive. Already oversubscribed at the start, the programme saw a third of participants gain admission to national high schools. The children also became more enthusiastic about learning and developed key digital competences and skills. After getting a better education in youth, their prospects are far brighter.

Libraries, skills and equity

The second and third pillars of the DA2I Framework address the social and cultural context, as well as the ability of users and consumers to get the most out of access to information. These pillars are closely associated with efforts to deliver greater equality and effective education systems – areas where libraries make a particularly strong contribution.

Regarding skills, libraries have two unique strengths. First is the expertise and experience of their staff in accessing and making use of information. Librarianship is a profession focused on learning how to navigate the sea of available information, and on teaching others to do the same.

This teaching can consist of helping users find the book or information that corresponds to their needs. However, it also implies developing information literacy among users. This is the skill that allows others to know where to find, how to evaluate, and in what ways to make use of information. With growing concern around the impacts of deliberate misinformation, the ability to spot the difference between the reliable and unreliable is a crucial response (with far fewer negative repercussions than efforts to ban "fake news").

The second strength is the fact that libraries are open to all, at all stages of their lives. They both complement schools (and can even precede them by helping develop early-age literacy) and provide a permanent second chance for those who do not succeed the first time in formal education. In light of rapid changes in the information environment, this role is particularly crucial. In this context, libraries can provide skills themselves that can promote employment, inclusion and civic engagement, in a more or less formal way, or can act as a platform for other groups to offer training.

In addition to skills training, libraries can also help address forms of inequality that result from a range of social and cultural factors. For example, whole groups – women and girls, migrants and refugees, older people, people with disabilities – can be excluded from opportunities to benefit from information. This exclusion can take place through formal rules and cultural practices (the right to own a phone, for example), an inability to take advantage of public services (due to language issues), or a simple failure to adapt to need.

As highlighted in the introduction, there can be a risk of a vicious circle where individuals or groups who are marginalised are also starved of access to the information they need to improve their lives. This, in turn, simply reinforces their exclusion. There has been discussion of the connection between information poverty and other forms of poverty, and so of the need for interventions (notably through libraries) to break this cycle.

Here, too, libraries have a role to play by offering a universal service. This comes both through the nature of the space they provide and the development of services to meet specific needs. The 2017 DA2I Report, for example, illustrated the particular role of libraries in promoting gender equality in access to information.[3]

Case study 3: gen connect, Shoalhaven, Australia

The potential of libraries as a platform for inclusive skills provision is underlined by Shoalhaven Libraries in Australia. In a community of around 100,000, almost a third of households are made up of older people who have either never had children, or whose children have moved away.[4]

Older people are particularly susceptible to being deprived of access to information, given the risk that they are left behind by a market focused on new devices and younger users. This can result, for example, in loneliness and failure to take advantage of eGovernment services. As a result, the Shoalhaven library decided to act to help ensure that all city residents could gain the skills they need to make use of new technologies.

Instead of offering formal courses, the library reached out to local schools to find young volunteers, who were more than happy to share their skills in using devices and services. Older people were then able to benefit from an hour of free one-on-one support each week from their new, younger "tutors," under the name "Gen Connect."

While for the older people, the learning was the most important aspect of what they viewed as a highly successful programme, the chance to connect with younger members of the community came a close second. The young tutors themselves particularly appreciated the relationships created. Overall, Gen Connect not only built digital skills, but also helped combat exclusion and built a stronger sense of community.

Case study 4: reading to dogs, Bashkortostan, Russian Federation

People with disabilities are at particular risk of enjoying fewer educational opportunities than others, thanks to a lack of relevant materials and support, compounding their potential to be excluded in later life. In particular, children with disabilities can suffer from a lack of confidence in reading aloud to adults or their peers, holding them back from doing so, and thus from developing a core skill for learning in general.

Libraries in the Russian Republic of Bashkortostan have sought to break this cycle by offering canine reading therapy – reading to dogs instead of people. It has been shown that this can remove the hesitation or embarrassment that children would feel otherwise. This service has been particularly helpful for poorer families that cannot afford more expensive private options.

The programme has led to greater confidence in reading and communicating with others, and it has helped build the ability of the children to empathise with others, leading to broader social integration.[5]

Case study 5: learn to discern, Ukraine

Given concern about deliberate misinformation online, the example of the Learn to Discern project run by IREX in Ukraine is powerful. At a time of high political tension, Ukrainians have been subject to extensive politicised use of information, risking creating a sense of apathy and disengagement in the population.[6]

IREX's approach has aimed to go beyond traditional media literacy content, not least given that many

> **Older people are particularly susceptible to being deprived of access to information, given the risk that they are left behind by a market focused on new devices and younger users.**

people now access their news through social media rather than traditional news sites. Through an interactive curriculum tailored to the local media environment and needs, and by training 428 grassroots media literacy trainers, it was possible to run courses both in libraries and in other institutions. Taking a cascade approach, those who took part in courses were then encouraged to spread their learning with those around them, complemented by billboards in public places. Crucially, those working in libraries ensured that the project was open to people of all ages around the country, and not limited to youth.

The project has had a measurable impact, with half of participants regularly fact-checking news three months after the course, up from 21 percent before. Ninety-two percent had checked news at least once, and 91 percent shared the skills gained. Meanwhile, a survey of the people who saw the billboards and advertising campaign in its first two weeks showed that 54 percent identified that they needed media literacy training.

Other examples
In providing skills, there is a need to tailor content to individuals' needs. The specific needs of youth – in particular those who may be at risk of marginalisation for other reasons, such as homelessness or sexuality – can pose a specific challenge, but dedicated library staff and a willingness to listen can make a difference.[7]

The same need to tailor programming is present with other at-risk groups. There are examples of libraries developing programmes to support employment and entrepreneurship focused on women (in China and Northern Macedonia), on Roma (in Croatia) and on immigrants (in Sweden), to offer just a few cases.[8]

Librares and liberties
The fourth pillar of the DA2I framework looks at key laws affecting freedom of expression and freedom of access to

information. As in the previous sections, the activities of libraries both gain from, and contribute to, better performance in this field.

It is clear that libraries themselves benefit from free expression (including the freedom to publish), which supports a strong flow of new books, articles and ideas. Without this supply, libraries would not have much information to which to give access. Sadly, there are numerous examples of laws (and a fear of them, leading to self-censorship) leading to materials being censored or even removed from library shelves.

Libraries are also less able to support researchers and creators when there is less freedom. Those carrying out research rely on academic freedom to pursue their work in line with their best judgment.

Yet as mentioned, libraries also help make rights become a reality. On a basic level, the relationship between free expression and free access to information is clear in the Universal Declaration. By giving people the possibility to read and learn, libraries empower them to create.

Libraries also support transparent and participatory governance. Many have realised their potential as places to help users take advantage of open government initiatives, to encourage political awareness and engagement. There are also examples of libraries simply helping users understand their own rights, and thus realise them.[9]

Finally, libraries can support efforts to build more peaceful and stable societies, not only through promoting inclusion in their services and collections, but also as memory institutions that can enable healing and reconciliation.[10]

Case Study 6: Parliamentary Library, Myanmar
In Myanmar, as part of the transition to democracy, the need for an effective parliamentary library was recognised by the government and donors. With

members of parliament gaining new powers to scrutinise the decisions of the executive and hold them to account on behalf of their constituents, they needed to be well-informed.

Working with the Inter-Parliamentary Union, the library developed a training programme for the local staff, with parliamentary librarians from other countries spending time there in order to share knowledge and practices. The result has been an operational research service whose work, even within the first year, has been used by almost all members of parliament, notably on issues such as domestic violence, international development loans, and land law reform.[11]

Case study 7: legal information access centre, New South Wales, Australia
While the law is dispensed in courts and tribunals, these are not usually the best places to access information about the law. Law libraries themselves tend to be sited within universities, and so not necessarily accessible to the general public. However, the expertise that law librarians have is undoubtedly helpful for people looking to understand and assert their rights.

The Legal Information Access Centre (LIAC) in New South Wales (NSW), Australia, has a record of almost 30 years of delivering access to justice through the Find Legal Answers service in public libraries.

The result of a collaboration between the State Library of NSW and the Law and Justice Foundation of NSW, the LIAC has produced materials that are comprehensible to the general public and trained public librarians to help people use them. The libraries have then worked with organisations representing groups that may have the greatest need for support, such as the Tenants' Union. It has received almost universally positive feedback from users, whose number is growing steadily.[12]

Other examples
In the United States, a network is developing libraries' potential as centres where the public can make the most of open data. The public, but less formal, nature of libraries makes them an ideal place for individuals to work with this information. Chattanooga Public Library, for example, has been running the city's online open data portal since 2014, and now hosts 280 datasets that have received hundreds of thousands of visits.[13]

Médellin, Colombia, has also seen a powerful example of libraries even acting as centres for the collection of open data, in this case around air pollution. The Makaia Foundation worked with the city and local libraries to install pollution sensors in branches, and then provide users with data literacy training in order to be able to interpret the information received. The project has seen strong participation, with an increase in understanding of the issue of air pollution, and greater engagement in local government debates about how to reduce it.[14]

There are also efforts to encourage engagement in the political process at the national level in the United States. The Columbus Public Library in Wisconsin organised a Kids Vote, encouraging

young people both to see how democracy works and to debate the merits of different candidates.[15] A broader campaign in the run-up to the midterm elections in November 2018 saw libraries across the country encourage voter turnout and engagement in the issues. Meanwhile, in Taiwan, China, libraries identified key topics of political discussion in elections and provided courses and reading lists for library users in order to understand more about the underlying issues.[16]

Conclusion: The SDG connection
The examples given in this paper provide illustrations, around the world, of the contribution that libraries can make to strengthening each of the pillars of meaningful access to information under the DA2I Framework. By enabling connectivity and access to technology, providing skills and learning for all (even those at risk of marginalisation), and strengthening democracy and accountability, libraries are making real contributions.

A noteworthy point is that many of the examples given could have been cited in more than one of the sections. This echoes the insistence in the UN 2030 Agenda of the fact

that actions in different areas of development are interconnected. It is also a reminder that libraries are well-placed to support the delivery of all the Sustainable Development Goals.

In the rest of this year's Development and Access to Information Report, experts will discuss the role of access to information in delivering five of the Sustainable Development Goals in focus at the 2019 High-Level Political Forum.[17] In each of these areas, there is evidence of how libraries can make a difference.

The multiple impacts of library interventions also recall the concept of "development accelerators" proposed by the United Nations Development Programme.[18] This sets out an approach to planning that identifies actions that can bring progress on a variety of fronts by resolving key "bottlenecks."

As set out in the introduction, if information poverty – a lack of meaningful access to information – is a bottleneck, then the world's libraries would appear to be a very strong example of a development accelerator. The only challenge now is to ensure that all of them have the recognition and support they need to realise this potential.

1. Baig, R. (2018)
2. IFLA SDG Stories, Library in Kibera, Africa's Largest informal Settlement, Improves Access to Information, https://librarymap.ifla.org/stories/Russian-Federation/CHILDREN-WITH-SPECIAL-NEEDS-READ-TO-DOGS-TO-DEVELOP-LANGUAGE-SKILLS-AT-THE-LIBRARY/127
3. See Nancy Hafkin's essay discussing the interplay of gender and access to information in Garrido, M. and Wyber, S. (2017), Development and Access to Information 2017
4. IFLA SDG Stories: Connecting Generations at the Library, https://librarymap.ifla.org/stories/Australia/CONNECTING-GENERATIONS-TO-BUILD-TECHNOLOGY-SKILLS-AT-THE-LIBRARY/125
5. IFLA SDG Stories: Children with Special Needs Read to Dogs to Develop Language Skills at the Library, https://librarymap.ifla.org/stories/Russian-Federation/CHILDREN-WITH-SPECIAL-NEEDS-READ-TO-DOGS-TO-DEVELOP-LANGUAGE-SKILLS-AT-THE-LIBRARY/127
6. IREX (2019)
7. Walsh, B. (2018)
8. FLA (2019)
9. American Association of Law Librarians (2014)
10. IFLA (2018)
11. Fraser and Myat Kyaw (2015)
12. Scarf, P. (2016)
13. Poon, L. (2019)
14. Makaia (2017)
15. Fesemye, C. (2018)
16. Lin and Zhong (2016)
17. SDG 4 (Quality Education), SDG 8 (Decent Work and Growth), SDG 10 (Reducing Inequalities), SDG 13 (Climate Action) and SDG 16 (Peace, Justice and Strong Institutions).
18. UN Development Programme: www.undp.org

Chapter 3
Quality education and lifelong learning for all – A focus on people

The ambition of SDG 4

When the Sustainable Development Goals (SDGs) were adopted by the United Nations (UN) General Assembly in 2015, they were welcomed by member states, civil society and other stakeholders. The 2030 Agenda aims to provide a universal reference framework for sustainable development that can unite efforts to improve lives and save the planet.

Following on from the 15-year Millennium Development Agenda, the SDGs not only brought new topics to the agenda (such as climate change, economic inequality, innovation, sustainable consumption, peace and justice), but were noteworthy for their universal character, in that they assigned responsibilities to developed industrial countries as well as to developing countries. There was also an increased emphasis on the interconnected character of the goals, and the notion that success in any one area could unlock the potential of the others.

This is very much the case with education. The whole 2030 Agenda clearly reflects this vision of the cross-cutting importance of an appropriate educational response. Education is explicitly formulated as a stand-alone goal – Sustainable Development Goal 4 ("Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all"), but it also seen as crucial for the achievement of many other goals. Education and lifelong learning are the golden thread that runs through the implementation of all 17 SDGs.

The expectations of education are very high: It is a prerequisite for poverty reduction, as well as gainful employment and decent jobs. It is also crucial for sustainable growth, building social cohesion, achieving prosperity, and promoting human rights and equality. The ambitions are clearly expressed in the targets of SDG 4 (UN, 2015), while numerous education-related targets and indicators are also contained within other SDGs.

Access to information is a key factor for success here. To paraphrase Paulo Freire, when people can neither read the words nor the world, they lack possibilities not only to change their own lives or the situation on the national level, but also to have information and knowledge about the issues for which they could fight on the global level.

It is true that, at the level of governments, there is a strong focus on the need to collect reliable data and information as the "key to decision-making" in support of the implementation of the Agenda. This covers collecting data and information from existing reporting mechanisms, developing new methodologies for the collection of data, and "efforts to strengthen statistical capacities in developing countries."

When it comes to access to information by "common people" – for whom the whole agenda is created – there is a broad reference to "access to information" (in SDG 16), but also many references to information for practical use, such as information "on food reserves," "health-care services, including for family planning," or "information and awareness for sustainable development and lifestyles in harmony with nature." This is complemented by talk of bridging the digital divide, and providing "access to information and communications technology" and "universal and affordable access to the internet."

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In countries struggling with budget weaknesses or a lack of capacity to develop policies, a lack of access to information can stand in the way of progress. Even if there are measures on a national or regional level, it is not clear whether relevant information will be accessible for all.

Access to information is also essential for achieving education for all. Potential learners need to know about the opportunities available, they need to interact with information as part of the learning process, and both they and government need information to assess the success of policy initiatives in the areas. This essay explores some of the key issues in the design and implementation of SDG 4, and how access to information contributes to success.

2. People, not politicians: helping everyone to learn

A first key question comes from the fact that the 2030 Agenda as a whole – and of course SDG 4 – is centred on people. As a result, people should be at the core of its implementation, and benefit from the transformative change that it promises, rather than simply being subject to the decisions of others. If information is power, access to information is crucial if people are to be empowered, and so the SDGs achieved.

Yet there is a risk that more effort goes into building capacity for governments, notably to monitor progress (which is indeed important, but should not be the only focus), than into supporting access to information for everyone. Given that those who have access to the relevant information have the power, it is crucial that access to information is considered as a human or civic right, and the right of all those people whom the Agenda is addressing, in order to empower them to take the role of agents of change.

When talking about ensuring the rights of individuals, it is important to remember the motto of the 2030 Agenda: "No one left behind." In other words, it should be for all

countries and groups of people. No one should be excluded. But this will remain wishful thinking if we continue with "business as usual." When it comes to education and information, we should note the conditions faced by at least two groups.

Firstly, people in less developed countries face multiple forms of marginalisation and deprivation. In countries struggling with budget weaknesses or a lack of capacity to develop policies, a lack of access to information can stand in the way of progress. Even if there are measures on a national or regional level, it is not clear whether relevant information will be accessible for all. Extensive experience has shown that proper guidance is useful, in terms of sharing information about education possibilities, offers and provisions that might be suitable, especially in non-formal education. This can be the case for everyone, from people in huge urban areas living in slum conditions to those in remote rural areas who are completely cut off from any source of relevant information. They are at risk of being unaware of the possibilities available to them, even if these exist, reducing the effectiveness of even the best-conceived policies.

The same principle applies in the context of the agenda-setting stages of the policy cycle. Here, there is a risk of a one-way communication where "beneficiaries" – especially in less developed countries – are passive receivers of information that has been selected, shaped, "packed," interpreted and distributed at power centres that exclude participation of "common people." The narratives of the SDGs and means of implementation are created mostly by the global

players, and the "beneficiaries" are in the best case informed about it, and seldom have even the opportunity to give feedback or to take active part in the transformation processes.

Secondly, adults and older people are also at risk of being left behind in the context of education efforts. In the SDGs, adults only feature as a target group in Target 4.6 – related to achieving literacy and numeracy, with very vague success indicators ("a substantial proportion of adults..."). The reference to "lifelong learning" may not help either. While the concept was once welcomed for its efforts to promote continuous education that places the learner at the centre, it has not fulfilled its promise, and indeed has left the door open to a focus of resources on younger learners at the expense of older ones. Moreover, putting the person in focus and insisting on individuals, it ended up giving adults full personal responsibility (most notably the financial one) for their learning and has diminished the responsibility of the state. The emphasis on non-formal education and on learning generally (instead of education) has weakened educational structures and institutional support and put educational outcomes high on the agenda (at the same time neglecting educational structures and processes). Thus, lifelong learning remained an empty frame in which adult education disappeared. Marginalization of this sector gained a powerful instrument, an excuse supported by the high-level policy approach. (Orlović and Popović, 2018, p. 7)

Adults also belong to the group that, compared to youth, have less access to information about education possibilities and options.

This can be for geographical, economic or political reasons, or because there is a social stigma, shame or previous bad education experiences that prevent them from reaching out for information, for chances, opportunities and prospects.

The increased weight given to digital access to information can cut them further adrift – much research shows that adults and older people can be reluctant or less successful in using ICTs. An exclusive focus on digital resources deprives them of those materials to which they are accustomed, such as the physical ones held in libraries, and minimises their chances of obtaining meaningful, relevant and adequate advice about types of information, areas of knowledge and learning methods that they may get within the educational structures.

3. Digital technologies – a necessary tool, but not a silver bullet

If there is one dominant feature of the new Agenda, it is the faith in ICT and digitalisation as a "silver bullet." The high level of trust in the power of technology is based on several successful projects where mobile phones or computers have been used to achieve the goals with the certain target group.

It cannot be denied that digital technologies play an especially central role in the implementation of Education 2030 and SDG 4. But it is wrong to understand information only in a digital context. Not all information is digital and not all knowledge needs to be, or should be, based on digital information. Focusing on digital information and neglecting other types leads to the loss of wider areas and sources of information and knowledge.

It should also be remembered that ready access to the internet and digital tools is still not a reality for a big part of the world, or of the human population. The spread of the internet has come with a

"digital divide" between rich and poor. Claiming that it is universal, the 2030 Agenda risks seeing the world through the lenses of the reality of more developed countries. Chakravorti warns: "Since the global digital players are based in the Digital North, much of the hand-wringing at headquarters is still over problems of the Digital North. It is high time we recognize that the Digital South is poised to forge its own path. Its attitudes and engagement with technology are different." (2018) This definitely has an impact on how technologies are used in education and how information is received and treated in different parts of the world.

It is also key not to take a means for a goal. While ICT could be a great supporter of educational endeavours, it is only a tool; the "good, old questions" of education remain: What is the content? Who is creating it and for whom? What kind of information should be delivered, thought, and how? Who is doing the monitoring and evaluation and how? Are all users really capable of taking on the whole educational process, without guidance, support or feedback?

Some interactive platforms offer a limited answer to these questions, but it remains far from the case that the internet can replace important parts of the education system. It is also increasingly clear that there are risks associated with extensive use of the internet and social media among younger people. Digital technologies and social media will indeed revolutionise our world and the way we live and work, but not in a uniquely positive way.

In adult education, there are many target groups who need more than the skills to use digital technology in order to become independent learners. Especially with marginalised groups with low literacy, motivation is of crucial importance. An encouraging teacher or facilitator, a supportive group and environment, and empowering methods and atmosphere are more important

for this kind of target group, and play a crucial role in reducing the risk of dropout.

Moreover, effective learning requires leaving the comfort zone sometimes and experiencing cognitive dissonances or discomfort when our stereotypes or "blind spots" are questioned. Reading books that have stood the test of time, having a reflective teacher that inspires critical thoughts, or having the experience of direct contact with visual arts are actions whose impact shouldn't be underestimated in the process of education, even if they cannot be captured in targets or indicators.

The complex issues of human motivation, reluctance, fear, shame and needs can hardly be solved by quick technological fixes. The question is, obviously, not whether the digital technology should be used, but how. A mixed approach is needed, but it seems to be overlooked or neglected in SDG 4.

4. Education and meaningful interaction with information

A focus on "providing" education can also overlook the fact that knowledge, especially in adult education, is created through two-way communication. The one-way approach, which risks being the case with the more restrictive current understanding of "access to information," assumes fixed, stable and reliable sources of information on one side, and passive receivers on the other.

This is a very traditional, even obsolete understanding of education and teaching, and increasingly inadequate, especially for adult education. To be active agents in delivering development, people need to be able to be co-creators of knowledge based on information.

Linked to the previous point, a key condition for active citizenship is critical thinking. Can people be reflective about their own learning process and how they will deal with the contradictions, difficulties and challenges in that

process? Do they have the broader competences (including ethical values) that could stand against "fake news" and misuse of digital media?

There is a need for much stronger efforts to develop **critical** access to information as well as media literacy, enabling citizens to question the sources of information, to evaluate them and to recognise various kinds of propaganda, manipulation and fraud. Indeed, critical thinking and critical reading of information are all the more essential as the role of ICTs grows, yet cannot themselves be successfully covered only by using ICT.

Many of the current problems the world is experiencing are not due to the lack of pure digital know-how, but the lack of related skills and attitudes. These require much more than the physical ability to get hold of a book or connect to the internet. Non-virtual spaces and interaction with written resources are important, not only for the techniques of reading and writing that are crucial for the literacy skills, but also for recognising and understanding three crucial aspects of information: context, content and meaning.

5. Beyond metrics, a necessary focus on outcomes and resources

There are implications from the heavy focus on measurement[1], which can lead to the neglect both of whole areas of education and of key factors that underpin success.

Certainly, it is a positive that there has been a drive to choose indicators that are "scientifically robust and evidence-based" (UNSD, 2015). These help make data collection more reliable and transparent, and monitoring easier. Nonetheless, this approach risks creating a kind of "mantra," where "what we choose to measure will dictate where states' activities are directed" (Long, 2015). The indicators risk driving the agenda, "putting measurability first and broader political concerns

Example: "Ang Guro kong Pulis," a mobile library campaign in Manila

Although the Philippines has one of the highest literacy rates among Southeast Asian countries, there is still a gap in literacy and a need to achieve inclusivity in education. The gaps are especially apparent at the community level (children, out-of-school youth, etc.), where the lack of classrooms and teachers is an important issue.

In order to meet some of these challenges, the "Ang Guro kong Pulis" educational project has been launched under the leadership of the Manila Police District. The project aims to give free basic education to street children. As a part of the project, one of the police vehicles has been filled with various books and turned to a mobile library, and several police officers have been visiting the streets of Roxas Boulevard in Manila.

Starting in October 2018, they offered children the books to read, with the idea of thus keeping them away from drugs and weapons. After the initial successes, the parents of children were also included into the programme; they would come along, and police officers with a background in education, who were tasked with teaching and bringing books, started teaching parents too. The mobile library now has 11 stops or stations, with ambitions of increasing the number.

The police provide meals for the participants, while several colleges and universities have been helping by conducting seminars on drugs, crime and basic first aid as well as supporting the programme by donating old books and writing materials. The books are used to teach basic education by giving lessons in basic reading and writing in English and Filipino, maths and civic education. This is a long-term solution that tries to support street children through education, but with the potential to include communities too.

that cannot easily be simplified second." (Freistein, 2017). Such broad concerns can include less easily quantified goals such as democracy (Smith, 2018).

In the case of education, the Education 2030 agenda pretends to be value-free, but its targets and indicators have an undeniable social and organising function. They carry a particular educational concept and are based on a particular value system, which shapes their social dimensions, "their omnipresence and power, particularly over those who are too powerless to resist them" (Freistein, 2017).

Both the UN 2030 Agenda and the Education 2030 Agenda have a strong focus on educational outputs rather than less easily measured processes and outcomes, with one consequence being the neglect of further

education areas beyond vocational education and training (VET) and skills. This leads to an under-appreciation of the importance of knowledge creation in important areas of human life, such as that which is delivered by libraries, as well as of things like art, creativity and critical thinking.

In parallel, there is of course a need for funding. It is estimated that $3 trillion will be needed annually in order to achieve an inclusive, equitable and quality education for all (SDG 4). The Global Education Monitoring Report estimated that low- and lower-middle-income countries would face an annual financing gap of US$39 billion in 2015-2030 (UNESCO, 2015). At the same time, investment in education is decreasing worldwide, both in the form of domestic spending and official development aid.

We need to be realistic about the possibilities to draw on private funding and domestic resource mobilisation, given both the need to ensure a continued focus on public interest goals in educational policy, and the irony that it is often the minimal taxes paid by private multinationals that lead to governments having insufficient money to spend in the first place.

6. The role of libraries

As already indicated a number of times, libraries have a potentially valuable role to play in delivering SDG 4, and in particular in addressing some of the challenges set out above. Their work is not only about the "good, old" habit of reading books.

There are recent studies by Vesna Crnogorac that point out the important role libraries have in democratisation of society and in the transformation of closed societies to democracy. "More than ever in the long history of libraries, there is a responsibility to create the conditions for free access to sources of knowledge and information, regardless of the differences (ethnic, political, religious, ethical). The library – by nature a democratic institution – serves society by serving the individual citizen who finds a place where he/she can achieve freedom of expression and free access to information. We are in a historic moment as regards respect for democratic values, and the public library needs to redefine its role from traditional to contemporary [...] The public library as an ''access point'' for citizens in the area of freedom of information

helps to achieve transparency and implicitly could allow for the exercise of that right of free access to information of public importance." (Crnogorac, 2016)

Access to information is closely connected to knowledge, democracy and protection of human rights, and public libraries are places where these values meet. Furthermore, a library is a place of cooperation of various partners and stakeholders, a centre of the local community and its activities, and a guidance centre for inquiry, research and learning.

Libraries welcome those at risk of being left behind, promote the development of critical information skills and other behaviours that allow everyone to make best use of information for education (and that may not be so easily measured), and provide a space for people of all ages to come and learn. At a time when there is a need to mobilise all resources to deliver development, it is necessary to make full use of libraries.

Yet this role of libraries is not sufficiently addressed in the UN 2030 Agenda notably SDG 4. Bearing in mind all of the difficulties the implementation of the Education agenda is facing, we can hardly afford to give up such a powerful resource and important ally in our efforts.

7. Conclusion

The 2030 Agenda puts an accent on data and information, especially in the context of monitoring the implementation of the Agenda, with SDG 4 of course included in

the efforts. The UNESCO Institute of Statistics[2] is indeed drawing on this data to warn of gaps in implementation, and is clearly inviting "countries, donors, international organizations and engaged citizens – to make the case for education at the next High-Level Political Forum on Sustainable Development" since even "the most basic data show that we are far from the goal of ensuring that every child is in school and learning by 2030."

But it is obvious that an approach to SDG 4 focused only on standards and schools misses out on non-formal education and lifelong learning. Crucially, it also neglects the role of access to information as a vehicle for transparency and a gateway to adult education.

Furthermore, meaningful access to information provides the basis for knowledge and should be seen as a precondition for the development of critical thinking skills and democratic citizenship, whereby data and raw information would be critically chosen, connected, reflected and assessed. The role of libraries is also important, since ICT and the internet should be seen as a useful tool, but not a magic solution.

Access to information is an important precondition for achieving the targets of SDG 4. Without a full recognition of this in the discourse about the 2030 Agenda, accompanied by greater investment in education and lifelong learning, huge groups of people will be left behind by 2030.

1. There are comparably few discussions about how to support implementation, and hardly any lessons learned from the Millennium Development Goals. "The 'post- 2015' euphoria does not take into account the fact that the majority of the issues which held back success in the MDGs and Education for All (EFA) movement have not been resolved, or have even worsened. The strong contemporary conviction that the lack of clear, measurable indicators was one of the main problems does not have a basis in research evidence or in contextual analysis..." (Popović, 2015). Criticising the effects of high-stakes testing on students' motivation and learning, Amrein and Berliner remind us that "we should remember the wisdom in the farmer's comment that weighing a pig every day won't ever make the pig any fatter. Eventually, you have to feed the pig" (2003). We risk focusing only on a limited number of successes, and ignore the waste that occurs when serious, systemic and structural problems are left untackled because they do not show up in the indicators.

2. UIS urges: "We need data to track progress over time. We need data to pinpoint the barriers to education access and quality. We need data that are disaggregated to ensure that no child is left behind. We need data that support national priorities. We need data that are internationally-comparable. We need data that demonstrate what works, so that resources can be channelled for maximum impact" (Montoya, 2019).

Chapter 4
A2I for decent work and economic growth

8 DECENT WORK AND ECONOMIC GROWTH
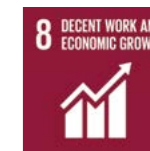
Access to information and ICT for more inclusive economic development, employment and decent work opportunities

The achievement and measurement of the 2030 Agenda will entail a multidimensional arrangement of solutions. To this end, the Agenda highlights the importance of its means of implementation for achieving the Sustainable Development Goals (SDGs) through the mobilisation of financial resources and the development of capacities and technology, as well as through data generation and institutional strengthening. Notably, the Agenda deems that information and communication technologies (ICT) play a facilitative and supportive role in this context, which confirms their importance for opening up major possibilities for the acceleration of human progress (Del Rio et al, forthcoming).

As we move toward Knowledge Societies[1], information and knowledge have an increasingly significant impact on people's lives (UNESCO, 2003). In this regard, access to information can be considered a complex process that encompasses "the rights and capacity to use, create, and share information in ways that are meaningful to each individual, community, or organization" as stated in the Development and Access to Information (DA2I) Report 2017 (Garrido & Wyber, 2017, p. 15).

In this context, it has been widely noted that ICT can play a key role in improving access to and sharing of information by potentially reducing the costs of producing, sharing, distributing and visualising information and knowledge, which is essential for the democratic functioning of societies and the well-being of each individual. ICT may therefore empower individuals, allowing them to exercise their rights, be economically active, and learn new skills. Furthermore, the internet and mobile communications have massively accelerated the pace and volume of information available, as well as its reach into even the most remote parts of the world[2].

Additionally, access to mobile services may bring new economic opportunities for low-income populations, for example through services such as m-banking and e-commerce. Not only is financial inclusion an important aspect for small businesses and entrepreneurship, but m-banking and micro credits also can lower transaction costs and foster economic growth. Furthermore, in many sectors – such as health, education, the labour market, and food and agriculture – a broad set of services, ICT-enabled solutions and resources can lead to transformations that can foster social, economic and political development in a sustainable manner.

In this scenario, it is expected that ICT will increasingly take over routine and analytical tasks, not only confined to manual tasks in manufacturing, but also to analytical tasks of decision-making (European Commission, 2016)[3]. It is therefore of utmost importance that people have the necessary skills for using the elementary functions of ICT meaningfully and efficiently. As the European Commission's report on ICT for work (2016) shows, digital skills are required across all types of work, including jobs outside the office. Notably, most jobs require basic digital skills, including being able to communicate via email or social media, to create and edit documents, to search for information, or to protect personal information online. Individuals who lack digital skills are consequently at risk of marginalisation not only in the labour market, but also in day-to-day life.

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ICT, therefore, cut across all sectors of economy and society, and the internet can be an important catalyst of development for individuals, communities and countries. For instance, they can provide extensive and growing access to information, services and applications that may add value to people's lives, enhance their productivity and enable them to access new opportunities (ITU, 2016, p. 91). In this sense, although within the SDG framework there are few specific mentions of ICT, they can potentially contribute to all SDGs.

Particularly for achieving decent work and economic growth – Goal 8 of the SDGs – economic growth will need to be fostered in a sustained, inclusive and sustainable manner, along with the promotion of productive employment and decent work for all. In this respect, ICT, by facilitating access to information, can play an important role by contributing to entrepreneurship, job creation, employment, education and training, economic productivity and growth, creativity and innovation, and financial inclusion.

This chapter looks at how ICT can potentially contribute to achieving SDG 8 by improving access to information as well as by offering a set of ICT-enabled solutions and services. It examines the numerous aspects to be considered for leveraging ICT for decent work and economic growth, both at the individual and organisational levels. It also addresses the obstacles and conditions for meaningful access to information and to financial services. Finally, it emphasises the relevance of monitoring the SDGs and advocates for the need for harmonised indicators for this purpose.

1. ICT and access to information

In considering ICT as a means for improving access to information, the relationship between ICT and SDGs emerges as a truism; ICT potentially increase access to

information, which in turn could empower individuals, allowing them to better exercise their rights, be economically active and productive, learn and apply new skills, and find better means for earning a livelihood. So empowered, they can potentially participate in decision making and holding their governments accountable, and they enrich their cultural identity and expression. Thus, access to information is crucial for enriching the collective knowledge-building process as well as for economic, social and political development (IFLA, APC & TASCHA, 2014; ISOC, 2015; World Bank, 2016).

SDG 8, concerned with decent work and economic growth, sets four targets encompassing different aspects that require access to information, such as productive employment, education and training, economic productivity, creativity and innovation. For people to learn and use new skills that may be relevant for work, especially in a changing and dynamic world, access to information is an important step in a complex process. Not only does accessing information require specific physical, social and legal preconditions, but information itself needs to be transformed into knowledge in order to be useful.

Furthermore, when aiming to achieve full and productive employment and decent work for all women and men, it should be noted that "the relationship between gender equality and access to information is a complex chain of events that reinforce themselves in a feedback loop" (Hafkin, 2017, p. 83). On a similar note, access to information and knowledge – together with economic rewards – is crucial for the development of a creative economy, and in view of the growing contribution of the creative industries to national economic output, most countries are seeking to adopt policies to develop their creative industries to strengthen their competitiveness in the global economy (UNESCO, 2013a).

Given their direct and secondary aspects, ICT can potentially contribute toward accomplishing decent work and economic growth by improving access to information both by individuals and organisations.

1.1. ICT for improving access to information by individuals

ICT potentially allow people, anywhere in the world, to access information and knowledge almost instantaneously (ITU, 2005). In particular, by expanding the information base, lowering information and search costs, and creating information goods, ICT can facilitate searching, matching and sharing of information and contribute to greater organisation and collaboration among economic agents (World Bank, 2016).

Particularly in agriculture, ICT can be used to keep workers informed about prices, inputs or new technologies, potentially reducing time and costs, as well as friction and uncertainty, by eliminating costly journeys and facilitating coordination with traders. In short, ICT can potentially affect economic development as they can help reduce barriers to accessing information and reduce service costs. For example, a mutually beneficial transaction might be hindered if two parties cannot find each other or acquire enough information to confidently proceed with the transaction; in such cases, the transaction costs are infinitely high. An example of the use of technology to overcome service costs is the emergence of e-commerce platforms – environments where supply and demand sides meet – which has made it easier for producers to find customers (World Bank, 2016).

Additionally, when addressing full and productive employment and decent work, *Target 8.5 – "Achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value"* explicitly recognises the need for inclusiveness. In addition, indicator

8.5.1 measures the average hourly earnings of female and male employees, by occupation, age and disability status, and indicator 8.5.2 addresses the unemployment rate, by sex, age and disability status.

In terms of inclusive employment, according to the UNESCO Global Report (2013b), persons with disabilities are much more likely to be unemployed or economically inactive, and even those who are economically active often earn less than their non-disabled counterparts. In this regard, technological developments may open new avenues for social inclusion, learning, employment and participation of persons with disabilities (UNESCO, 2013). To this end, ICT can enable multiple means of communication – voice, text and gestures – facilitating access to information by persons with disabilities, as well as social interaction, thus opening up significant and widespread opportunities for employability and economic productivity[4]. In addition, telework can allow people to engage with work remotely, outside the office (World Bank, 2016), overcoming difficulties related to displacement.

Furthermore, in order to achieve Target 8.5 in particular – as well as the entire 2030 Agenda – Member States must bridge the gender (digital) gap, so that women can fully benefit from access to the internet and the resources that ICT may provide. Generally, women tend to be poorer than men, have less access to education and hold less powerful positions in businesses and in politics. This being said, there are many inequalities and barriers faced by women that prevent them from fully benefiting from the opportunities provided by ICT, including those related to social norms, gender-based division of labour, gender stereotypes and even gender-based violence (UNCTAD, 2014). However, ICT can potentially increase women's opportunities for employment, entrepreneurship, and social good in areas that are increasingly embedded in everyday life, such as facilitating financial transactions,

filling out government forms, and communicating with others around the world (Garrido, Fellows & Koepke, 2017). Thus, in different spheres, including the social and economic, women can profit from ICT, as these can often obviate the need for mobility and help overcome the barriers to accessing information. This, in turn, facilitates more informed decisions and may increase economic opportunities (UNCTAD, 2014). Finally, beyond access, other barriers must be taken into account as women seek to effectively utilise information[5] (Hafkin, 2017).

Garrido & Wyber (2017) argue that distinct gaps in access to education and training opportunities contribute to unemployment levels among youth. Therefore, increased access to information could presumably contribute to developing employable skills and overall employability, which relates to the achievement of *Target 8.6 – "Substantially reduce the proportion of youth not in employment, education or training."* ICT tools and resources, such as massive open online courses (MOOCs)[6] and open educational resources (OERs)[7], can facilitate the acquisition of skills and promote job trainings as well as lifelong learning[8].

1.1.1. ICT for learning skills, skills for using ICT

Empowering individuals requires not only the provision of access to information but also the skills to transform it into knowledge[9] – to be able to seek information, critically evaluate it and create new information and knowledge. Furthermore, as people develop the skills and resources to obtain, share, create and express information, they are building powerful mechanisms to address the challenges that they understand as being the most pressing to them (Garrido, Fellows & Koepke, 2017).

That being said, ICT can potentially expand access to education and open up new possibilities by eliminating spatial and time constraints, but digital skills

are fundamental for them to effectively contribute to reducing the proportion of youth – and adults – not in employment, education or training. Not surprisingly, SDG 4 Target 4.4 calls for "substantially increasing the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship," and a related indicator explicitly refers to ICT: *4.4.1 "Proportion of youth and adults with information and communication technology (ICT) skills, by type of skill."*

In other words, although ICT may leverage the learning of employment-related skills, one must have the necessary skills for using ICT and for accessing information more generally. This goes beyond basic digital competencies for the adequate use of tools: digital skills generally are composed of computational, informational and communicational literacy (Hinostroza, 2017). Such competencies include one's ability to use computers to investigate, create and communicate in different spheres of life – at home, at school, in the workplace and, generally, in society (Fraillon et al., 2013, cited in Hinostroza, 2017, p. 16).

Finally, future scenarios point to the emergence of new categories of jobs, in the context of advancing technologies, partly or wholly displacing others. This means that sets of skills required in both old and new occupations will change in many industries and transform how and where people work. This entails difficult transitions for millions of workers and the need for proactive investment in developing a new surge of agile learners and skilled talent globally[10] (WEF, 2018). In this context, many stress the relevance of developing a particular set of skills – namely 21st century skills – grouped into four areas: life and career skills; learning and innovation skills (critical thinking, communication, collaboration etc.); key subjects and 21st century themes (language, mathematics,

science, finance, ecology, etc.); and information, media and technology skills (Hinostroza, 2017).

1.2. Information, creativity and innovation enabled by access to information through ICT

Given that information is currently disseminated faster than ever and that it is an essential asset for economic competitiveness, it is important that both enterprises and governments promote ways to develop the necessary skills for information to be used in creative and innovative ways. Since information is considered fundamental for increasing economic productivity, the sunk costs for its creation must be overcome. However, although the cost of producing information is high, this is not the case for its reproduction (Shapiro & Varian, 2002). As the use of ICT increases and information becomes more widely disseminated, the cost of accessing information decreases. This poses the following challenge for enterprises: there is an increasing number of competitors capable of reproducing information that is produced by organisations. Therefore, given this more competitive environment, enterprises must develop organisational structures capable of responding rapidly to technological and market changes.

Target 8.2 calls for *"higher levels of economic productivity through diversification, technological upgrading and innovation, including through a focus on high-value added and labour-intensive sectors."* Access to and sharing of information are crucial for promoting innovation, and once this becomes a routine within organisations, this may lead to greater economic productivity and technological diversification, given that the ecosystem in which it functions allows the creation of new information. As innovation is internalised by enterprises, this in turn fosters a dynamic culture, in which entrepreneurship and creativity are rewarded, and

can lead to the emergence of new enterprises that offer solutions to the most diverse problems and needs; in environments where innovation is the rule, there is a demand for quality jobs that require specific capabilities from individuals and enterprises.

It is noteworthy that greater access to information does not necessarily lead to the generation of value for all; likewise, along with the dissemination of information, there is more intense competition among enterprises, precisely because the greater circulation of information enables more actors to access more markets, since the ease of internalising information may lead to the improvement of processes and the development of new products. Therefore, from the perspective of creating economic value, the greater circulation of information is both an opportunity and a challenge: those that can better and faster transform access to information into knowledge, and in turn into innovation, will gain competitive advantages that are difficult to reverse.

Target 8.3 aims to *"Promote development-oriented policies that support productive activities, decent job creation, entrepreneurship, creativity and innovation."* Accessing and using information efficiently and productively are essential for enabling enterprises to create and participate in dynamic ecosystems, in which the production of knowledge, along with its use in practice, leads to innovation and entrepreneurship, favouring the emergence of dynamic sectors and economic growth. The dissemination of ICT facilitates the production of knowledge and its sharing free of charge, favouring the entry of several actors in process or product development. Open environments – those in which the access to and sharing of information are not restricted – are more conducive to creating knowledge and innovation. Finally, the idea of promoting open and friendly environments for the free movement of information to foster knowledge creation and innovation applies to both nation states and enterprises.

2. Financial services as ICT-enabled solutions

A broad set of public and private services – both online, and off-line, that are leveraged by ICT, as well as ICT-enabled solutions and resources – may foster social, economic and political development in a sustainable manner, by contributing in areas such as education, health, finance, the labour market and public administration.

Currently, 2 billion individuals (and 200 million businesses) in emerging economies lack access to savings and credit and do not fully participate in the formal financial system (McKinsey Global Institute, 2016), preventing them from engaging in economic activities that could transform their lives as well as blocking economic development[11]. Financial inclusion is particularly relevant for vulnerable populations and may contribute to greater security and stability; this allows, for example, one to better plan for the future or to respond to unexpected events (Diniz, 2018).

The 2030 Agenda recognises that financial inclusion is vital for small businesses and entrepreneurship, and particularly *Target 8.10* aims to *"strengthen the capacity of domestic financial institutions to encourage and expand access to banking, insurance and financial services for all."* Likewise, a related indicator explicitly refers to ICT: 8.10.2 "Proportion of adults (15 years and older) with an account at a bank or other financial institution or with a mobile-money-service provider."

In this context, ICT – together with the skills and confidence to use them – can help to improve the quality, variety and scope of micro-financial services and address some of the inherent needs of the daily lives of persons with low incomes, historically excluded from the financial sector for being profiled as high-risk and less profitable.

Digital platforms, for instance, offer many possibilities for facilitating inclusion of important

financial services: payment, credit, savings and insurance. Access through a mobile device can help overcome many of the problems associated with achieving financial inclusion: Programmes such as mobile banking combat the issue of remoteness; peer-to-peer money transfers avoid high transaction costs; offering new ways to establish credit helps those who struggle with a lack of credit history; and the creation of new business models addresses the lack of financial literacy and education among the financially excluded (Diniz, 2018). In countries with low levels of financial inclusion among a large proportion of the population, ICT-related innovations in the field of financial services include branchless banking correspondents, electronic money, and basic savings accounts (no-frills accounts) (Ontiveros, Martin Enriquez & Lopez Sabates, 2014, cited in Del Rio et al, forthcoming).

Through the internet, broadband and mobile phone-based ICT infrastructure, people living in poverty may increase their capability to improve their economic situation by accessing reliable financial services that can provide a vital safety net. From obtaining an account and conducting basic transactions such as money transfers and bill payments, users can move on to more advanced financial services such as loans and insurance products. The increased access to financial services enabled by ICT can in turn encourage investment, spurring job creation and economic growth (The Earth Institute, Columbia University & Ericsson, 2015).

3. Conditions for meaningful access to information and for access to financial services

The Development and Access to

Information (DA2I) framework, developed by the International Federation of Library Associations and Institutions (IFLA) in partnership with the Technology and Social Change Group at the University of Washington, proposes four interdependent dimensions that influence access to information and its ability to advance the SDGs, as follows:

1. Information and communications access infrastructure: the connectivity (and material resources) that establishes the physical connection to information.
2. Social context of use: the variety of local, cultural factors that shape the way users will engage with information.
3. Capabilities: the body of functional knowledge, skills and resources a population develops over time that shapes the nature of how information is used or not used.
4. Legal and policy landscape: the policies and regulatory frameworks that promote or hinder connectivity, affordability, inclusiveness and rights.

In this regard, for ensuring access to information – as well as to ICT-enabled solutions – certain preconditions must be met, such as having the necessary adequate infrastructure (fixed and mobile broadband) along with devices (computers, telephones, etc.) for connecting to the internet. Internet access via mobile devices is increasingly important in less developed countries and rural and remote areas, since mobile devices have become the primary gateway to the internet for many. Smartphones can potentially connect an increasing number of people to knowledge resources, job opportunities and cultural amenities. However, it must be noted that "those who depend on their smartphones to go online

encounter constraints with data caps and small screens, and the device is not their 'go to' tool for personal learning at home. Instead, those with smartphones but not home broadband rely on a kind of 'workaround ecosystem' that is a combination of using their mobile devices along with other resources such as computers and Wi-Fi available at public libraries" (Anderson & Horrigan, 2013).

Also important for accessing information are public internet access points, such as telecentres and libraries, in particular in countries or areas with lower household connectivity[12]. In addition to maintaining a wealth of information resources, many libraries provide multiple forms of access to ICT, generally free of charge, as well as access to books, documents, periodicals and databases in-library or remotely through websites, along with mobile services. Moreover, librarians have a role to play in guiding those with little experience in accessing information and/or using ICT (Hafkin, 2017): beyond access, libraries can potentially help people understand the information they obtain. Consequently, libraries support SDG 8[13] by providing public access to information and the skills training needed – especially by the digitally excluded – to search for jobs. For example, skilled library staff may provide assistance with online applications and related activities for finding a job (IFLA, 2016).

Hence, even when there is physical connectivity, particular capabilities are necessary for identifying, finding and using existing information and potentially using it for improving life conditions – notably employment and training – and for generating new information. Therefore, access to information and knowledge

requires digital literacy skills, media literacy (understanding of various types of media and formats through which information is transmitted), and information literacy (skills for seeking, evaluating, using and creating information effectively to achieve personal, social, occupational and educational goals) (UNESCO, 2018, cited in Del Rio et al, forthcoming). Taking into account that the 2030 Agenda pledges that "no one is left behind," it is of utmost importance to consider a gradual advancement in digital inclusion, from ICT access to ICT use. Given that an important aspect of the digital divide[14] refers to lack of skills, these are critical for ensuring that people can benefit from ICT and have meaningful access to information and avoid reproducing inequalities.

That being said, beyond internet connectivity and capabilities, information must be: relevant and made available (generated, made public and actively publicised by all stakeholders, in addition to being socially and economically relevant); accessible (potentially accessed by all, without difficulty, regardless of language, culture, geographic location or level of skill); and affordable in terms of cost of access (UNESCO, 2018, cited in Del Rio et al, forthcoming).

Along with the high cost of telecommunications, micro and small enterprises face another barrier to accessing financial services: they often lack the capacity to use ICT-led financial services due to poor communication infrastructure and lack of regulatory support. These are often hindered by the prevalence of obsolete technologies and prohibitive cost of installing new technology, and suffer from a lack of qualified staff and low digital literacy skills (The Earth Institute, Columbia University, & Ericsson, 2015). Once again, skill development and capacity-building are therefore preconditions for these businesses to access ICT-financial services. In countries where unemployment or underemployment are a growing problem, expansion of micro and

small business can create vital employment opportunities. By addressing low digital literacy levels and promoting access to ICT-led financial services, policymakers can provide a much-needed boost to the small business development-related SDGs (The Earth Institute, Columbia University, & Ericsson, 2015, p. 39).

4. Monitoring the achievement of the SDGs: the need for harmonised indicators & ICT findings

Access to information is a matter that cuts across the entire 2030 Agenda and is therefore tracked by indicators that are arranged under different goals and targets. Likewise, all SDG goals and targets are interdependent and must be pursued together, since progress in one area often depends on progress in other areas.

For the follow-up and review of progress toward achieving the SDGs, 10 criteria were established by the UN Statistical Commission for the collection of robust Global Monitoring Indicators, which will be compiled by international agencies using disaggregated data from national statistical systems. Timely and usable data are critical for informed decision-making, monitoring of progress, and evaluation of outcomes.

In light of this, ICT are explicitly recognised as a cross-cutting means of implementing the Agenda, as well as for their key role in the measurement of progress on all aspects of sustainable development. To this end, it is important that all areas where ICT play a relevant role are adequately measured and monitored. To achieve this, it is crucial to have internationally comparable ICT indicators based on commonly agreed definitions and methodologies, which allow policymakers and other key stakeholders to identify ICT-related trends and challenges.

In recent years, the Regional Centre for Studies on the Development of the Information Society (Cetic.br), a department of

the Brazilian Network Information Center (NIC.br), has been actively contributing to international debates on the standardisation of indicators and methodological definitions for the production of ICT statistics. The Center conducts several ICT national standalone surveys – such as the ICT Household and the ICT Enterprises Surveys – that are essential for collecting and disseminating ICT-related data, nationally and internationally. This allows a closer understanding of the role of ICT in facilitating access to information and education by both individuals and organizations, for example. The methodologies followed by Cetic.br for such surveys are aligned with the parameters set by international organisations, including the International Telecommunication Union (ITU) and the United Nations Conference on Trade and Development (UNCTAD). The Center therefore collects internationally agreed indicators on ICT that allow cross-national comparisons, but also produce a wide range of nationally relevant data that are disaggregated by important socioeconomic variables that allow greater understanding of local contexts. This process is crucial for monitoring the socioeconomic impacts of ICT and the achievement of the 2030 Agenda more broadly.

5. Conclusions

ICT are strongly linked to the access to and use of information, which are important for economic development, education, training and employment. ICT may have a relevant role in promoting a more inclusive, sustained and sustainable development. In particular, women and people with disabilities, as well as youth, mentioned by Targets 8.5 and 8.6, can benefit greatly from the opportunities offered by such technologies.

However, more than ever, access to information requires the skills necessary to access, use, share and appropriate the tools offered by ICT, in order to ensure that all benefit equally and that no one

is left behind. If social and digital gaps are not bridged, inequalities may be further reproduced, and those with skills – digital, cognitive, 21st century skills – may be better positioned to find a job and earn better wages. In this regard, the development of digital skills related to information processing for youth and adults is a priority, in particular for groups that have been identified as potentially economically or socially disadvantaged.

Due to the enhanced dissemination of ICT access and use, information circulates more efficiently among individuals, communities and organisations, increasing their chances of acquiring and

developing knowledge that can be useful for the productive process, favouring inclusive economic growth. For enterprises, the challenge is to transform this greater circulation of information into better decision-making and knowledge for innovation and, by doing so, to support Target 8.2 and Target 8.3.

Both for accessing information through ICT and for using ICT services and resources, such as financial services, there are many conditions that must be met in order to ensure that no one is left behind. Having access to information via ICT encompasses having connectivity – on mobile devices, at home, in public spaces

such as libraries, or elsewhere – but also developing the necessary skills to use information meaningfully, for relevant purposes. Access to information should be understood as a complex process that relies on the availability of relevant information as well as its affordability and accessibility.

Finally, in light of the key role that access to information plays in achieving SDG 8, and the potential offered by ICT for improving its access, use, creation and sharing, it is of utmost importance that timely and relevant data are collected to inform policymakers and to monitor the progress of internationally agreed goals such as the 2030 Agenda.

1. According to UNESCO, Knowledge Societies are based on four principles, namely freedom of expression; equal access to education; universal access to information, especially in the public domain; and giving expression to cultural diversity. Built on the concept of Information Society, the plurality inherent in the concept of Knowledge Societies "implies diversity, variety and openness to choice," where "people can access and exchange quality information and ideas that are relevant to their life and development" (UNESCO, 2003:2).

2. For example, as agriculture is increasingly knowledge-intensive, ICT may help farmers improve crop yields and business productivity through better access to market information, weather forecasts, training programmes, and other online content tailored to their needs.

3. According to the ICT for work: Digital skills in the workplace Report (European Commission, 2016), the use of ICT – in the EU member countries – has increased significantly in the last five years in more than 90 percent of workplaces, with micro-sized workplaces more likely to report limited increases compared to bigger ones. In addition, 38 percent of workplaces report that the lack of digital skills has an impact on their performance.

4. However, as the World Bank (2016) points out, the mere existence of technology is not sufficient to eliminate the gap in the socioeconomic inclusion of people with disabilities, since an adequate ecosystem is needed to promote the implementation of accessible digital technologies.

5. In this regard, it is worth mentioning the role of libraries for empowering women through ICT, as described in the Beyond Access Issue Brief "Empowering Women and Girls Through ICT at Libraries" (2012), available at http://beyondaccess.net/wp-content/uploads/2013/07/Beyond-Access_GirlsandICT-Issue-Brief.pdf

6. A MOOC is an online course aimed at unlimited participation and open access via the web. In addition to traditional course materials, such as filmed lectures, readings and problem sets, many MOOCs provide interactive tools with user forums to support community interactions among students, professors and teaching assistants (TAs), as well as immediate feedback to quick quizzes and assignments.

7. Open educational resources (OERs) are teaching, learning and research materials in any medium – digital or otherwise – that reside in the public domain or have been released under an open license that permits no-cost access, use, adaptation and redistribution by others with no or limited restrictions. To learn more, visit https://en.unesco.org/themes/building-knowledge-societies/oer.

8. Lifelong learning is related to voluntary and self-motivated education, conducted beyond school, with the main goal being to improve personal or professional development. To learn more, visit http://uil.unesco.org.

9. Traditional media, civil society organisations and public institutions such as libraries can contribute in the translation of information into accessible knowledge and purposive use, "by curating information, extending informational resources to communities in need, and offering social spaces for convening, learning, creating, and problem-solving in their communities" (Garrido, M. & Wyber, 2017, p. 11).

10. It must be noted that here we are referring to the potentials of ICT for workers and future workers to acquire skills and, by doing so, prepare themselves for the labour market. However, as the World Economic Forum declares in The Future of Jobs Report 2018, a range of immediate implications and priorities stand out for different stakeholders, such as companies and governments. "(...) Imperative for achieving such a positive vision of the future of jobs will be an economic and societal move by governments, businesses and individuals towards agile lifelong learning, as well as inclusive strategies and programmes for skills retraining and upgrading across the entire occupational spectrum. Technology-related and non-cognitive soft skills are becoming increasingly more important in tandem, and there are significant opportunities for innovative and creative multistakeholder partnerships of governments, industry employers, education providers and others to experiment and invest in new types of education and training provision that will be most useful to individuals in this new labour market context" (WEF, 2018, p. 22).

11. According to the McKinsey Global Institute (2016), the widespread adoption and use of digital finance could increase the GDP of all emerging economies by 6 percent, or $3.7 trillion, by 2025.

12. These include "facilities that allow any member of the public to make affordable use of computers with broadband connections, along with associated ICT tools, such as printers and scanners, as well as technical support for using the internet. Public access facilities may be purpose-built state-supported 'telecentres' or 'community multimedia centres' (CMCs), or private 'cybercafés.' Locating public access services in existing institutions situated in the community, such as libraries and post offices, is often a particularly effective method of deploying public access" (IFLA, APC & TASCHA, 2014).

13. Several examples on how libraries have supported employment around the world can be found in IFLA's paper A Social Justice Mission: Libraries, Employment and Entrepreneurship, available at https://www.ifla.org/files/assets/hq/topics/libraries-development/documents/libraries_and_social_justice.pdf

14. According to the Organisation For Economic Co-operation And Development (OECD), the term "digital divide" refers to the gap between individuals, households, businesses and geographic areas at different socioeconomic levels with regard both to their opportunities to access information and communication technologies (ICTs) and to their use of the internet for a wide variety of activities (OECD, 2001, p. 5).

Chapter 5
Inequalities: libraries and knowledge sharing

10 REDUCED INEQUALITIES

This essay explores the role of libraries in knowledge sharing, focusing especially on their digital expression and ways through which they can contribute to poverty reduction. It begins by setting the context in terms of the Sustainable Development Goals (SDGs) and the distinction between "open/public" and "closed/private" knowledge. The next section explores important issues around the meanings and use of "information" and "knowledge," the needs that poor and marginalised people have for knowledge, and the importance of gaining more evidence about how libraries, both virtual and real, can be used to influence poverty reduction. The penultimate part of the essay then examines the diverse ways through which libraries can be used to reduce inequalities, and includes two contrasting case studies, the Indian Public Library Movement and Portuguese micro-libraries. The essay concludes with recommendations on how the obstacles facing more extensive use of libraries for reducing inequality can be overcome.

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Context: open and public, or closed and private?

Knowledge is powerful. It has therefore tended to be used by the rich and powerful throughout history to maintain their status and perpetuate inequalities in their favour. However, there have also always been those who have tried to share knowledge more widely, often on the moral grounds that knowledge is indeed empowering, and can transform social and political structures. This is as true today, when formal knowledge is increasingly being mediated through digital technologies, as it has been in the distant past, when knowledge was largely shared through books. SDG 10, which focuses on reducing inequalities, provides an important lever through which such agendas can be promoted in the decade ahead.

SDG 10: the troublesome goal

Recent efforts to reduce poverty have generally focused mainly on economic growth, rather than reducing inequalities. Agenda 2030 and the SDGs (UN, 2015) thus largely continue the focus on economic growth that lay at the heart of the United Nations' previous Millennium Development Goals (MDGs) of 2000. However, the SDGs are many more in number, and seek to combine the largely economic growth interests of the MDGs with concerns about environmental change and sustainability. They also include an important tension, represented by the apparently out-of-place SDG 10: to reduce inequality within and among countries. These focuses on increasing growth and reducing inequality compete with each other, because economic growth has almost always been associated historically with increasing inequality, unless very considerable attention is paid specifically to sharing the benefits of that growth widely throughout society (Oxfam, 2019). The processes giving rise to these inequalities have been dramatically increased by the design and spread of ever more rapidly evolving digital technologies (Unwin, 2018). Yet, the 10 targets of SDG 10 make no direct mention of ways through which knowledge can be used to reduce inequality, nor of the use of digital technologies to do so.

To understand this tension between growth and inequality, it is essential to address the distinction between relative and absolute poverty (Unwin, 2007). In essence those advocating an absolute measure of poverty, as embedded within the MDGs and most of the SDGs, do so based on the positive notion of individuality and competition, whereas those advocating

a relative standard do so in the normative belief that people are also communal and should organise economic activities co-operatively (O'Boyle, 1999). The overwhelming dominance of notions of "individual" rather than "communal" human rights (Unwin, 2014) in the UN system and beyond, and the power of major global corporations in contemporary international governance, have fuelled this emphasis on maximising growth rather than minimising inequality. Absolute poverty can indeed be reduced by economic growth alone, but relative poverty cannot. The SDGs and the High-Level Political Forum on Sustainable Development (HLPF) have failed to sufficiently recognise this tension, and have thus also failed to provide mechanisms through which damaging inequalities can be reduced.

Private and public knowledge

The holding of knowledge by individuals or communities is central to the power relations associated with this balance of emphasis between absolute and relative poverty. Historically, in societies with literate traditions, the written word has been an important means for recording and sharing information and ideas by those who could read and had access to texts. Fixed libraries therefore played a crucial role as repositories of knowledge. Societies with oral traditions in contrast transmitted knowledge through the more accessible spoken word of sagas, poetry and storytelling. Both traditions nevertheless had significant

structures of power: libraries helped maintain power in literate traditions; initiation rights and hereditary structures served oral traditions. Both sought to balance secrecy and openness, but in different ways. There does, though, seem to be a useful distinction that can be made here between literacy and individualism on the one hand, and oral and communal traditions on the other. The means of sharing within both types of society differ, and more research needs to be undertaken on the extent to which these are each related to inequality.

The development of access to information and knowledge in literate societies is reasonably well documented. Early books had to be copied laboriously by hand, and were thus expensive. Since knowledge is power, they were usually kept in the "private" libraries of elites. New forms of printing in Europe began to democratise knowledge sharing from the 15th century onward, but the idea of "public" libraries only really began to take shape in Europe in the 19th century (Harris, 1999), as a result of both moral and economic pressures to improve the lives of the poor. It is salient to note, though, that other much earlier traditions had also sought to share knowledge within literate societies. In Cairo in the early 11th century, for example, الله الحاكم بأمر (al-Hakim bi-Amr Allah, also known as Abu Ali Mansur), the sixth Fatimid caliph, founded the دار العلم (Dar al-Alem, House of Knowledge), which was specifically designed to enable the public to acquire knowledge.

Information, knowledge and inequality

There are strong arguments that the creation of public libraries, rather than just private ones, can play a role in enabling everyone to access information, and process it to shape their own knowledges. However, for this to happen people have to be literate and able to access the content therein; such arguments also tend to privilege literate traditions over oral ones. The advent of information and communication technologies (ICTs) has also provided a valuable opportunity to extend the notions of communal public knowledge sharing, especially through the use of free and open source software and open educational resources, and by creating virtual, or digital, libraries (IFLA & UNESCO, 2011). Such distinctions between public and private closely parallel the difference between communal and individual approaches to poverty reduction (Table 1). In practice, these concepts, shown as binary opposites in Table 1, usually blur into each other and are at either end of spectra, but they are shown here in this way because they reflect fundamentally different conceptualisations of poverty, the role of libraries, content, digital technologies and development.

UNESCO, in particular, has for a long time played a strong role in advocating that more support should be given to the creation of knowledge societies in which all citizens are able to access and use the information that they require to live fulfilled lives (Mansell & Wehn, 1998; UNESCO, 2005). As Souter (2010, p.11) has summarised, "By

Knowledge Societies, UNESCO means societies in which people have the capabilities not just to acquire information but also to transform it into knowledge and understanding, which empowers them to enhance their livelihoods and contribute to the social and economic development of their societies." Such ideas reinforce the notion that information and knowledge are essential for effective development, and therefore that overcoming information poverty and inequality is an important part of any global development agenda (Haider & Bawden, 2007). However, there are considerable challenges in delivering such a vision, some of the most important of which are explored further below.

Marginal and elite knowledges

Traditionally, librarians have served as the gatekeepers to knowledge by deciding what should be in a library and what should be excluded. This has meant that libraries have generally provided access to elite knowledges. Almost by definition, they have also been the preserve of literate knowledge rather than oral knowledge. Poor and marginalised people and communities nevertheless also have immense knowledge resources. Passing down information through oral traditions, they know, for example, how to eke out an existence in environments where a "well-educated" literate banker, academic or politician would not even be able to survive for a few days.

ICTs have, though, begun to be used to subvert traditional concepts, in two main ways: through the use of audio and video that no longer require traditional literacy skills to access them; and through allowing anyone with access to the internet and an input device to upload multimedia content. Some librarians and institutions have long been actively engaged in democratising knowledge. The BBC Sound Archive in the U.K., for example, founded in 1936, contains hundreds of thousands of audio recordings dating back to the 19th century. More recently, Ryerson University in Canada has developed initiatives

to incorporate indigenous knowledges into its practices (Sloan, 2018), and Horrigan (2015) has also highlighted the ways in which libraries in the U.S. are changing in response to people's desire to use them to provide new services As the examples in the next section also emphasise, many initiatives are focusing especially on the ways through which new kinds of libraries can serve marginalised communities.

It must never be forgotten that marginalised people with few resources still have very powerful knowledge. It is just a different kind of knowledge from the knowledge that the rich deem to be important. This essay suggests that both types of knowledge should be regarded as equally "valuable" in any type of development discourse.

Inequalities: seeing and hearing the poor and marginalised

In contrast to the MDGs, SDG 10 provides a much clearer framework in which to consider inequality, and in recent years there has been some evidence that UN agencies and some governments are recognising the need to balance economic growth with attention to inequality, if only because of the realisation that

growing inequalities themselves hamper growth (Cingano, 2014; UNESCO, 2018). There is thus a healthy and growing understanding that poverty and inequality should not just be seen in economic terms. The ways that different human characteristics and dimensions of life intersect and reinforce poverty have drawn renewed interest, highlighting how certain groups of people tend to be consistently marginalised. The processes associated with economic growth, particularly as a result of the emergence of new digital technologies, work to keep them in poverty. These people include persons with disabilities, out-of-school youth (children at risk of living and working on the streets), girls and women (especially in traditional patriarchal societies), ethnic minorities, and refugees.

It is very important that the voices of these marginalised individuals and communities are heard, not only within the countries where they live, but also globally in the formulation of policies and initiatives such as the SDG process itself. Their stories need to be in the libraries of officials, and policymakers, who in turn need to start

Table 1: Binary oppositions: poverty, libraries and content

Concept of poverty	Solutions for poverty reduction	Libraries	Society Type	Content	Software	Direction
Absolute	Individual (economic growth)	Private	Mainly literate	Proprietary content	Proprietary/ closed	Mainly top-down
Relative	Communal (reducing inequality)	Public	Mainly oral	Open access (especially open educational resources)	Free and open source	Encourages bottom-up

developing strategies with rather than for the most marginalised.

Needs, access, experience and use

The presence of a library, either real or virtual, does not necessarily mean that it will benefit the marginalised and reduce inequalities. At the very simplest level, if people do not know how to access a library, they cannot benefit from its content; if they cannot read the text, they are unable to learn from it; if there is nothing relevant to their needs, they will not be empowered. Far too often, library initiatives and online learning solutions have been developed for poor people in the hope that the content therein will change lives for the better, but because these efforts have not understood the key principles of need, access, experience and use, they have failed to provide the intended outcomes. This has led to a resurgence of interest in the meanings of literacy, and recognition that it must now go far beyond just the ability to read text on a page so as to include digital literacy, or the skills required to access content online and make sense of it (Wagner, 2011, 2017). If people cannot access digital technologies and then find the content or information that might be useful to them, they are likewise never going to benefit from the potential that has been created.

Libraries as places

Digital technologies have transformed understandings of place and space. Traditionally, public libraries were physical places where people went to read, study, gain information, or borrow books. They were places where communities could be formed, and reading or learning groups fostered. Increasingly, as digital technologies have become more popular and local councils cut back on expenditures, many such libraries are in crisis. In the U.K., for example, it was reported in 2016 that nearly 350 libraries had closed in the past six years with a loss of 8,000 jobs (The Guardian, 2016; but see also Horrigan, 2015). While the rapid expansion of virtual and digital libraries since their origin in the mid-1990s has had many benefits, such as not occupying much physical space (there remains a necessity for servers to host the content), being available all the time, facilitating searching, enabling the preservation of texts and images, and providing multimedia resources, many questions still remain about how these should be funded, the balance between open and proprietary content, the extent to which they enable community interaction, and ultimately whether they increase or reduce inequalities. While some libraries are being transformed into digital hubs, it is often the already privileged who benefit most from these, rather than the poorest and most marginalised.

The need for evidence and data

The challenges of evidence in the previous section highlight the important need for more data and evidence upon which to reach decisions about the relative impact of different kinds of library solutions for reducing inequality. As Garrido and Fellows (2017) note, it is remarkable that the SDGs do not actually mention access to information as a specific

The Indian Public Library Movement (IPLM)

Access to relevant and useful information has long been a challenge for poor people and marginalised communities in India. Traditionally, access to information was skewed in favour of the elites, and public libraries have therefore played an important role in democratising such access. Library provision is, though, variable spatially, with 80-90 percent of public libraries being situated in only six states, mainly in the south; many of these also have limited access for users and often only provide a reference and traditional lending service. The IPLM has therefore been formed to revitalise India's public libraries and bring them back into the mainstream as inclusive knowledge and information centres. Experiences from other multimedia service centres elsewhere in the world indicate that they have the potential to provide many different services, and ongoing IPLM programmes provide health awareness sessions, educational content and career guidance both online and for the locations in which they are situated. Particular attention is also paid to providing relevant training for librarians so that they have the skills necessary to support users in benefiting from their resources and information. However, costs involved are high, and much of their early work was funded by external agencies, such as the Bill and Melinda Gates Foundation.

factor in reducing inequality. There therefore needs to be much more exploration and research on the ways through which such access, especially through both physical and virtual libraries, can enable the most marginalised and vulnerable people and communities to benefit. Much more data is also required on the use of "libraries" and digital repositories by marginalised people, and the extent to which such usage may reduce inequalities, so that better knowledge-based development policies can be shaped.

Libraries addressing inequalities

The boundaries between the virtual and the real, and indeed between humans and machines more generally, are becoming increasingly blurred. Yet these concepts retain value and are particularly useful in helping to understand how libraries can address inequalities.

The virtual...

The explosion of information and learning resources online over the last decade has been remarkable, and many people now literally have the world's knowledge at their fingertips through the internet. However, just under half (48.8 percent) of the world's population is still not using the internet (ITU, 2018). Digital technologies primarily continue to serve the needs and interests of richer rather than poorer people. Hence, to reduce inequalities, it is essential to increase access, to enable people to be able to use such information resources, and for content to be relevant to their needs. All three of these require very considerable effort, and a change in the mindsets of those advocating the use of ICTs to deliver the SDGs away from an emphasis on economic growth and toward the reduction of inequalities.

Mobile technologies provide a very important means of communication and knowledge sharing, and there are now more mobile subscriptions than there are people on the planet. However, such usage is spatially very variable, with African countries and other least developed states still having much lower rates. While such technologies can be used to increase relevant knowledge sharing among the most marginalised, much more needs to be done to support and implement policies and initiatives that will focus on this.

... and the real

Multi-purpose telecentres have been widely criticised, and may well be but a transitional feature of the move away from communal to individual models of human activity. However, they have shown considerable resilience (as in this illustration of a telecentre in Bario, an isolated community in Sarawak), and still provide a valuable means through which

more marginalised people can indeed access and use digital technologies and resources. When these are truly multi-purpose and multimedia, they can indeed serve as places where people in isolated areas are able to access health, educational, cultural and economic knowledge, and share their own experiences online should they wish. They nevertheless need to be appropriately planned and resourced, and measures must be put in place to mitigate the numerous negative aspects of digital use, especially for children (UNICEF, 2017).

Libraries, though, are much more than just places where information and knowledge are transacted. They also serve important social, cultural and indeed political roles. In an increasingly individualised digital world, dominated by economic exchange, they remain places where the soul of a society can be found and shaped.

Addressing the obstacles

If we ignore the poor in our midst, we have lost our humanity and our souls. For those who think it

is wrong that 26 people, mainly men (n=25) from the U.S. (n=15), at least 10 of whom have made their fortunes from the technology sector, should own the same as the 3.8 billion poorest people in the world (Oxfam, 2019), the obstacles preventing progress toward SDG 10 must be identified and overcome. Three initial steps are essential:

- Recognising that reducing inequalities is about the will to do so, and not the money. If the UN system as a whole as well as the leaders of specific governments are to begin to reduce inequalities in their states, then they need to focus on this objective above the recent emphasis that has been placed on economic growth. Failure to do so is not only morally wrong, but it will have very significant impact on the global economic system, social cohesion and political stability.

- Achieving affordable universal access to high-quality digital connectivity. In a world that is increasingly dominated by information sharing through digital technologies, it is essential for these to be affordable, reliable and of sufficient speed everywhere, so that poor and marginalised people and communities can potentially benefit from the knowledge acquisition that they enable.

- Serving the interests of the poor and marginalised. Access alone, though, is insufficient. The information and communication opportunities enabled by technology must be relevant to the needs of the most marginalised, who in turn must be able to use them for their own empowerment. It is here that librarians and libraries, virtual and real, continue to have such a crucial role in shaping societies for the better.

Micro-libraries: an example from Portugal

In contrast to the problems faced by large traditional libraries, the micro-library movement reflects a more bottom-up and communal approach to knowledge sharing. In many instances, as in Portugal and the U.K., this has been supported by telecommunication company foundations, offering old telephone boxes for use as micro-libraries, thus once again reinforcing the connection between ICTs and knowledge sharing, albeit in a very different idiom. In Portugal, for example, the PT Foundation (2018) "reuses the old telephone boxes and establishes partnerships with local councils and others, for the adaptation, placement and promotion of micro libraries that aim to strengthen community ties, promote citizenship, encourage reading and promote the love for books in a totally unexpected space." Since the late-2000s, such initiatives have blossomed globally, with the Little Free Library movement claiming to have reached some 75,000 registered libraries in 85 countries by 2018, and other initiatives such as The Book Stop Project in the Philippines creating networks of mobile spaces for pop-up library networks in urban areas (Rhodes, 2018).

Chapter 6
A2I and climate change

The United Nations (UN) General Assembly adopted universal Sustainable Development Goals (SDGs) in 2015. The 17 SDGs address all three aspects of sustainability: economic, social and environmental. The UN aims to reach the defined goals by 2030, at the latest. The SDGs are of universal relevance, i.e., nations at all levels of development are equally committed to their implementation.

The SDGs are part of UN Resolution 70/1 which sets out the Agenda for Sustainable Development for transforming the world. It highlights in particular the people, the planet, prosperity, peace and partnership. It recognises that the world is facing tremendous challenges of inequality, global environmental degradation and insecurity. It calls on nations to work toward the achievement of the goals through a revitalized global partnership based on a spirit of strengthened global solidarity aimed at leaving no one behind. It places importance on democratic governance and participation of all stakeholders and all people. Full participation of people requires empowerment, literacy and access to information.

Among the many challenges the planet is facing, climate change is truly global. Science has understood how human activity on this planet, largely drawing on fossil energy sources, is polluting the planet's atmosphere and hence leading to a more rapid rise in global temperature than what the planet has ever experienced. For this process, it is irrelevant where the greenhouse gas emissions are produced; they all end up in the atmosphere and contribute equally to the warming process. Scientists refer to the last 70 years as the great acceleration. The world population has exploded from 3 billion in 1950 to more than 7 billion today and is expected to grow to more than 10 billion in 2050. Human production and consumption patterns are putting a severe strain on the limited natural resources of our planet. Phosphate and nitrate cycles are reaching critical levels, and drinking water and fertile soils are under stress, as are ecosystems and biodiversity. And climate change is happening already, as evidenced by the more extreme weather conditions on the planet.

It is worth noting that the effects of climate change are not equal on all continents of the planet. While it is true that climate change leads to global warming, it is necessary to understand that this is measured on an average basis. It explicitly does not mean that temperatures will be rising in linear fashion everywhere on the planet. The individual reality is defined by local weather conditions. Global warming will modify these weather conditions in dramatic ways, making local weather more erratic and more extreme. The planet will experience heavier winds and hurricanes drawing strength from the warmer ocean waters; periods of heavier rainfalls, but also longer droughts; dramatic temperature shifts in tropical zones; and potentially harder winters in temperate zones. The precise translation of global warming into local day-to-day weather conditions is still a scientific challenge, but it is becoming clear that the poorest part of the planet is likely to be hit hardest. First, this is because almost all the recent demographic growth on the planet has taken place in the less developed world, and this trend continues. India, China, Southeast Asia, Brazil and Mexico have experienced this growth, and Africa is joining in — putting us on the road to more than 10 billion men and women on the planet by 2050. This growth has occurred largely in tropical zones, where the warming will make living conditions particularly

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13 CLIMATE ACTION

> Many more people need access to information. They need the capability to understand communication and to change their individual behaviour. They clearly also need to translate their improved knowledge into their democratic right to elect leaders who will do the right thing.

difficult. Second, these are poor regions, with people who do not have the financial means to protect themselves against the effects of climate change. Some low islands and coastal regions will be submerged by the rising sea levels, monsoon-like rains will wash away their homes, and prolonged periods of drought will lead to extreme shortages of drinking water. Food production will also be substantially hampered. Poor populations will be most affected by the progressive destruction of the world's ecosystems and their capability to provide food and drink for human beings.

What is needed?

We need action to mitigate the man-made causes of climate change and we need to adapt to the inevitable consequences of what we have already provoked. These actions need to be globally coordinated. The United Nations Framework Convention on Climate Change (UNFCCC) is seeking to achieve consensus among the nations that urgent measures are necessary. But we still have a number of world leaders in denial of the obvious, and many individuals have insufficient awareness about the consequences of business as usual. Substantial improvements on the knowledge side are necessary, as are major mitigation efforts to reduce substantially the use of fossil fuels in the world's economies. Alternative sources of energy are being developed, with a strong focus on efficiency, in an effort to live with less energy. Food production also contributes substantially to climate change. Human diets, with less emphasis on meat, sugar and salt, can make a contribution in slowing down climate change. The transport sector also is, in its present form, a

large contributor to CO_2 emissions and will need to be reformed. And the large housing sector needs to be made more energy-efficient, through better heating and cooling systems and better insulation.

Importantly, the known tipping points need to be avoided, because if crossed, these would dramatically accelerate climate change. A significant example is the risk of release of very substantial quantities of methane, today captured under permafrost. Methane is a 30 times stronger greenhouse gas than CO_2. Science is highlighting all these effects more and more precisely.

This is where the link with information, literacy and education is obvious. Many more people need access to information. They need the capability to understand communication and to change their individual behaviour. They clearly also need to translate their improved knowledge into their democratic right to elect leaders who will do the right thing. What the planet needs is meaningful access to information, i.e., information that is clear and reliable, that has been peer-reviewed as to its scientific quality and professionally verified as to its truth — a major challenge in the era of fake news and alternative facts! News media will have to play a role, but local communities may want or need to develop their own understanding based on written information. Here again, libraries can play a role in presenting unfiltered access to the widest range of scientific writings.

Information is available today at an unprecedented magnitude. International scientific panels such as the Intergovernmental Platform on Climate Change (IPCC) bring together qualified scientists from

a wide range of sciences and a broad geographical area, and they, of course, rely on access to global, up-to-date scientific information. They produce peer-reviewed models that not only explain the root causes of climate change, but also provide modelling tools that predict with ever growing probability the consequences of inaction. Many parts of the planet will become unliveable for mankind, through increased temperatures, droughts, sea level rising, etc. With changes in technology, access to information today more often relies on digital search instruments. We have basically replaced the word "research" by "Google." It is so easy, when there is access to the internet. But few people understand that their research is filtered through algorithms, which try to offer information that confirms rather than challenges previously held views. These systems effectively divide our societies in unprecedented ways, even creating acceptance for alternative facts, a complete misnomer.

Libraries must play a major role in addressing this problem. They can help individuals to check information without a filter, accessing the full spectrum of scientific knowledge. It is clearly more difficult to pretend in the US that climate change is simply a Chinese/European trick to weaken the US economy, when NASA and the US military services are among the leading sources on ongoing climate change and expected future developments. Confronting misconceptions with peer-reviewed evidence from a wide range of independent sources seems to me to represent the best hope of coming to a rational assessment of reality, rather than ideologically held beliefs. One may

argue that the dramatic change of weather conditions can be observed also by the uneducated. Many traditional communities that are living on nature's services for food and drink will indeed notice the change. They will see the migration of animals, both on land and in the seas, due to global warming. They will notice that trees and entire forests are moving into previously colder areas and that their typical crops are disappearing. This may be true for people still living with nature, less so for the many who have moved into megacities, but what is needed for all is to understand the direct link between human activity and climate change. Where the attitude of people is still mainly influenced by religious fatalism, it is difficult to argue for change of human production and consumption patterns. Where people do not understand the important greenhouse gas binding capability of wetlands, soils, forests and oceans, it remains difficult to persuade them that these ecosystems need to be protected. It requires awareness to realise that plastic litter can be a direct threat to life on land and in the oceans, putting at risk the very survival of mankind on this planet.

The same reasoning holds for necessary adaptation measures. Giving up land as overflow areas to rivers is politically difficult. Preventing construction in known flood areas is equally difficult. As a European environment minister once told me: investing in flood protection is unpopular, because it means raising taxes. Showing up in flooded areas in rubber boots and showing empathy is very popular! Uninformed people tend to make uninformed decisions! Libraries are again a major source of sound information, wherever possible peer-reviewed. And it is absolutely necessary that libraries are properly run, showing as transparently as possible the available literature on climate change. Libraries could also seek to guide people in the direction of the most peer-reviewed articles or books and organise workshops around the multilaterally discussed solutions for mitigation and

adaptation. The literature is also full of suggestions for intelligent solutions for adaptation. The role of mangrove forest to protect seashores and the maintenance of terrestrial forests are but two examples. Both forests also bind CO_2 and serve as CO_2 sinks. On land, forests tend to keep soil in better shape, in particular with regard to water absorption. This helps to prevent floods after heavy rains, or even mudslides. Trees in cities have an air conditioning effect, making heat waves more tolerable to human health.

As is the case for all 17 SDGs, it is true that Goal 13 (Climate Action) cannot be achieved in isolation. We will not secure the necessary mitigation and adaptation measures if we do not successfully fight poverty and hunger, if we do not offer decent work conditions to people, eliminate gender discrimination, empower people in democratic forms of governance, protect ecosystems on land and in our oceans, etc. We need to overcome the silo mentality that is predominant in our highly specialised world. In Europe, green NGOs lobbied for years for the use of diesel engines in the belief that they were more efficient and emitted less greenhouse gas. It was then discovered that diesel engines emit more nitrates and more fine particles and are a major cause of the 400,000 premature deaths each year due to poor ambient air in European cities. One needs to avoid developing solutions to specific problems without testing these solutions against the entire list of SDGs. This may sound ambitious, but it is the only safe way forward toward a sustainable future for mankind on this blue planet.

Some of this may seem obvious to the informed. But the planet is populated with people who have never heard of the scientific findings and the very large consensus around the causes of climate change and its rapidly increasing threats. This is not a criticism; it is unfortunately still a reality. Those people directly exposed to the visible effects of climate change do tend to realise

that something is wrong. But it is not common knowledge that human activity is a major cause for the dramatic change. The sheer number of humans on the planet should be more widely recognised as a contributing factor. In the 1950s the planet was populated by 3 billion people. Today we are 7 billion and we expect to exceed 10 billion in the next 20 to 30 years. The carrying capacity of the blue planet called Earth is being seriously stretched! Almost all of the demographic growth is taking place in less developed countries. The demand for resources for a decent life is growing exponentially! Most of today's quality of life in the industrialised part of the world is fuelled by fossil energy resources. Much of our food is produced at the expense of forests and wetlands, and our meat diets are not only unhealthy for those who enjoy a steak a day, but also a big source of greenhouse gas emissions.

How can better governance deal with all of these challenges? The UN resolution on the SDGs highlights the role of democratic governance and respect for the rule of law. Both concepts need informed citizens to exercise their democratic rights and claim their individual rights under impartial rule of law. Information and education are crucial for both. And libraries are a fantastic tool for sharing human knowledge. It is no surprise that dictatorial regimes tend to destroy books and libraries, as evidenced during the fascist reign in Germany or more recently during the Islamic extremists' occupation and partial destruction of Timbuktu.

Over the centuries, access to libraries has become more open, sharing knowledge well beyond small numbers of elites. Fighting illiteracy continues to be dramatically important. The SDGs represent an attempt to overcome the increasing specialisation of today's world. The world needs specialists, to advance collective knowledge. But the world also needs generalists, who understand the specialists'

languages and can bring them to interact to properly assess all consequences, not just individual silo effects. Examples of a lack of holistic analysis are plentiful. The shift toward diesel engines in cars in Europe was motivated also by fight against climate change, without consideration of the significant ambient air pollution by nitrogen emissions and fine particles. Similarly, in the shift toward renewable energy, the introduction of large dams for electricity production often fails to account for the drinking water needs of downstream populations,

not to mention the problems for downstream wetlands and agriculture. Sustainable policies will need to be holistic policies. The 17 SDGs all impact each other, and only those policies that effectively consider all issues in a balanced way will eventually lead toward sustainable societies.

Scientific knowledge on these interactions is growing and documented, for example in the form of the agri-food nexus, or the deeper understanding of the functioning of the planet's many ecosystems. It is important that

as many people as possible have access to these findings, in order to draw the appropriate conclusions for their personal behaviour and perhaps even more importantly, to use their right to vote for governments that will pursue sustainable policies. I remain convinced that the urgency of implementing changes for sustainability requires government regulation. The individual behavioural change of more than 7 billion people will simply take too long to maintain global warming below 2 degrees Celsius.

Chapter 7
Goal 16: Peace, justice and strong institutions depend on A2I

The past two decades have seen significant shifts in the perceived benefits and dangers of technology. These shifts reflect the complex relationship between the capabilities of today's digital technologies, how they are regulated and controlled, and our ability to achieve SDG 16.

Concerns have expanded from access, affordability and various kinds of digital divides to now include information asymmetries, net neutrality, platform dominance, data-exploitation business models, algorithmic bias, privacy and security concerns, and fake news. The power of social media to inform and mobilise civil society celebrated during the "Arab Spring" is now juxtaposed against manipulation of public opinion and the "weaponisation" of the same platforms in the context of elections. For example, the Cambridge Analytica scandal[1] covered extensively by mainstream media provides real insights into the business of social media "profiling."

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> ### SDG 16
> Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels.[i]
>
> 16.10: Ensure public access to information and protect fundamental freedoms, in accordance with national legislation and international agreements.

A tool that is also used to radicalise youth and promote violent extremism in civil society, social media has brought many to the realisation that the concentration of power in "big tech" (the major technology players, based mainly in the U.S. and China, that dominate the curation, access and control to information) merits greater attention. At the same time, rapid deployment of combinations of new technologies that mediate access to information – such as artificial intelligence, IoT (internet of things) and, of course, big data – reinforce the need to have a better-informed and engaged public capable of making technology choices that are in their best interest.

This chapter will focus on aspects of information ecosystem governance and the potential for greater civic engagement around the issues of public access to information and, in particular, Target 16.10. The recommendations focus on the role of libraries to educate, inform and engage from the community to global levels.

Inclusive knowledge societies – UNESCO
The internet was originally designed as a public good. The "openness" that allows us to create content, innovate, and access information online is under constant threat and attack from a range of forces, including but not limited to "big tech." As Mozilla's Internet Health Report 2019 states:

> **Since wars begin in the minds of men and women, it is in the minds of men and women that the defences of peace must be constructed.** *UNESCO Constitution*

"… [I]n 2019, the internet's openness is as radical — and as threatened — as ever. Governments worldwide continue to restrict internet access in a multitude of ways, ranging from outright censorship to requiring payment of taxes to use social media, to shutting down or slowing down the internet to silence dissent. Powerful lobbyists are winning fights for more restrictive copyright regimes, and big tech platforms lock us in to proprietary systems."[2]

These realities remind us of the need to never take our rights for granted.

UNESCO is a multilateral organisation within the UN system that vigorously defends a free and open internet through international cooperation, capacity building and technical assistance to its Member States.[3] It has been engaged with this agenda for many years, emphasising the internet's potential within its goal of developing "inclusive knowledge societies based on freedom of expression, universal access to information and knowledge, respect for cultural and linguistic diversity, and quality education for all."[4]

UNESCO and its sister UN organisations such as the International Telecommunications

Union played a key role in the World Summit on the Information Society (WSIS, 2003 and 2005), which mapped out the implications of information technology for development, including the internet, and reinforced multi-stakeholder approaches in internet governance. The engagement continues through the annual WSIS forum and the regular meetings and conferences convened on access to information in the digital age.

UNESCO is committed to the construction of sustainable knowledge societies through its major programmes, including intergovernmental ones such as the UNESCO Information for All Programme (IFAP). IFAP was founded when member and partner governments pledged to harness the new opportunities of the information age to create equitable societies through better access to information.[5] In 2011, IFAP launched a code of conduct for the internet that remains relevant today.

IFAP actively promotes international reflection on the ethical, legal and societal challenges of knowledge societies. For example, UNESCO and IFAP are actively working to counter the radicalisation of young people online. The internet has been embraced by violent extremist groups, which are increasingly effective in using ICTs to promote hatred and violence, based on ethnic, religious and cultural grounds. These groups use the internet to extend their outreach and recruitment efforts, particularly among young people, by creating online communities with global reach in which violent extremist views and behaviour can be encouraged. On a more optimistic note, IFAP has long-standing cooperative links with IFLA to promote their common goals, including those in the area of information literacy and lifelong learning.

In 2015, UNESCO's 195 Member States committed themselves to internet universality and four fundamental principles that can be summarised in the acronym R.O.A.M.: that the internet should be:
1. based on human Rights;
2. Open;
3. Accessible to all, and
4. nurtured by Multi-stakeholder participation.

These ROAM principles anchor the internet universality indicators (IUI), which are "intended as a voluntary research tool for stakeholders to gather evidence to assess national internet frameworks, particularly in UNESCO's mandate areas, to increase understanding of the national internet environment, and to provide an evidence base for policymaking by governments and other stakeholders."[6] The IUI are spearheaded by the IPDC – International Programme for the Development of Communication.[7]

If one asked the average person about ROAM principles and internet universality indicators, few people would have much of an idea. The voluntary rollout of the IUI, which can even be done at the community level, will perhaps gradually change this situation. The IUI decisively

move the discussion around improving access to information for sustainable development away from its historical focus on infrastructure and remind us of the need to ask important questions such as: Who are the gatekeepers of content? How is content curated and controlled? In which languages is content available on the internet? And how does access to information differ depending on who you are and where you find yourself? These questions are relevant in every country and are also important dimensions of IFAP's work.

Walled gardens on slippery slopes – registries as content police

ICANN (Internet Corporation for Assigned Names and Numbers) is a nonprofit organisation registered in California since 1998. It is responsible for coordinating the maintenance and procedures of several databases related to the namespaces and numerical spaces of the internet, ensuring the network's stable and secure operation.[8] Its mission as stated on icann.org is "to help ensure a stable, secure and unified global internet." In everyday language, ICANN manages everything that comes after the dot in a web address, for example: .com, .org, .biz or .ru. These are known as TLDs or top-level domains. When a TLD does not represent a country

or a territory, it is known as a generic TLD (gTLD).

TLDs are managed by registries. These are companies that historically have played a major role in the technical health of the internet. 35 years ago, seven TLDs were created by the U.S. National Science Foundation, including .com, .org and .net. In 2012, after close to a decade of policy discussions and consensus-building within the ICANN multi-stakeholder decision-making framework, applications for new gTLDs were taken. Examples of new gTLDs applied for and delegated include ".africa," ".baby" and ".bible." The stated objective of the exercise was to enhance competition, consumer choice and innovation and to expand the generic top-level domain name system into languages beyond English, including Chinese, Cyrillic and Arabic.

Despite the preparatory work, the implementation of the new gTLD regime continues to attract controversy. Major companies and well-established organisations are perceived to have an unfair advantage in applying for and managing particular gTLDs. Some have created "walled gardens" by introducing rules and restrictions that limit access to the second-level domain names by business and even ideological rivals.

Perhaps of equal if not greater concern, the delegation of new

gTLDs has meant a new version of the registry contract. In their original iteration, registries were concerned with the health of the internet's infrastructure and the interests of the public – including registrants (those of us who register domain names for our organizations, our companies, our hobbies and our neighbourhoods). Today registry powers are being greatly extended, as reflected in this statement: "A registry operator is responsible for services including customer database administration, zone file publication, DNS and DNSSEC operation, marketing and policy determination."[9]

The following extract from a public comment posted in relation to changes in the way .org is managed provides a summary of the implications of those changes, and the box below provides context

by detailing a real anti-abuse policy.

The internet has no boundaries (in theory) but what is legal depends on jurisdiction. IFLA's 2013 Trend Report[10] identifies this as the ongoing challenge of regulating a global borderless internet at a supranational level whilst accommodating overlapping and competing national legal jurisdictions and frameworks. The kind of open-ended reasons given under item B in the anti-abuse policy above do not make clear which jurisdiction would apply. In fact, "any applicable laws, government rules or requirements, requests of law enforcement" would seem to indicate that any government could request that a registry take action and suspend, cancel or transfer any registration or transaction or put them on registry lock. There is also no clarity on what exactly would constitute a

content infringement. The situation is not only dangerous for the registrants, it also introduces new vulnerabilities for registries as they could open themselves up to legal action by accepting certain requests and denying others. There is also no clarity on what exactly would constitute a content infringement.

Those in favour of Public Interest Commitments and the changes in the responsibilities of registries argue that these are needed if some of the criminal elements of internet – e.g., child trafficking, pornography and promoting violent extremism – are to be controlled.

However, what constitutes acceptable content and what does not are not only debatable, they are anchored in history and culture. Censorship can affect real people and very often the most vulnerable in society. Pulling down a domain name means losing web pages, emails and listservs – entire online identities of organizations, businesses, causes and personal ideas. Changing the role of ICANN and giving registries the ability to set the rules, apply them as judge and executioner without due process – in a scenario that defies natural justice – cannot be healthy for good governance, free speech and those rights that are fundamental to a free internet.

As the public comment on the changes to .org rules puts it: *"The mandatory and voluntary 'Public Interest Commitments' are already being used to justify registry-imposed censorship of internet content in the new gTLDs. They are utterly inappropriate for*

the legacy TLDs, especially .org, and the special circumstances of millions of domain names registered to organizations dedicated to free expression and engaged in lawful critique, including critique of companies and their products, services and practices."

The question is, how did we allow this to happen? Unfortunately, there are very few people, outside of paid specialist staff from organisations with healthy budgets, who track what happens in ICANN. Its multi-stakeholder processes are complicated to follow and understand, even for those who work in this field. There are too few professionals with the required combination of legal, technical, organisational and policy skills. Most interested individuals and organisations of the 'Global South' cannot afford to consistently attend the many meetings that are central to ICANN's work. Libraries are uniquely positioned to provide the spaces for remote access to ICANN meetings. They can host public discussion on these issues, to inform and educate and to develop real solutions.

ICANN's work is central to a robust internet that allows us to access the content that we need in line with UNESCO's ROAM principles. We need to pay more attention to how our virtual world is organised

and governed. Walled gardens in the context of an internet that is supposed to be free and open merit much research and analysis.

Conclusion

The internet is central to our ability to access information. An estimated 4.5 billion internet users regularly access online content, often using their mobile phones. The number of internet users is rising rapidly with some estimates indicating that more than 1 million people come online for the first time each day. Many countries have limited information literacy resources, and so users have few tools to make safe and informed choices about how they access information online. They learn by doing, they learn from their peers, their children and sometimes they learn from predators. The 2017 Development and Access to Information report[11] highlights the potential for libraries to make a difference by cultivating capabilities. People need to understand the implications of the technology choices they make.

When the U.S. government passed the CLOUD act, which gives it access to data stored abroad, not many people in my neighbourhood took any notice at all. Even in relatively sophisticated "old" internet markets, it took time for people to understand how Cambridge

Analytica used profiling to distort elections. There was no precedent, nothing in their experience that they could use to explain it. For some people, just the word algorithm is enough to persuade them to tune out. Algorithmic bias has been shown to work against justice for all by profiling certain races as inherently immoral or dangerous.[12] Those criminals who promote violent extremism online know that many of the vulnerable young people they target have no understanding of how they are being manipulated. These are real, not virtual, threats to the achievement of SDG 16.

Changes to ICANN's role have had implications on the potential for censorship online, and accountability presents a challenge, as does deciding how to better manage the regulation of a global borderless internet at a supranational level whilst accommodating overlapping and competing national legal jurisdictions. There are a number of such issues that require broader informed engagement. We need the discussions to become mainstream to move outside the Internet Governance Forum. Libraries have a proven track record as places that promote civic engagement. We need to be better informed about how the information ecosystem we find ourselves in today works. Formal education systems have a role, media has a role, and libraries have a potentially major role.

An excerpt from a real anti-abuse policy (voluntary commitments) includes the following clause[iii]**:**
Registry operator reserves the right, at its sole discretion, and at any time and without limitation to deny, suspend, cancel, or transfer any registration or transaction, or place any domain name(s) on registry lock, hold or similar status as it deems necessary for any of the following reasons:

A. to protect the integrity and stability of the registry;
B. to comply with any applicable laws, government rules or requirements, requests of law enforcement, or any dispute resolution process;
C. to comply with the terms of this Registry agreement and the Registry Operators Anti-Abuse Policy;
D. registrant fails to keep Whois Information up to date;
E. Domain name violates the Registry Operator's acceptable use policies, or a third party's rights or acceptable use policies, including but not limited to the infringement of any copyright or trademark; or
F. As needed during resolution of a dispute.

The 'Public Interest Commitments' impermissibly invite regulation of internet speech and content
"The so-called mandatory and voluntary 'Public Interest Commitments' are a set of requirements that were added to registry agreements for the new top-level domains. They were created and imposed by ICANN staff without community input. They purport to impose a general obligation on registries and registrars to regulate the contents of websites and internet applications to prevent 'copyright infringement,' 'deceptive practices,' or other 'activity contrary to applicable law,' and to 'provid[e] consequences for such activities including suspension of the domain name.' These provisions, in effect, repurpose the domain name system from a global system of unique identifiers for information resources to a global regulator of speech in which internet users around the world must conform to a vague, inconsistent set of national laws, interpreted and enforced by numerous private corporations, or risk losing their domain names. And they run directly counter to ICANN's mission statement, which states that 'ICANN shall not regulate (i.e., impose rules and restrictions on) services that use the internet's unique identifiers or the content that such services carry or provide.'"

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i   See https://www.un.org/sustainabledevelopment/

ii   Taken from the Donuts Inc Acceptable Use and Anti-Abuse Policy: https://donuts.domains/about/policies/acceptable-use/. Such rules are, however, common and this example is representative of other registries also.

iii   See https://www.multichannel.com/blog/platform-dominance-privacy-antitrust-5g-dominate-sotn-industry-assessment-as-internet-infrastructure-fades

iv   Quotation received by e-mail

v   Excerpted from: https://mm.icann.org/pipermail/comments-org-renewal-18mar19/2019q2/003200.html. See ICANN's bylaws: https://www.icann.org/resources/pages/governance/bylaws-en/#article1

1.   See https://www.theguardian.com/uk-news/2019/mar/17/cambridge-analytica-year-on-lesson-in-institutional-failure-christopher-wylie

2.   See https://internethealthreport.org/2019/understand-the-issue-openness/

3.   UNESCO's mandate is to forge a culture of peace by fostering the generation and exchange of knowledge … through international cooperation, capacity building and technical assistance to its Member States. It works to create the conditions for genuine dialogue between cultures and peoples based upon mutual respect and respect for shared values. See unesco.org.

4.   See https://en.unesco.org/internetuniversality

5.   See https://en.unesco.org/programme/ifap

6.   See https://en.unesco.org/internetuniversality

7.   See https://en.unesco.org/programme/ipdc

8.   See ICANN's bylaws: https://www.icann.org/resources/pages/governance/bylaws-en

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Conclusion

In line with the focus on the interconnectedness of policy actions under the Sustainable Development Goals (SDGs), access to information is both a target in itself and a means of achieving other targets. The Development and Access to Information report therefore focuses both on measuring progress toward meaningful access to information and showing the benefits it can bring.

This – the 2019 edition of the report – allows for a first look at different countries' and regions' performance over time in the four key areas identified in the 2017 edition: physical connectivity, skills, social and cultural norms, and legal environment.

It highlights internet connectivity as having been an area of strong performance globally, with a number of countries making major strides toward affordable internet access. Nonetheless, there remains strong variation both within and across regions. We remain far from a world where everyone has the ability to get online at a price they can afford.

More worryingly, inequalities that exist offline also appear online. For example, the internet gender gap – the difference between the share of men and the share of women getting online – has widened. There is also a mixed picture on skills, where growing overall numbers of people with post-secondary education mask differences between countries. The picture is gloomier as concerns the legal environment, with more and more countries classified as unfree or only partially free.

Overall, while there are reasons to be positive, it is clear that meaningful access to information is far from a reality for all, in all of its dimensions. When one group enjoys more meaningful access than another, or when it is restricted for all through the actions of government or private actors, access to information cannot contribute fully to sustainable development.

Chapter 2 stresses how libraries can play a positive role. It underlines that the work of libraries is itself dependent on connectivity and fundamental freedoms, but can also support them, creating a virtuous circle. Furthermore, libraries are key partners for governments in efforts to promote equality, employment and skills. As the chapter points out, a single library activity can indeed contribute to a number of different policy goals, underlining the role of these institutions as development accelerators.

The five thematic chapters reinforce these messages. Chapters 4 (SDG 8 – decent work and growth) and 6 (SDG 13 – climate action) provide evidence of how access to information can be key for the success of policy efforts in favour of employment, financial inclusion, and the fight against climate change.

At the local level, access is a key means of ensuring people can take advantage of available opportunities to learn and earn, as well as adopting more environmentally friendly behaviour. But it also matters globally, for example for the researchers working to monitor and develop responses to climate change, as well as for the policy-makers who make decisions on the basis of their work.

> Throughout these chapters, the potential of libraries is clear. They are places where access to information can become a reality for all, regardless of background, gender, resources or other factors. They can provide the support people need to develop skills and realise opportunities.

Chapter 3 (SDG 4 – Quality Education) not only stresses the value of access to information as a means of making the link between people and opportunities, but also makes the point that for access to be effective, we need to go beyond thinking only about connectivity. It underlines the need for more sophisticated skills if people are to take advantage of digital information. Counterintuitively perhaps, these are often best provided through in-person teaching and support.

Chapters 5 (SDG 10 – Reducing Inequalities) and 7 (SDG 16 – Peace, Justice and Strong Institutions) explore the need to pay attention to the way information itself is provided. They note that for access to be a tool for equitable progress, the way information is gathered and presented matters. If care is not taken, information risks reinforcing the power of one group over another, or being distorted through the actions of commercial or state actors. Where this happens, the power of access to information is weakened or nullified.

Throughout these chapters, the potential of libraries is clear. They are places where access to information can become a reality for all, regardless of background, gender, resources or other factors. They can provide the support

people need to develop skills and realise opportunities. As public-focused institutions with a unique expertise in dealing with information (and a growing awareness of the impacts of their decisions), they can also help to counter the risks of distortion or discrimination. As such, they help ensure that access to information realises its potential as a development accelerator.

What does this report mean for the SDGs? A first key message is the need for concerted, coordinated policies. A partial approach, focusing for example on connectivity without regard to skills, freedoms or equality, will lead to suboptimal outcomes. Governments must live up to their commitment to treat the SDGs, and notably those relating to access to information, as a coherent whole, and not pick-and-mix from their different elements.

A second implication is that tackling global challenges such as climate change requires global approaches to access to information. Sustainable Development Goal 17 already refers to transfer of technology, but there is no reason why this should not also be the case with information. Indeed, global access to information promises to allow the beneficiaries of technology transfers to develop their own

solutions rather than simply being "takers" of others' ideas.

A third implication is the need to continue to focus on meaningful indicators at the UN level. Disaggregation by gender and socioeconomic status is already on the agenda but still far from complete. Meanwhile, measurement of those SDG targets that mention access is less than satisfactory. With access to information playing such a core role in the effectiveness of other policy initiatives, this is a significant gap that deserves to be filled.

A fourth implication – and one already being addressed independently by the United Nations Secretary General's High-Level Panel on Digital Cooperation – is the need to reflect on how information itself is governed. The type of information available, how it is shared, and with whom, has major impacts on real-world situations.

The final implication is the need to consider the potential of libraries as a key means of delivering access to information. As a pre-existing, familiar infrastructure, with an expertise in managing and giving access, they are logical partners, from the local to the global level, in supporting global development efforts.

Contributors

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Karl Falkenberg has 40 years of experience of international negotiations for the European Union. His career started with textile trade negotiations, and he has spent most of this time on multilateral negotiations, including the negotiation of the institutional agreement setting up the World Trade Organisation.

He also negotiated a large number of bilateral free trade agreements, before moving to become Director General of the EU's Directorate General for Environment. In this position, he negotiated on issues such as Climate Change, Biodiversity, a range of international environmental conventions and the Sustainable Development Goals (SDGs) in the UN system.

Since July 2017 he has worked as an independent lecturer and advisor on trade, environment and sustainability.

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Michelle is a research scientist in the Technology & Social Change (TASCHA) Group at the University of Washington (UW) Information School. She uses mixed-methods research and evaluation to answer questions related to access to information, skill development, and program outcomes.

Much of her work centres on how public libraries support community well-being and promote development. She also has a keen interest in literacies (information, web, digital, data). Michelle holds degrees in Public Administration (MPA) and Library and Information Science (MLIS) from the University of Washington.

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Maria is a Principal Research Scientist at the Technology & Social Change Group of the University of Washington's Information School. Experienced in conducting multi-country studies that span diverse geographic regions, much of her research focuses on the appropriation of information and communication technologies (ICTs) to catalyse social change, specifically in communities facing social, political, and economic challenges.

Keenly interested in the role of ICTs in social movements, youth employability, and skill development, Maria has worked closely with civil society organizations, NGOs, public libraries, and development funders to conduct participatory research that results in actionable recommendations for policy and practice.

Maria is currently leading a multi-year research effort focusing on the role of access to information in advancing the Sustainable Development Goals (SDGs). She holds a Ph.D. in Communications from the University of Washington and a Masters in International Relations from the University of Chicago.

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Dorothy Gordon is Chair of the Inter-governmental Council of UNESCO's Information for all Programme and a Board Member of UNESCO IITE – Institute for Information Technology in Education. She was the founding Director-General of the Ghana-India Kofi Annan Centre of Excellence in ICT, a specialist technology training and research institute, a position which she held for over a decade. She works globally as a policy advisor, evaluator, project manager and organisational management consultant.

Over the course of her 30-year career in international development and technology she has held management positions with the UN and global management consulting firms on four continents; involving oversight responsibilities for multi-million dollar projects and programmes.

She is a member of ICANN's Non-Commercial Stakeholder Group. As a strong advocate of the importance of building robust local innovation ecosystems based on open source technologies, she serves on the board and as a mentor to a number of start-ups and women in tech NGOs. She holds degrees from the University of Ghana and the University of Sussex, Institute of Development Studies where she trained as a development economist. She works in both English and French.

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Gerald Leitner

Gerald Leitner took on the role of IFLA Secretary General in June 2016. He is responsible for the strategic and operational direction and financial management of IFLA.

In 2017, Gerald Leitner initiated the IFLA Global Vision project, with a view to building a stronger and more united library field globally, better able to promote literate, informed and participatory societies. In this context, he has led an ambitious global conversation, involving libraries in 190 United Nations Member States, alongside launching new projects such as the Library Map of the World, and overseeing an expansion in IFLA's engagement with libraries globally.

Gerald Leitner has worked in senior positions at international organisations and in Austria's cultural, scientific and educational sectors. Prior to becoming IFLA Secretary General, he was the Secretary General of the Austrian Library Association. In this role, he oversaw fundamental reforms to the training of public librarians, organised Austria's largest literature festival, and developed new IT services for libraries. He engaged closely with government, ensuring the place of libraries on the political agenda.

He is a past president of the European Bureau of Library Information and Documentation Associations (EBLIDA) and a member of national and international advisory bodies in cultural, education and scientific sectors. He is highly experienced in negotiating with politicians, authorities, lobby groups, publishers, artists, businesses and strategic partners. In 2017, he was awarded the Austrian Cross of Honour for Science and Art.

Gerald studied literature and history at the University of Vienna, and after his studies worked as journalist, chief editor of the Austrian Library magazine and head of training for public librarians in Austria.

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Her Capstone project focused on gathering and analysing data about Open Access journals, which she and her collaborators continue to maintain at FlourishOA.org. She also works as a project manager for the UW iSchool's Open Data Literacy program. Her research focuses on curating Open Data and analysing Open Data in new and creative ways to advance and expand scientific scholarship.

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As Secretary General of ICAE she monitors and supports implementation of the global agendas, especially the SDGs and Education 2030. She is co-chair of the Academia and Education Stakeholder Group in the UN DESA system, member of the Steering Group of the HLPF Coordination Mechanism and member of the Global Alliance for Literacy.

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He serves on the UK Department for International Development's Digital Advisory Panel, and the UN University – Computing and Society International Advisory Board. In 2018-19 he led the co-ordination of 21 UN agencies on behalf of UNESCO and UNICEF to develop a system-wide strategy on the future of education and learning for the UN's High Level Committee on Programmes.

His influential edited book Information and Communication Technologies for Development, was published by Cambridge University Press in 2009, and his latest book Reclaiming ICT4D was published by Oxford University Press in 2017. Most of his research and writing currently focuses on the inequalities caused by ICTs and what needs to be done to ensure that the poorest and most marginalised people can benefit from them.

He is a member of the £20m UKRI GCRF South-South Migration Hub (2019-23) undertaking research on the use of digital technologies by migrants, Co-Founder of TEQtogether (an initiative to change men's attitudes and behaviours towards women and technology), and is also well-known for his research on the history and geography of wine. He was appointed a Companion of the Most Distinguished Order of St. Michael and St George (CMG) in the Queen's 90th Birthday Honours list in 2016 for his services to the Commonwealth.

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Stephen Wyber is Manager, Policy and Advocacy at the International Federation of Library Associations and Institutions, where he leads on efforts to build understanding of the role of libraries and influence policy-making.

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Chapter 2

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Chapter 4

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Chapter 5

Inequalities: libraries and knowledge sharing

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Figures

1. Afghan refugee children in Pakistan: among the poorest and most marginalised (Source: Author, 2016)
2. TS Central State Library observes International Day of the Girl Child (Source: Indian Public Library Movement, http://www.iplm.in/gallery.html)
3. Telecentre in Bario, Sarawak, Malaysia (Source: Author, 2017)
4. Micro-library in Ponta Delgada, São Miguel, Azores, Portugal (Source: Author, 2018)