Information practices for sustainability: role of iSchools in achieving the UN sustainable development goals(SDGs)

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Abstract

In September 2015, the United Nations (UN) General Assembly passed a resolution identifying 17 Sustainable Development Goals (SDGs) and 169 associated targets; and countries around the world agreed to achieve these by 2030. By conducting a thematic analysis of four key UN policy documents related to sustainable development, this paper argues that alongside financial and other resources, access to, and use of, appropriate information are essential for achieving SDGs. The paper also reviews research on information and sustainability undertaken at the iSchools and the computer and HCI communities. Given that the mission of iSchools is to connect people and society with the required information through the use of appropriate technologies and tools, this paper argues that iSchools can play a key role in helping people, institutions and businesses, and thus countries around the world achieve SDGs. The paper identifies four broad areas of teaching and research that can help iSchools around the world prepare a trained workforce who can manage, and facilitate access to, information in specific domains and contexts. It is also argued that cooperation and collaborations among iSchools can promote a culture of sustainable information practices amongst university graduates and researchers in different disciplines that will pave the way for achieving SDGs in every sector.

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Introduction

The UN General Assembly, in its meeting on 25th September 2015, adopted the Resolution A/RES/70/1that proposed 17 sustainable development goals (SDGs) (see Appendix 1) and 169 associated targets (United Nations General Assembly, 2015a). The SDGs are "universal goals and targets which involve the entire world, developed and developing countries alike" (United Nations General Assembly, 2015a, p.3), and consequently all countries agreed to work for achieving them. Alongside the continuing development priorities such as poverty eradication, health and wellbeing, education for all, and food security and nutrition, SDGs (United Nations General Assembly, 2015a):

- set out a wide range of economic, social and environmental objectives;
- promise more peaceful and inclusive societies; and
- define means of implementation of the goals and targets.

Although they were adopted as a UN Resolution in 2015, SDGs are successors of the UN Millennium Development Goals (MDG) adopted in 2000 (UNDP, 2016). Although countries around the world agreed to accept them, there is a debate on how SDGs and their success can be measured (Griggs et al, 2013). LeBlanc (2015) argues that some thematic areas covered by the SDGs are well connected with one another while others are not, but overall the SDGs as a whole are a more integrated system than the MDGs were.

The importance of, and need for, appropriate management, access, use and sharing of information for achieving sustainability in different sectors, have been mentioned in several places within the UN (United Nations General Assembly, 2012), and also other international, policy documents (see for example, OECD,2010) and information science literature (see for example, Nolin, 2010; Nathan, 2012; Chowdhury, 2012a, 2012b, 2012c, 2013). However, systematic research is needed to determine what are sustainable information practices, and how they can help individuals, institutions, governments and countries achieve SDGs, and thus build a sustainable and inclusive society as envisaged in the UN *Resolution A/RES/70/1*. This paper aims to stimulate research in this area by addressing the following questions:

- What roles do information play in the United Nation's canonical texts on sustainable development?
- What roles do information play in promoting SDGs?
- How can iSchools strategically connect to the SDGs?

The study approach

The following four key UN policy documents were thematically analysed in order to understand how the importance of terms like data and information have been recognised in various contexts of sustainable development:

1. The *Brundtland Report, Our Common Future* (United Nations, 1987),
2. The UN General Assembly Resolution called *The Future We Want* (United Nations General Assembly, 2012)

3. UN Resolution A/RES/70/1: *Transforming our world: the 2030 agenda for sustainable development,* that proposed 17 sustainable development goals (SDGs) (listed in Appendix 1) and 169 associated targets (United Nations General Assembly, 2015a).
   The *Addis Ababa Action Agenda*, adopted by the UN General Assembly on 27 July 2015 (*Resolution 69/313*; United Nations General Assembly, 2015b

Nvivo was used to conduct the thematic analysis. A text query on 'information' and 'data' was performed in NVIVO, and instances of term occurrence within the chosen UN documents were collated. The paragraphs were manually read and information related themes described around the words were noted, and Tableau was used to visualise the data (see Figure 1).

The paper also briefly reviews research on different aspects of information undertaken within the iSchools. Founded in 2005, the iSchools organization (ischools.org) currently has 77 member institutions, or iSchools, from around the world. While each individual iSchool has its own focus and strengths, together the iSchools consortium intends to be the global resource for education and research at the nexus of information, people and technology (Overview of the … 2016; Seadle, 2016). Given that data and information play a key role in SDGs, and that iSchools' education and research focus on information, it is only reasonable that iSchools have a role to play in the context of SDGs. Key research papers that reviewing research in iSchools were analysed. Key research papers, from the computer science and HCI community, that discuss the role of ICT and information in sustainable development have also been reviewed to understand the current state of research in this area. Based on the thematic analysis, and review of research on information and sustainability, the paper discusses how sustainable information and data management systems, policies and practices can be delivered through the teaching and research programmes in iSchools; and thus how iSchools can play a key role in achieving the SDGs.

Sustainable Development Goals

The World Commission Report on Environment and Development, called *Our Common Future* (also known as the *Brundtland Report*), provided the classic definition of sustainable development as:

> 'development which meets the needs of the present without compromising the ability of future generations to meet their own needs' (United Nations, 1987).

While this definition emphasizes on the environmental sustainability, it is generally agreed that sustainable development calls for a convergence of three areas: economic development, social equity and environmental protection (Drexhage and Murphy, 2010; Wu and Wu, 2012). The UN *Resolution A/RES/70/1* emphasizes that the SDGs are integrated and designed to balance the three dimensions of sustainable development: economic, social and environmental. Although *Resolution A/RES/70/1*, puts special emphasis on the developing and least developed countries, SDGs are applicable to every country, developed and developing alike. For example, quoting a UNICEF report, the Guardian newspaper in Britain reports that child poverty has increased in 23 countries in the developed world since the start of the global recession in 2008 (The Guardian, 2014). Similar data on poor health, gender imbalance and income differences in the developed countries can be found in various UN, WHO and OECD reports (e.g. UNDP *Human Development Reports*, 2015; *WHO Statistics 2013* (WHO, 2016); and *OECD Charts, tables and databases* (OECD, 2016)).

Structure of the paper

The rest of the paper discusses how data and information gathering, management, access, sharing and use/re-use are the essential requirements for achieving SDGs in every country, and how iSchools, that specialise in education and research in these areas, can make a major contribution.

First a thematic map of concepts dealing with information within four key UN documents on sustainable development and related areas has been presented to show how different aspects of information management, access, sharing and information-led research and decision making have been proposed in these documents. This follows a brief overview of research in iSchools, and on different aspects sustainability and information research undertaken primarily by the information and computer science community. The paper then discusses sustainability and information education, and proposes a framework for research and training on different aspects of sustainability that the iSchools should undertake in order to make contributions to the UN SDGs.

Data, information and sustainable development

Several international and national policy documents have recognised the importance of management, access, use and sharing of data and information for sustainable development. The canonical text on sustainable development, *Our Common Future* (United Nations, 1987), has clearly highlighted the need for improved access to information in a number of places; for example (some words are highlighted here for emphasis):

- **Free access to relevant information** and the availability of alternative sources of technical expertise can provide an informed basis for public discussion (p.57)
- The real challenge is to ensure that the new technologies reach all those who need them, overcoming such **problems as the lack of information** (p. 77)
- **Many developing countries need information on** the nature of industry-based resource and environmental problems, on risks associated with certain processes and products, and on standards and other measures to protect health and ensure environmental sustainability. They also need **trained people to apply such information** to local circumstances. (p. 192)
- The primary frustration about this wealth of data is that the **information is dispersed** among governments and institutions, rather than being pooled (p.227)
- **New technologies** and **potentially unlimited access to information offer great promise** (p. 257)
- Augmented by **digital communications and advanced information analysis**, photos, mapping, and other techniques, these **data can provide up-to-date information** on a wide variety of resource, climatic, pollution, and other variables (p. 267)

The need for access to, and sharing of, information has also been mentioned in many other policy documents created by the UN (United Nations General Assembly, 2012, 2015a, 2015b), European Commission (2010), the OECD (2010), and studies commissioned by national governments (for example, Department for Environment…, 2013); as well as by researchers (see for example, Nolin, 2010; Nathan, 2012; Chowdhury, 2014).

A thematic map of information in key UN documents

Figure 1 shows a thematic map of various information related concepts appearing in the selected UN documents. The most significant themes, based on their weighting were: Information access, Information sharing, Building databases, Information skills, Scientific/research information, Information Technology, Information advocacy, Information analysis, Environmental information, etc. The thematic map and the weightage of difference themes show the different contexts in which the concept of information have been discussed in various UN documents. It may be possible that the notion and context in which the word information occurred in those documents may vary, and terms may not have been used consistently by the authors of those documents. Hence, each sentence in which the word information occurred, was studied manually alongside it's previous and

following sentences, in order to understand the theme and create the tag accordingly. Thus these tags show the different information related themes appearing in the leading UN documents on sustainable development.

Figure 1: Thematic map of information appearing in four key UN documents

Information research in iSchools

According to ASIS&T (Association for Information Science & Technology) information science includes any professional who works with, researches or learns about the management of information in any form (ASIS&T, 2016). Numerous research papers and books have appeared over the past few decades debating the definitions and connotations of information science as a discipline, as a multi- and inter-disciplinary field of study, as a profession, and so on. Overall, researchers agree that information science is different from other conventional disciplines in a number of ways, and it has evolved quite significantly over the years. In fact, over the past few decades information science has become a melting pot of ideas, theories, principles and practices from several other disciplines; and as a result it has increasingly evolved to become a multidisciplinary field of study (see for example, Buckland, 2012; Bawden, 2007; Bawden & Robinson, 2012; Budd, 2015; Furner, 2004; Holmberg, Tsou and Sugimoto, 2013; Maceviciute & Wilson, 2005; Robinson, 2009; Wilson, 2003, 2010; Wu et al, 2012; Zhang, Yan & Hassman, 2013; Zins, 2007). Consequently, research and education programmes in information science schools have also changed name and scope over the past few decades. Buckland (2012) summarises this change in the following words:

"During the 20th century there was a strong desire for the provision of information services to become scientific, to move from librarianship, bibliography, and documentation to an information science. ... By the beginning of the 21st century, however, departments of (library and) information science had turned instead towards the social sciences. Leading programs have increased their size and visibility with skillful publicity liberally using the words "information," "society," and "technology." "Information school" is currently a name or nickname of choice."

Budd (2015) observes that library and information science schools have changed over several decades but with the iSchools movement, the pace of change has accelerated and the makeup of schools has continued transformation. Wiggins and Sawyer (2012) comment that some iSchools are highly specialised, while others are highly multidisciplinary; and the richness and diversity of the broad disciplinary domains make an important contribution to the information community and scholarship.

However, despite its multidisciplinary nature, the core objective of the discipline or the profession of information science has remained unchanged. Bates (2010) argues what distinguishes information science from other disciplines is that whatever the information content, the objectives are "to understand the domain of information and the human relationship to it at a theoretical level, and to develop practical skills of organization, retrieval and dissemination of information to address real-world problems at a professional level."

It may be argued that traditionally information science and information management programmes have taught how to manage recorded information or information objects, not data per se. This has been the view of many leading researchers in the field. For example, Saracevic (2009) notes that information science is concerned with "recordable information and knowledge, and the technologies and related services that facilitate their management and use." Bawden (2016) comments that information science is best regarded as a multidisciplinary field of study, with its subject being all aspects of human recorded information.

Over the past few years, boundaries between data management and information management have been blurred, and today many information science programmes, and especially iSchools, teach people how to manage both structured data as in databases and spreadsheet software, and unstructured data such as textual, image, audio and multimedia data.

Overall, iSchools aim to connect people, institutions, businesses and society with data using appropriate ICT and a range of other technologies, tools and policies, so that appropriate meaning or sense of the data can be made or inferred by people and thereby generating information that can be used in a specific context for learning, problem solving, decision making, healthy living, research & development, and so on. Wilson (2010) provides a simple, and yet profound, example of the relationship between data and information:

"Information is all around us - we live in an information environment, like fish in water. This is clear when we consider my favourite definition of information as 'any modulated signal': all we need is the ability to decode and interpret the signal and the information is revealed to us" (Wilson, 2010).

The key concepts here are 'decode and interpret' the signal or data to transform it to information in a specific context; and if the context is taken away or changed, the interpretation may be different resulting in a different information or no information at all. iSchools play a key role in teaching and research of 'decoding and interpretation' of data in a specific context using the appropriate tools, technologies, standards and domain- and context-specific skills. In other words, iSchools can teach individuals and institutions how to collect, manage, access and decode and interpret data from multiple sources that are necessary for achieving SDGs.

Several researchers have attempted to map and evaluate the research and intellectual contributions of iSchools' academics and researchers. Budd (2015) observes that programmes that are part of iSchools tend to lead the way in intellectual productivity measured through the number of research publications. While analysing the staff and research profile of five US iSchools, Zhang, Yan and

Hassman (2013) note that the faculty come from four dominant areas and their research topics reflect their background (Table 1).

Table 1: Staff background and research area (Zhang, Yan & Hassman, 2013)

Subject/Topic	Faculty background	Faculty research area
Information Science	27%	27%
Computing	23%	21%
Management & Policy	17%	17%
Library Science/Studies	10%	19%

In their study, based on 25 iSchools, Wu et al (2012) observe that 42% faculty come from library and information science, 13% from computer science, 9% from education, 7% from arts & humanities, 6% from business & economics, 5% each from engineering and communication, 4% from psychology, and so on. They divided the chosen 25 iSchools into three categories: LIS (library and information science) focused, CS (computer science) focused, and business management (BM) focused, and identified the research interests of staff in each area as follows:

- Within the LIS iSchools, education theory and practice and LIS education are the most popular topics followed by information theory, culture, reading, information literacy; library management, information resource management, organizational management; and information retrieval;
- Within the CS iSchools, intelligent systems, adaptive systems, user modeling, decision support systems and neural networks are the most researched subject areas, followed by HCI and human-centred design; and
- Within the BM iSchools the most popular topics were e-commence; HCI and human-centred design; and social web and collaborative work.

In a more recent study involving all the iSchools as of February 2013, Holmberg, Tsou and Sugimoto (2013) list 20 most frequently mentioned research interests of iSchool faculties (Table 2).

Table 2: 20 most frequently mentioned research interests of iSchool faculty

Research topic	Number	Percentage
Human-computer interaction	85	7.2
Information retrieval	72	6.2
Digital libraries	71	6.1
Information technology	54	4.6
Information systems	52	4.5
Data mining	52	4.5
Social media	49	4.2
Knowledge management	48	4.1
Information seeking	42	3.6
Education	36	3.1
Software engineering	35	3
Information management	35	3
Information behaviour	32	2.7
Privacy	30	2.6
Technology	29	2.5
Information policy	28	2.4
Learning	28	2.4
Evaluation	28	2.4

Machine learning	27	2.3
Artificial intelligence	25	2.1

Overall, these studies show that the iSchools faculty increasingly come from a range of disciplines; and research in the technology areas has seen some growth. However, such growth is more common for iSchools that have a computer science focus, or for researchers with a computer science background.

Sustainability and information research

Nathan (2012) points out that the work of information professionals is in part informed by, and in part scaffolds, the information practices of society at large. Drawing on the definition provided by Dourish and Anderson (2006), Nathan (2012) defines sustainable information practices as "the socially negotiated behaviour through which we create, change, share, and store information". The phrase 'socially negotiated behaviour' is important here. It means that standards and protocols should be developed and agreed by specific disciplines, communities of practice, industries and society at large; and these should be learnt and practised for the entire lifecycle of information in a given sector for achieving sustainable development.

Sustainable information practices should therefore use appropriate technologies, tools, standards, methods, policies and practices so that sustainability can be achieved throughout the lifecycle of data and information; and these should not only be done within the information services unit in an organization or business, but should be applicable for the entire organization and all its activities. Sustainable information practices should also influence the development and use of appropriate ICT infrastructure and digital information tools, regulations and policies, as well as human and social/institutional behaviour in the use of data and information for sustainability in every sphere of life and activity.

Numerous research paper have appeared in the recent past investigating how sustainability can be achieved at the levels of ICT infrastructure (see for example, Anagnostopoulou, Saadeldeen *&* Chong, 2010*;* Baliga, Ayre, Hinton, & Tucker, 2011, 2012; Pawlish, & Varde, 2010; Tomlinson, 2010), information and data management software (see for example, Bales, Sohn & Setlur, 2011; Basirat & Khan, 2010; Langer, 2011; Shih, Tseng & Yang, 2011; Yang, Kamata & Ahrary, 2009) and system/product design (see for example, Carballo-Penela, *&* Domenech, 2010; Christianson *&* Aucoin, 2005; Haigh & Griffiths, 2008; Jenkin, Webster & McShane, 2010; Teregowda, Urgaonkar & Giles, 2010; Watson, Boudreau, & Chen, 2010; Watson, Boudreau, Chen & Huber, 2008; Williams & Tagami, 2003).

Researchers from computer science, and especially the HCI, community have been engaged in research on sustainability from different technological perspectives; for example,

- HCI and interaction design (Belvis, 2007; Dourish, 2010; Molenbach et al, 2012; Howard and Lubbe, 2012; Dick, Drangmeister, Kern and Naumann, 2013; Nystrom and Mustaquim, 2014; Pargman and Raghavan, 2014; and McKinnon, 2016; Knowles et al, 2016)
- sustainability frameworks and indicators (Knowles, Blair, Hazas and Walker, 2013; Combemale et al, 2016; Meyers and Nathan, 2016);
- sustainable ICT and user behaviour (Gegenbauer, 2012; Meurer, Lawo, Jansen and Wulf,2016).

Some researchers have also investigated how some information and knowledge management tools and techniques can be used for achieving sustainability in different fields. For example, Kibe (2016) discusses how the Jua Kali artisans in Kenya share the knowledge they possess, and how this may be

useful for sustainable development of Jua Kali workers. Madlberger et al (2013) describe an ontology-based data integration system for corporate sustainability activities, while Ghahremanloo (2012) proposes a new ontology for sustainability indicators in heterogeneous fields of activities. Haupt et al (2015) proposes a business intelligence approach to support sustainability information management.

Information and sustainability education

ICT infrastructure for data management, sharing and access to promote sustainable development require massive investment and also calls for the development of appropriate regulations and skilled manpower. These are some of the major barriers to achieving SDGs. The *Addis Ababa Action Agenda*, adopted by the UN General Assembly on 27 July 2015 (*Resolution 69/313*; United Nations General Assembly, 2015b) addresses the investment issue and makes some specific recommendations. Goal 17 of the UN SDGs (UN Sustainable Development Knowledge Platform, 2016) makes specific reference to the need for resource mobilization, including through international support to developing countries. Goal 17 also makes specific references to technology development and cooperation (SDGs 17.6 to 17.8). For example, a specific goal (17.6) is to enhance regional and international cooperation on access to science, technology and innovation and enhance knowledge sharing through improved coordination among existing mechanisms.

Paragraph 123 of the *Addis Ababa Action Agenda* (United Nations General Assembly, 2015b) and paragraph 70 of the development agenda for SDGs called for establishing a technology facilitation mechanism and an online platform "to establish a comprehensive mapping of, and serve as a gateway for, information on existing science, technology and innovation initiatives, mechanisms and programmes, within and beyond the United Nations" (UN Sustainable Development Knowledge Platform, 2016). It is also proposed that the online platform will facilitate:

- access to information, knowledge and experience, as well as best practices and lessons learned, on science, technology and innovation initiatives and policies; and
- dissemination of relevant open access scientific publications generated worldwide.

A search on the website of iSchools reveals that only in 13 out of 77 iSchools there is a module related to sustainability of information. However, often sustainability is covered as part of a more generic module on computing or environment or information science, rather than sustainability of information per se. For example: environmental informatics at UC Irvine, information environments at University of Maryland, global computing challenges at Syracuse, designing technologies for social impact at Cornell, environmental science and sustainability at the University of Tennessee (Knoxville); or social implications of the information age at Florida State University, creating sustainable digital collections at the University Texas, Austin, and so on. Sustainable design, persuasive technology, gamification, etc., have been proposed for teaching sustainability as part of computer science courses in some universities; examples include:

- Sustainability and green computing at Michigan Technological University (Cai, 2010)
- Sustainable energy efficient data structure and data storage at UG and PG level course at RMIT, Melbourne (Hamilton, 2015), and the University of British Columbia (Knorr and Thomson, 2016);
- Sustainable engineering concepts and design practices through gamification and persuasive technology (Salman, Riley and Javed, 2016);
- Sustainable Data Science course at University at Buffalo (Ramamurthy, 2016).

Some researchers have also developed courses that aim to teach different aspects and challenges of sustainability in different fields/disciplines by taking ICT based solutions. Such courses are available at the University of California, USA, and ETH, Switzerland (Tomlinson, Patterson, and Nardi, 2016). While such university courses are designed to teach sustainability as part of computer science and engineering courses, some researchers are still working on developing a common understanding of various sustainability issues and challenges (Knowles, Blair, Hazas and Walker, 2013; Pergman and Raghavan, 2014). Some researchers have also discussed the challenges of teaching sustainability; for example, Caetano et al (2105) discuss the challenges of providing sustainability education to a large group of students from different countries and cultural background attending a summer school at the University of Porto, Portugal.

Expertise in data creation/collection, assurance of data quality and integrity, data interoperability and data flow for achieving sustainability in different disciplines and businesses can be provided through information/data management courses. While these skills are essential for information professionals, some of these may also be helpful for students, researchers, professionals and managers in every discipline and sector so that everyone becomes familiar with the basic data skills. Data-driven research and decision-making, and a culture of data sharing and re-use, can be promoted through education and training in sustainable data and information practices. Such skills may be imparted by iSchools to all university students in every discipline. Data sharing and re-use can be facilitated by making data publicly accessible through open access mandates, and by developing and advocating appropriate legal and regulatory frameworks and protocols. iSchools can play a key role in all of these areas, and develop and deliver different data and information management programmes, and also create awareness amongst university students, and general public, through special training programmes, workshops and engagement activities.

A framework for teaching and research in iSchools for promoting SDGs

Based on the different themes that emerged from the four selected UN documents, and analysis of research on sustainability and information undertaken by the iSchools, and computer science HCI research community, it possible to identify four key areas of teaching and research that can promote sustainability from the perspectives of information science and iSchools:

1. Sustainable infrastructure, and information systems
    a. Sustainable ICT infrastructure
    b. Sustainable information management systems and technologies
    c. Specific data management and application systems/tools for big data, data analytics, business intelligence, visualization, etc.
2. Sustainable information practices
    a. Sustainable data and information management tools and technologies for providing services in specific domains and institutions
    b. Sustainable information practices and standards for access, sharing, and use/re-use in specific contexts
    c. Sustainable management, preservation/disposal of content and equipment/devices
3. Sustainable information policies and governance
    a. For managing data and information throughout its lifecycle
    b. For open access to data and information
    c. For data rights, ethics, sharing, privacy, security, etc.
4. Sustainable user education, training, literacy
    a. User education to increase awareness in relation to data, information and ICT in general, and in specific disciplinary contexts

b. Data, information and environmental literacy
c. Data sharing, knowledge exchange practices and culture.

It may be noted that these categories are not mutually exclusive, and in fact teaching and research in some areas, for example sustainability issues and challenges related to infrastructure and systems and tools and standards, or even policies, can overlap (Figure 2). Nevertheless, a full MSc programme on sustainability of information should cover all the areas shown in Figure 2, and together they can contribute to the SDGs. Alternatively, some iSchools may choose to cover sustainability as part of various topics as shown in Figure 2, as part of information courses.

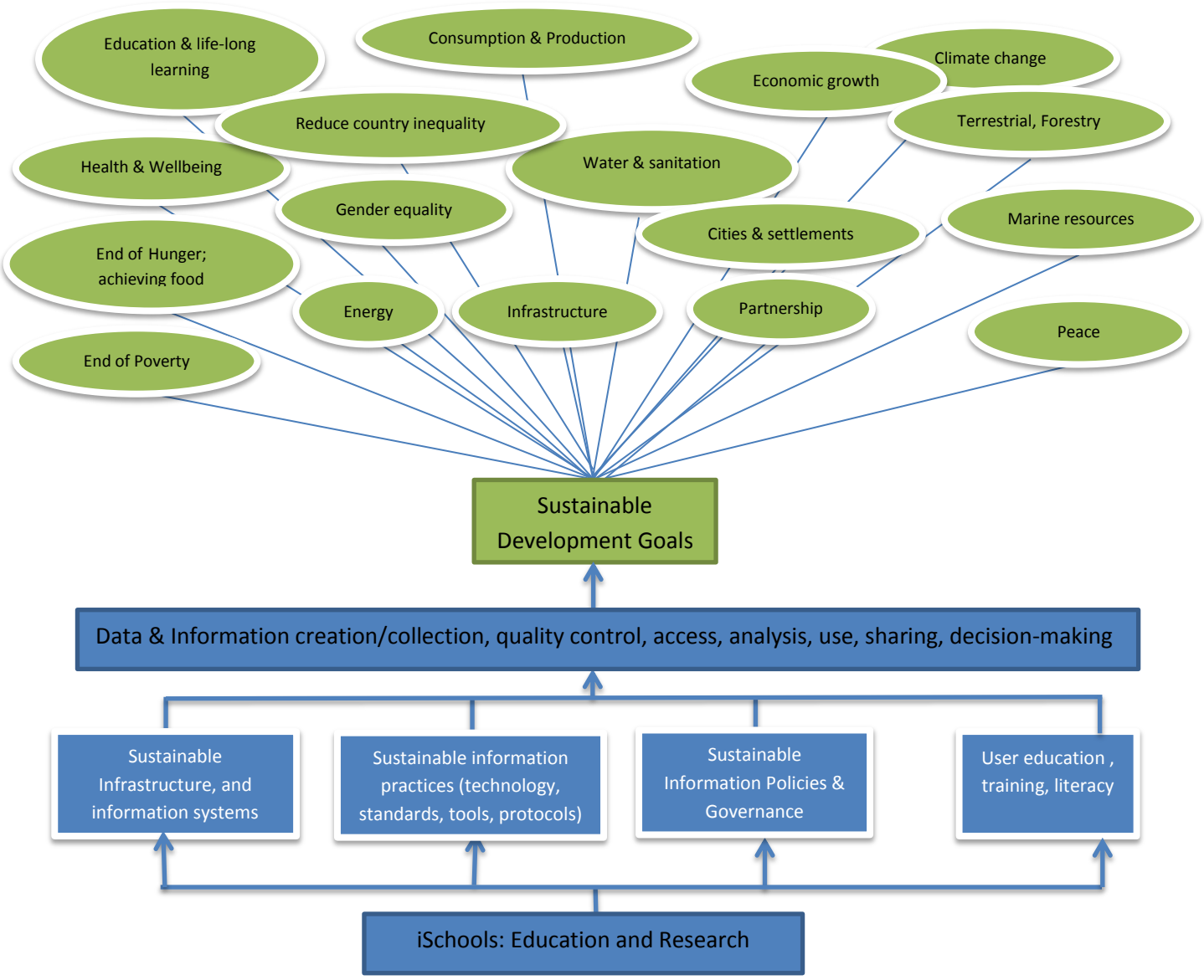

Figure 2: iSchools education and research for supporting SDGs

Sustainable higher education: a key driver for achieving SDGs

Sustainable higher education (HE) has remained an area of discussion for over a decade, but it got a momentum in 2011 when Plymouth University hosted a workshop gathering 11 leading universities in UK (Sterling, Maxley & Luna, 2013). The aim of the sustainable university is to change the culture and mindset of its people – students, academics, staff – so that the economic, social and ecological

sustainability issues are embedded in every activity and policy of the institution (Sterling, Maxley & Luna, 2013).

By introducing sustainable data and information practices as part of education and research in every discipline, iSchools can help universities achieve the broader goal of sustainability in higher education and research, and thereby creating sustainable universities (Brostrom and Nolin, 2015; Talloires Declaration, 2016). Thus, iSchools can play a major role in educating the entire higher education community about sustainability by:

1. Creating data and environmental literacy programmes that can be packaged with information literacy programmes so that every student and staff in universities become environmentally literate especially with regard to the creation, use and sharing of data and information that are the foundation for achieving SDGs; and
2. Promoting the culture of data-driven education, research and decision making by undertaking research on sustainable data and information management with experts in different disciplines, and thereby creating a culture of shared creation, access, use and interpretation of data for sustainable development in every discipline and business.

iSchools and SDGs: need for cooperation and collaboration

Most of the 77 member institutions of the iSchools organization are currently located in the developed countries: 33 in the US and 3 in Canada; 24 in Europe including one each in Israel and Turkey; 3 in Australia and one in New Zealand; 12 in Asia including 4 in China, 3 in Korea, and one each in Japan, Singapore, Hong Kong, Taiwan and the Philippines; one in Africa; and none from South America.

Literature shows that education and research in information in the developing countries is progressing slowly and they suffer from a number of challenges, predominantly from limited staff and resources (Abdullahi, Asundi and Karisiddappa, 2014; Du, Zhu and Koronios, 2014). Information education and research in Europe also suffer from the lack of enough staff and resources. Furthermore, as Spink and Heinstrom (2012) observe, the multicultural and multilingual landscape of Europe pose a number of challenges for information science education and research. In short, many information science schools, especially those that are in the developing and least developed countries, suffer from adequate staff expertise and resources required for producing the manpower that are appropriately trained for the creation, gathering, accessing and sharing of large and diverse datasets that are required for achieving the SDGs. iSchools, being a global organization, whose mission is to promote the use of information through appropriate technologies, can play a key role here by sharing the relevant knowledge and resources in information management, access, analysis, use and sharing in specific contexts. Overall, more cooperation, collaboration and knowledge exchange activities are needed amongst iSchools in order to provide better support for information education and research in the developing and least developed countries in support of SDGs.

Conclusion

Countries around the world have committed to achieving the SDGs by 2030. This paper shows that various policy documents created by the UN and other agencies have clearly pointed out the importance of creation, management and sharing of quality data and information for achieving the SDGs. Given this, and also for the fact that the teaching and research activities in iSchools around the world deal with information, the paper justifies that the iSchools can play a major role in promoting and achieving the SDGs. The four major strands of information education and research, identified in

this paper, can help iSchools graduates in information, as well as university graduates from other disciplines, play a key role in achieving SDGs by facilitating the tasks of creation, collection, management, access, use and sharing of data and information, and more importantly by developing the culture of sustainable data and information practices across different disciplines and businesses.

Overall, as proposed in this paper, sustainability should be embedded in every aspect of data and information management teaching and research in iSchools and other university disciplines so that the graduates can make appropriate management, research and professional contributions at workplace in every business and industry towards achieving the SDGs.

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Appendix 1: UN SDGs

Goal 1. End poverty in all its forms everywhere
Goal 2. End hunger, achieve food security and improved nutrition and promote sustainable agriculture
Goal 3. Ensure healthy lives and promote well-being for all at all ages
Goal 4. Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all
Goal 5. Achieve gender equality and empower all women and girls
Goal 6. Ensure availability and sustainable management of water and sanitation for all
Goal 7. Ensure access to affordable, reliable, sustainable and modern energy for all
Goal 8. Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all
Goal 9. Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation
Goal 10. Reduce inequality within and among countries
Goal 11. Make cities and human settlements inclusive, safe, resilient and sustainable
Goal 12. Ensure sustainable consumption and production patterns
Goal 13. Take urgent action to combat climate change and its impacts
Goal 14. Conserve and sustainably use the oceans, seas and marine resources for sustainable development
Goal 15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss
Goal 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
Goal 17. Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development