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The report benefited from the contributions and insights of ITU staff:


Disclaimer

The information contained in this publication is provided by the multiple stakeholders that contributed to the WSIS Stocktaking process and does not engage ITU. Denominations and classifications employed in this publication do not imply any opinion on the part of the International Telecommunication Union concerning the legal or other status of any territory or any endorsement or acceptance of any boundary. Where the designation “country” appears in this publication, it covers countries and territories. The views expressed in this paper are those of the authors and do not necessarily reflect the opinions of ITU or its membership.

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Introduction to the WSIS Stocktaking Report 2017

The principal role of the WSIS Stocktaking exercise is to leverage the activities of stakeholders working on the implementation of WSIS outcomes and share knowledge and experience of projects by replicating successful models designed to achieve SDGs.

The WSIS Stocktaking process was initiated in October 2004 during the Tunis phase of WSIS, and in the years since then it has come to comprise the database of:

- exchanges of information on projects,
- sharing of best practices of certain regions,
- initiatives related to the implementation of the 11 WSIS action lines
- linkage between the 11 action lines and the Sustainable Development Goals (SDGs) - a linkage that becomes more and more important over the years.

The WSIS Stocktaking process provides a register of activities, including, projects, programmes, training initiatives, conferences, websites, guidelines, tool-kits, etc., carried out by governments, international organizations, the private sector, civil society and other entities. To that end, in accordance with § 120 of the Tunis Agenda for the Information Society (TAIS) adopted by WSIS, ITU has been maintaining the WSIS Stocktaking Database as a publicly accessible system providing information on ICT-related initiatives and projects with reference to the 11 WSIS action lines (Geneva Plan of Action) and 17 SDGs.

The WSIS Stocktaking Portal provides a repository of best practices for stakeholders seeking updated information on progress in the implementation of WSIS outcomes (§ 28.e of the Geneva Plan of Action). The WSIS Stocktaking Platform, launched in February 2010, transformed the previous static database into a unique portal to highlight ICT-related projects and initiatives in line with WSIS implementation. The platform offers stakeholders exciting and interactive networking opportunities via Web 2.0 applications. Within the framework of the WSIS Stocktaking Platform, all types of stakeholders can benefit from the “global events calendar”, “global repository” and “blog” components. It provides the opportunity for stakeholders to network, create partnerships and add value to projects at the local, national, regional, and international levels.

As in 2015, the UN General Assembly within the framework of the ten year review of the WSIS (Res. A/70/125) called for a close alignment between the WSIS process and the 2030 Agenda for Sustainable Development (Res.A/70/1). The WSIS Stocktaking process responded by highlighting the contribution of 11 WSIS Action Lines to the achievement of 17 Sustainable Development Goals (SDGs).

The direct linkages between the WSIS action lines and the SDGs set out below are crucial to continuing to strengthen the impact of ICTs for sustainable development. Each UN action line facilitator has analyzed the connections and relations between their respective action lines and the proposed SDGs and their targets to create a clear and direct linkage and an explicit connection between the key aim of WSIS- that of harnessing the potential of ICTs to promote and realize the development goals- and the post-2015 development agenda, so as to contribute to realization of the latter. The majority of the projects presented in this report clearly showcase the linkage between their related action lines and the various SDGs and targets. At the WSIS Forum 2015, the SDG matrix was extremely well received by the WSIS community, offering as it does a better explanation of the potential of ICTs as enablers for sustainable development. A new component was introduced in the WSIS Stocktaking process in

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1 https://www.itu.int/net4/WSIS/sdg/
the form of reporting ICT success stories to best showcase the possible achievement of SDGs through the implementation of WSIS action line-related projects.

The WSIS action lines break down into 18 categories:

1) The role of governments and all stakeholders in the promotion of ICTs for development
2) Information and communication infrastructure
3) Access to knowledge and information
4) Capacity building
5) Building confidence and security in the use of ICTs
6) Enabling environment
7) E-government
8) E-business
9) E-learning
10) E-health
11) E-employment
12) E-environment
13) E-agriculture
14) E-science
15) Cultural diversity and identity, linguistic diversity and local content
16) Media
17) Ethical dimension of the information society
18) International and regional cooperation

17 Sustainable development goals (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
More than 600 ICT-related projects from around the world were submitted for the WSIS Stocktaking Report 2017 by the WSIS Stakeholder community. The ninth edition of the WSIS Stocktaking set a new record of global multistakeholder engagement in implementation of WSIS Action Lines for SDGs. The Report will be presented during the WSIS Forum 2017, 12-16 June 2017 in Geneva, Switzerland. At the same occasion, an interactive session will be dedicated to presentation of the results of this year’s WSIS Stocktaking and to listen to the voices of the WSIS stakeholders community on how to improve the process in the future.

The 2017 edition of the WSIS Stocktaking Report is the continuation of the WSIS Stocktaking Report series1. This ninth edition in the series reflects around 427 activities relating to ICTs for development, submitted to the WSIS Stocktaking Platform for the period January 2016- March 2017, each one highlighting the efforts deployed by stakeholders involved in implementation of the SDGs. The report is based on the multi-stakeholder approach, including input from stakeholders from all over the world responding to ITU’s official call in 2016 for stocktaking updates and new entries. The inputs from WSIS action line facilitators and co-facilitators also contributed to the present report.

The WSIS Stocktaking database (www.wsis.org/stocktaking) was introduced in 2010 and currently has 10,000+ entries and a growing community of 300,000 stakeholders. It is a unique global tool for collecting information and regular reporting on information and communication technology related initiatives and projects, carried out by governments, international organizations, the business sector, civil society, academia and other entities, in the context of 11 WSIS Action Lines. The WSIS Stocktaking process has been maintained by ITU since 2004 as requested by the WSIS Outcomes (TAIS, Para 120).

Since the WSIS Stocktaking Process was established, eight editions of global WSIS Stocktaking Reports have been published, providing an overall picture of progress and an insight into latest WSIS-related activities. The ninth report will focus on contributions by stakeholders worldwide to WSIS and Sustainable Development Goals. This Report seeks to provide key findings on emerging trends in the development of the information society, and references major activities being implemented in the eighteen areas covered by the eleven WSIS action lines and seventeen SDGs.

During the WSIS Forum 2016, while noting United Nations Economic and Social Council (ECOSOC) Resolution 2015/26, the WSIS multi-stakeholder community expressed the need for customized regional WSIS Stocktaking reports highlighting the efforts made towards implementation of the WSIS Action lines at the regional level. The WSIS Stocktaking Regional Reports of ICT Projects and Activities for the Period 2014-2016 for Africa, the Americas, Arab States, Asia and Pacific, CIS, and Europe have been diligently prepared. The collection of projects reflecting the linkages between WSIS Action Lines and SDGs, the WSIS Stocktaking Regional Reports showcase the impact these projects have on the ground at the regional level.

The United Nations Economic and Social Council (ECOSOC) resolution 2016/22 on "Assessment of the progress made in the implementation of and follow-up to the outcomes of the World Summit on the Information Society" reiterates the importance of sharing best practices at the global level, and, while recognizing excellence in the implementation of the projects and initiatives that further the WSIS goals, encourages all stakeholders to submit ICT-related projects and initiatives to the WSIS Stocktaking platform.

The same Resolution also reiterates the importance of recognizing excellence in the implementation of the projects and initiatives that further the goals of the World Summit on the Information Society

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process, and encourages all stakeholders to nominate their ICT-related projects for the annual WSIS Prizes contest as an integral part of the WSIS Stocktaking process.

With the year-round ongoing call for updates and new entries, all stakeholders are invited to continue sharing best practices on the WSIS Stocktaking Platform and emphasize how ICT-related initiatives and projects are enabling SDGs.

All WSIS-related publications, including the WSIS Stocktaking reports, are available to download at the ITU Bookshop.
Action Line C1. The role of governments and all stakeholders in the promotion of ICTs for development

The effective participation of governments and all stakeholders is vital in developing the information society, an endeavour which requires cooperation and partnerships among all such parties. This action line is intended to promote the development of national e-strategies, including the necessary human capacity building, taking into account different national circumstances.

The United Nations Department of Economic and Social Affairs (UNDESA), as the lead facilitator for Action lines C1, C7 and C11, Vice-Chair of the United Nations Group on the Information Society (UNGIS) and administrator of the Internet Governance Forum (IGF) secretariat, continued its efforts to promote policy dialogue and advocacy for the implementation of the World Summit on the Information Society (WSIS) outcomes by United Nations bodies, governmental and non-governmental stakeholders and partners through a number of initiatives listed in Part II of this report. It has ensured, in addition, the comprehensive exchange of views, information and experiences among WSIS stakeholders, as well as providing advisory services and technical assistance to developing countries.

Progress in online service delivery continues in most countries around the world. At the same time, the 2014 United Nations E-Government Survey observes a new trajectory in the efforts of governments to put together a national ICT policy and e-government strategy by strengthening institutions and building the capacities of public servants. Collaborative service delivery is now pervasive, where governments, citizens, civil society and the private sector often work together to innovate processes and leverage new technologies. In meeting multi-faceted sustainability challenges, governments are, for example, increasingly using open data and big data analytics to improve accuracy in forecasting citizens’ demand for public utilities or to screen for irregularities in public procurement. Predictive analysis is also used to identify issues before problematic scenarios develop, and sentiment analysis is deployed in engaging citizens in public consultation and decision-making processes, notably through e-participation.

This shift is observed in both developed and developing countries, with the focus on adding public value to people’s lives in an inclusive manner. As this collective global effort, led by the United Nations, gains momentum towards greater acceptance, and the institutional linkages among the economic, social and environmental pillars of sustainable development are strengthened, there is a need for awareness of the importance of e-government that is for and with the people, in achieving higher standards of living for future generations.

Lastly but very importantly, this action line contributes to several of the Sustainable Development Goals (SDGs), namely SDGs 1, 3, 5, 10, 16 and 17. The actions of governments and all stakeholders aim to reduce existing and emerging socio-economic and gender inequalities, promoting affordable access to ICTs and digital content, ensuring that e-services can be adequately provided to all people through affordable and public access to ICTs. Regarding the health system, by monitoring the spread of diseases, creating related databanks and storing good practices, governments and stakeholders may assist decision makers in health planning, human resources needs assessment, medicines procurement and infrastructure construction, thereby facilitating SDG 3 Targets 3.8 and 3.d, relating to the achievement of universal health coverage and strengthening of the capacities of all countries to manage health risks. This category creates structures for communication and collaboration to enable coordination, strengthening actions among governments, international organizations, non-governmental organizations (NGOs), the private sector and civil society.
C1.1 National e-strategies

Targeting African countries, the African Civil Society on the Information Society (ACSIS) organization has developed the ACSIS WEB PLATFORM, which aims to provide African civil society and all partners (African governments, civil society, communities, the private sector, academia and international organizations) with a consistent information system focusing on WSIS and ICT activities relating to the African continent. The project directly addresses several SDGs, namely SDGs 1, 3, 4, 5, 8, 9, 10, 16 and 17, by promoting inclusive and sustainable ICT growth, peaceful and inclusive societies and lifelong learning opportunities for all African countries, ensuring healthy lives and equitable quality education, building resilient infrastructure and fostering innovation. The goal of the programme is to inform, train and educate Africans on issues related to Internet governance and WSIS action lines, as part of a unique platform for Africa and the African diaspora. The platform will also be progressively establishing an observatory on ICTs and the ICT profile of each African country.

In Algeria, Algérie Télécom has launched a project with the determined aim of positioning itself as a model in terms of organization and automation of work processes and quality management, through the implementation of a Quality management system entailing the participation of all workers. In this context, web portals and workflows have proved to be tools of major benefit in organizing, executing and optimizing business processes, with the result that Algérie Télécom can now plan to use them for the automation of processes in the business plan. The project is relevant to SDGs 9, 12 and 15.

Neo Globe Consulting in Chile, in partnership with Cryptosoft, ITU and the Chilean Subsecretariat for Telecommunications (SUBTEL), launched a project on Security and Regulations for Internet of Things in Latin America and the Caribbean, which proposed a one-day seminar to accompany the ITU Regional Cybersecurity event to be held in Ecuador in July 2016. The seminar was to address the ways in which Internet of Things (IoT) technologies can help in achieving the SDGs and discuss potential points of collaboration for Latin America and the Caribbean (LAC) to harmonize its regulatory framework for fostering IoT adoption. An improved regulatory framework would help engagement with industry partners, who could capitalize on harmonized markets to launch products more quickly in the LAC region. Speakers could include officials from LAC regulatory agencies, industry, and possibly an international organization such as ITU. This project is relevant to SDGs 3 and 11.
In **China**, the China Mobile Group Jiangsu Co. Ltd started a research project on *urban and transportation planning* based on big data from telecom operators, which can be relevant to **SDG 9**. The project studies the application of cellphone signal data in government planning and intelligent transportation. Operators’ data can be widely used in urban planning management, traffic planning, etc. Based on the cellphone signalling data, after data fusing, mining and modelling, a big data application platform is built in the traffic industry. This platform can provide abundant data labelling, data interfaces and standardized products.

Jiangsu Post and Telecommunication Planning Design Institute Co. in **China** has launched a project relevant to **SDGs 3, 8 and 11**, called the *Quanzhou Municipality “Smart City” Plan (2014-2020)*. Forward-looking and practical, this project is capable of moving the construction of “Smart Quanzhou” forward in a scientific and orderly manner, as well as effectively escalating the e-government level of urban administration of the city. The plan follows the guiding principle of “coordination, sharing, integration and innovation” and the methodology of “taking the easiest and the most urgent first, and intensively conducting integration, demonstration and promotion”, giving priority to projects that cut across sectors and have an impact on employment and major livelihood factors. In this way, a construction path with strong operability is developed.
The Bandung Institute of Governance Studies (BIGS) in Indonesia, in partnership with Sinergantara, the Bojonegoro Institute and the Regency Government of Bojonegoro, has launched a project entitled *Data Revolution for Monitoring Sustainable Development Goals*, which is in the process of developing a platform for monitoring the SDGs. The platform involves the development of software and guidelines. Software is being created for data collection and data visualization for web and dashboard; and guidelines are being developed for data collection by citizens and data management by regency or village government. Thereafter, the institute will move on to the creation of baseline data, allowing citizens to update data, and data verification. In terms of baseline data creation, the institute will provide new information on topics related to SDGs, such as data on pregnant mothers with high risk. The project can be relevant to **SDGs 1, 3, 8, 11 and 17**.

In **Kazakhstan**, the Ministry of Energy of the Republic of Kazakhstan is undertaking a project that aims to implement a *Subsoil Use Management System (SUMS)* in order to control and monitor subsoil use, provide an enabling environment for the private sector in subsoil use activities, and ensure openness and access to information for citizens. The project can be relevant to **SDGs 8, 12 and 17**.

In **Mauritius**, the National Computer Board is setting up a project to promote connected communities by means of 600 Wi-Fi hotspots and 270 computer clubs, which is relevant to **SDGs 4, 9 and 10**. To reduce the digital divide and promote connected communities, 600 Wi-Fi hotspots with 10 MB Internet connections over optical fibre are being set up in public places across Mauritius. While the Wi-Fi access is based on bringing one’s own device, the needs of people who do not possess a smartphone or a laptop have also been catered for through the establishment of 270 computer clubs nationwide. The project is geared towards providing universal access to ICT for all segments of the population. The project partners include Microsoft, Mauritius Telecom and the Ministry of Technology, Communication and Innovation.

The NED University of Engineering and Technology in **Pakistan** is developing the *Illegal Parking Detector*, which is of relevance to **SDGs 3, 11 and 16**, with a view to implementing an artificially intelligent software to prevent inappropriate car parking on main roads and public streets (no parking zones) for the safety of citizens. This project is necessary since, although webcams are common on almost all main roads, they only capture footage and monitor ongoing activity, without the ability to take any corrective action. The university’s project aims to develop software for a webcam embedded with artificial intelligence which will monitor and detect wrongful parking and generate an alert to the relevant authority.
In **Pakistan**, the National University of Sciences and Technology (NUST) has designed and initiated a *Finding Innovative and Creative Solutions for Society* (FICS) programme aimed at encouraging students to identify social problems and develop innovative, technology-based solutions. FICS comprises a competition engaging all of NUST’s 18 schools and colleges, spread across different cities of Pakistan. It involves industry and civil society in identifying problems and developing solutions; mentoring and improving the solutions over a period of six to seven months; demonstrating working prototypes to industry judges; post-competition selection of the best projects; and further mentoring to transform the best projects into social enterprises. FICS is closely aligned with the SDGs, in so far as students can source and develop their ideas from within the SDGs. The partners include the Pakistan Higher Education Commission (HEC), Interactive Group (IAG), the Organization of Pakistani Entrepreneurs (OPEN), the National ICT R&D Fund, the Indus Entrepreneurs (TiE), Crescent Steel & Allied Products Ltd (CSAP), and several other industry partners. The project can reflect SDGs 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15 and 16.

The Department of Information and Communications Technology of the **Philippines**, in partnership with the National ICT Confederation of the Philippines (NICP), which is composed of 70 ICT councils; the Information Technology and Business Process Association of the Philippines (IBPAP); the Contact Centre Association of the Philippines (CCAP); the Philippine Software Industry Association (PSIA); the Animation Council of the Philippines (ACPI); the Game Developers Association of the Philippines (GDAP); the Healthcare Information Management Association of the Philippines (HIMAP); and local government units (LGUs), has launched a *Next Wave Cities* (NWC) programme, reflecting SDGs 1, 4, 8, 9, 10 and 11. The programme aims to provide access to digital jobs and opportunities, contributing significantly to the economic growth of the countryside or regions outside of metropolitan Manila. Through the NWC programme, government, business, academia and other stakeholders collaborate to maximize the use of ICT. Today, out of the 1.1 million direct workers in the Philippine Information Technology and Business Process Management (IT-BPM) sector, around 300 000+ are based in IT-BPM centres in next wave cities, providing remarkable economic benefits to the Philippine countryside.

In **Qatar**, the Ministry of Transport and Communications is launching a *Government e-tendering system* project. The project, which can relate to SDGs 8 and 12, aims to provide a government-wide standardized electronic solution to automate government entities’ tendering processes in compliance with Qatar’s procurement regulations, and thereby serve the objectives of increased efficiency, improved transparency and a reduction in duplicate procurement and consumption in government...
procurement management. The project will also advance the national goal of providing equal opportunities for small and medium enterprises to grow and contribute to the economy.

The Agency for Security Planning and Development in the Ministry of the Interior of Saudi Arabia has implemented the Unified Security Operations Centre 911 (MOI 911) project, whereby emergency call reception services are consolidated in one physical location using a single emergency number for unified multi-agency call-handling at provincial level. The target operating model also included consolidating field dispatch at the agency level, while deploying a crisis-management and joint-operations capability. The MOI 911 project delivered processes, data, systems, ICTs and training, resulting in unification of the operational rooms through a single emergency number (911) for several agencies - Police Patrol, Traffic and Road Security Special Forces, as well as Civil Defence. The project is relevant to **SDGs 9, 11 and 16**. The partners include the Public Security Directorate and Civil Defence.

In **Singapore**, the Infocomm Media Development Authority (IMDA) has launched the **Silver Infocomm Initiative (SII)**: E-inclusion of seniors for wellness and integration into the community, which is a digital inclusion effort, led by the government in strong partnership with industry, academia and the community, to engage seniors so that they, too, will be able to benefit from a digital economy. The need for this becomes more evident as Singapore develops into a “smart nation”, with many critical government services moving online. The success of SII hinges on several features: a multi-pronged approach, strong partnerships, active volunteerism, and sustained government support. These elements are demonstrated through the various strategies implemented under the SII branding.

The project relates to **SDGs 3 and 4**, and involves partners from all sectors: Public sector - Skillsfuture Singapore (previously known as the Singapore Workforce Development Agency), People’s Association, Lifelong Learning Institute, Institute of Technical Education, Nanyang Polytechnic, Temasek Polytechnic, Ngee Ann Polytechnic, GovTech, MoE schools and government agencies with mobile apps (e.g. Municipal Services Office, Land Transport Authority, Sports Singapore, etc.); Civil society - Chinese Development Assistance Council, RSVP Singapore – the Organization of Senior Volunteers, Northeast Community Development Council, Caritas Singapore, Singapore Computer Society; and Private sector - Apple, Google, Microsoft, Samsung, Singtel, M1 Limited, POSB Bank, IBM, Accenture, Sapura, Cognizant, Dell, Hewlett Packet Enterprise, Netlink Trust, Oracle, PriceWaterHouseCoopers, Singapore Pools, Tata Consultancy.

Advance Info Service PLC (AIS) in **Thailand** has launched the **Child Safety App for Community School Bus** project, in partnership with the Ministry of Transportation of Thailand. Its objectives are to build a social community collaboration app for driver, teacher and parent, ensure real-time GPS location tracking and notification, and implement ‘every student accounted for at final stop on route’ and ‘no child left behind’ checks. Expected results are a reduction in the number of school bus accidents and ensuring no child is left in the school bus. The project is linked to **SDGs 3 and 11**.

In **Trinidad and Tobago**, the Ministry of Public Administration has established **ICT frameworks and policies**. Noting that policies are a mechanism through which leadership can set the boundaries of the operational environment, communicate important roles and responsibilities, outline key organizational structures and establish baselines, the Government of the Republic of Trinidad and Tobago has implemented the following ICT frameworks and policies: E-government Interoperability Framework (e-GIF), GovNeTT
Policy Framework, Government Omnibus Technical Standards (e-GOTs), Information Security Policies, and Portal Policy Framework. Additionally, under the aegis of the National ICT Plan, there is ongoing monitoring of the development and progress of over a hundred projects across the state and non-state sectors in Trinidad and Tobago. The project reflects **SDGs 1, 3, 5, 10, 16 and 17**.

The Dubai Land Department (DLD) in the **United Arab Emirates** has launched the **EJARI** online tenancy registration project, in partnership with the Dubai Electricity and Water Authority (DEWA), Dubai Economic Development (DED), General Directorate of Residency and Foreigners Affairs (GDRFA), Etihad Bureau (EB), Dubai Municipality (DM), Dubai Supreme Council of Energy (DSCE), Rental Dispute Centre (RDC), Dubai Happiness Meter, Supreme Council for National Security, and Dubai Statistics Centre (DSC).

EJARI is a world class ICT programme providing a bridge between property owners and tenants with clear end-to-end governance from DLD, so that Dubai can host a transparent, secure and sustainable real-estate market. EJARI is fully aligned with connecting minds in the value chain and creating a sustainable and predictable future. This unique B2B-B2C programme provides diversified features for landlords, tenants, investors, city planners, government entities, real-estate management companies, property service vendors and administrations through various interfaces and integrations. EJARI plays a key role in sharing authentic critical information on tenants with various other government departments in order to provide services to citizens through tenancy contracts. Thus, EJARI plays central role in e-governance, national identity, visa services, access to utilities and traceability, and the project can relate to **SDGs 1, 3, 4, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16 and 17**.

The Ministry of Cabinet Affairs of the **United Arab Emirates** has launched the **Drones for Good** award. The UAE Government invites the most innovative and creative minds to find solutions that will improve people’s lives and provide positive technological solutions to modern-day issues. This award is designed to offer the people of the world an opportunity to really make a difference. With a commitment underlined by the significant prize fund, the UAE Drones for Good award is considered as the first and largest of its kind, rewarding the best practical implementations of drones to benefit humanity. The award’s aim is to serve as a hub for innovators worldwide to demonstrate their prototypes, network with stakeholders and investors, and explore collaboration opportunities. It consists of an international competition (prize money of USD 1 million) and a national competition (prize money of AED 1 million). By establishing strategic partnerships with Microsoft, Samsung, Indra and IEEE, the award attracted over 800 submissions from 57 countries in its first cycle, and 1,017 submissions from 165 countries for the second cycle.
C1.2 ICT for sustainable development

Khalifa Empowerment Program for Students in the United Arab Emirates has launched the AQDAR’s E-SAFE SCHOOL ONLINE SAFETY program, aligning with the SDGs 3,4,9,11,16. UAE E-Safe School is a brilliantly designed, Government led project to challenge, support and recognize schools to review their e-safety provision and to develop an action plan to protect their children online. All schools have a responsibility to safeguard and promote the welfare of children. Today, so much of students’ experience is shaped and surrounded by online media; internet access has truly become the new currency of learning. A school’s duty of care therefore increasingly applies to the online world. The program will revolutionize online safety in all schools to protect and support a nation’s children online.

In Algeria, the Caisse Nationale de Sécurité Sociale des Non-Salariés (CASNOS) has launched the Pharmnos in connected mode project. This solution, which is being rolled out with a view to containing expenditure and combating abuse, enables officially authorized pharmaceutical dispensaries to consult remotely, via a secure Internet connection, the history of the medicines prescribed to people on social security and which will consequently engage the pharmacists’ responsibility.

The Fondation Jeunesse Numerique (Digital Youth Foundation) from Cote d’Ivoire has launched a project entitled Accompanying innovative digital projects from young Ivorians, in partnership with Ivoire Start-up, Ubuntu Capital, Africa 2.0, Akendewa, etc. The project’s aim is to accompany young Ivorians with innovative digital projects, and turn them into prosperous companies. Its founding members include, inter alia, the Village of Information Technologies and Biotechnology of Côte d’Ivoire, a technology park and free trade zone; the African Higher Education School of ICTs (ESATIC), also an ITU centre of excellence in cybersecurity; and physical persons from the Ministry in charge of the Digital Economy. The project applies to SDGs 1, 2, 3, 5, 8, 9, 10 and 17.
In China, Jiangsu Post and Telecommunication Planning Design Institute Co. has established the “Wisdom Nanjing” central management operation and service platform, reflecting SDGs 3, 6, 8, 9, 11 and 15. The “Wisdom Nanjing” platform integrates various types of the city’s social services and public information resources to serve innovation on urban construction, operation and management. The project creates the first top-thinking design method to facilitate the implementation of a smart city, the smart-city SCP software framework to enhance China’s international competitiveness on smart-city technology, a unified information model of multivariate heterogeneous data based on GIS, and the first city resource thread tool (RRT); it possesses 23 international leading independent intellectual property rights, and speeds up the construction of a "strong, rich, beautiful and high-level" Nanjing.

The World City Intelligence Engineering Technology Research Institute in Beijing, China, has developed Refuse Landfill Aerobic Ecological Restoration Technology, which relates to SDGs 3 and 15. Hazardous waste is harmful to the environment and human health if it is exposed to the elements. Safe filling and burying is imperative, but during the filling and burying process there will still be some pollution generated. Higher standards are required in the design and construction of hazardous waste landfill sites. The design of an impermeable layer is the central issue. This project summarizes the design and construction experience of hazardous waste landfill sites in China, highlighting the main design and construction features to make hazardous waste landfill locations genuinely isolated from the biosphere so as to avoid secondary pollution.
In **Cuba**, the Unión de Informáticos de Cuba (Cuban Information Technology Union) (UIC) has launched the *Incubator of ICT projects and entrepreneurs*, in partnership with Ministry of Communications, the Provincial Directorate of the Ministry of Education, and Camaguey University, and in line with **SDG 8**. The purpose of the incubator is to contribute to the implementation of innovation projects and entrepreneurship directed by UIC members, within the framework of ICTs, based on a particular work model comprising training, tutoring, Internet access, collaborative work and other technical and professional services, to ensure the success of innovative ideas and business.

In **Germany**, the German International Cooperation Agency GIZ (Deutsche Gesellschaft für Internationale Zusammenarbeit) in the Federal Ministry for Economic Cooperation and Development has set up the *Lab of Tomorrow* project, in partnership with various private-sector partner networks like Impact Hub, and the German Chamber of Commerce. Germany makes use of the Lab of Tomorrow to bring together private-sector stakeholders and others in order to identify solutions to development challenges. The lab uses unique buildings and spaces to bring participants together to work out potential business models to meet different challenges. GIZ, which implements the lab, identifies challenges, but leaves it up to private-sector partners to identify the solutions. Solutions are then backed with financial and technical assistance commitments from GIZ for further development. The project addresses **SDGs 1, 2, 3, 4, 6, 7, 8, 9, 10, 11, 12, 15 and 17**.

**Bandung Institute of Governance Studies** (BIGS) in **Indonesia** has initiated *Research on ICT initiatives in the governance sector in Indonesia*, with the aim of identifying ways of achieving impactful improvements in terms of government responses and strengthening the role of citizens. After observing ten ICT programmes (Increasing maternal and neonatal survival; Jakarta smart city; Online complaint handling system; Zero-waste portal; Online complaint mechanism for school costs; Development village movement; Village information system; Bojonegoro ICT initiative; Weather and climate SMS; and Check my school), the conclusions are that a more participatory process will make ICT initiatives more effective and a strong understanding of the ecosystem on the part of the initiator/implementer and a more open and flexible space will influence the successful development of ICT initiatives. The project is organized in partnership with Sinergantara and the Development Studies Foundation (DSF), and can address **SDGs 3, 4, 9, 11 and 13**.
In **Malaysia**, Pos Malaysia Berhad has launched the *Smart Postman - Catalyst of local improvement* project, in partnership with the Malaysian Communications and Multimedia Commission (MCMC). Smart Postman by Pos Malaysia and its regulator, MCMC, promotes the postman as a catalyst for local improvement. It involves deployment of the Smart Postman app enabling postmen to easily record any issues during their daily delivery rounds. Issues such as potholes and dumped rubbish are captured via icons, along with corresponding GPS coordinates and photos. In the background, the telecommunication wireless signal is captured automatically. The issues and the wireless signal are uploaded and relayed to external stakeholders such as government agencies and telecommunication providers for the appropriate action, which will lead to improvements in community, communications and Internet services. The project reflects **SDGs 3, 8, 9, 10, 13** and **16**.

In **Oman**, the Information Technology Authority has set up the *Sas centres*, in line with **SDG 9**. These Sas initiatives (“sas” evokes a “solid foundation” in Arabic) - Sas Centre for Entrepreneurship, Sas Centre for Virtual Reality (VR), and Sas Centre for Mobile Applications Development- aim to lay the foundation for creating a new and vibrant ICT industry, thereby fostering an entrepreneurial spirit in the ICT sector in Oman. The programme contributes to the development of an internationally competitive ICT industry, self-employment and new job creation, as well as the introduction of new technologies to create innovative products, solutions and services. Today, Sas for Entrepreneurship has produced 35 companies, and Sas VR and Sas for Mobile Applications Development have trained 480 and 148 Omanis, respectively.

In the **Philippines**, the Department of Information and Communications Technology has launched the *ICT-enabled start-up development (“seedPH”) programme*, in partnership with the Philippine Software Industry Association’s Spring.PH); Philippine Society of IT Educators; Ideaspace Foundation; Kickstart Ventures; Microsoft Philippines; HP Enterprise; Techtalks.Ph; Plug & Play Tech Centre; University of the Philippines - Enterprise Centre; Founder Institute - Philippines; Ideyatech; 1 000 Angels; 1 337 Ventures; Techstars; Huawei Philippines; National ICT Confederation of the Philippines; and the Department of Trade and Industry. The seedPH programme aims to develop the Philippine start-up ecosystem and expand the economic potential of digital entrepreneurship, especially in rural areas. Guided by the Philippine Roadmap for Digital Start-ups, the programme aims to position the government as an important partner in the start-up community by conducting advocacy and capacity-building programmes anchored towards encouraging Filipinos, particularly youth, to help create a nation of innovators, all
working towards solving the most pressing problems of Philippine society. The programme is relevant to SDGs 1, 4, 8, 10 and 17.

C1.3 ICT in parliaments

In Bangladesh, the Bangladesh Rural Advancement Committee (BRAC) has set up Policy Adda, which is in line with SDGs 1, 2, 3, 5, 8 and 13. ‘Adda’ is a Bengali word for informal discussion in a gathering. The project seeks to create a virtual platform where people can gather to share their opinions about government policies, dissect or scrutinize them, and tear them apart, to create mass awareness and consensus on an issue. It is an outlet for sharing views in people’s own words about what is right and what is wrong with a specific policy and what can be done to make it better or implement it more effectively. Policy Adda intends to foster close camaraderie among experts in the field who create the policies and non-professionals who are directly affected by them. It invites policy-makers, students, journalists, development practitioners, lawyers, health professionals and everyone out there who has an opinion and wants to share it with the larger population. So, let’s start the ‘Adda’ and shape the future of our policy!

In China, Haohan Data Technology Co., Ltd has launched the High-performance Internet DPI system and practices of big data, in partnership with China Mobile, China Unicom and China Telecom. Products based on outcomes from this project have been widely deployed in the networks of China’s three major carriers, governments, enterprises and public institutions, and applied in the fields of network data acquisition, traffic optimization and control, illegal information blocking, DDoS attack detection, and content resource scheduling. The link bandwidth monitored has exceeded 100 Tbit/s. In the industry, the product wins the biggest market share in international network interfaces and ISP-interconnection interfaces. The project responds to SDG 11.
In Kazakhstan, the joint-stock company National Information Technologies JSC has established the Integrated Call Centre (ICC), in partnership with Ministry of Information and Communications, and in line with SDG 16. The Integrated Call Centre for public services is an information and referral service that provides 24/7 consultation assistance on public services to citizens. ICC’s major objectives are: to provide a single access point for citizens to obtain information on public services; to improve the level of public awareness about government agencies’ activities and about the procedure for public services delivery; to improve the accessibility of information on public services and on the forms of delivery thereof to citizens; and to interact with government agencies on issues relating to the provision of information on public services.

The Department of Budget and Management of the Philippines has launched the Medium-term Information and Communications Technology Harmonization Initiative (MITHI), in partnership with the Department of Information and Communications Technology and the National Economic and Development Authority. MITHI is a process that harmonizes and ensures interoperability among ICT-related resources, programmes and projects across the government of the Philippines. It is the process of coordinating, planning, budgeting, implementing and evaluating resources and projects in the government of the Philippines, which includes national government agencies (NGAs), government-owned and controlled corporation (GOCCs), and state universities and colleges (SUCs). MITHI was created in 2012 through a Joint Memorandum Circular between the Department of Budget and Management, the Department of Information and Communication Technology and the National Economic and Development Authority. The project applies to SDG 17.
In Saudi Arabia, the Saudi Commission for Tourism and National Heritage (SCTH) has launched the Digital portal for tourist accommodation licensing services, in partnership with ELM (the developer), a joint-stock company owned by the Public Investment Fund (PIF); the Ministry of Commerce and Industry (MCI); and the National Information Centre (NIC). It is an online website designed to provide users with a virtual link to SCTH for licensing services. The portal enables access to information for all stakeholders, in order to promote investment in the tourist accommodation sector. It was created by dint of several partnerships in the governmental sector, including with the Ministry of the Interior and the Ministry of Commerce and Industry, to enrich databanks and raise standards for all parties involved. The results have shown a 60 per cent reduction in processing times. The portal is flexible enough to accommodate any potential changes in the future.

In Switzerland, The Geneva Internet Platform (GIP) is a centre for digital policy, comprising an online observatory and a capacity-building centre. It assists governments, civil society, technical communities and other information-society stakeholders- with a focus on small and developing countries- in building the capacity to participate more efficiently in the global policy processes of Internet governance, finding resources related to digital policy and governance, and engaging with other stakeholders. GIP also fosters links between International Geneva and the global community. It is supported by the Swiss authorities and operated from Geneva by DiploFoundation and online through www.giplatform.org. The project was initiated by the Swiss Federal Department of Foreign Affairs (FDFA) and the Swiss Federal Office of Communications (OFCOM) in January 2014, and launched officially in April 2014. Other members of the GIP Steering Committee include the University of Geneva, the Geneva Centre for the Democratic Control of Armed Forces (DCAF) and the Board of the Swiss Federal Institute of Technology (ETH) in Zurich. The project contributes to attaining SDGs 9, 16 and 17.

In United Arab Emirates, the Ministry of the Interior (MoI) has launched the Mol UAE Smart Application, in line with SDGs 3, 16 and 17. To achieve the vision and initiative of "smart government", Mol introduced a qualitative shift in service delivery channels by transforming from e-government to
more advanced and innovative smart government concepts, which are consistent with the ambitious goals of the UAE Vision 2021: “We want to be among the best countries in the world by 2021”. This was achieved through the development of an intelligent application that makes it possible for MoI to deliver its services 24/7 from anywhere on smartphones and handheld devices. Its approach was characterized by innovation, excellence and the application of international service standards.
Action Line C2. Information and communication infrastructure: an essential foundation for the information society

As stated in the Geneva Plan of Action, ICT infrastructure plays an important role in achieving the WSIS objectives and SDGs. This chapter illustrates some of the initiatives that the International Telecommunication Union (ITU) participated in and launched in relevance to this category.

The ninth Interactive Facilitation Meeting on Action Line C2 was held in Geneva on 28 May 2015, entitled Broadband for Sustainable Development. The most debated issues were: public private partnership (PPP) as model for implementing broadband networks, the application of lessons from Moore’s law in order to promote broadband and achieve the SDGs, key factors to make rural communication projects successful and sustainable, evolving IMT systems, standards, technologies and architecture supporting mobile broadband, the ITU GIS-based transmission maps as a useful tool for identifying the missing links and improving broadband connectivity.

Main linkages with the SDGs:

- The existing IMT standards and the further development of IMT-2020 will play a key role in achieving the SDGs.
- The success case from the microchip industry has been significantly increasing affordable access to the Internet all over the world.

At the 2014 ITU Plenipotentiary Conference (PP-14) held in Busan, Republic of Korea, the Connect 2020 Agenda for Global Telecommunication/ICT Development was adopted unanimously. This new Agenda will constitute the new global shared vision, goals and targets to be achieved by 2020 in collaboration with all stakeholders across the ICT ecosystem.

ITU’s “Connect a School, Connect a Community” initiative, part of the “Connect the World” initiative, aims to improve access to broadband in schools and enable schools to serve as community ICT centres. ITU is continuing to support the initiative in Comoros, where it is equipping and connecting schools, and in Palestine, in cooperation with the United Arab Emirates (UAE).

To provide a global perspective of broadband connectivity that will allow its membership to identify broadband investment opportunities, ITU has been updating the ITU Interactive Terrestrial Transmission Maps by continuously collecting data from all regions. The maps are a cutting-edge ICT-data mapping platform for taking stock of national backbone connectivity (fibre and microwave) as well as of other key metrics of the ICT sector; the platform currently covers Africa, the Asia-Pacific region, the Arab States, CIS, Europe and Latin America, with data from more than 300 operators.

ITU has organized conformity and interoperability (C&I) activities on a regional basis in partnership with relevant stakeholders. Capacity building events have been organized on electromagnetic compatibility, type approval of mobile terminals, and C&I regimes. These sessions took place at partnering laboratories in the regions.

C&I training for the Arab region was conducted in Tunis, Tunisia, from 11 to 15 April 2016. This year the C&I training course focused on the organizational aspects of conformity assessment from the administrative perspective: the roles of and relationship between the designating authorities, conformity assessment bodies, certification bureaux and test labs.

The ITU Regional Workshop for CIS and Georgia on Mobile Number Portability, Conformance and Interoperability was held in Moscow, Russian Federation, from 22 to 24 March 2016. The workshop was aimed at sharing practical experience in the field of the testing (including remote testing) of equipment, new technologies and services. In particular, the workshop covered such issues as:

- Mobile number portability standardization
Experience of operation of the Number Portability Database in Russia and European countries

Areas of ITU activities in the field of conformance and interoperability

Infrastructure of the virtual laboratory for remote testing of equipment, new technologies and services.

During this training, international experiences regarding procedures to establish C&I regimes were presented and practical testing activities on C&I were conducted.

Further C&I Training for the Africa region, on Type-Approval Testing for Mobile Terminals, Homologation Procedures and Market Surveillance, was conducted from 14 to 18 December 2015 in Tunis, Tunisia.

The ITU-UMA Experts Meeting on C&I in the Maghreb Countries was held in Rabat, Morocco, from 23 to 25 November 2015. The meeting was devoted mainly to reviewing the results of the evaluation study of the current regimes governing C&I testing in the Arab Maghreb countries and to the review/approval of the draft Mutual Recognition Agreement (MRA) between the Arab Maghreb countries as suggested by ITU.

A series of meetings and workshops took place in 2015 in different regions:

- Conformance and Interoperability (C&I) Validation Workshop for COMTELCA countries and Cuba, Tegucigalpa, Honduras, 7-9 December 2015.
- Conformance and Interoperability (C&I) Validation Workshop, Laico Regency Hotel, Nairobi, Kenya, 21-23 October 2015.
- ITU Asia-Pacific Centre of Excellence Training on Conformity and Interoperability, 12-16 October 2015, Beijing, P. R. China.
- Regional Workshop for CIS on Conformance and Interoperability, Moscow, Russian Federation, 7-9 July 2015.
- Conformity and Interoperability training for the Americas region on Type-Approval Testing for Mobile Terminals, NGN Integration and Interoperability Testing, Homologation Procedures and Market Surveillance, 8-12 June 2015, Campinas, Brazil.

On 26 September 2015, in New York, United States, the United Nations Summit for the Adoption of the Post-2015 Development Agenda adopted the proposed set of SDGs, representing a shared commitment on the part of United Nations Member States and the international community to work together to promote sustained and inclusive economic growth, social development and environmental protection, in the interest of creating a world that is just, equitable and inclusive. To this end, the launch of the ITU/UNESCO Broadband Commission for Sustainable Development is aimed at promoting the use of broadband to achieve the SDGs.

Another special session at the World Economic Forum held on 21 January 2016 in Davos, Switzerland, brought together all broadband commissioners and invited guests to discuss collaboration opportunities and initiatives to connect the unconnected.

The spring meeting of the Broadband Commission took place in Dubai, UAE, on 12-13 March 2016, at the invitation of Mr Sunny Varkey, Founder and Executive Chairman of the GEMS Education Group. In conjunction with the Global Education and Skills Forum 2016 which, from its inception in 2013, brings together leaders from the public, private and social sectors seeking solutions for achieving education, equity and employment for all, the Broadband Commission convened its spring meeting to discuss, among other issues, how to innovate in education through technology. During the two-day event commissioners had the chance to attend on-site sessions of the Broadband Commission’s three current working groups on the Saturday, as well as the full-day meeting of the Commission on the Sunday. The full meeting of the Commission also revisited the issue of new broadband targets to help achieve SDGs.
ITU and the United Nations Economic Commission for Europe (UNECE) convened the Future Networked Car event within the Geneva Motor Show on 5 March 2015. The year 2015 marked ITU’s 150th anniversary and the 10th edition of the Future Networked Car event. Intelligent transport systems and automated driving are moving fast towards widespread commercialization and market acceptance. High levels of automation – the penultimate step to fully automated driving – are expected on the road by 2020 and hold great promise to improve road safety, reduce congestion and emissions, and increase accessibility and personal mobility for the elderly and persons with disabilities. The Symposium on the Future Networked Car brought together representatives of the automotive and ICT industries, governments and their regulators, motor sport and international automobile associations to discuss the status and future of ICT integration in vehicles. The international symposium examined advances in the area of connected vehicles, from the perspectives of business, technology and regulation. Technical sessions highlighted the crucial roles of communication protocols, information security, in-vehicle emergency call systems, location referencing and maps.

ITU’s Smart Sustainable Development Model (SSDM) is an initiative intended to promote the measures needed to deploy the crucial telecommunication infrastructure that contributes to providing rapid assistance in the event of natural disasters, and could also be used as a working tool to foster economic and social development, providing community telecommunication services whereby people can have access to education, health or best practices in any particular field. Linking ICT development with emergency telecommunications opens up opportunities for countries to achieve sustainable development, while access to and use of telecommunication services brings innumerable social opportunities and helps to stimulate the economic growth of all nations, thereby benefitting all citizens in their daily lives.

The objectives of the initiative are to:

• Harness the potential of ICTs in changing lives through development and saving lives at times of emergency
• Link rural telecommunication/ICT development to both disaster risk reduction and management efforts
• Make optimum use of scarce and high-cost resources such as satellite systems by exploiting unused satellite capacity
• Create ecosystems where investments made for deploying telecom infrastructures for economic development are also used for disaster response for public safety
• Ensure the deployment of robust and resilient communication networks which continue to provide services in the immediate aftermath of disasters
• Avoid duplication of effort by development partners (governments, private sector, intergovernmental organizations and so on) brought about by focusing exclusively on development or exclusively on disaster management, without taking into account the other area.

This action line contributes to various SDGs, notably SDGs 1, 8, 9 and 11, promoting economic growth, inclusive and sustainable industrialization, fighting against poverty, etc. Without ICT infrastructure, industrialization, economic development, employment or sustainability of cities is impossible.

C2.1 Infrastructure and broadband

In Algeria, the National Agency of Dams and Transfers (ANBT) under the Ministry of Water Resources and Environment has launched the Geoportal of Algeria’s dams programme, in partnership with Spider Network. The Geoportal of Algeria’s dams is an IT infrastructure that enables access to geographic information services via the Internet, as well as search and visualization of geographic and geolocation data on all Algerian dams. This tool, made available to the wider public and to the scientific community in particular, contributes to the dissemination of information for the sustainable development
of water infrastructure. The Geoportal exports ANBT’s geographic information system to the Internet from existing map data. It offers visitors a range of consultation, research, analysis and printing tools, and a host of other features, including: displaying multiple themes according to the needs of various sectors; navigation, drawing, distance calculation and search functions; thematic analysis functions; map layer query functions for displaying alphanumeric data; tabular data export functions; printing functions with different scales; interactive legend display features; layer overlay on global cartographic backgrounds (Google, Yahoo); and access management and posting confidential data. The objective of the Geoportal of Algeria dams is to serve as a nationwide observation tool for retrieving information on changes in water reserves on all dams in operation and for monitoring ongoing projects (work and studies). It thus offers the most widely accessible entry point for retrieving the main geographical data, knowing what data are available and knowing how to access, view and exploit them. The programme is relevant to SDG 6.

In **Azerbaijan**, the Aztelekom Limited Liability Company has launched the project on setting up new network using GPON technologies. As we know, today most networks employ GPON, a telecommunication technology that implements a point-to-multipoint architecture in which unpowered fibre-optic splitters are used to enable a single optical fibre to serve multiple end points such as customers without having to provision individual fibres between the hub and customer. As a national communications operator of Azerbaijan, we too strive to integrate global ICT-sector innovations and improve the respective areas, first nationally, then in the regions. The main objective of the project is to set up a new network to provide high-rise buildings in the regions of the Republic of Azerbaijan with high-speed Internet using GPON technologies. In the first phase, four regions are planned to be equipped with a GPON-based network. The project is in line with SDG 9.

In **Botswana**, Botswana Fibre Networks (Pty) Ltd (Bofinet) has launched the Government Data Network (GDN) - Phase 1, in partnership with the Ministry of Transport and Communication. Bofinet is procuring and project-managing the GDN upgrade project on behalf of the Department of Information Technology (DIT). It is to directly appoint Cisco (based on DIT’s recommendations) to tender to conduct a network and data centre assessment of devices and applications that make up the current Botswana GDN infrastructure at various locations across the country, including virtual private network (VPN) extensions of the GDN to Botswana’s 28 foreign missions across the globe. The scope of the assessment encompasses all DIT’s IT resources, i.e. applications, information, infrastructure and people.

In **China**, China Mobile Group Device Co, Ltd (CMCD) has launched the Altitude for education in Malaysia (A1s) project, in partnership with YTL Communications Sdn Bhd. The vision of YTL Communications is to use its mobile 4G network to help set up an Internet-driven economy model in Malaysia. CMDC’s vision is to provide more affordable 4G mobile phones to accelerate rapid popularization of 4G in Malaysia. Under the programme led by the Malaysian Ministry of Education, we are the first Internet service provider to be able to connect all 10 080 government schools nationwide with Internet connectivity and a cloud-based Frog Virtual Learning Environment to transform the education experience, bridge the digital divide between urban and rural students and establish Malaysia as a model of education excellence. The project is in line with SDG 4.

**China**’s China Mobile Communications Corporation has set up the Smart insight on telecom big data project, pertaining to SDGs 7, 8, 11, 12 and 16. The project has brought good social benefits, including: Reducing energy consumption through smart transportation (SDG 7); Supporting business model evolution through the analysis of business outlets (SDG 8); Improving city disease prevention capability
through disease monitoring (SDG 11); improving product production and consumption patterns through customer insight (SDG 12); Enhancing the harmonious development of society with the education index (SDG 16). It is easy to replicate applications using telecom industry big data. The project has received wide acclaim from all sectors of society and government, led growth of relevant partners in tourism, transportation, banking, colleges and other industries, and provided a good reference for smart communities.

In China, Jiangsu Post and Telecommunication Planning Design Institute Co. has launched the Beijing Yizhuang cloud-computing centre building project, in line with SDG 9. The project will achieve an installed capacity of 14 000 cabinets, which can support the global network topology, improve service capability, enhance core competitiveness and satisfy significant business development needs. From the standpoint of global informatization, in addition to yielding positive social and economic benefits, the project will powerfully drive industry development in terms of reliability, safety and quality of service. The project can provide differentiated business models, improve social perception of information services, and attain the strategic goals of replication and sustainability by using modular technology.

Jiangsu Post and Telecommunication Planning Design Institute Co. in China has likewise launched the China Telecom LTE network construction project, in line with SDGs 8 and 9. In order to support the development of the national economy and satisfy market demand, China Telecom has planned to implement the 4G mobile communication construction project. From 2014 to 2016, China Telecom helped build more than 400 000 base stations and 160 000 sets of indoor distribution systems to serve subscribers. The project promotes LTE construction and operation, implements the national
strategy and upgrades the IT industry. During the construction period, it indirectly boosted national economic growth by nearly CNY 300 billion and created about 500,000 jobs.

In China, China Communications Technology Co, Ltd has set up the South-to-North water diversion (Eastern route) communication optical cable project for the water resources dispatch and management system, in line with SDGs 3, 6 and 7. The project laid 1,028 km of optical cable along the pipelines, through the five provinces, which feature complex topography and are subject to severe environmental constraints. In the case of remote sites, cable routing is frequently required to cross rivers and dams, which has to be taken into account in the planning. In this context, a lot of new technology was invented by engineers. The project is a first in applying a communication project to water conservation, thereby filling a gap in terms of the acceptance of long-distance communication projects in water conservation. The story of this project can easily be copied and used by other countries or communities.

In Indonesia, Asosiasi Penyelenggara Jasa Internet Indonesia (APJII) has launched the Indonesia Internet exchange (IIX) project, in partnership with Jamalul Izza and Henri K. Soemartono, and in line with SDGs 8, 9, 10 and 11. The objective of the IIX programme is to form a national interconnection network that has the requisite capability and facilities to meet the needs of each ISP. The IIX project has no end date for the programme as a whole, but is divided into stages that will be developed continuously.

In the Islamic Republic of Iran, the Data Processing Company (Parvaresh Dadeha) (DPCO) has launched the Houshyar OSS project, as a solution for optimizing and improving the quality and resilience of information and communication infrastructure, in partnership with Ali Rahmanian; Alireza Talebipour; Hadi Mahmoudi; and Amir Mehrabinezhad. Houshyar OSS is a fully-fledged Java-based software that can be used by service providers for unified and integrated monitoring, control, analysis and management of their ICT infrastructure. This is a solution that has been developed by DPCO from scratch for optimizing and improving the infrastructure as the main foundation of the information society. The system can manage different components of the infrastructure, including broadband network infrastructures, mobile and fixed communication networks,
data centres (servers, applications, databases, storage solutions, etc.) and e-services. These kinds of systems have a critical role in providing resilient, reliable, high-quality, sustainable and ubiquitous access to ICTs by citizens, businesses and government. Quality infrastructure is positively correlated with the achievement of social, economic and political goals, and undeveloped and low-quality infrastructures limit access to healthcare and education. Houshyar OSS has been used at the national level for managing some of the services of the national information network, telephony switching network and broadband network of service providers. One of its targets being to develop quality, reliable, sustainable and resilient infrastructure, including regional and transborder infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all, the project is relevant to SDGs 9 and 11.

In the Islamic Republic of Iran, the Information Technology Organization has set up Cloud computing for start-ups, in partnership with Azzahra and Sharif universities. The main objective of the project is to present an IaaS infrastructure design in Iranian data centres, this being an appropriate solution to facilitate and meet the requirements of start-ups and provide the computing infrastructure they need as a service on a cloud-based platform. A package of these services and resources is placed at the disposal of start-ups free of charge for a limited time (e.g. one year). This service, tailored to users’ requests, provides round-the-clock access to resources everywhere, on the intranet and the Internet. The project helps start-ups to focus on their creative ideas, providing base data.

In Kuwait, the Central Agency for Information Technology (CAIT) has set up the Kuwait Information Network (KIN), in partnership with Cisco, Fortinet and HP, and in line with SDG 17. CAIT was established back in 2006 as a government initiative with the main responsibility to develop and implement Kuwait’s e-government programme. It partnered with an international consultant to set its e-government strategy for the next five years. KIN was one of the early projects that was planned to provide the communications infrastructure to pave the way towards efficient and integrated implementation of e-services nationwide. KIN was designed to integrate the networks of all government entities (GEs) so as to enable future integration of isolated information systems and develop electronic services.
In **Malaysia**, the Malaysian Communications and Multimedia Commission (MCMC) has set up the **Security and Integrated Flood Network** (SAIFON), in partnership with Kota Belud District Office; Malaysia Civil Defence Force (APM); and MSD Digital Intelligence Pte Ltd, and in line with **SDGs 9** and **11**. Under the Smart Community initiative, MCMC has developed key programmes to meet challenges in fulfilling the vision of Smart Nation, which includes access to information and communication infrastructure. One of these programmes is SAIFON, which comprises basic IoT components—hardware, network and data analytics—to bring solutions to communities for creating a better way of life through the use of ICT. This is also in line with one of the objectives of Smart Community. The system is fully developed by Malaysians and currently being used at Kota Belud Smart Community.

In **Oman**, the Information Technology Authority (ITA) has launched the **Oman Government Cloud** (G-Cloud) project, in line with **SDG 9**. G-Cloud, an initiative for serving Omani government entities, is a major element of the national eOman strategy. It is a shared private cloud IT infrastructure for government entities initiated by ITA. It is built entirely on free open-source solutions (FOSS). For citizens, this translates into a more connected world where they can access their data and information at virtually any time from just about anywhere. G-Cloud is currently serving 13 government entities.

In **Senegal**, the Ministry of Posts and Telecommunications has launched the **Reliability of free-space optical systems** (FSO) project, in partnership with Agence de l’Informatique de l’Etat (ADIE) and Cheikh Anta Diop University (UCAD). Senegal, like many least developed countries (LDCs), is facing challenges in developing its telecommunication networks and services in terms of accessibility and availability and thereby satisfying the need for the universal access to basic ICT services. In this context, FSO systems can play a key role in terms of backhauling and back-up links for the telecommunication infrastructure of the governmental intranet, in regard to ensuring access and service availability. They have a similar capacity to optical fibre and are easy to install, licence-free and low-cost compared to wired technologies. Under the project, FSO link availability and link-range feasibility were investigated and established using visibility data records to simulate existing FSO systems, even taking into consideration the occurrence of severe variations in meteorological conditions, such as heavy rain and dust events, and the scintillation effects on the signals. The project is relevant to **SDGs 9, 10, 11** and **17**.

In **Tanzania**, an international organization called the Trias NGO has launched the **Geomonitoring of savings groups in Maasai pastoralist peripheral areas** project, in partnership with the Pastoralist Women’s Council (PWC); Maasai Women Development Organization (MWEDO); MVIWATA Arusha (farmers’ organization); Longido Community Development Organization (LCDO); Tanzania Chamber of Commerce, Industry and Agriculture (TCCIA), Arusha; TCCIA Manyara; Maasai Pastoralists Foundation; Marketplace Literacy Communities Trust; Oikos East Africa; Vétérinaires sans Frontières; World Food Programme; BTC.

In order to monitor close to 300 savings groups (VICOBAs), consisting largely of vulnerable Maasai women who live in extreme poverty, Trias uses a digital management information system (MIS). VICOBAs, each with about 30 members, are often located in remote areas. The MIS allows Trias to collect and monitor both financial data and data on the group quality of VICOBAs from a distance.
Thus, the MIS and GIS (geographic information system) make it possible to analyse data from the VICOBAs, compare groups, follow trends and visualize and cluster VICOBAs geographically through the data collected via smartphones and tablets. The project is relevant to SDGs 1, 2, 4, 5, 8, 10 and 12.

C2.2 ICT for all and connectivity for public access institutions

In Indonesia, Handoyo Taher has launched the Indonesia Internet exchange (IIX) project, in partnership with Agus Budi Raharjo. The objective of the IIX programme is to build a national interconnection network that has the requisite capability and facilities to meet the needs of ISPs that already have operating licences in Indonesia. Currently, the IIX project has no end date for the programme as a whole, but is divided into stages that will be developed continuously. The project is in line with SDGs 1, 2, 4, 5, 8, 10 and 12.

In Trinidad and Tobago, the Ministry of Public Administration has set up the Trinidad and Tobago Research and Education Network (TTRENT), of relevance to SDGs 1, 4, 8, 9, 10 and 11. A number of key activities have taken place over the last year. The Global Eduroam Governance Committee approved TTRENT’s membership as the national roaming operator (education roaming) for Trinidad and Tobago. TTRENT achieved the peering of three tertiary level institutions (TLIs) and the Ministry of Education with the top-level RADIUS Server to facilitate eduroam service provision nationally (education roaming allows students, lecturers, researchers and staff from participating institutions to obtain Internet connectivity across the campuses of participating institutions worldwide and in public spaces such as airports and train stations, by simply turning on their mobile devices, e.g. phones and tablets). Full deployment has been carried out at the University of the West Indies and the University of Trinidad and Tobago, and a draft policy document has been prepared. Executive approval was secured for the transition of TTRENT into a not-for-profit agency registered under the Companies Ordinance of Trinidad and Tobago. Moodle LMS access and support was provided to the Trinidad and Tobago Police Service Academy and the Ministry of Public Administration for the Commonwealth of Learning’s programme - Developing and Teaching Online Courses. Development was undertaken of Phase I of Studious: a student knowledge exchange platform to facilitate sharing of intellectual outputs and expertise among tertiary level students.

In China, the Internet Society of China has set up the China e-Government Information Accessibility System, in partnership with Telecommunications Authority of the Ministry of Industry and Information Technology (MIIT) of the People’s Republic of China; MIIT’s National Software and Integrated Circuit Promotion Centre (CSIP); Tsinghua University’s Information Accessibility Research Centre; China’s Digital Library for Visual Impairment; National Aging Office Information Centre; and iFlytek Cc., Ltd. Through the China e-Government Information Accessibility Public Services System, cooperating with all levels of government, institutions and organizations, as well as enterprises, this project aims to build and integrate sub-platforms of provincial, municipal, district and county governments to promote information accessibility technology and service sharing. The project also seeks to ensure that all levels of government, public utilities and commercial sites form an interconnected barrier-free information service system in order to provide equal access to information for disadvantaged groups, including persons with disabilities, the elderly, the poorly-educated, etc. It plays a strong sustainability role in building an information society that benefits everyone. The programme serves SDG 16.
In Ghana, Nasco Foundation has launched the Information Communication Technology Literacy project, in partnership with Labdoo, RedBull, Polytechnic University of Barcelona (UPC), Niels Buster Norsk-Denmark, Sawla Tuna Kalba (STK) District Assembly. About 70 per cent of the world’s population do not have the opportunity to use computers and related technologies. The digital divide is prevalent in our part of the world, and to our mind poverty is a result of lack of education and technology. The organization was founded on the premise that universal primary education and information are vital for poverty eradication. ICT centres have been established in remote areas of Ghana connected with Moodle courses and the Internet. Over 10 000 students have gained knowledge and self-development with employable skills through the literacy project; 4 271 are currently studying at the centres. The project is relevant to SDGs 1, 2, 3, 4, 5, 8, 9, 10, 13, 16 and 17.

In Mauritius, the National Computer Board (NCB) has initiated Cybercaravans, Public Internet Access Points (PIAPs) and Learning Corners, in partnership with the National Empowerment Foundation, Mauritius Telecom and Mauritius Post Ltd. NCB has implemented projects like cybercaravans and PIAPs in post offices and learning corners to reduce the digital divide and connect communities. The projects are focused on advancing universal access to ICT and Internet for all segments of the population. The cybercaravans, which are equipped with desktop computers, travel around the island with IT support officers to deliver training and assistance to the public on the use of ICT. PIAPs have been set up in all post offices around the island, with IT assistants to help the public use this facility.
Similar service has been extended through 34 learning corners- 13 in Mauritius and 21 in Rodrigues. The programme is in line with **SDGs 4, 5, 9 and 10**.

In **Mexico**, the Federal Telecommunications Institute has set up the *Integral Information System for Users*, consistent with **SDGs 9** and **16**. The system provides users with various consultation tools that allow them to ascertain and compare various characteristics of telecommunication services, and to know their minimum rights as users. The tools contained in the system provide the user with information on: guaranteed coverage of mobile networks; the contractual conditions of each operator; the quality of mobile services; approved mobile terminal equipment; the rights of users of telecommunication services; and a guide to the contracting of telecommunication services. In addition, the system has a "Data Consumption Simulator" that allows users to calculate their monthly data consumption and to find and compare the tariff plans that fit their needs.

In the **Russian Federation**, the public joint-stock company PJSC Rostelecom has initiated the *Bridging the digital divide* project for the provision of modern telecommunication services to rural settlements, in partnership with Ministry of Telecom and Mass Communications of the Russian Federation, the Federal Communications Agency, and the limited-liability company Infrastructure Investments, LLC– 4. The project foresees the development by Rostelecom of a telecommunication network to provide Internet access in small residential areas of Russia (with 250 to 500 inhabitants). PJSC Rostelecom is a universal service operator in Russia operating pursuant to Russian Federation Government Decree No. 437-p dated 26.03.2014. As a universal service operator, Rostelecom is responsible for providing universal telecommunication services, through access points connected to the communication network by fibre-optic communication links. The project responds to **SDGs 4, 8, 9, 10, 12, 16 and 17**.

**C2.3 Adequate and affordable ICT equipment and services**

In **Kyrgyzstan**, the Institute of Electronics and Telecommunications has launched the *Barrier-free educational environment for teaching people with disabilities* project, which responds to **SDGs 4, 8, 9, 11 and 16**. The motivation of persons with disabilities to go to university is reduced by the fear of an ill-adapted environment and the lack of special tools and equipment, special software and teaching materials for educational institutions. To solve this problem, the Information and Training Centre for Persons with Disabilities was set up in the Institute of Electronics and Telecommunications, and has been in operation since 22 October 2015. The centre has multimedia tools, office equipment and an interactive whiteboard, there are workplaces equipped with special tools for the visually impaired (three workplaces), blind persons (three workplaces), people with mobility impairments (six workplaces) and the hearing impaired. It will allow people with disabilities not only to continue school education, but also to master a variety of professions.
In **Malaysia**, the Malaysian Communications and Multimedia Commission has set up the project for *Empowering digital inclusion towards reaching connected communities through u-Pustaka knowledge services*, of relevance to **SDG 4**. The availability of more than 12,000 libraries in Malaysia providing information and knowledge services for millions of citizens, with the quantum leap made possible by various technologies supported by broadband infrastructure, has prompted the effort to develop the u-Pustaka ecosystem in order to transform public service delivery for the ease of citizens who need information and knowledge at any time and from any place. The development of u-Pustaka is all the more necessary with the introduction of the government’s ‘No Wrong Door’ policy, which sets high standards for excellent government services to be delivered by all government servants to the public. Given citizens’ expectations and needs in terms of information in today’s age, which calls for faster decisions, especially for people on the move, the public library becomes a major enabler to achieve this.

Project partners include: Ministry of Communications and Multimedia Malaysia (KKMM); Malaysian Communications and Multimedia Commission (MCMC); National Library of Malaysia (PNM) and seven libraries - State Library of Selangor (PPAS), State Library of Negeri Sembilan (PPANS), State Library of Pahang (PPAP), Pustaka Negeri Sarawak (Pustaka), State Library of Sabah, Kuala Lumpur Library (PKL), INTAN Library at Bukit Kiara; Malaysian Administrative Modernization and Management Planning Unit (MAMPU); Economic Planning Unit (EPU); National Registration Department (NRD); National Centre of Excellence for Sensor Technology, at Universiti Putra Malaysia; Pos Malaysia Berhad; FPX Gateway Sdn. Bhd (MEPS); Bank Islam; Malaysia Berhad; and Touch ’n Go Sdn. Bhd.

In **Pakistan**, the National University of Sciences and Technology (NUST) has launched *Smart Meter Data Collection*. The aim of the project is to collect the data from all smart electricity meters in a community, and transfer them to a central facility for billing and other services. The underlying idea of capturing the data and transmitting them over a wireless channel makes use of a specific wireless technique known as cooperative communications, which is low-overhead and can be implemented using low-cost radios. This would alleviate the problem of electricity theft and allow smart online decisions by both the end users and the utility company to adjust their respective loads. The programme is carried out in partnership with National ICT R&D, Pakistan, and is relevant to **SDGs 9** and **11**.

In **Qatar**, ictQATAR is facilitating tech start-up incubation through the *Digital Incubation Centre (DIC)*. The ictQATAR DIC was created to boost ICT innovation in Qatar, particularly among young people at the critical early stages of starting or growing a technology-related business. The centre’s objectives are to help young entrepreneurs transform innovative ideas into viable businesses and provide incubation...
programmes that nurture and help grow new businesses, by offering expertise, professional guidance, and services – including access to space, business planning, education and training, and legal advice, among others – throughout the phases of the start-up’s development. The Digital Incubation Centre is looking for entrepreneurs capable of harnessing emerging technologies to create innovative products, solutions or services that will contribute to Qatar’s digital economy. The project serves SDG 8.

In Trinidad and Tobago, the Ministry of Public Administration has initiated the GoRTT WiFi project, in line with SDGs 1, 4, 5, 8, 10, 11 and 17. The Government of the Republic of Trinidad and Tobago (GoRTT) is seeking to deploy free public wireless Internet service, using the PPP model as required, to enable citizens across all strata to access online information and services on the go. This project will be implemented in four phases, with the first phase due to commence in second quarter of 2016 through availability of WiFi on 13 buses.

In Uganda, Asia Kamukama has set up the Mobile Solar Computer Classroom, in partnership with the Kikandwa Rural Communities Organization. The aim is to make computer skills, tools and information accessible to socio-economically underprivileged schools and communities in Uganda. The Mobile Solar Computer Classroom consists of an all-terrain vehicle equipped with solar panels, laptops, an Internet router and two teachers that takes computer literacy to rural and suburban schools and communities. Over a period of two years, the project offers a digital literacy curriculum that focuses on building not only basic computer literacy, but also general literacy, numeracy and critical thinking skills. The project reflects SDG 4.

In the United Arab Emirates, the Emirates Identity Authority (EIDA) has launched the UAE National Validation Gateway. Building on the foundation established by the national ID card, the National Validation Gateway represents one of the key programmes introduced under the Strategic Plan to support the evolution of e-government in the UAE. The gateway enables the national ID card to be used to facilitate improved business services to all public and private organizations and government agencies within the UAE, by providing real-time identity verification and validation and strong user authentication capabilities for digital transactions. The National Validation Gateway also gives a strong boost to local businesses, by providing them with a range of new value-added services, such as legally binding digital signatures that will speed up the secure transition from paper-based to electronic transactions. The gateway is instrumental in addressing SDGs 1, 8, 9 and 11.

In the United Arab Emirates, Abu Dhabi National Oil Company (ADNOC) Distribution has set up the SMART project, reflecting SDGs 3, 4, 7, 8, 11, 12 and 16. The SMART service stations will provide world-class self-service facilities that conform to international hygiene, safety, security and ecology standards. The stations will offer enhanced designs and integrate innovative technologies such as RFID-based authorization and payment and NFC readiness, as well as mobile and B2B/B2C e-commerce platforms – all designed for the comfort and convenience of our customers and partners, providing them with innovative and convenient ways to pay for their purchases. Our SMART customers will be able to manage their accounts anywhere, anytime, from computers or tablets. Customers will be able to top up their accounts and access account statements online.
Action Line C3. Access to information and knowledge

The United Nations Educational, Scientific and Cultural Organization (UNESCO) is the lead facilitator for Action line C3, while the International Telecommunication Union (ITU) is co-facilitator.

The ITU Telecommunication Development Sector (ITU-D) held numerous workshops, conferences and symposia, making materials widely available free-of-charge on the web. In addition, a number of information-rich resources have been made available, including web-based information portals and practical ICT toolkits, and online databases have been launched and/or existing resources updated.

ITU developed a set of “Guidelines for Promoting ICT Accessibility for Persons with Disabilities in the Americas Region”. These guidelines are available in English, Spanish and Portuguese.

Concerning broadband access, ITU, with support from the Republic of Korea, has assisted countries in developing broadband policies and plans. Currently, support has been provided to develop wireless broadband master plans and national broadband plans/policies in Fiji, Cambodia, Brunei, Viet Nam, Samoa, Nepal, Myanmar, Bhutan, Bangladesh, Papua New Guinea, Indonesia, Pakistan, Lao People’s Democratic Republic, Vanuatu, Marshall Islands, Philippines, Saint Lucia, Malawi and the Republic of the Congo.

In addition, ITU has reinforced its internal coordination mechanism for unified action in the area of accessibility. The new ITU Accessibility Task Force (AccTF) focuses on making ITU a fully accessible organization and mobilizing further resources and partners to increase access to ICTs through ITU activities.

Action line C3 is crucial to fulfilling numerous established SDGs (SDGs 2, 4, 6, 8, 9, 10, 11, 12, 13, 14, 15 and 16). Access to information and knowledge is essential in order to ensure a successful agricultural industry, empower farmers by engaging them in policy/market processes and profitable sales, ensure sustainable educational processes and afford lifelong learning opportunities (SDGs 2 and 4). This action line contributes to ensuring the sustainable management of water; it can connect the national government with individual water users and thus increase transparency and raise awareness regarding water-related challenges (SDG 6). In order to reduce inequality, obtain transparency in markets and provide predictable trading systems for countries, access to information and knowledge is fundamental (SDGs 8 and 10). Open access to information can contribute to controlling levels of marine pollution; it allows cross-border communication and the rapid adaptation of preventive measures, favouring effective climate change-related planning and management (SDGs 13 and 14). It plays a critical role in the event of natural disasters and ensures conservation, restoration and sustainable use of terrestrial ecosystems (SDG 15).

C3.1 Access to information

The Access to Information (a2i) Programme of Prime Minister’s Office in Bangladesh has established the DAISY-standard Accessible Reading Materials for Students with Visual and Print Disabilities project, which aligns with the SDG 4. In Bangladesh, around 37% of the population (35% illiterate and 2% visually impaired) is falling behind in society because of inaccessibility to reading materials. With the support of a2i’s Service Innovation Fund, the Young Power in Social Action (YPSA) has developed DAISY standard accessible reading materials for students of class 1 to 10 which are handed over to visually impaired students every year on Textbook Day (1st of January) by the Honorable Prime Minister. This has made primary and secondary education inclusive (SDG 4.a) and accessible for all girls and boys, and contributed to improving literacy and numeracy among the user groups.
In Cuba, the Joven Club de Computación (Youth Computer Club) has initiated the Cuban Collaborative Encyclopaedia (EcuRed), in line with SDG 4. EcuRed is a collaborative encyclopaedia created on MediaWiki that seeks to bring knowledge to communities and actively tries to involve them in the elaboration of content related to their actions. At present, it is fully implemented and enjoys general acceptance of the public in Cuba.

In the Islamic Republic of Iran, the Iran Consortium on National Content (University of Tehran Section) has set up the project Thematic knowledge generation and sharing in an academic environment, in partnership with Nader Naghshineh and Seyyed Saeed Reza Ameli. Being the oldest institute of higher learning, at the forefront of modern information generation and distribution for over 100 years, the University of Tehran holds nearly a century of material on academia and its interaction with society. It is one of the biggest generators of e-content in Farsi. Currently, it operates the only integrated Academic Intelligence System within the Iranian university landscape. The system not only fulfils the day-to-day and traditional information support roles, but furthermore offers unparalleled opportunity for gauging academic performance as well as the impact of knowledge generated. As a member of the Iran Consortium on National Content, the University of Tehran has played a major role in making these materials and services available to a wider audience. Its success is reflected in the general consensus that the university is no longer confined to Tehran, but rather encompasses the whole of Iran. It currently has branches in Aras Free Economic Zone, Caspian Sea, Qom, Karaj as well as Kish Island. The project is relevant to SDGs 4, 5 and 16.
An international organization called ABBYY has launched All of Tolstoy in One Click, in partnership with the Leo Tolstoy State Museum and the Yasnaya Polyana Tolstoy’s Estate Museum. All of Tolstoy in One Click is a one-of-a-kind crowdsourcing project run by ABBYY, the Leo Tolstoy State Museum and 3 000 devoted volunteers investing great effort in preserving the cultural heritage and introducing the complete works of Leo Tolstoy to the world. Volunteers from 49 countries digitized and proofread over 46 800 pages of his works using ABBYY optical recognition technologies. One year later, a standard digital version of the 90-volume collection went online. Now, even Tolstoy’s rare works are accessible worldwide and it is easy to learn and perceive reality through the eyes of one of the greatest writers. The project is in line with SDG 4.

In Kenya, inABLE has established Computer Labs for the Blind, in partnership with the Ministry of Education (Government of Kenya); Access Kenya Ltd; Safaricom Foundation; Safaricom Ltd; Microsoft East and Southern Africa; and the Georgia Institute of Technology. The project is in line with SDGs 1, 4, 5, 8 and 10. The mission of inABLE is to empower blind and visually impaired students in Africa through computer-assistive technology. Since 2009, inABLE has established eight assistive-technology computer labs in six special schools for the blind in Kenya, hired 15 computer instructors, enrolled over 1 600 blind students and 131 teachers, provided over 20 000 hours of computer skills training, provided employable skills training (Java programming, web design: https://www.youtube.com/watch?v=Khf-m7OLHY) and conducted research and development (https://smartech.gatech.edu/handle/1853/56118). It is an official partner of the Ministry of Education in implementing assistive computer technology in special schools for the blind.

In Kyrgyzstan, the Kyrgyz Software Developers and Services Association has initiated the development of a Special ICT programme for people with disabilities, in partnership with the Ministry of Education of the Kyrgyz Republic, Vocational Lyceum #98, the Primary and Secondary Vocational Education Agency, and NGOs, including associations and communities working with the disabled. According to official statistics, there are 28 200 children under 18 with disabilities in Kyrgyzstan, and only 28 per cent of them are provided with educational services. Persons with disabilities have less access to education, medical services or information technologies. In this context, the special programme aims to take the initiative to develop methodological training plans for people with special needs, in particular visually impaired students. This experience has long been practised and showed stable results in Western countries. Persons with disabilities can acquire a good profession with a proper salary, and thus not be at a disadvantage in relation to others in social and financial terms. The project serves SDGs 4, 8, 10, 16 and 17.
In **Malaysia**, the Malaysian Communications and Multimedia Commission (MCMC) has initiated *E-magazine Development* at schools in Kemaman district, Terengganu, Malaysia, in partnership with the District Education Office (PPD), the National Books Council of Malaysia (MBKM) and Xentral Methods Sdn Bhd (eSentral). Over the years, financing the annual magazine has always been a challenge for schools in Malaysia owing to limited budget allocations. The annual school magazine is generally published by the school, with graphic layout and printing done by a private company, usually financed by the students themselves when they make a purchase. As printing becomes more expensive and community advertising and sponsorship becomes scarce, the funding shortfall for publication of an annual magazine has to be borne or shared by the school and the parent/teacher association. A further reason is the rapid adoption of digital technology. Malaysian schools are facing various challenges in dealing with digital native students. This new generation is less attracted to conventional printing material, and desires more interactive content. The initiative therefore endeavours to train and drive teachers and students to create an interactive digital magazine as their school’s annual publication. The project serves **SDG 4**.

In **Pakistan**, the Internet Society (ISOC) has launched the *Hamara Internet* project, a pioneer project to raise awareness of digital violence against women. Funded by ISOC’s Beyond the Net, the project is opening a new chapter in the struggle for women’s rights in Pakistan, providing women with the necessary knowledge and tools to protect their freedom of expression: training, workshops in universities, legal and psychological support and a crisis centre. Pakistani women deserve to be free to use the Internet to improve education and contribute to economic growth. The project reflects **SDGs 1, 3, 4, 5, 8, 10 and 16**.

In the **Russian Federation**, Alex Rosl has launched the *Next-generation network multiservice platform public Internet portal*, in partnership with Cisco Systems, Huawei, Protei, NSN, Alcatel-Lucent, NEC, VocalTec, MFI Soft, IskraTel, Eltecs and Citronics. The project is a public Internet information resource - the portal of next-generation network (NGN) multiservice platforms of domestic and foreign manufacturers used in Russia. The lack of systematic information and opportunities to compare makes it difficult to choose NGN equipment performance for design, research and educational purposes. To solve this problem, we propose to use the multiservice NGN platform public Internet portal, developed in the Povolzhsky State University of Telecommunications and Informatics (PSUTI). At present, the portal facilities are already used by PSUTI students and postgraduates carrying out NGN study and research projects. The project is in line with **SDG 4**.

In **Saudi Arabia**, the Ministry of Education has set up *Rasd Al Fa’aliat Al Ilmiah* (Observatory of Scientific Events), relevant to **SDG 4**. With the development advances witnessed in several sectors in Saudi Arabia, and in higher education in particular, it became imperative to consolidate the efforts of partners and organizations concerned in documenting academic material and recommendations for academic events held in the Kingdom. The need arose for organized institutional work to assess the sustainable development process of the sector. The observatory provides a one-stop shop for all academic and scientific events and lifelong learning programmes in Saudi Arabia.
In **Serbia**, the Ministry of Culture and Media has launched the *Pupin Digital Memorial* project, in partnership with the Ministry of Culture and Media of the Republic of Serbia and the Telekom Serbia Corporation. For the first time in history, people are given the chance to meet in virtual reality with a person from the past and discuss the present and the future. The Pupin Digital Memorial, which pays tribute to one of most significant telecommunication scientists, inventor and owner of many telecommunication patents, best known for his coils used in long-distance telephony, one of the founders of NASA, honorary professor of 18 world universities, winner of many scientific awards and medals, etc., was designed with the idea of cultivating the truth about a scientist as an inspiration to future generations. This project is actually the first museum exhibition in Serbia to use modern technology in order to make each of its segments interactive and, for the first time in Serbian museology, introduces virtual reality technology. This use of new technologies is a unique attempt to bring information and knowledge about scientific and cultural heritage closer to wider audiences who are more attracted to interactive technologies. Visitors to the museum will have the opportunity to explore the life story of this great man with his own personal inputs and guidance. The project serves **SDGs 4, 10 and 16**.

In **Spain**, Pablo Lanza has launched the Spain national grants and subsidies database (BDNS). The National Subsidies Publication System (SNPS) publishes all grants from all government authorities via a complete and searchable website. It also discloses amounts awarded and the names of grantees. Free of charge and fully accessible, it is posted at: www.infosubvenciones.es. Data are downloadable according to the open data paradigm. Users may: search for a grant and parse it through data elements and documents (regulations, forms); link to the granting authority’s secure website for electronic submission; register alerts, so when an authority registers a grant call which satisfies certain attributes, the system pushes a message; and search for awards, infringements and penalties. The project addresses **SDGs 1, 4, 5, 9, 10, 16 and 17**.

In **Switzerland**, Raising the Floor – International (RtF) has created *Prosperity4All*, an EC-funded project part of the Global Public Inclusive Infrastructure (GPII) initiative which aims to ensure that everyone who faces accessibility barriers due to disability, literacy, digital literacy or aging, regardless of economic resources, can access and use the Internet and all its information, communities and services for education, employment, daily living, civic participation, health and safety.

The project in carried out in partnership with Fraunhofer-Gesellschaft zur Förderung der Angewandten Forschung e.v. (FHG-IAO), Germany; Raising the Floor- International Association (Rtf-I), Switzerland; Ontario College of Art and Design University, IDRC, Canada; Internationella Handelshogskolan i Jönköping (IHH-JIBS), Sweden; Singularlogic Anonymi Etaria Pliroforiaikon Sistimaton kai Efarmogon Pliroforikis (SILO), Greece; Hochschule der Medien (HdM), Germany; Centre for Research and Technology Hellas (CERTH), Greece; Fundosa Tecnosite SA (TECH), Spain; Engineering – Ingengeria Informatica SPA (ENG), Italy; Participatory Culture Foundation (PCF), United Kingdom; Sensus ApS, Denmark; Karlsruher Institut für Technologie (KIT), Germany; Kompetenzzentrum Informationstechnologie zur Förderung der Integration von Menschen mit Behinderungen (KI-I), Austria; Fachhochschule Technikum Wien (FHTW), Austria; University of Cyprus (UCY), Cyprus; Fundacion Once para la Cooperacion e Inclusion Social de Personas con Discapacidad (FONCE), Spain; Age Platform Europe AISBL (AGE), Belgium;
C3.2 Software and open access

In **Algeria**, AINA Business Services has set up Ziara, partnering with the University of Hassiba Ben Bouali in Chlef, the Ministry of Tourism and Crafts and the National Tourism Office, and in line with SDGs 8 and 17. The web portal Ziara (“courtesy visit” in Arabic) has been developed with the aim of promoting sustainable tourism for development in Algeria. This will give Algerian citizens and foreign visitors access to information on all the national territory in the form of maps and dynamic content. Through the portal, Algeria is trying to begin achieving some of the universal sustainable development objectives set by the World Tourism Organization.

In **Canada**, the Brian Dickson Law Library in the University of Ottawa has launched the project on *Sharing open-access e-books between Canadian and Caribbean university law libraries*, which is in line with SDGs 3, 4, 10, 16 and 17. The movement in favour of open access for academic publishing has been emerging worldwide. The Canadian Tri-Councils (CIHR, NSERC and SSHRC) now require their funding recipients to disseminate the knowledge from funded research projects in open-access publishing venues. At the Faculty of Law, University of Ottawa, many law professors and researchers have already been publishing their research results in the open-access setting. Many of their copyright-free works are available through the University of Ottawa Press website. They can be accessed online and downloaded in PDF format. Downloading these law e-books can be done locally and globally. Everyone is legally free to share these open-access law e-books via any form of communication. However, not all libraries may be aware of this resource.

Research questions:

1. What is the current open-access movement in university libraries in the Caribbean countries? Is it different from or similar to the open-access movement in Canadian universities?
2. Are the university law libraries in the Caribbean countries interested in promoting access to the University of Ottawa professors’ open-access law e-books?
3. Is there support from law librarians in the Caribbean universities to pursue this research?

The University of Ottawa’s open-access law e-books should be widely used and shared beyond Canada, especially with people in countries that have less financial resources available for purchasing such texts, which often face barriers to accessing good foreign textbooks. This project selects the academic law libraries in the Caribbean countries to promote the University of Ottawa’s open-access law e-books. In many Caribbean countries, among other languages, English and French are spoken, which are the official languages at the University of Ottawa, where professors write books and journal
articles mostly in these two languages. For this research project, these factors are a bridge to help sharing knowledge between Canada and Caribbean countries.

In Italy, LibraRisk is a technology platform for innovative risk communication on Internet mobile and WebGIS, allowing public bodies to make their civil protection plans available for citizens, on smartphone, tablet or WebGIS, and activate alert services via push notification; and citizens to interactively consult plans on both iOS and Android devices or WebGIS interface, receive warnings and spread them through WhatsApp, mail, social network (Facebook and Twitter) and SMS (with Family Plan functions). All LibraRisk software content has been developed by LibraRisk SRL, a company founded at the Chamber of Commerce of Brescia (Italy) on 6 February 2015 and recognized as an innovative start-up since 26 May 2015. Ecometrics SRL, a spin-off company of the Catholic University (Brescia headquarters), is the co-founder, providing knowledge and skills in civil protection and emergency planning. To date, LibraRisk has been adopted by about 70 Italian municipalities, with a total population of approximately 380,000 inhabitants. The project addresses SDG 3.

In Mexico, the Federal Telecommunications Institute has launched the Telecommunication Services Comparator 2.0, which is relevant to SDGs 9 and 16. The comparator in this second version (Comparator 2.0) is an online tool which makes it possible to consult and compare in detail the characteristics of the current offering of all types of both mobile and fixed services. For mobile services, Comparator 2.0 shows the variables of monthly rental plans; recharge amounts; included voice minutes, short messages (SMS) and megabytes; and additional costs, features and options, for prepaid or postpaid subscriptions. For fixed services, Comparator 2.0 shows the monthly rental; coverage; included minutes/calls; number of channels; included Internet speed; and additional costs and features, for the different subscription types (single play, double play and triple play).
In Pakistan, the NED University of Engineering and Technology created the Getinfo programme, a website which informs users, mainly students, about the opportunities offered by various organizations worldwide, such as scholarships, internships, sponsorships, jobs, competitions, free certified courses, etc. These are opportunities that enable students to enhance their academic learning, so an up-to-date website providing all such information is a valuable asset. Getinfo opens the way for students to prove themselves ahead of a valuable career. With its links to the global community, the project fosters access to inclusive and equitable quality education and sustainable economic growth, reduces inequality within the country and revitalizes the global partnership for sustainable development, thus serving SDGs 4, 8, 10 and 17.

In the Russian Federation, Inreco LAN has developed the Pony software: IT Solution to overcome age-related cognitive and mental limitations, relevant to SDGs 3 and 4. There exist certain scientifically proven age-related cognitive and mental limitations, which are ignored by IT manufacturers. This results in digital and social isolation of seniors. The solution we are working on is a comprehensive IT solution that considers age-related and health-related cognitive and mental limitations, comprising Pony – a specially designed software for tablet computer for seniors to enjoy using modern digital content, a remote server containing digital books, movies, pictures, etc., and client software to be used by relatives, who remotely control tablets, and by doctors, who watch for healthcare issues affecting the seniors. The partnership involves Sergey Nikitin, Artem Vasiliev and Konstantin Demidov.

In Switzerland, the Geneva Internet Platform (GIP) has launched the GIP Digital Watch observatory. This comprehensive Internet governance and digital policy observatory is an initiative of GIP, in partnership with the Internet Society (ISOC), and operated by DiploFoundation, in the service of SDGs 9, 16 and 17. The platform – at www.digitalwatch.giplatform.org – provides a neutral one-stop shop for the latest developments, overviews and explanatory texts, events, resources, and other content related to Internet governance and digital policy. It draws on the strengths of its partners’ assets: the resources DiploFoundation has developed over the last 15 years, GIP’s international reach, and ISOC’s network of Chapters that help shape localized content.
In the **United States**, BethClip, Inc. has launched the *BethClip - Smart Cloud Clipboard Sync*, in partnership with Imperious Group, TelcoVision Group, Bakcell, Happy Farm Business Incubator, Qafqaz University, and Azerbaijan National Academy of Science. BethClip is a lightweight and very easy to handle piece of software whose main function resides in synchronizing your clipboard across multiple devices, enabling you to have access to the same data regardless of the device you are working on. BethClip is a cloud-based productivity tool/solution to provide clipboard (and data) sharing between your devices with one click. The project is relevant to **SDG 9**.

### C3.3 Community centres

In **Indonesia**, Pusat Telaah dan Informasi Regional (Centre for Regional Studies and Information) (PATTIRO) has developed *Promoting accountability of village law implementation* through an ICT-based forum and feedback loop mechanism. Kedesa.id is a portal integrating four platforms, namely blog, wiki, repository and forum. The blog is provided to accommodate ideas in the form of short articles that can be commented by other users. The wiki platform provides annotations about village law prepared by the PATTIRO team, in which users are free to contribute and provide input in the form of relevant information. The repository is used to accommodate documents related to the implementation of village governance, including policies and reports of studies on the practice of the organizing village governance. The forum is an online discussion medium for interactive communication and response to the issue of village development. The project, which relates to **SDGs 8** and **16**, is carried out in partnership with other PATTIRO networks at the national and local level, forming the PATTIRO Raya network.

In **Mauritius**, the Ministry of Technology, Communication and Innovation has developed the *Democratizing access to ICTs through cyberaravans, computer clubs and Wi-Fi in Mauritius*. No fewer than 270 computer clubs, each equipped with around three Net PCs/tablets and free Internet access, were set up across the island to democratize access. Some 1.3 million registrations, including recurrent users, have been noted. Furthermore, 369 locations in Mauritius will be equipped with Wi-Fi and 10 Mbit/s connections through fibre optics. The National Computer Board (NCB) also operates three cyberaravans equipped with broadband Internet through which training is provided to the community by registered IT Support Officers according to the specific needs of different segments. A total of 181 541 participants have undergone training in ICT awareness, 2 793 in Internet core computing certification, 62 in the Microsoft Office package and 61 in an ICT literacy programme. The programme is conducted in partnership with Microsoft, Mauritius Telecom, the Mauritius Telecom Foundation and the National Empowerment Foundation, and is consistent with **SDGs 4** and **9**.
In Qatar, the Ministry of Transport and Communications has developed the Qatar Government Contact Centre (QGCC). The centre provides the public with a single point of contact for all queries and issues related to key Qatar government services. It serves as the first line of support for many services offered by government entities. QGCC offers many benefits. It acts as a single point of contact for government entities to handle and deal with all end users’ enquiries. It answers all first-level users’ enquiries and resolves users’ issues. It will refer matters to the government entity for resolution only when required. It consolidates all calls and requests in one CRM system for customer profiles. It facilitates data and information exchange between government entities and between the government and the public. It fosters consistent customer engagement across government agencies by applying the same process, using the same terminologies, and adopting the same concepts across different agencies. It enhances communication and interaction between government entities, thereby yielding better performance and service delivery. The partnership includes Malomatia, and the project is applicable to SDGs 8 and 9.

In Saudi Arabia, the Saudi Commission of Tourism and National Heritage has created the MAS Website. The main task of the MAS Centre is the collection and dissemination of information and data on tourism for internal and external users. The MAS Website is used as a prime tool for the dissemination of such information and to make it available to everyone anytime, anywhere, in Arabic and English. The centre wishes to develop and enhance the website and e-portal in order to provide the best service for visitors to the website, improve performance and implement better search techniques, taking advantage of the properties and features of SharePoint technology. Partners in the project are the MAS team, the IT team and the outsourced company team.

C3.4 Digital libraries and archives

In Nepal, Tribhuvan University Central Library has initiated electronic thesis and dissertation management. The library receives Masters, M.Phil and PhD theses, which it has started to upload in Dspace for open access. Demand for relevant information is increasing every day, and the supply of information to meet requirements is inadequate on account of several barriers, such as, inter alia, the large amount of information, and finance, space, language and time constraints. Sharing of resources is one way to reduce these barriers and to meet the information needs of users. However, networking of libraries in Nepal is only at a nascent stage. Without knowledge of IT and ICT skills, we cannot globalize our service. Librarians know the value of information, but lack the modern ICT skills to properly manage theses and dissertations in our institution. The initiative is in line with all the SDGs.

In the Russian Federation, the Russian State Library has set up the National Digital Library. The National Digital Library (NDL) is a Russian federal information system, providing the foundation for a Russian digital knowledge space. The main aim of the project is to provide Internet users with free access to digitized documents owned by the Russian state libraries, museums and archives. Every year digital copies of at least 10 per cent of all books published in Russia are added to the NDL, which now contains about 2 million digital objects and 36 million bibliographic records. It is de facto Russia’s largest fully legitimate online library. The project addresses SDG 4.

In the United Arab Emirates, the Telecommunications Regulatory Authority (TRA) has launched the TRA-ITU ICT Discovery Museum. The museum was built with USD 2 million support from the Administration of the United Arab Emirates, and UAE was designated as the sole founding partner of the museum, with ITU. The UAE Administration has not only been a sponsor, but has also contributed to the design, theme and expansion of the museum. The initiative supports all the SDGs.
Action Line C4. Capacity building

The United Nations Development Programme (UNDP) is the lead facilitator for Action line C4. The co-facilitators are the United Nations Educational, Scientific and Cultural Organization (UNESCO), the International Telecommunication Union (ITU), the United Nations Conference on Trade and Development (UNCTAD), the United Nations Department of Economic and Social Affairs (UNDESA), the United Nations Food and Agriculture Organization (FAO) and the United Nations Industrial Development Organization (UNIDO).

Capacity building and ICT literacy are essential for building an inclusive information society.

As stated in the Geneva Plan of Action, ICTs can contribute to achieving universal education worldwide, through delivery of education and training of teachers and offering improved conditions for lifelong learning, encompassing people that are outside the formal education process and improving professional skills (SDG 4). Governments continue to develop national policies to ensure that ICTs are fully integrated into education and training at all levels. Literacy programmes in schools familiarize children with ICT tools. Capacity-building programmes provide an excellent basis for educating and preparing the national workforce for the future. Governments emphasize the importance of creating a critical mass of qualified and experienced ICT professionals by establishing public access points and local ICT training centres. Knowledge and information are exchanged via webcasts and other portals. In some countries, adult illiteracy is still an enormous challenge, particularly in rural and underserved areas. Numerous efforts have been made to narrow the digital divide between rural and urban areas. New opportunities have been created to provide ICT education for citizens in rural areas through specially equipped vehicles, such as trucks and buses designed to travel across the country and target rural areas. Training is becoming increasingly available for women and girls and aims to engage them with ICTs and increase the number of women pursuing ICT careers. Projects are increasingly focused on facilitating access to new information technology for young people and children. Investment in ICT literacy for older persons is crucial in many countries; worldwide, 2 billion people will be aged 60 or over by 2050. The United Nations and its specialized agencies continue to promote international and regional cooperation in the field of capacity building.

This action line ensures that ICTs are fully integrated in education and training at all levels, thus contributing to reduction of poverty (SDG 1). In parallel to the growing adoption of ICTs, the need for access and knowledge is increasing, making this action line very important in the promotion of sustainable agriculture and achievement of food security (SDG 2). It is also crucial to SDGs 5 and 10 – on removing gender barriers, the promotion of equal training opportunities and reducing inequality within and among countries. Steps taken on capacity building can increase scientific knowledge and develop research innovation capacity in order to conserve and sustainably use oceans and marine resources (SDG 14). In order to prevent violence and combat terrorism and crime, human capacity building needs to go hand in hand with institutional capacity building (SDG 16).

C4.1 ICT literacy

The NGOs Network for Radio and Communication in Bangladesh has launched the English Language through Community Radio in Rural Bangladesh project, in partnership with 17 community radio stations. English is becoming one of the key requirements in ordinary people’s lives in Bangladesh; and community radios are one of the best educational platforms for reaching a wide audience at
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community level. This effective project is now addressing the above perspective, and contributing to improving the overall English-language skills of the broad radio audience in the rural communities. The success stories of development through community radio are inspiring people and give them strength to combat poverty and overcome other struggles in their lives. The project is of relevance to SDGs 1, 4 and 16.

In Belarus, Natalia Ovsyanko has developed Wecare.by, in partnership with the Baranovichi medical rehabilitation centre and Molodechnomebel. The objective of the Wecare.by project is to employ the powerful tool that is ICT to draw attention to and increase the visibility of the most vulnerable social group, the mentally disabled, showing how they build on their disability and, despite everything, continue to strive and work, thus benefiting the community. This is, however, just one aspect of the project. The other is dedicated entirely to the application of ICT 4D: with the help of ICTs, the community can contribute to and collaborate with these people. The project offers an example of setting up an e-business for the disabled via a personal website and an Internet store to sell and showcase the merchandise which they produce during work therapy sessions and to find potential customers. The project serves SDGs 3 (good health and well-being), 8 (decent work and economic growth), 16 (peace, justice and strong institutions) and 17 (partnership for the goals) and WSIS Action Lines 2 (digital inclusion), 3 (ICTs for all), 4 (capacity building) and 7 (e-business).

In Costa Rica, Fundación Omar Dengo has initiated the Had to be a Creative Woman (“Tenías que ser mujer... creativa” in Spanish), in partnership with the Humanist Institute for Cooperation (HIVOS), Netherlands; Cantera Association, Nicaragua; Goloven, Honduras; and Asociación Ajb’atz’ Enlace Quiché, Guatemala. The project consisted of specific ICT-based training courses for young women between 12 and 20 years old which seeks to positively influence their vocational attitude towards science, technology, engineering and mathematics (STEM) in Costa Rica, Guatemala, Nicaragua and Honduras. Through participation in short extracurricular training courses, the project seeks to generate an interest among young female high-school students to create links with careers in science and technology, encouraging and training them with skills and knowledge in programming (coding) and robotics, and dispelling their fears in relation to these issues. The project serves SDGs 4, 5 and 8.

In Costa Rica, Fundación Omar Dengo has launched Costa Rica´s implementation of Global Learning and Observations to Benefit the Environment (GLOBE), in partnership with the GLOBE programme and the Ministry of Public Education of Costa Rica, and in line with SDGs 4, 6, 13 and 15. GLOBE is a global
educational programme for primary and secondary schools that seeks to promote the collaboration of students, teachers and scientists in enquiry-based research on the environment. GLOBE Costa Rica is offered in the form of science clubs in public high schools, and reaches young people between the ages of 12 and 17 that join the clubs and use their extracurricular time in a productive way. The programme’s objective is to give students an opportunity to develop their scientific thinking through research projects in which they are able to relate science with problems in their communities, giving special emphasis to water use and conservation.

In **Egypt**, the Information Technology Institute (ITI) of the Ministry of Communications and Information Technology has launched the **ITI Online Freelancing Capacity Development programme**, in partnership with Assiut University, Mansoura University, Upwork Payoneer, Pi technologies Group and others.

This ITI programme is capitalizing on a strong educational delivery framework and close links with the ICT industry locally and internationally, catalysing the entire capacity- and talent-development cycle, from basic digital literacy up to the latest worldwide technology trends. It has been put in place by ITI in cooperation with academia, represented by the regional universities in Mansoura and Assiut, and in full coordination with the ICT industry, working collectively to:

1. Integrate freelancing skills capacity development and boot camps as key components in the professional training programme alongside the core technical modules
2. Enable distinguished ITI learners to pursue new and non-conventional endeavours and career paths in the international employment market through the Internet
3. Empower the Egyptian governorates (Mansoura and Assiut) by capitalizing on distinguished resident talents and exploit their competitive advantages to create new hubs for the ICT workforce outside major (Tier A) cities
4. Empower Egypt’s IT, social and economic welfare through a self-sustained work model for all promising youth with no preference based on gender or location across Egypt
5. Encourage the establishment of small and medium-sized enterprises adapted to the local identity of each governorate and province, and attract investments to their home towns
6. Enhance the creativity and innovation skills of younger generations to play a role in the development and management of the production and service sectors in line with economic development plans.

The programme is relevant to **SDGs 4, 8, 10, 12 and 17**.

In **Ghana**, iSpace Foundation has developed the **Unlocking women and technology project**, designed to equip women and girls with the necessary ICT skills needed to work and also to create their own businesses. This is achieved by providing ICT training, mentoring and funding. There is a global drive to get more women involved in the technology field in order to counteract the lack of gender diversity, and we are part of it! Some of this imbalance has been caused by the long-held notion that tech is of interest only to men, and that women have no place in a technological development environment. There is a significant skills gap in the sector and we (the tech sector) should be looking to fill it in any way we can.

In our experience, we have found that much of the problem lies in early education as, simply put, schools are not doing enough to foster girls’ interest in or enthusiasm for technology. Women have highlighted that career advisers lack sufficient knowledge about the IT sector to advise them on how
to access it successfully. In collaboration with local and international partners, iSpace Foundation (GH) has put together a programme to challenge gender stereotypes in tech and create various platforms for women (both young and more mature) to access opportunities that will help them see technology as a viable career as well as a tool for business growth.

The project is undertaken in partnership with Comic Relief, Radical Leap, Mobile Web Ghana, Ghana Code Club and Google, and relates to SDGs 4 and 5.

In **Ghana**, Healthy Career Initiative has launched the Phoenix project, in partnership with Ispace Foundation Ghana, Mobile Web Ghana and Radical Leap company, UK. Phoenix is an after-school programme, initiated in summer 2016, designed to help children, especially girls, see technology in a whole new light as a medium for self-expression, and as a means for changing the world. Each curriculum for the Phoenix project is creative and fun, giving kids the opportunity to create digital content such as websites, games, animations and interactive stories. The project serves SDGs 1, 4 and 5.

In **India**, the Sakhi Samaveshan project pursues financial inclusion through the empowerment of women, enrolling ordinary self-help group (SHG) members as business correspondents. It has been launched by Narmada Jhabua Gramin Bank, in cooperation with the Rural Financial Institutions programme of the German International Cooperation Agency (Gesellschaft für Internationale Zusammenarbeit) – National Bank for Agriculture and Rural Development (GIZ-NABARD), in four districts of Madhya Pradesh, covering 240 villages with a combined population of 300,000, through 41 Bank Sakhis.

The objective is to “leverage on the existing SHG ecosystem for building a sustainable customer service point network to offer formal banking/financial services in un/under-banked villages”. The project utilizes the strengths of SHG networks, their wide membership base and the entrepreneurial interest of SHG members in order to work as business correspondents offering doorstep financial and banking services. It has succeeded in breaking down social barriers, and women who previously never stepped out of their house to participate in banking activities and earn are now driving this innovative project. Male clients who used to hesitate to approach SHG members (Bank Sakhis) to engage in banking transactions now do so freely. Bank Sakhis say that their social status has been enhanced and that they take great pride in being able to offer banking services to their fellow villagers.

In achieving these objectives, the Sakhi Samaveshan project supports gender equality and the empowerment of women and girls, in the service of SDG 5.
In Italy, the University of L'Aquila has created Museum In Click!, in partnership with schools in the Abruzzo Region, the Archaeological Superintendence of Chieti, local authorities (Department of Culture of the town of Chieti, etc.) and associations. Within an inter-institutional partnership model, the project has sought to enhance the quality of training from the methodological point of view, by combining ICT and cultural heritage, i.e. cultural sources that help to respond more effectively to the needs of the new literacy and communication society. It has been validated to define its soundness, effectiveness and efficiency, adopting a design centred on examining contexts, principles, inputs and processes and evaluating the impact on cultural, organizational and operational aspects. Research has focused on the characteristics of the educational offering introduced to strengthen the communicative and educational strategies of the teachers and museum educators dispensing initial and in-service training so they may acquire specific methodological and digital skills that would raise the quality of the educational system from the point of view of transversal curricula and multiliteracy. The museum supports SDGs 3, 4, 10 and 17.
In Mauritius, the National Computer Board (NCB) has launched the Universal ICT Education Programme, in partnership with the Cyber Learning Foundation, Certiport and the Ministry of Education and Human Resources. In today’s digital world, it is essential that each individual be conversant with and proficient in IT tools. It is with this objective in mind that NCB has come forward with the Universal ICT Education Programme to train a maximum number of individuals on the IC3 course. The implementation model is also particularly interesting, whereby resources of State secondary schools that were idle after school hours, at weekends and during vacations have been put to use. More than 230 000 persons have been trained to date. The project is relevant to SDGs 4, 5 and 10.

The Ministry of Communications and Transportation of Mexico has created Puntos México Conectado. Through this programme, the Mexican Government aims to bridge the digital divide and enhance broadband Internet access for all Mexicans, in order to maximize the endless possibilities this technology has to offer. With one centre operating in each state of Mexico, making 32 in total, and located in marginalized areas with high poverty rates, the Puntos México Conectado programme provides digital literacy, programing, coding, innovation and entrepreneurship courses free of charge to enable greater digital inclusion and generate better-informed and more community-involved citizens. Likewise, this programme promotes the creation of more efficient and productive micro, small and medium enterprises throughout the country.

Puntos México Conectado is carried out in partnership with the Federal Government of Mexico, Microsoft, Cisco, Google, Lego, the US Mexico Foundation, CREA A.C., Dell, iLab and Robotix. The project’s objectives are strongly linked to such problematic issues as poverty, quality education and gender equality (SDGs 1, 4, 5, 8, 10 and 17).

In Nigeria, the Women’s Technology Empowerment Centre (W.TEC) has developed the W.TEC Girls Technology Camp, in line with SDG 5, with partners and supporters that have included Union Bank, MainOne, General Electric, Internet Society (ISOC), Intel, Amadeus, Google, Microsoft, World Bank, Swift Networks, Omatek Computers, Rutgers University’s Women in Computer Science Department, Anita Borg Institute for Women and Technology, Lagos State Ministry of Education and Laureates College, Lagos.

The W.TEC Girls Technology Camp is an annual initiative designed to help girls in Nigerian secondary schools develop an early interest in computer science and information technology careers. The camp helps to intervene early, combat stereotypes and tackle the digital gender divide. We teach girls to create digital content, create software and develop skills that use information and communication technologies. Our two-week immersion programme empowers girls to contribute meaningfully to the digital economy and improve their economic opportunities. Through a mixture of classes, workshops and excursions, the girls learn to create useful technologies through programming, mobile application development, filmmaking and digital animation.
In the Philippines, Free Basic Digital Literacy Training (FBDLT) is a training activity conducted free of charge by the Malvar Community eCentre (CeC). Four stationary CeCs and one mobile CeC are equipped with 39 desktop and 13 laptop computers. With the goal of making a difference in the lives of constituents, free training is provided in word processing, spreadsheets, multimedia, Internet browsing, use of social media and e-mail. The clients of FBDLT are housewives, retirees, senior citizens, young people not attending school, children with special needs, volunteers, municipal and barangay officials and employees, tricycle drivers, elementary and secondary school pupils and students. The initiative fulfills such SDGs as combating poverty, achieving gender equality and promoting sustainable economic growth of the country (SDGs 1, 5 and 8).

The O Robot Ajuda! (The Robot Helps!) project in Portugal consists in using robots as an educational tool with the aim of guiding students’ curiosity towards the discovery and learning of basic STEM (science, technology, engineering and mathematics) concepts. The project’s goals have to do with the planning and presentation of experimental activities, by and for students, stimulating and promoting their interest in science and self-learning, and in this way responding to SDG 4 by ensuring inclusive and equitable quality education and promoting lifelong-learning opportunities. The use of robots enhances science-based activities, particularly those relating to engineering and ICT. In addition to planning and building prototypes to solve specific problems, the students organize workshops for students and teachers in schools around the country, and teach hospitalized children in the paediatric ward. The Project is carried out in partnership with the Departamento de Informática da Faculdade de Ciências of the University of Lisbon (Professor Dr Luís Correia) and the Escola do serviço de Pediatria of Santa Maria Hospital (Professors Sara Costa and Diana Pita).
In Sierra Leone, B-Gifted Foundation of Sierra Leone has launched *Digital Hope (ICT for an inclusive information society)*, in partnership with Teach a Man to Fish, UK; National Telecom, Sierra Leone; National Youth Commission, Sierra Leone; and UN ITU TELECOM’s Young Entrepreneurs and Innovators 2011 competition, and serving SDGs 1, 3, 4, 5, 8, 10, 16 and 17.

Over 1 billion people, or approximately 15 per cent of the world’s population, live with some form of disability. Some 80 per cent of them live in developing countries. The Digital Hope project is unique and innovative in many ways. It has begun targeting 20,000 victims of amputation in the aftermath of wars in Sierra Leone and drawing attention to the plight of other disabled individuals in a way never tested before in this country by any other organization or company. The imaginative use of technology and apps for the disabled has, in its pilot stage, provided 1,550 war amputees with the necessary ICT skills so that they can rebuild their lives as well as their country, and raise the resources they need to carry out their dreams. The technology addresses the global challenge of access to learning and education for people with disabilities, and the project distinguishes itself from other actors in the same field through its economic viability and largely humanitarian component. The pilot stage was carried out with the support of an open innovation competition grant provided by ITU in Geneva.

In the Solomon Islands, the Ministry of Education and Human Resources Development (MEHRD) has created the *ICT4BE – KioKit* trial project in the Solomon Islands, in partnership with Solomon Islands National University, Solomon Islands Government Information Communication Technology, and schools along with their teachers, students and parents. ICT4BE is a MEHRD project funded by the Asian Development Bank. One of its objectives is to trial the KioKit in selected schools in the country. Five schools were identified and selected from Malaita Province (Gwounaoa Community High School and Kilusakwalo Community High School), Guadalcanal Province (Nguvia Community High School and Tamboko Community High School) and Central Islands Province (Kalaka Community High School). Training on the use of KioKit was dispensed at MEHRD headquarters and in the schools. All these schools are currently using the KioKit. Monitoring of implementation was conducted mainly by the ICT4BE team (external), and some positive impacts have been reported in the schools in terms of teaching and learning of students. The project aligns with SDGs 4 and 5.
In **South Africa**, Ikamva Lisezandleni Zethu has developed *Operation Fikelela*, in partnership with Bridges.org; Nazeema Isaacs library; Shuttleworth Foundation; Ford Programme; Via technologies; JMC; Siyakhula Education Foundation; and Computers4Kids. Operation Fikelela is IkamvaYouth’s computer literacy programme which ensures that learners are able to: conduct research; create professional CVs and letters; learn typing and presentation skills; perform effectively at tertiary education; and be employable. This not only provides the learners with necessary skills to enter traineeships and ensures that those entering tertiary education are better equipped, but also enables increased learner participation in the organization’s daily operations and management. Our learners come from schools that are highly under-resourced, particularly in terms of technology. We seek to empower them with computer skills and thus make them more employable in this information age. The venture is in line with **SDGs 1, 4 and 9**.

In **Trinidad and Tobago**, the Ministry of Public Administration has launched the *Tech Savvy Youth Camp*. A youth camp was hosted in August 2015, in which 125 students between the ages of 13 and 17 received training in web design and development, adventures in programming, effective use of social media, and cybersecurity. It was designed:

- to encourage the pursuit of studies in the STEM fields, including ICT;
- to develop some proficiency in coding and website design;
- to elicit creative thinking and analysis in addressing real-world problems; and
- to have code viewed as a force for positive change while exploring new/emerging technologies.

The youth camp serves **SDGs 1, 3, 4, 5 and 8**.

In **Tunisia**, IEEE SIGHT Tunisia has developed *Tawasol*, in partnership with IEEE SIGHT; IEEE Internet Initiative; People-Centred Internet; International Connector; and IEEE Tunisia Section, and in line with **SDGs 4, 5 and 10**. Tawasol’s mission is to pioneer social change in Tunisia through technology and to establish connections between people and communities. The goal is to build a thriving Tunisia with
a new generation of thinkers and doers: boys and girls who believe they are powerful and capable of addressing Tunisia’s challenges. The project is investing in youth, technology and STEM as a means of empowering connection and problem-solving. It is connecting people at both the technical and human levels by providing the requisite infrastructure and building an education and social change process that fosters interaction between communities.

In Uruguay, Youth IGF Uruguay has initiated Youth IGF Guidelines, in partnership with the Internet Society (ISOC) Uruguay Chapter and the Latin America and Caribbean Network Information Centre (LACNIC). Youth IGF (Youth in Internet governance) aims to provide the opportunity for equal participation of multiple stakeholders in the process of building the information society by associating adolescents and young people from different countries of the world. The main objective is to enable young people’s voices to be heard by the leaders of the information society on issues related to Internet governance and to help young people to participate actively in decision-making processes. Particular attention is paid to the participation of young people from vulnerable groups and those who have fewer opportunities for better social inclusion. Youth IGF reinforces active citizenship among young people and participates in the development of intercultural and intergenerational dialogues. It is an initiative developed by Together against cybercrime International (TaC), French youth and partners. The Youth IGF Initiative was conceived during the first Youth IGF French and Adolescents event, which took place in 2011. It is of relevance to SDGs 1, 4, 5, 9, 10, 16 and 17.

C4.2 National policies

In Bangladesh, the Bangladesh NGOs Network for Radio and Communication (BNNRC) is seeking to engage community radio for the elimination of gender-based violence in rural Bangladesh, in partnership with 14 community radios.

Within this framework, BNNRC has implemented the Girl Power Project in collaboration with Plan International and nine other partner organizations in Bangladesh, to sensitize and activate media professionals (both media initiators and journalists) in the quest to eliminate violence against girls and young women through media. BNNRC has trained 350 community radio broadcasters and mainstream media practitioners. Three awards events were organized for the best reporting and programmes. Around 500 motivated community radio broadcasters and other mainstream media practitioners (both print and electronic) are now engaged and committed to offering more quality radio and TV programmes, reports and news through their own media channels.

The project relates to SDGs 1, 5, 10 and 16.

In Mexico, the Federal Telecommunications Institute has launched Me Informo (“Get me informed”). “Me informo” is an electronic tool that aims to contribute directly to bringing users closer to the most relevant information pertaining to access and use of their telecommunication services, enabling them to make better decisions when purchasing and using such services, through clear and simple didactic materials that facilitate understanding of the subjects, even those that are technical and complicated. This is achieved through webinars.
given by experts in the field of telecommunications, online courses and knowledge tests. The project is relevant to **SDGs 4, 9, 10, 16 and 17.**

In **Qatar**, the *ICT SME Toolkit* by ictQATAR provides small and medium-sized enterprises (SMEs) with the knowledge they need as they adopt web presence, e-commerce and cloud service technologies. Building on the progress made over the past years, Qatar Digital Government is focused on providing benefits to the people of Qatar. The drive to make Qatar’s government more efficient, effective and customer-centric is driven by the Qatar Digital Government 2020 Strategy, which is built around three main strategic objectives:

- Better serve individuals and businesses
- Create efficiency in government administration
- Develop a more open government with enhanced participation of citizens and residents.

The ICT SME Toolkit thus promotes economic growth, employment and decent work in Qatar, in line with **SDG 8.**

In **Serbia**, the Ministry of Trade, Tourism and Telecommunications (MoTTT) has created the *IT caravan*, in partnership with the Ministry of Education, Science and Technological Development and Microsoft Serbia. The IT caravan promotes beneficial and safe use of information technology and the Internet, and underpins MoTTT’s ongoing campaign, entitled "Smart & Safe", to encourage development of the information society. The project, which underpins **SDGs 4 and 5**, has been implemented in 15 cities in Serbia.

In **Slovenia**, the Ministry of Public Administration of the Republic Slovenia has launched *Big data analysis for HR efficiency improvement*, in partnership with EMC2 Computer Systems. Big Data Analysis for HR efficiency improvement is a pilot project, which has been run within the Ministry of Public Administration in collaboration with EMC Dell as an external partner, with the aim of identifying the right big data tool that, when installed on Slovenian State cloud infrastructure, could improve HR data efficiency in the ministry. To this end, anonymized internal data sources containing time-management information, HR database, finance database and public procurement information have been combined with external resources using employees’ postal codes and weather data to identify potential for improvement and possible patterns of behaviour. The results show that there is considerable room for improvement in the field of HR and in lowering costs in the field of public procurement within the ministry. The project relates to **SDGs 10 and 17.**

In **Trinidad and Tobago**, the Ministry of Public Administration developed the *Regional workshop on e-commerce legislation harmonization in the Caribbean*, in partnership with the United Nations Conference on Trade and Development (UNCTAD). Jointly hosted with UNCTAD in September 2015, the four-day workshop built upon an online training course on e-commerce organized by UNCTAD in April 2015, the first to target the English-speaking Caribbean. The workshop had some 30 participants, comprising representatives from the Caribbean Community (CARICOM) and Latin American
countries and UNCTAD institutional partners. Participants received training in a number of areas, including: Global and regional e-commerce trends and cyberlaw developments; Harmonization of national technology policies in the Caribbean; Electronic transactions/electronic signature laws; Data protection; Consumer rights; and Online protection. The project is of interest to SDGs 1, 3, 4, 5 and 8.

C4.3 ICTs for professionals and experts

**Bangladesh has launched the Infolady Social Enterprise Ltd (iSocial) project, in partnership with the ICT Division of the Ministry of Information and Communication Technology, Government of Bangladesh, as an ICT-based door-to-door women’s entrepreneurship model for creating employment, alleviating poverty and empowering women in rural Bangladesh (SDGs 1, 3 and 5).** The objective of the project is to scale up a proven, award-winning model named “Kallyani”, designed and developed by a pioneering social enterprise, Dnet (www.dnet.org.bd), and now operated by iSocial. It is to be noted that this model is currently being replicated in other countries beyond Bangladesh.

Specific objectives of the project include: Creating self-employment for women in rural Bangladesh; Connecting rural communities to national and global markets through the network of Kallyanis; Spanning the last-mile for the delivery of public goods and safety-net benefits to people’s doorsteps in remote areas; Significantly improving the health and well-being of adolescent girls and women; Connecting rural youth to opportunities (soft skills development, jobs, training, etc.) available in urban areas and abroad; Creating a vigilance and support network for violence against women; Educating rural youth with modern ICTs; Enhancing income opportunities of rural small farmers by facilitating access to modern agricultural technologies; and Creating last-mile Internet connectivity for rural citizens.

In **Costa Rica**, Fundación Omar Dengo has developed Labor@Enterprises, an educational programme aimed at young students in Costa Rica’s public education system. Through an ICT-based simulation process, the students create and manage a practice company and acquire skills that will enable them to generate start-ups, or successfully join the labour force. Labor@Enterprises has been implemented since 2004 in academic and technical high schools, and in 2007
it was formally incorporated into the curriculum in all technical specialties taught in public technical high schools across the country. Labor@Enterprises students develop entrepreneurship capacities, acquire business-management knowledge, make productive use of digital technologies, and develop interpersonal skills for life and work in a collaborative environment.

The programme, which is of relevance to SDGs 4 and 8, is carried out in partnership with: Technical Management and Entrepreneurial Capabilities Division of Costa Rica’s Ministry of Public Education; National Educational Informatics Programme (MEP-FOD); Banco Nacional de Costa Rica; Telefonica Foundation; Institute for the Connectivity in the Americas (ICA) of the International Development Research Centre of Canada (IDRC); Costa Rica-United States Foundation for Cooperation (CRUSA); and Microsoft.

In Kyrgyzstan, the public foundation IT Attractor Plus has launched the Educational Software Development project (ESD), in partnership with the IT Attractor Plus Education Centre (current implementer); the Soros Public Foundation, Kyrgyzstan (sponsor 2013); Kyrgyz IT Labs and Kyrgyz-Russian Slavic University (sponsors, 2010).

The ESD project, which is of interest to SDGs 3, 4 and 5, is an innovative method of software developer training aimed at overcoming the shortcomings of the modern educational model. Guided by an experienced software developer, ESD participants take part in a software development process with distinct roles and role rotation, focused on software quality and process organization. Born as an in-house capacity-building method in 2009, over a several iterations ESD has become an independent methodology of expedited training for junior software developers, capable of raising their level of proficiency to match industry standards in just a few months.

In Kyrgyzstan, the Kyrgyz Software and Services Developers Association has initiated the Development of a special ICT programme for people with disabilities, in partnership with the Ministry of Education of the Kyrgyz Republic, Vocational Lyceum #98, the Agency for primary and secondary vocational education, and NGOs, including associations and communities working with disabled people.

The project’s goal, consistent with SDGs 4, 8, 10 and 16, is to create a special educational methodological plan (EMP) for programming a course adapted for disabled people. The project objectives are to:

1. Develop a special EMP in conjunction with specialists in programming and experts on inclusive education
2. Recruit students for the pilot group
3. Test and adapt the EMP with the pilot group in one academic year
4. License the EMP through the relevant bodies (Ministry of Education).
In Malaysia, the **Converged Telecommunications Policy and Regulations (CTPR) Master Class** is designed to offer mid- to senior-level executives in national regulatory agencies, relevant government ministries, telecommunication service providers, broadcasters and equipment manufacturers/vendors in the Asia-Pacific region a holistic and up-to-date world view on all matters related to the converged telecommunication space, giving them exposure to the latest global thinking on converged policy and regulatory matters and the way forward in support of capacity building; a better grasp of related global laws and regulations; and a holistic understanding of key issues to enable participants to engage in multistakeholder and multidisciplinary discourse, policy-shaping and decision-making in the telecommunication arena.

In this way, the CTPR Master Class encompasses learning and educational issues (**SDG 4**). It is carried out by the Multimedia University (MMU) in partnership with the GSM Association (GSMA) and the Malaysian Communications and Multimedia Commission (MCMC).

In **Mauritius**, the Ministry of Technology, Communication and Innovation has launched the **ICT BPO capacity-building programme**, in partnership with the National Computer Board, National ICT Training Centre Ltd (ICT Academy), Industry Associations (OTAM, MITIA, CCIFM), State Informatics Ltd (SIL), Oracle, FRCI Knowledge 7, and Ceridian.

This capacity-building programme, which supports **SDGs 4, 8 and 9**, is being implemented to ensure the delivery of industry-relevant training in order to address the skills mismatch and lack of manpower and to train a maximum number of unemployed, with a view to supplying a pool of qualified human resources to drive the growth of the second wave of ICT BPO development in Mauritius.

Training programmes dispensed include mobile application development (MAD) and Oracle Java SE8 programming. A one-year scholarship in MAD was offered to 24 participants. Forthcoming training programmes include IT career readiness training for fresh graduates, and courses in BPO call centre, Oracle, Java, Cisco and cloud technologies.

An **international organization** called Junior Computer Academy is a social business that contributes to **SDG 4** with a mission to provide STEAM education for 50 000 children by 2020. Its project-based curriculum develops skills in programming, web development, design, robotics, engineering and 3D-modelling to prepare children for the challenges of the future economy. The programme is currently implemented in 11 countries (Azerbaijan, Belarus, Brazil, Bulgaria, Georgia, Kazakhstan, Moldova, Romania, Russian Federation, Ukraine, United States), with a desire to expand further to the Africa region. It is being carried out in partnership with 35 local Step IT Academy training centres. Since its inception in 2012, 14 000 children have completed three- or five-year courses and courses involving 16 500 are in progress.

In **Qatar**, the Ministry of Transport and Communications launched the **Better Connections** project, which is a collaborative framework for employers and contractors to establish ICT facilities and provide training to their transient workers on-site in the workers’ accommodation. This initiative (see https://www.youtube.com/watch?v=SMT_QoJvds) provides the beneficiaries free of charge with refurbished hardware, tailored training content available in five languages and training and coordination support from volunteers, enabling transient workers residing in Qatar to access the Internet and various ICT tools, and hence take part in the ever-changing digital world. The project is thus working to reduce inequality in the country (**SDG 10**).
The project’s partners are Reach Out To Asia, Microsoft Qatar, RAF Foundation, Social and Economic Survey Research Institute, Qatar Foundation, Supreme Committee for Delivery and Legacy, and CH2M, in addition to 29 employers of migrant workers including construction companies and contractors.

Contractors enrolled in the project include: HBK, CHEC, BOTC, L&T, QDVC, J&P, BUTEC Qatar, UCC, Ezdan Holding, Qatar Rail - RLN UG, Qatar Rail - Gold Line, Qatar Rail - Major Stations, Qatar Rail - GRN UG, Qatar Rail - QDVC: Doha Metro Red Line South, Msheireb - Gasco, Msheireb - Carillion, Msheireb - Obayashi - HBK, Msheireb - Redco, Msheireb - Arabtec, Woqod, NRHC, Amal Services, Qatar Foundation, Shapoorji Pallonji, Nakheel Landscapes, Shaqab Abela Catering Services, TCC/CCC.

In Saudi Arabia, the Saudi Standards, Metrology and Quality Organization (SASO) has developed IT Capability Management. IT Capability Management is a platform that helped SASO IT to develop and manage targeted capabilities to execute its IT strategy. It is based on the Skills Framework for the Information Age (SFIA), and is supported by a system, called CapableIT, that automates the stages of capability management, namely: organize, acquire, deploy, assess, develop, appraise, and reward. The project is relevant to SDG 4.

In Saudi Arabia, the e-government programme “Yesser” is keen to support the change that accompanies the implementation of e-government projects. To move forward successfully, such change requires soft skills in addition to technical competencies. To this end, Yesser has launched multiple programmes under its Capacity Building and Development initiative, which aims to build and enhance IT competencies in order to deal with implementations requiring a high level of skills and professionalism. As at January 2016, over 42 000 government employees have been trained in areas ranging from basic computer usage to professional IT certifications and workshops for CIOs.

The programme relates to SDGs 1, 4, 5 and 8, as it addresses such issues as poverty, education, equality of people and economic growth of the country. It is carried out in partnership with the Ministry of Civil Service; the Technical and Vocational Training Corporation – TVTC; he national company for training and education (TeTec ); and Alkhaleej Training and Education.

In the United Arab Emirates, the Dubai Smart Training Initiative (DSTI) is one of the initiatives under the Dubai Government Excellence Programme (DGEP), aiming to enhance the capacities of Dubai Government employees in government excellence knowledge and applications through the latest electronic and smart technology platforms. It thus relates to SDGs 4, 5, 8, 9, 11 and 16, as it addresses, inter alia, education, gender equality, economic growth and sustainable industrialization. The training content is presented in a well-designed structure and flow, making the training more effective and enjoyable, and offers alternatives to suit and accommodate the user’s preferences. DSTI offers training via both e-learning and smart app. The smart app channel utilizes mobility, interactivity and connectivity capabilities along with smart mobile features to offer the convenience of training 24/7 from anywhere in the world.
C4.4 International and regional cooperation

In **Africa**, Global e-Schools and Communities Initiative (GESCI) has launched the *African Digital Schools Initiative* (ASDI), in partnership with MasterCard Foundation, Ministry of Education Kenya, Ministry of Education Tanzania, and Ministry of Education Côte d’Ivoire, and in line with **SDGs 4, 5, 8** and **10**.

ASDI is a comprehensive programme to implement digital school development in secondary schools so as to transform secondary schools into digital schools of distinction. It is designed specifically to build 21st century skills among secondary-level students and nurture innovative practices among teachers in a way that is responsive to the needs of the marketplace and to the emerging knowledge economies and societies. Starting in 2016, ADSI will reach out to 140 schools in Kenya, Tanzania and Côte d’Ivoire. No fewer than 4 200 teachers will be trained through the project, including 1 400 teachers in science, technology, English and mathematics (STEM), as well as 210 000 students, including 70 000 STEM students.

In **Greece**, Safer Internet Hellas has launched the *Youth4Greece* project, in partnership with the Technological Educational Institute of the Ionian Islands and Google. The project has given minors the chance to promote Greece through their eyes, by allowing them to create and submit original videos showcasing the sights and attractions, events and local recipes of their hometown. In so doing, they learn to use ICT tools and information in a creative and innovative way, while sharing their experience and promoting the positive aspects of the Internet. Through Youth4Greece and in line with European Union’s Strategy for a Better Internet for Children, the minors demonstrated that they can fully participate in the information society, if they are given the chance and the incentive. The project supports quality education (**SDGs 4**).
Action Line C5. Building confidence and security in the use of ICTs

Confidence and security play an essential role in the information society. Governments, in cooperation with the private sector, are working to prevent, detect and respond to cyberthreats and misuse of ICTs by: developing guidelines that take into account ongoing efforts in these areas; considering legislation that allows for effective investigation and prosecution of misuse; promoting effective mutual assistance efforts; strengthening institutional support at the international level for preventing, detecting and recovering from such incidents; and encouraging education and raising awareness. Thus, the projects reported on in this chapter showcase the ways in which stakeholders are contributing on an ongoing basis to building confidence and security in the use of ICTs.

As lead facilitator for Action line C5, ITU has made available to the international community a global platform for dialogue, coordination and cooperation.

The ITU Global Cybersecurity Agenda (GCA) provides the framework within which the international response to the growing challenges to cybersecurity can be coordinated and addressed. Within this framework, the Union has continued to play a key role in the global community through various partnerships and initiatives. ITU-IMPACT has provided cybersecurity services and capabilities to 149 countries and, together with the United Nations Office on Drugs and Crime (UNODC), ITU is assisting Member States in properly addressing cybercrime.

Within the framework of the GCA, the Child Online Protection (COP) initiative brings together partners from all sectors of the global community to ensure a safe and secure online experience for children everywhere.

The International Conference on Cyberspace, Energy and Development was co-organized and co-hosted by ITU and the Energy Pact Foundation with the support of the International Atomic Energy Agency (IAEA) and the World Economic Forum (WEF). The conference focused on the different aspects of the interaction of cyberspace, energy and development, based on key findings on security issues. There is a need for greater international cooperation among nations on matters pertaining to cyberspace, especially concerning the risks that can affect critical infrastructure such as conventional energy systems. Early initiatives in this area have focused mainly on safety of telecommunication and information networks, as these are the very infrastructure of cyberspace. However, if a cyberattack were to cause deterioration in the electricity supply, it could also impair the operational protection of the telecommunication infrastructure at large. Apart from this ubiquitous role of the electricity system, itself unique compared to all other critical infrastructures, many areas of energy systems are exposed to damage originating in cyberspace, and include energy mining and production centres, logistics or trading platforms, transport infrastructures for primary resources such as oil, gas and coal, or processed electricity, such as smart grids, processing units, such as those for uranium, consumption meters, including smart metering, control systems such as drones, and e-mobility environments, including electric cars. Obviously, the stakes go well beyond ensuring security of supply and involve the constantly shifting national and transnational flows of resources and power grids, the potential damage to key infrastructures, market impacts, theft of general and customer data, and other dormant risks. This interaction of risk issues between cyberspace and energy is in fact the umbrella under which effective cybersecurity should be designed for such critical infrastructure. It requires an exchange between the national level, responsible for critical domestic infrastructures, and the international level, as the extreme interconnectedness of the telecommunication industry and electricity infrastructures will only increase over time.

Furthermore, the fight against online child sexual abuse content is increasingly a global effort. The Internet Watch Foundation (IWF) has been invited by ITU to develop a template that will enable
countries which currently have no provisions in this regard to access IWF’s expertise and resources with a view to establishing efficient and cost-effective methods to tackle this growing problem.

Besides child cybersecurity, this action line contributes to several SDGs, namely SDGs 1, 4, 5, 7, 11, 16 and 17. Quality education, lifelong learning opportunities and gender equality partly depend on confidence and security in ICTs (SDGs 4 and 5). SDG 7 – ensuring access to energy for everybody – is directly related to this action line. As energy infrastructure increasingly relies on ICTs through management and control of the relevant systems, cyberthreats become a valid risk that must be addressed with adequate security measures. Confidence and security in the use of ICTs are a crucial component in achieving the inclusivity and sustainability of society, institutions and human settlements and in contributing to the economic development of the global community (SDGs 11, 16 and 17).

C5.1 Legal measures

In Japan, the National Incident Readiness and Cybersecurity Strategy Centre (NISC) has developed the new National Cybersecurity Organizational Framework. Pursuant to the Basic Act on Cybersecurity, a Cybersecurity Strategic Headquarters was established under the Cabinet for the purpose of formulating the cybersecurity strategy, assessing cybersecurity measures by government, assessing serious cyberincidents in government and coordinating overall governmental cybersecurity policies. NISC is the leading governmental organization for cybersecurity issues. The Act has strengthened NISC’s functions, which include (1) Government Security Operation Coordination team (GSOC); (2) investigations into causes of serious cyberincidents in government; (3) audit and consultation to government for cybersecurity; (4) programme planning and overall coordination for cybersecurity. These developments are in line with SDG 9.

In Mauritius, the Ministry of Technology, Communication and Innovation, in partnership with the Ministry of Education, Human Resources, Tertiary Education and Scientific Research, and the Private Secondary Schools Authority (PSSA), launched the implementation of a Child Safety Online Action Plan to address an issue that has attracted global attention and which prompted a call for action by Member States during the Tunis phase of the World Summit on the Information Society. The Action Plan, which was developed by the National Computer Board and endorsed by the Cabinet in 2009, and supports SDGs 9 and 11, is currently being implemented. The policy measures it embodies relate to the following:

• Public awareness campaign
• Safety measures for schools and public Internet access points
• Child safety online legislation
• Enforcement and reporting measures
• International cooperation.

In Trinidad and Tobago, the Ministry of Public Administration is developing cybersecurity (SDGs 4, 8, 16 and 17). In accordance with the National Cybersecurity Strategy, a Cybercrime Bill has been drafted and is currently on the government’s legislative agenda and awaiting resubmission and debate in parliament. In February 2014, under an administrative agreement with the International Telecommunication Union (ITU), technical assistance was provided for the establishment for a national Cybersecurity Incident Response Team (CSIRT). Established in May 2015, CSIRT is the national focal point for incident reporting, incident management and incident response. Whilst recruitment efforts have begun, work in the following areas remains ongoing, and is scheduled to be completed in May 2016:

• Establishment of watch, warning and incident-response capabilities
• Identification of national critical information infrastructure sectors and establishment of a foundation at national level
National capacity building and knowledge transfer to facilitate the development of national critical information infrastructure protection.

C5.2 Technical and procedural measures

In Algeria, the University of El Oued has undertaken the development of an Android application to combat the kidnapping of children based on modern technologies.

Today, the kidnapping of children is a horrible phenomenon that has become a real problem afflicting all communities. The biggest challenge is that parents do not know when, how and where is this problem is liable to occur. The whole world has been looking for a solution to this phenomenon, and numerous international symposia and conferences have been organized around this serious subject. As a solution proposed for the first time, the University of El Oued (work supervised by Mr Ghendir Said) has developed an Android app which is installed on a smartphone. The app is based on a remote monitoring system to track the children through GPS coordinates, and SMS services to keep parents informed of their children’s welfare. Thus, we aim to provide a contribution to the information society through low-cost security tools and technological means to ensure safe life and well-being to promote sustainable development throughout the world (SDG 3).

In China, China Mobile Communications Corporation is enhancing the ability of information security to effectively protect the rights and interests of telecommunication network users, in accordance with SDG 12. With the development of ICT technology, users enjoy convenience while also facing more information security risks. In order to protect information security, China Mobile has introduced a wide range of practices in customer information protection, phone fraud prevention, mobile malware control, pseudo base station governance, etc. These efforts effectively reduce the chance of users being defrauded, protect their legitimate rights and interests, and enhance user confidence in ICTs and their sense of well-being. These practices are replicable around the world to enhance information security capabilities and protect all ICT users.

In the Czech Republic, the Ministry of Industry and Trade has initiated the Turris Omnia router project, which has been nominated by the Czech Republic for the WSIS Prize 2017 competition. The Turris Omnia router device was invented by the CZ.NIC Association, a national .cz domain names registrar and a national CSIRT operator. The Turris project represents a whole security environment composed of a router that is secure by design and a Turris centre with cyberthreat analysis. The Turris router also

China has established the 12321 Unsolicited Electronic Messages Complaint and Reporting Centre. With the development of the Internet, messaging abuse such as e-mail Spam, SMS Spam and harassing calls has raised concerns and has even caused property loss on the part of users. On 28 April, 2008, commissioned by the Ministry of Industry and Information Technology of China, the Internet Society of China (ISC) set up the 12321 Reporting Centre to receive public reports and complaints on unsolicited messaging. The centre supports SDG 12.
offers much broader usage opportunities thanks to its high performance and hardware options. The technical solution offered by the Turris Omnia router increases citizens’ trust not only in the Internet but also in national and possibly international security schemes. Its development is consonant with SDG 9.

In Myanmar, the Myanmar ICT for Development Organization has launched the SOS - Safe Online Space programme. This is an initiative run by a local civil society organization to promote peace and tolerance online (SDG 16). It is composed of three segments: 1) Training in digital literacy/information literacy and building an online peace mobilization system; 2) Monitoring and combating online hatespeech; 3) Supporting media and civil society organizations with data and a network for rapid response.

In pursuit of child online protection, the Ministry of Digital Affairs of Poland has launched Risky Online Adventures, starring Sheep Loco and the Kid – a visual information campaign for protecting children online. Every day, many children enter the Internet in pursuit of knowledge and entertainment. They may find what they are looking for, but they are also exposed to numerous risks, which are often well disguised. It is our task, as adults, to address and promote the principles of safe use of the Internet. It is for this reason that the Ministry of Digital Affairs has launched an information campaign. The best way to reach out to children is through means they understand and are well accustomed to – animated films. The ministry has produced five films about the threats such as cyberbullying, spam, viruses, addictions, and chain letters. The campaign’s goals coincide with SDGs 4 and 11 by strengthening efforts to protect and safeguard ICT access and ensuring quality education for children.
In **Pakistan**, the COMSATS Institute of Information Technology has created the *Smart Surveillance System*. Smart Surveillance is a new and intelligent wireless multi-option security system. It is low-cost and flexible. The system uses an embedded micro-web server, with IP connectivity for accessing and controlling devices, as well as keeping premises secured using an Android-based application. It is basically a remote-controlled monitoring and operating system which will make you the king of your own place. This system intends to control electrical appliances with a user-friendly interface and easy installation. It will not only make your life safe, but also keep you updated with the current situation of your house, including the medical condition of any patient at home/anywhere in the world, so that you can do what you feel is right for you’re the safety of your family and property. The project is of relevance to **SDGs 3, 4, 5, 8, 9, 11 and 13**.

In **Saudi Arabia**, the Ministry of Foreign Affairs (MoFA) has launched the Saudi Ministry of Foreign Affairs Security Awareness project, in line with **SDGs 3, 4, 5, 11 and 16**. In support of its vision, mission and values, MoFA believes in the importance of developing advanced information security programmes to meet the challenges of the digital age, progressing through the adoption of secure and reliable information and communication technology (ICT), which it considers as one of its strategic objectives. In addition, it believes in the importance of information as a strategic asset essential to its core mission and objectives, in which security is a critical element that is under potential and increasing threat. MoFA has a duty to protect its information and its information systems and to ensure that it can defend against any risk and cyberattack.

The Saudi information security awareness project is an ongoing process of learning that is meaningful to recipients and delivers measurable benefits to MoFA from lasting behavioural change. It provides high return on investment, and has a very significant positive impact on MoFA’s security. The project covers all MoFA employees worldwide, including at MoFA headquarters, MoFA branches in Saudi Arabia and 192 or more Saudi diplomatic missions all around the globe. In addition, it is delivered in a manner that fits the overall culture of MoFA and has the greatest impact on its personnel.

In **Ukraine**, the A.S. Popov Odessa National Academy of Telecommunications has set up a *Database of existing technical solutions for child online protection*. The database has been developed in partnership with the International Telecommunication Union (ITU) in the framework of implementation of the Regional Initiative on “Creating a child online protection centre for the CIS region” adopted at the World Telecommunication Development Conference (Dubai, 2014) (WTDC-14). A group of experts drew up a list of existing technical solutions for testing. Each solution on the list was then installed on a computer or mobile device, with a view to thorough testing of every function announced on the official site. For each solution, a test report was compiled and entered in the Contentfiltering.info service database. The
Contentfiltering.info software has been developed on the basis of recommendations on selecting the best content-filtering system for a given user/organization. The database supports SDGs 4 and 11.

In the United Arab Emirates, the Dubai Electricity and Water Authority (DEWA) began implementing the GD Smart Power Planet (SPP) project in January 2016, with the aim of establishing a centre to gather data in real time from isolated power stations in order to build a Generating Power Plants Distributed Control System with real-time and historical data and thereby provide a holistic view of the operational, technical and economic condition of each plant/unit. Plant data can be accessed on the move via smart devices, PCs and laptops equipped with online plant monitoring, evaluation, reporting, performance calculations, dashboards, KPIs and SMS/e-mail to support decision-makers. The project seeks to ensure a reliable, sustainable and modern energy supply and resilient infrastructure, and fosters innovation (SDGs 7, 9 and 11).

C5.3 International cooperation

In Malaysia, Lee Hwee Hsiung has initiated the Global Accredited Cybersecurity Education Scheme (ACE).

Needs and demand for human capital are more pressing than ever before, while the environment of uncertainty along with the spectre of potential threats hinder the efforts of players in the ecosystem to pursue cyber-related initiatives, thus restricting economic development. CyberSecurity Malaysia (CSM) is addressing this issue by establishing a holistic framework of professional cybersecurity certification. The ACE scheme was initiated in 2016 through strategic collaborations with the government, academia and industries. The scheme is aimed at enhancing the skill-sets of cybersecurity professionals congruent with local and regional requirements while ensuring a consistent and high-quality service level from accredited personnel.

It is being carried out in partnership with the Computer Emergency Response Team of the Organization of the Islamic Cooperation (OIC-CERT); Ministry of Science, Technology and Innovation (MOSTI), Malaysia; National Security Council, Malaysia; Ministry of Human Resources, Malaysia; Malaysian Administrative Modernization and Management Planning Unit (MAMPU); Malaysian Communications and Multimedia Commission (MCMC); Technical University of Malaysia Malacca (UTeM); International Islamic University Malaysia (IIUM); National ICT Association of Malaysia (PIKOM); Council of Trust for the People (MARA), Malaysia; Cybersecurity Malaysia (CSM), and supports SDGs 4 and 17.

C5.4 Regional actions

In Azerbaijan, Aztelekom LLC has developed the SAF safe Internet project. Today, Internet is an inseparable part of our life. We cannot imagine our life without ICTs, especially the Internet. It is also clear, however, that the Internet creates a number of problems, too. In order to protect Internet users from harmful websites, Internet-related problems, threats, and so on, the SAF project (SAF stands for "pure" in Azerbaijani) aims to provide our users with Internet security. It offers them transparency, enabling them to track the activities of their children while they are online. SAF checks websites that
they enter, enables them to use websites based on selected options or alternatives, or forbids some websites. The project is in line with SDGs 11 and 16.

Malaysia has launched the National ICT Security Discourse (NICTSeD): A CyberSAFE Awareness Challenge for Students. The discourse forms part of the CyberSAFE (Cyber Security Awareness for Everyone) initiatives, a dedicated programme developed to raise awareness on the importance of cybersafety and personal information security in Malaysia. CyberSAFE encourages Internet users to be more responsible and safe in using the Internet and other online applications. CyberSecurity Malaysia organized the first National ICT Security Discourse in secondary schools throughout Malaysia in 2013. The first discourse encouraged open and constructive conversation on cybersafety and security issues, as well as the development of a fresh perspective on the key issues in the area of cybersafety and security. The project is carried out in partnership with the Ministry of Education of Malaysia and DiGi, and serves SDGs 9, 11, 16 and 17.

In Ukraine, the A.S. Popov Odessa National Academy of Telecommunications has developed a Multimedia distance-learning course on the safe use of Internet resources. This project is being implemented in partnership with the International Telecommunication Union (ITU), as part of the CIS (Commonwealth of Independent States) Regional Initiative on “Creating a child online protection centre for the CIS region”, adopted at the World Telecommunication Development Conference (Dubai, 2014) (WTDC-14). The multimedia distance-learning course is divided into three parts: Basic (for pre-school and junior schoolchildren); Intermediate (for children in classes 5 to 9); and Advanced (for senior pupils, students, parents and teachers). Each course is based on thematic modules, with tests after each module. In 2016, more than 19 000 users worldwide had used course materials and around 9 000 certificates were issued. The project aims to ensure quality education and promote learning opportunities for the CIS region (SDG 4).

Launched by the Telecommunication Regulatory Authority of the United Arab Emirates, in partnership with the Al-Ameen Service, the Cyberblackmail Campaign seeks to educate users in the UAE about the risks and potential consequences of careless Internet use, and raise their awareness of the need for caution when sharing data on the web, especially with the remarkable growth and development of cyberspace made possible by modern technologies—an online space where unscrupulous users can take advantage of other people in order to harm them, violate their privacy and use their personal data and pictures to obtain illegal financial gain. As they help to build security in the use of ICTs, the campaign’s goals reflect SDGs 5, 11, 16 and 17 by addressing gender equality, promoting a peaceful society and encouraging the global partnership for sustainable development.
Action Line C6. Enabling environment

The United Nations Development Programme (UNDP) is the lead facilitator for Action line C6, while ITU, United Nations regional commissions, the United Nations Conference on Trade and Development (UNCTAD), the United Nations Department of Economic and Social Affairs (UNDESA), the United Nations Industrial Development Organization (UNIDO) and the Association for Progressive Communications (APC) are co-facilitators.

Governments should foster a supportive, transparent, pro-competitive and predictable policy, legal and regulatory framework that provides the appropriate incentives to investment and community development in the information society.

Governments are invited to facilitate the establishment of national and regional Internet exchange centres; manage or supervise, as appropriate, their respective country code top-level domain name (ccTLD); and promote awareness of the Internet.

Organized by ITU, in collaboration with the Gabonese Autorité de Régulation des Communications Electroniques et des Postes (ARCEP), under the patronage of His Excellency Mr Ali Bongo Ondimba, President of the Republic of Gabon, the 15th Global Symposium for Regulators was held in Libreville, Gabon, from 9 to 11 June 2015. Under its central theme of "Mind the Digital Gap: Regulatory incentives to achieve digital opportunities", participants explored ways to ensure that all citizens can benefit from the social and economic opportunities brought by the digital economy. For digital opportunities to fully materialize in today's increasingly complex and pervasive environment, an adaptive, consultative and innovative approach to regulation is more than ever required. Regulators, policy-makers, industry leaders and other key ICT stakeholders shared their views, engaged in interactive discussions and identified best practices moving forward.

Initiated by the ITU Telecommunication Development Bureau (BDT) and the Infocomm Development Authority of Singapore (IDA), the inaugural ICT Regulators’ Leadership Retreat, reserved for heads of ICT regulatory authorities, took place in Singapore from 18 to 20 March 2015. The retreat provided heads of ICT regulatory authorities with the opportunity to engage with internationally renowned experts, exchange views and experiences, challenge preconceived ideas from the ICT sector and identify common approaches to respond efficiently to the challenges of regulation in a data-driven connected world. Under the overarching theme “Getting ready for tomorrow: regulation in a data-driven connected world”, the first two days of the retreat provided a global perspective on examining agile and adaptive regulation in a digital ecosystem, and showed how bigger data can mean better decisions. The third day focused on Singapore’s regulatory approach in a connected world. The following topics were addressed: competition in the digital age, the changing rules of the game brought about by the advent of over-the-tops (OTTs), big data for bigger decisions, smart cities and open data, and the role of the regulator today and in preparing for tomorrow.

This action line is crucial to achieving such SDGs as SDGs 2, 4, 5, 8, 9, 10, 11, 16 and 17. Policies and regulations must contribute to reducing barriers to broadband development, facilitating the build-out of national fibre-optic networks and international connectivity links. This, in turn, is fundamental to building resilient and sustainable agriculture and e-agriculture systems (SDG 2). Governments should prioritize the implementation of policies that develop human rights, including gender equality, empowering women for the building of a vibrant and diversified ICT sector (SDGs 5 and 10). Economic growth, decent job creation, employment, innovation and industrialization and the building of human settlements are impossible without clear, predictable and stable government regulations and ICT regulatory policies (SDGs 8, 9 and 11). Evidently, Action line C6 may contribute to SDG 16 as it ensures public access to information and protects fundamental freedoms, with broadband – especially mobile broadband – enabling citizens to access any content anytime and anywhere. Moreover, participatory and representative decision-making may be ensured by the use of various platforms, which will
develop a common understanding, setting up vision, strategy and multiple collaboration mechanisms to further dialogue with industry, consumers and other stakeholders. Enabling ICT regulatory policies also provides the framework for international cooperation towards a harmonized and coordinated approach to oversee the evolution of the information society (SDG 17).

In Egypt, the Ministry of Communications and Information Technology has launched Egypt’s National Programme for ICT Accessibility in Education for Persons with Disabilities, which is being implemented in partnership with a number of stakeholders: Ministry of Education; Global Initiative for Inclusive ICTs; UNICEF; Cisco; Misr Elkheir Foundation; Vodafone Foundation; and Daesen, and is of relevance to SDGs 1, 4, 8, 10, 11 and 16.

This is the first national programme to utilize ICT to facilitate access to and enhance the quality of education for persons with disabilities. It started with formulation of the country’s Policy for ICT Accessibility in Education. To put this policy into action, the main pillars for the work were identified, namely: technological accessibility of schools; teacher training; development of assistive technologies (AT) for education; and promoting access to leaning materials. The programme has benefited 765 schools and 5,500 teachers and supported the development of 12 ATs.

In Hong Kong, China, the Hong Kong Federation of E-Commerce has launched the Hong Kong Trust Mark, in partnership with the “Belt and Road” E-commerce Strategic Alliance, including: China Guangdong Electronic Commerce Association (GDECA); Russian Association of Internet Trade Companies (AITC); Ecommerce Foundation by Ecommerce Europe; Thailand eCommerce Association (Thai ECA); Ecommerce Association of India (ECAI); Dubai Chamber of Commerce and Industry (DCCI); Digital Commerce Association of Philippines (DCOM); and World Trust Alliance (WTA).

Hong Kong’s retail industry offers a wide variety of International goods and services, and is well known to customers worldwide. The launch of the Hong Kong Trust Mark aims stop people buying from problem online shops, and thereby foster better development of the global e-commerce market. The Hong Kong Federation of E-Commerce (HKFEC) will base itself on the associated Code of Practice to review each application for approval and grant permission to use of the "Hong Kong Trust Mark". Authorized users would then be allowed to post the electronic logo of the "Hong Kong Trust Mark" issued by HKFEC on their website with a link to a given webpage. Online consumers and the general public can click on the "Hong Kong Trust Mark" logo on an approved website to review the detail and status of that particular site. HKFEC will ensure that all members granted the Trust Mark follow the Code of Practice and guarantee never to sell any fake product or publish a misleading service description on their website, thus making it easy for consumers to distinguish between good and honest online merchants and others through the Trust Mark.

The trust mark initiative is consistent with SDGs 8, 10, 11 and 17.
In Indonesia, the Centre for Innovation Policy and Governance (CIPG) has initiated the project From Smart City to Open City: The case of Jakarta Smart City, carried out in collaboration with Open Data Labs Jakarta and funded by the Web Foundation. The project highlights issues related to open data and public participation, using Jakarta Smart City as a case study. The research suggests that although the smart city programme has succeeded in providing public reporting tools, it has yet to attain the notion of open city. The project relates to SDGs 11 and 16.

Elaborated by the Department of Child Development, Women’s Development and Social Welfare, the Trackchild 2.0 project is the National Tracking System for Missing and Vulnerable Children in India. It provides an integrated virtual space for 17,100 police stations, 5,500 childcare institutions, citizens and various national law-enforcement and ICPS (Integrated Child Protection Scheme) bodies. It also provides a networking system among all the stakeholders and citizens to facilitate tracking of a child in distress. The portal maintains a nationwide database of missing and found children who are covered by various services under the ICPS and Juvenile Justice (Care and Protection of Children) Act. The portal facilitates data entry and the matching of missing and found children, as well as follow-up of the progress of children who are beneficiaries of the ICPS scheme. The software provides facilities for the mapping of vulnerable locations, i.e. those which have a large number of children reported missing, so that corrective action can be taken in those areas.

The project supports SDGs 3, 4, 5, 11 and 16, in addressing healthy life, quality education, stronger child protection and promotion of peaceful societies.

In Kazakhstan, Assel Nurmukhanova has created the Informatization Service Model, in partnership with the Ministry of Information and Communication of the Republic of Kazakhstan and National Information Technologies JSC.

On 24 November 2015, the President of the Republic of Kazakhstan signed a new Law on Informatization, embracing a new model, the Informatization Service Model for the government sector, which is based
on use of an architectural approach for the automatization of government functions. The main principle of the service model is transition from Capex to Opex, whereby the government does not own ICT and build its own ICT infrastructure and information systems, but instead consumes services. This will result in:

- a decrease in the annual cost for the budget, by replacing ownership with purchase of services;
- a new informatization model, in which government will receive ICT as a service;
- private-sector investment in ICT infrastructure, provided that there is long-term security of demand;
- an agile approach, enabling government functions to be automated in short time-frame (6 to 12 months) as against 3 to 3.5 years at present for the establishment of ICT projects under the traditional model.

The informatization service model is applicable to SDGs 8 and 9.

In Kazakhstan, The Supreme Court of the Republic of Kazakhstan has set up the Judicial Office, aligning with SDG 9. The objectives of the Judicial Office are to provide access to justice for the general public, increase public confidence in the judicial system, and ensure that citizens have access to the electronic services of the judiciary through a single window. The Judicial Office electronic information service is an Internet resource of the Supreme Court of the Republic of Kazakhstan designed to simplify proceedings through electronic interaction and make the justice system more efficient, accessible and transparent.

In Kyrgyzstan, the Kyrgyz Software Developers and Services Association has initiated the development of a Special ICT programme for people with disabilities, in partnership with the Ministry of Education of the Kyrgyz Republic, Vocational Lyceum #98, the Primary and Secondary Vocational Education Agency, and NGOs, including associations and communities working with the disabled. According to official statistics, there are 28,200 children under 18 with disabilities in Kyrgyzstan, and only 28 percent of them are provided with educational services. Persons with disabilities have less access to education, medical services or information technologies. In this context, the special programme aims to take the initiative to develop methodological training plans for people with special needs, in particular visually impaired students. This experience has long been practised and
showed stable results in Western countries. Persons with disabilities can acquire a good profession with a proper salary, and thus not be at a disadvantage in relation to others in social and financial terms. The project serves SDGs 4, 8, 10, 16 and 17.

In **Mexico**, the *Open Contracting Data Standard* has been created under the National Digital Strategy, in partnership with the Open Contracting Partnership (OCP), World Bank (WB), National Institute for Transparency, Access to Information and Personal Data Protection (INAI), Ministry of Public Administration (SFP) and the civil society organization Transparencia Mexicana (TM), and in support of SDG 16.

In 2016, Mexico passed a constitutional reform to create the National Anticorruption System, reforming the Mexican legal framework and making a crucial change to promote concrete policy delivery and active collaboration with civil society through the use of digital technologies and open data. Because of this, Mexico is at the forefront of innovation around open contracting, as one of the first implementers of the Open Contracting Data Standard in mega-infrastructure projects, making open contracting a requirement for all federal procurement, and committing to lead open contracting globally as a founding member of the Contracting 5 (C5) initiative.

Elaborated by the Federal Institute of Telecommunications (IFT), the *Soy Usuario* (I am a User) system in **Mexico** is an electronic tool that supports the conciliation process between the user and the provider of a telecommunication service following a failure in that service or when a user’s right is violated. It enables the telecommunication services regulator and consumer protection agency to monitor conciliation proceedings and advise users as to their rights. It is easy to use and has accessibility features for people with visual disabilities. It also generates reliable information about the service status of each company, enabling IFT to detect generalized service failures and recurrent abusive practices, thus constituting a timely monitoring and verification tool and allowing for the imposition of sanctions, where appropriate.

“I am a User” aims to encourage the user challenges under their service provider conciliation process, without the intervention of authority. The system allows both the regulator of telecommunication services, the Federal Telecommunications Institute (IFT), as the agency responsible for the protection of consumer, and the Federal Consumer Protection Bureau (PROFECO), to advise users and monitor the process in order to prevent any transgression of user rights. “I am a User” is an unprecedented Mexican electronic tool, which provides a space where users, suppliers and authorities coexist in order to streamline the process of handling deficiencies in telecommunication services or violations of the rights of telecommunication service users. As such, it contributes to SDGs 9 and 16.
In Qatar, the Ministry of Transport and Communications has initiated the Government Data Exchange (GDX), in partnership with Malomatia. Data exchange is vital to the QDG 2020 strategic objectives, which focus on better serving individuals and businesses as well as creating efficiency in government administration (SDGs 3 and 8). The GDX platform has been developed with the necessary components for data and information sharing within and across government entities, so as to improve government efficiency and collaboration and thereby deliver customer-centric end-to-end digital services.

Recognizing that legal and regulatory structures are a critical component and enabler for the ICT environment, the Government of Trinidad and Tobago has included the following ICT-related legislation and policies in the legislative agenda put forward by the Ministry of Public Administration:

- **Electronic Transactions Act 2011**
  The Electronic Transactions Act is a key enabling framework necessary to support e-commerce in Trinidad and Tobago, and seeks to create a clear and predictable legal environment that can be trusted by citizens, institutions and businesses. In facilitating e-commerce, the Act provides for the legal recognition of electronic documents, electronic records and electronic signatures. It also aims to establish uniformity of rules and standards regarding the authentication and integrity of electronic records, and to promote public confidence in the integrity and reliability of electronic records and transactions conducted in an electronic environment. To date, the following parts of the legislation are yet to be proclaimed:
    - Part V: Electronic Authentication Providers
    - Part VI: Intermediaries and Telecommunication Service Providers
    - Part VIII: Consumer Protections
    - Part IX: Contravention and Enforcement
    - Part X: Miscellaneous.
  The full proclamation of the Act and the preparation of regulations are being pursued. In this regard, The National Technical Advisory Committee on Electronic Transactions (NTAC) completed a National Policy Review in 2015.

- **E-Payments: Exchequer and Audit (Electronic Funds Transfer) Regulations**
  The Exchequer and Audit Act was amended in 2014 to provide for e-payments within government. The Regulations outline the general rules for electronic funds transfer and were laid down in parliament in May 2015. (It should be noted that the Exchequer and Audit Act is not under the purview of the Ministry of Public Administration but rather under the jurisdiction of the Ministry of Finance.)

- **Data Protection Act 2011**
The Data Protection Act was approved on 22 June, 2011, and has partially entered into force via Legal Notice No. 2 of 2012. The Act provides for the protection of a person’s right to privacy, and establishes affirmative responsibility, in both the public and private sectors, with respect to the security of personal information collected, stored and processed in the course of business operations. It applies to all individuals and organizations that handle, store or process personal information. To date, the following parts of the legislation are yet to be proclaimed:

- Part II: Office of the Information Commissioner (to facilitate the enforcement of the Act)
- Part III: Protection of Personal Data by Public Bodies
- Part IV: Protection of Personal Data by the Private Sector
- Part V: Contravention of Enforcement.

In this context, the Government of Trinidad and Tobago worked with the Commonwealth Cybercrime Initiative and the International Telecommunication Union (ITU) in 2015 to develop the Draft National Polices on Data Disposal and Data Classification. In accordance with international best practice, the elaboration of the policy and standards is being pursued in four phases, as follows:

- Phase 1 - Current State and Readiness Assessment to be conducted for ministries and agencies, including a review of existing legislation, frameworks and national ICT plans (completed).
- Phase 2 - Stakeholder Needs Assessment (completed)
- Phase 3 - Design of a National Data Classification Policy, Data Classification Strategy and Data Classification Guidelines (ongoing)
- Phase 4 – Dissemination of Policy and Stakeholder Consultation (not yet commenced).

**Telecommunication Amendment Bill**

The Telecommunication Act, Chapter 47:31, has been in effect since 2001. Several amendments have been made to deal with spectrum, quality of service, universal service, pricing and obligations. These amendments are intended to strengthen the framework established under the Act and to address competition issues.

**Telecommunication Consumer Quality of Service) Regulations 2015**

These regulations seek to provide the general overarching framework to safeguard the interests of consumers in the telecommunication and broadcasting sectors and ensure that consumers have the right to the following:

- Access to essential telecommunication and broadcasting services
- Access to the information required to make informed consumption decisions
- Personal privacy which is respected and protected
- Minimum standards for consumer-related service quality
- Protection from unfair and anti-competitive business practices
- Effective and efficient complaint recognition, handling and resolution
- Information which creates an awareness of relevant consumer obligations.

The regulations have been submitted to the Minister of Public Administration for approval and promulgation through negative resolution of parliament in accordance with Section 78 of the Telecommunication Act.

**Universal Service Regulations**

Draft Universal Service Regulations were completed in July 2013, and subsequently revised in October 2013 following stakeholder consultations. After review by the Legislation Revision Commission (LRC)
and completion of the administrative groundwork, a Universal Service Committee (USC) was established in 2015 and the Telecommunication (Universal Service) Regulations 2015 came into effect via Legal Notice No. 63 of 2015.

- **Other**

Work is under way, and pending approval by the minister with responsibility for telecommunications, on the following pieces of legislation:

- Draft Telecommunication Regulations (Fees) (Amendment);
- Telecommunication Regulations (Interconnection) (Amendment);
- Telecommunication Regulations (Access to Facilities) (Amendment);
- Telecommunication Regulations (Radio Spectrum Management); and
- Telecommunication Regulations (Authorization).

All the above legislative and policy actions help to support the attainment of **SDGs 8, 9, 10 and 16**.

In **Turkey**, the Ministry of Justice of Turkey has launched the *Program for the Calculation of Workers’ Claims*, in line with **SDGs 9** and **16**. Thousands of lawsuits are filed each year in the Labour Courts for receivables and indemnity claims arising from the relationship between employer and employee. These cases generally relate to workers’ rights and claims, and depending on the scope of the case the trial process can take a long time. The process entails the preparation of expert reports by different professional experts, in view of the diversity of the sectors in which claimants may work and of the receivables and amounts claimed. Objections to these reports are of great importance. Expert examination of such objections can only be carried out in central courts located in the largest provinces. This increases the duration of the judicial process excessively, as well as adding to the workload of the central courts. To overcome these problems and speed up the judiciary, the Ministry of Justice has developed a program for the calculation of workers’ claims, which every Court Judge can employ to obtain results in minutes. The system has yielded considerable savings in terms of the cost and duration of the judgment process.
Action Line C7. ICT applications: Benefits in all aspects of life

ICT applications can support sustainable development in different sectors such as public administration, business, education and training, health, employment, environment, agriculture and science within the framework of national strategies. This chapter illustrates how ICT applications can maximize social and economic benefits for society.

C7.1 E-government

The United Nations Department of Economic and Social Affairs (UNDESA) is the main facilitator for e-government, while the United Nations Development Programme (UNDP) and the International Telecommunication Union (ITU) are co-facilitators. One of the main instruments for monitoring implementation of this action line at the global level is the United Nations E-Government Survey, which draws a systematic assessment of the use and potential of ICTs to transform the public sector by enhancing its efficiency, effectiveness, transparency and accountability, as well as access to public services and citizen participation. By studying broad patterns of e-government around the world, the survey assesses the e-government development status of the 193 United Nations Member States. It serves as a tool for decision-makers to identify their areas of strength and challenges in the field of e-government in order to inform policies and strategies.

E-government aims to implement e-government strategies focusing on applications aimed at innovating and promoting transparency in public administrations and democratic processes, improving efficiency, and strengthening relations with citizens. It develops national e-government initiatives and services at all levels, adapted to the needs of citizens and business, in order to achieve a more efficient allocation of resources and public goods. It also supports international cooperation initiatives in the field of e-government, in order to enhance transparency, accountability and efficiency at all levels of government.

An important aspect of this approach is broadening the scope of e-government, fully embracing the citizen engagement component, thus enabling government to play a transformative role towards cohesive, coordinated and integrated processes and institutions through which such sustainable development takes place.

This action line also contributes to such SDGs as SDGs 9, 16 and 17. E-government expansion may be a driver of demand for ICTs, as well as provider of affordable access, promoting effective and efficient public service delivery to all people. Also, reliable and affordable connections to the Internet worldwide can facilitate access to financial services, mobile finance, insurance and market information (SDG 9). ICTs represent a key driver and enabler of enhanced efficiency, effectiveness and transparency in public service delivery. Thus, e-government also contributes to expanding participation in decision-making and addressing digital divides, thanks to various forms of ICT-enabled information sharing and consultation within the global community (SDGs 16 and 17).

In Algeria, the National Social Insurance Fund (CNAS) has launched the El Hanaa space/account (El Hanaa means “serenity” in Arabic). El Hanaa is a service for socially insured persons, in two forms: as an accessible web portal (https://elhanaa.cnas.dz), and as an application for Android smartphones, allowing them to access a private account in order to track the benefits in kind and in cash paid by the National Social Insurance Fund. As such, it contributes to SDG 3.

In Albania, the National Agency for the Information Society (NAIS) has created the e-albania.al multifunctional government portal. NAIS is an Albanian public institution, reporting to the Council of Ministers. The agency is headed by Ms Mirlinda Karkancaj, a prominent expert and mentor in ICT. The
The core of NAIS’s activity consists in providing centralized online services through ICT. The e-Albania portal is a prime example of the excellent work the agency carries out, providing communication between state institutions and Albanian citizens. From 2013, dozens of projects implemented by NAIS in relation to e-services have helped expand e-Albania and continuously improve it, thereby raising Albania to another level of achievement in the ICT field, and furthering the objectives of SDGs 9, 16 and 17.

In Albania, the Ministry of Innovation and Public Administration (MIPA) has created the MIPA Albania National Geoportal, in partnership with the National Authority for Geospatial Information (ASIG), Kartverket Norway, and all public bodies that feed the geoportal with data.

Geodesy, mapping and preparation of geographic information in digital form in Albania is distributed among several agencies, and access to up-to-date geographic information has been very limited. To address this issue, in 2013 the Government of Albania established the National Authority for Geospatial Information (ASIG). The primary goal of ASIG is to create a permanent National Infrastructure of Spatial Data (NSDI), in line with spatial data infrastructure in the European Union, by establishing mechanisms of cooperation with other institutions and organizations involved and responsible for gathering, maintaining and distributing geospatial information, as well as monitoring and adjusting work to the demands of primary users, groups and citizens.

The overall goal of the National Geoportal, which serves SDGs 9, 16 and 17, is to ensure better service delivery to users of improved public access to geographic information, as outlined in the e-govern ment plan for Albania.

In Azerbaijan, the Ministry of Labour and Social Protection of the Population of the Republic of Azerbaijan has launched the Electronic information system for the registration of targeted state social
In accordance with the Decree of the President of the Republic of Azerbaijan on “Improvement of the targeted state social aid system” dated 23 February, 2015, and the “Rules governing applications, assignment, payment and refusal in respect of targeted state social aid”, approved by the Cabinet of Ministers on 5 February 2016, a Unified Subsystem of Electronic Applications and Assignments was set up, to make it easier for citizens to apply for targeted state social aid and cut down on negative cases. Citizens seeking targeted state social aid can now do so through the e-government portal, based on the application submitted by a Notary’s office. Improved delivery of state aid supports good health and well-being (SDG 3).

In Azerbaijan, ASAN Visa has created the Electronic visa portal of the Republic of Azerbaijan, in partnership with the Ministry of Foreign Affairs. ASAN Visa is a brand-new system enabling foreigners of 81 nationalities and stateless persons to apply for and obtain e-visas for travel to Azerbaijan. The system was established on the basis of a presidential decree issued in June 2016, and six months later the system started to accept e-visa applications. Up to know thousands of persons have applied for and obtained their visas. The idea of ASAN Visa is “easy to apply, easy to get”. The whole process is done online. There is no need to go to an embassy or consulate, make an appointment, collect documents or hand in your passport. It only takes three working days to obtain an e-visa. The project supports SDG 17.

In Bangladesh, the Access to Information (a2i) programme has set up Nothi: the Paperless Office. In government offices of Bangladesh, paper-based file management and archiving follow an outdated method, which is stigmatized as lacking transparency and accountability, being slothful and providing an inadequate communication channel for citizens. Acting from the Prime Minister’s Office and supported by the Cabinet Division – the apex of the bureaucracy – a2i has developed a robust e-file system, called “Nothi” (www.nothi.gov.bd), that allows quick decision-making and service delivery. Since the roll-out of the system, which now covers more than 5 000 offices from sub-district to ministry level, there has been a significant improvement in the level of transparency and convenience for citizens in offices that have implemented the system. By strengthening government institutions, Nothi contributes to attaining SDG 16.
In **Bangladesh**, the Access to Information (a2i) programme, under the Prime Minister’s Office, has developed the **Web-based Environmental Clearance Certificate** (ECC) application system for the Department of Environment (DoE), in partnership with that department under the Ministry of Environment and Forests.

DoE, which is the single most important agency mandated to preserve and protect the environment, faces the challenge of reluctance on the part of businesses to apply for environmental clearance certificates (ECC) due to the cumbersome and time-consuming application process. By developing an innovation supported by the Service Innovation Fund (SIF), it has re-engineered the ECC application system to make it more transparent, accessible, accountable and user-friendly, resulting in 200 per cent increase in applications and a 20, 57 and 33% decrease in time, cost and visits, respectively, within seven months of its launch, doubling its revenue and demonstrating visible progress on **SDGs 9** and **13**.

In **Colombia**, The Agencia Nacional del Espectro (National Spectrum Agency) (ANE) is the entity responsible for planning, allocation, monitoring and control of the radio spectrum in Colombia, providing technical advice for efficient spectrum management and promoting knowledge about the spectrum. ANE has created the **Web-based Open National System for Monitoring of Electromagnetic Fields** – a tool whereby citizens can consult, in real time, the results of the geo-referenced measurements of the EMF levels generated by telecommunication antennas collected by ANE’s network of sensors, in the interests of alleviating the fears generated by the belief that such emissions could be harmful to health.

Besides contributing to the safety of cities, the project seeks to ensure healthy lives, build resilient infrastructure and foster innovation (**SDGs 3, 9 and 11**).
In Colombia, the Master Key website is the main initiative for consolidating information relating to beneficiaries belonging to what the Colombian Government refers to as the “inclusion and reconciliation sector”. It enables government institutions to compile and consult the coverage history of each beneficiary and his/her family members. It also permits data analysis in order to create new coverage initiatives for unattended needs within the poor, extremely poor and vulnerable populations in Colombia. Master Key facilitates the implementation of a social public policy that requires the identification of populations in need, and the creation of programmes based on those needs, prior to authorizing the spending of public resources.

The website addresses ending poverty, food security, gender equality and reducing inequality within the country (SDGs 1, 2, 5 and 10).

In Cyprus, the Department of Information Technology Services (DITS) in the Ministry of Finance has created the Cyprus Government Data Warehouse (GDW). The data warehouse contains selective transactions and inter-related information from various government information systems, specifically structured for dynamic queries and analytics. The data can be further analysed, thus providing government executives with a global view of civil service operations and the capability to effectively monitor trends in relation to various matters, draw useful conclusions and take quick decisions, based on accurate and reliable information.
The project, which is aligned with SDG 11, was carried out in partnership with IBM Italia S.P.A (Cyprus Branch); and, for the execution of the project, IBM partnered with NCR Cyprus, Datatech and Predicta. DITs also cooperated with relevant stakeholders from various government organizations (Tax Department, Department of Lands and Surveys, Social Insurance Services, Customs, Grants and Benefits Service, Treasury, Civil Registry and Migration Department, Department of Registrar of Companies and Official Receiver, Statistical Service, Road Transport Department, Social Welfare Services, Cyprus Police, Department of Labour, Statistical Service of Cyprus, Office for the Commissioner of Personal Character Data Protection).

The Government of Estonia has introduced e-Residency. The Republic of Estonia is the first country to offer e-Residency — a transnational digital identity available to anyone in the world interested in administering a location-independent business online. Additionally, e-Residency supports secure and convenient digital services that facilitate credibility and trust online. The e-Residents receive a smart ID card which provides the ability to:

- Digitally sign documents and contracts
- Establish an Estonian company online
- Administer the company from anywhere in the world
- Conduct remote money transfers
- Access online payment service providers.

The e-Residency scheme offers every world citizen the opportunity to obtain a government-issued digital identity and run a trusted company online.

The partners involved in the project are the Government of Estonia; Ministry of the Interior and its IT and Development Centre; Police and Border Guard Board; Ministry of Justice; Ministry of Foreign Affairs and Estonian embassies and consulates worldwide; Ministry of Finance; Information System Authority; Office of the President of the Republic of Estonia; Government Office of the Republic of Estonia; Ministry of Economic Affairs and Communications; and Enterprise Estonia (Estonia’s investment agency). The project relates to SDGs 8, 9 and 16.

Germany’s International Cooperation Agency (Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH) (GIZ) has created the Trade Route Incident Mapping System (TRIMS), a tool to tackle corruption in the public sector, specifically among security agencies and other public sector actors involved in road management in Nigeria. It allows traders and transporters of goods (target group) to anonymously report bribes, harassments and delays faced at mostly illegal checkpoints while transporting legitimate goods. The system uses SMS, a mobile app and a website to illustrate the problems faced by traders in a structured way. Aside from quantitative data, qualitative data such as interviews with traders and security agencies have been collated. TRIMS uses media such as radio and so-called “market storms” to involve both traders and security agencies and to create broad awareness of the problems. In this way, the project contributes to the economic growth of the country (SDG 8).
In Indonesia, Sinergantara Indonesia, in partnership with Making All Voices Count (MAVC) and the local governments of Bojonegoro Regency and Pekalongan Regency, has launched Game My Village: Innovation for Strengthening Participatory Planning and Public Monitoring in Village Development. Game My Village (GMV) is an initiative to apply ICT in order to help improve the quality of village development planning and village development implementation monitoring processes, and the participation of citizens therein. In this context, GMV’s role is to provide data for village development, help village development actors constitute more participatory forums, and promote planning development that is based on accurate data. GMV’s tools and approach have been supporting data revolution implementation in Bojonegoro District, which is one of the international-level pilot project areas of the Open Government Partnership in 2017. The project is in line with SDGs 1, 10 and 11.

In India, the National Informatics Centre (NIC) has launched MARREG (Marriage Registration - Registration for Empowerment), in partnership with the Judicial Department and the Government of West Bengal. The Government of West Bengal’s MARREG portal is ready for public use. An approach to implement and establish good governance has propelled this proposed computerization programme by the Judicial Department and the O/o Registrar General of Marriages, with the support of the Government of West Bengal. The portal, designed and developed by NIC, is a huge step forward in the digital world, bringing public services closer to citizens’ doorsteps. This is in line with the Government of West Bengal’s strategic approach to implement e-governance in this sector in order to enable and support flexible, responsive and innovative public service.

Being a G2C service, the portal seeks the most suitable way to satisfy all stakeholders, keeping uppermost in mind ease of use (user-friendliness). The most critical aspects of a successful e-governance strategy are re-engineering and changing an “as is” mindset so as to build a “to be” process. Such a change, especially as broad-based as in a government-wide initiative, was effected in order to computerize current processes, and procedures were attuned to suit the new environment. This approach should result in improved efficiency and increased productivity. Key features of MARREG, which supports SDG 5, include:

- Creating a database of registered marriages
- Allowing citizens to view and benefit from it
- Allowing online printing of certificates (at a later stage)
• Revenue reconciliation
• Shortening the time required to obtain a certificate
• Preventing tampering of records during transit
• Data on volume of marriages registered.

In Kazakhstan, National Information Technologies JSC has launched Open Government of the Republic of Kazakhstan, in partnership with the Ministry of Information and Communications of the Republic of Kazakhstan, and in line with SDGs 3, 4, 8, 9 and 11.

Development of transparent and accountable government is one of the five key priorities of institutional reforms determined by the Head of State. Government agency “openness” was defined by the President of the Republic of Kazakhstan in a “100 Specific Steps” national plan. Kazakhstan is embracing the concept of transparency by implementing the Open Government project, which was launched in 2013. The project’s objective is to implement the principles of transparency and accessibility, introduce the possibility of re-using data generated by government and quasi-government organizations, and empower citizens. This project enables citizens to be aware of key and socially-important areas of government activities and take an active part in the decision-making process.

In Kazakhstan, the Electronic Government of the Republic of Kazakhstan website is a single mechanism for government interaction between citizens and government agencies enabling coordination through information technologies. This mechanism has made it possible to reduce queues in government agencies, facilitating and speeding up the process of obtaining abstracts, certificates, licensing documents, etc. The e-Gov portal provides detailed information about public services. As many as 200 services have been automated on the portal in various fields, such as healthcare, social welfare, employment and employment assistance, and documentation of the population. The project is implemented by the Ministry of Information and Communications, and promotes SDGs 3, 4, 8, 9 and 11.
In Kuwait, the Office of the Minister the State for National Assembly Affairs (MoNA) has launched the **Parliamentary Gate**, an open source of data related to everything regarding parliamentary affairs in Kuwait. This project embodies democratic principles, by informing citizens on what is happening in the National Assembly, including discussions and the resulting laws and regulations, thus affording transparency and credibility, and strengthening institutions (**SDG 16**). The gate is considered as the historical legacy of parliamentary life in the State of Kuwait, since it includes everything about Kuwait’s parliamentary activity from the beginning to the present day. It surpasses any other system or specialized site by virtue of its data content, and there is no system, application or website that deals with parliamentary affairs as effectively. The gate enables people to follow parliamentary matters, and has become a highly reliable source for other state ministries, and regular meetings have been held between MoNA and officers of parliamentary affairs in other ministries to discuss and display the latest services provided via the gate and to facilitate their work. The gate has been authorized by the Central Agency for Information Technology to be one of the applications displayed on the homepage of the official State site. In addition, another service has been added on the gate’s website, namely questions arising from the data on the Parliamentary Gate.

In Kuwait, Kuwait **Government Online** (KGO) is a government portal providing web-based, easy-to-use, mobile-enabled, one-stop, multi-language, single entry-point, user-centric Kuwaiti government information and e-services. Available 24/7, KGO is the gateway and first point of visit for citizens (G2C), businesses (G2B) and visitors wishing to find information and e-services provided by the Government of Kuwait. Multiple access channels are established via the web, mobile and other ICT tools to ensure that KGO portal users can benefit from information and services. To maintain the highest usability, performance and security rates, developers designed KGO according to international technical standards.

The portal was set up in partnership with a Steering Committee consisting of representatives from several government agencies (e.g. Central Agency for Information Technology; Kuwait Institute for Science Research; Kuwait University; Ministry of the Interior; Civil Service Commission), and with private-sector contribution for its design and implementation. It will help in achieving the objectives of **SDG 8**.
In Kuwait, the Public Authority for Civil Information (PACI) has created the **Kuwait Finder**, launched as part of its GIS programme. Kuwait Finder was released to equip Kuwaiti society with a localized GIS-based search engine, supporting address search up to individual apartment level, and by establishment name and business type. The Kuwait Finder application was developed by PACI to serve users’ needs, with the following functions:

- Search using PACI electronic number for building, apartment, etc.
- Search using area name, block number, street name or house number
- Search for points of interest like hospital, shop or mall, etc.
- Quick search through shortcuts for various different categories of entities such as shopping centres, schools or other activities and crafts
- Turn-by-turn voice navigation and guidance in Arabic and English
- Saving favorite places
- Information on social activities and their locations
- Both vector and satellite map display
- Sharing locations via Facebook, Twitter or e-mail.

The project is carried out in partnership with the Openware Information Systems Consulting company (Openware) and HERE maps, and serves **SDG 11**.

In Kuwait, the Ministry of Finance (MoF) has initiated the **Tasdeed** project. Tasdeed is an oriented service that has been designed in collaboration between MoF, the Kuwait Government Online Portal (CAIT) and a third party from the private sector (KNET). It is a tool to facilitate the collection of debts owed to the government by individuals/customers (Kuwaiti citizens, residents, corporations). The project is in line with **SDG 8**.

In Latvia, the Register of Enterprises of the Republic of Latvia (LRUR) has initiated the **Commercial Pledge** e-service, developed by Exigen Services Latvia. This e-service allows users to pledge movable property – capital shares, vehicles, trademarks, equipment and other registered property – without transferring it into the possession of the pledge holder, by simply registering a lien in the appropriate register. Business owners use the system to receive loans for the development of their companies.
The Commercial Pledge e-service was developed in order to enable any individual to enter commercial pledge application data in the Commercial Pledge Register held by LRUR. The solution elaborated under the project enables authenticated users not only to submit commercial pledge applications to LRUR electronically, but also to submit electronically signed documents, pay a fee or specify payment data, and receive answers signifying the decision. A new website (https://komerckila.ur.gov.lv/) was designed in line with the latest technology (SDG 9). The main benefit of the introduction of such a solution is that it simplifies the process of submission of applications from the customer’s point of view. Moreover, state notaries are no longer obliged to rewrite the text in electronically readable form, which enhances the overall quality of LRUR.

The Special Support for the Rural Development Programme project in Latvia includes several services to enhance and maintain the country’s common information system for rural support, including, primarily, collaboration with customers (i.e. farmers, rural entrepreneurs); administration of investment projects; reduced bureaucracy and increased speed, effectiveness and quality of processed applications for rural investments; transparency of investment distributions; task management system for employees of the support service; reporting and statistics for the Ministry of Agriculture and Council of the European Union.

The main goal of the project (information system) is to provide a quick, traceable, justified and collaborative service for investments between government institutions and farmers and rural entrepreneurs. Thus, the project relates to such issues as poverty, inequality, and revitalizing the global partnership for sustainable development (SDGs 1, 10 and 17).

The Latvia State Radio and Television Centre (LVRTC) was the first company in the European Union to launch Qualified Cloud Signing (QCS) services for its citizens in 2011.

Virtual e-signature does not require a smartcard or other type of user hardware apart from a computer to produce a legally binding document valid for any institution in Latvia. To use virtual e-signature, a person logs into the website (http://www.eparaksts.lv/) where they can perform document signing, document verification, sharing of documents to be signed by multiple parties, as well as bulk signing. The website provides information (date, time and country) regarding the last time the user used the secure electronic signature. This functionality enables users to trace and monitor usage of all e-signature carriers. According to law, the timestamp must be used along with e-signature in communications with state or local government institutions. The timestamp records electronically, and thus provides proof of, the time at which a document is signed. When the virtual e-signature is used, the timestamp is always added to the document.

Secure electronic signature is currently available to Latvian residents by three different methods: e-ID card, smartcard issued by LVRTC, and virtual e-signature. More than 20 per cent of all e-signature usage in 2015 was performed by virtual e-signature. The extensive application of e-signature is also confirmed by the fact that in 2015 it has been used from 104 countries.

By implementing this programme, a high level of economic productivity is achieved (SDG 8).
In **Mauritius**, the Ministry of Technology, Communication and Innovation, in partnership with the Employment Division of the Ministry of Labour, Industrial Relations and Employment, has set up the *e-Work Permit* system (**SDG 8**). The e-Work Permit Portal will support interactions with companies and external agencies. Applications for work permits, permission in principle, renewal, cancellation, etc. as well as supporting documents in electronic format will be submitted online to the ministry through the e-payment gateway. The back-end consists of the software to process work permit, quota, recruitment licence and certification of exemption applications. It also includes workflow software, document management software and printing services for the Work Permit Card.

In **Mauritius**, the Ministry of Technology, Communication and Innovation, in partnership with the Ministry of Gender Equality, Child Development and Family Welfare (MGECDFW), has created the *Domestic Violence Information System* (DOVIS), a web-based computerized system for the registration of reported cases of domestic violence which will be used as a tool to monitor, assess record and generate specific reports on such cases dealt by the Family Support Bureaux (FSBs) around the island, and as an improved record-keeping system for faster response to queries regarding domestic violence issues. By combating domestic violence, this scheme will significantly advance **SDG 5**.

In **Mauritius**, the Ministry of Technology, Communication and Innovation, in partnership with the National Computer Board (NCB), Central Informatics Bureau (CIB) and Central Information System Division (CISD), has launched a project for the *Promotion of E-Government through E-Services in Mauritius*. To promote e-government, NCB set up the Government Web Portal, which is the main gateway for accessing applications online through the Citizen Portal. This e-services section enables the submission of online applications and online payments, the receipt of online acknowledgements, and the online tracking of status of applications. It represents the main component whereby the citizen may interact with the government anytime, anywhere and in real-time. All online transactions are encrypted and secured. As a further step to foster online citizen-to-government interactions, the number of e-services has evolved from 53 in 2009 to 72 in 2015. The project relates to **SDGs 9**.

In **Mexico**, The Ministry of Communications and Transportation is implementing a digital platform known as *Sigue la Obra Pública e Infraestructura*, the main objective of which is to provide citizens with the capacity to consult information about strategic infrastructure projects. At present, the platform contains information on 223 national projects that are at different stages. This effort involved all areas of the ministry in order to ensure the correct publication and updating of project information by the officials responsible. It serves to provide first-hand information, promote direct interaction between civil servants and citizens, and create mechanisms to improve transparency, accountability and participation. Thus, the project meets various SDG targets, such as promoting peaceful and inclusive societies and ensuring access to information (**SDG 16**).
Under the National Digital Strategy, Mexico has launched MiGobierno. Through RapidPro, an open-source two-way SMS communication platform, government institutions can establish direct and personalized communication with citizens to improve the delivery and quality of public services.

In the first project of its kind, Mexico implemented the solution with pregnant beneficiaries of Prospera, the world’s second largest cash transfer programme, to communicate maternal and infant health messages and foster positive changes in behaviour. The results for users and government have been overwhelmingly positive, and the solution is currently being scaled up to encompass all pregnancies in Mexico, chronic and degenerative diseases, and other projects regarding agriculture, environmental impact and justice procurement.

The project is conducted in partnership with the Office of the President of Mexico; UNICEF; Prospera social inclusion programme; Ministry of Health; Federal Attorney for Environmental Protection (PROFEPA); Office of the General Prosecutor (PGR); Ministry of Agriculture, Rural Development, Fisheries and Food (SAGARPA); Baby Centre; Que Funciona Para el Desarrollo (QFD); Behavioural Insights Team (BIT), and Women’s World Banking (WWB), and relates to SDGs 3, 5 and 17.
In **Myanmar**, Yin Nwe Cho has created the Government Administration Management Solution (GAMS), a cloud-based platform which automates and manages the full range of government office administration, with modules from Human Resources and Document Management to Financial Management, Inventory Control and Management Reporting Systems. GAMS uses stored data to create comprehensive management reports at various levels and transfer them to the relevant authorities responsible for monitoring government structures. The real-time data is used by the government to support decision-making and organize efficient planning for the country’s development. In the user-connection segment of the GAMS platform, the public can view open information on government institutions and track news and updates.

The project, which is relevant to **SDGs 3, 4, 5, 8, 9, 10, 12, 13, 16 and 17**, is carried out in partnership with the Ministry of Transport and Communications; Ministry of Education; Mandalay City Development Centre; National Parliament of Myanmar; Teromac Technologies; DabLab Advertising; Myanmar Computer Federation; Myanmar Computer Industrial Association Yangon; and Myanmar Computer Professional Association.

In **Oman**, the Public Establishment for Industrial Estates has created eProspect. This system, which caters for people seeking new investment prospects, provides a platform accepting online applications to invest in Oman’s industrial estates. The platform immediately registers users online for them to start the process of setting up their business in an industrial estate. Investors are directed to the most suitable area matching their activity, and offered different types of properties depending on their requirements, such as offices or land, and the utilities required for the investment, such as gas, electricity or water. Since the launch in 2013, 1,410 applications have been processed through the system, which is relevant to **SDGs 8 and 9**.
In Oman, Oman Public Prosecution has set up the Judicial Orders System. E-case registration is achieved by integrating the systems of the Omani Public Prosecutor and both the Royal Omani Police (ROP) and the Public Authority for Consumer Protection (PACP) through the Oman government MPLS network. The rationale behind the service was to simplify and expedite the processes of case registration and issuing judicial orders by utilizing the Oman government MPLS network which is managed and operated by the Information Technology Authority (ITA). A simple judicial order that used to take at least 20 minutes to prepare now requires less than 5 minutes. Furthermore, it also reaches the designated ROP officer in few seconds with zero human interaction. This helps to strengthen Omani institutions, in accordance with SDG 16.

In Rwanda, RwandaOnline Platform Limited has launched Irembo, in partnership with the Government of Rwanda and CrimsonLogic. Irembo is an e-government portal which enables access to and provision of government services in Rwanda, built within a PPP framework. In less than two years since its launch (service go-live), today Irembo hosts over 40 e-services pertaining to six different government agencies with more than 90,000 users a month. The services are available online, on USSD and through a network of support agents. With daily awareness-building, Irembo has also set out to harness the existing ecosystem (telcos, infrastructure, human resources, payment gateways, etc.) to increase its number of payment channels, access points and field agents, as well as its overall user rate. The service is designed to improve citizens’ way of life by making government services easier, faster and less costly to access.

Irembo plans to increase the number of e-services accessible to citizens to over 100 by end 2017, and expand its nationwide access points to get even closer to each citizen in the country; to re-engineer government services so as to complement the paperless and cashless economy that our country is striving towards; to expand from product to platform, enabling an innovation ecosystem where Rwanda’s youth can play a big part in the country’s digital transformation. The future is digital, and Irembo intends to continue its journey on this path, thereby also contributing to SDGs 8, 9, 11 and 16.

In the Russian Federation, the Informational Democracy Foundation, in cooperation with the Russian Government, has launched the Russian Public Initiative (RPI), an e-petition platform for the public presentation and balloting of proposals from Russian citizens. Supported proposals are considered after approval of the expert working group with participation of members of the State Duma, the Federation Council and the NGO community. Thus, RPI is an important component of the information-society and e-governance development programmes in Russia. The RPI’s aim is to provide the capability to strengthen democracy by promoting citizens’ participation and engagement in political affairs, to promote greater transparency, and to draw the attention of the authorities to society problems. The platform is relevant to SDGs 8 and 16.

In the Russian Federation, the Ministry of Telecom and Mass Communications of the Russian Federation, in partnership with PJSC Rostelecom, JSC RT Labs, AIS Media and RooX Solutions, has launched the Human-centric User Experience for online public services project, which is relevant to SDGs 9, 16 and 17. The main purpose of the project is to provide access to electronic public and
municipal services for the Russian Federation’s citizens, implemented according to the best Internet-industry standards and user interface design practices.

At the outset of the project in July 2014, the Gosuslugi.ru portal did not comply with the specified requirements in terms of user comfort, popular services were not converted into electronic form, and users enjoyed only very limited functionality for payment and support. Likewise, major inconsistencies were observed between regional portals and agency websites providing public services, portals did not follow any standardized design and navigation principles, and there was no corporate style, and no promotion. All these factors reduced the efficiency of electronic public and municipal services. The objective set in implementing the project was to eliminate these shortcomings and raise public services to a new level of quality and user comfort.

SDGs: 9, 16, 17

In the Russian Federation, the Ministry of Telecom and Mass Communications of the Russian Federation, acting in partnership with the Pension Fund of the Russian Federation and credit organizations, has launched National Online Identification and Personal Data Management for Public and Commercial Services, which is of relevance to SDGs 9, 16 and 17.

In order to increase the availability of financial services for the population and promote financial market competition, it is planned to provide remote electronic identification for citizens via the Internet, thus obviating the need to visit a bank. For this purpose, it is proposed to employ the National Online Identification which is currently being used to provide citizens with e-government services. Before using remote electronic identification, a citizen is required only once to complete a full identification using their passport. After the full identification, the citizen will be assigned log-in and password details for remote electronic identification, which may then be used as a universal log-in and password for any financial organization. SDGs: 9, 16, 17


The e-government infrastructure, which serves SDG 8, is designed to meet the challenges resulting from ever faster changes in the social and economic environment, progress in ICT capabilities, and the growing needs of e-government service users. Its key components include a unified identification and authentication system (UIAS), a cross-departmental interaction system (CDIS) and a common public service portal (CPSP). Through the CPSP, any
user can file an electronic service request and submit documents required for service provision. CDIS is an information-management system enabling federal, regional and local authorities, lending institutions (banks) and other CDIS participants to exchange in electronic form information required for the provision of public services to individuals and organizations.

In the **Russian Federation, the** Cabinet of Ministers of the Republic of Tatarstan has launched the project for **Delivery of state and municipal services in electronic format**. The project has been implemented since 2008 and is aimed at raising the living standards of citizens and improving the business climate. Since 2008, e-government has helped citizens of the Republic of Tatarstan save more than 169 million hours. All state and municipal authorities, more than 12 000 officials, and 1.8 million citizens of the republic have been involved in the process. According to the results for 2016, 83.2 million services have been delivered in electronic format. No fewer than 65.2 per cent of citizens use electronic services. The Republic of Tatarstan is ranked first on this criterion in the Russian Federation.

The project serves **SDGs 3, 4, 8, 9 and 11**, and is carried out in partnership with the federal executive authorities of the Russian Federation; state and municipal authorities of the Republic of Tatarstan; Magistrates’ court (JPs); organizations managing the housing and utility sector; communication providers; kindergartens and schools; Russian Post; ticket agents; charity funds; AK BARS Bank PJSC (the bank, which receives payments on the Portal); Infomats and mobile applications; and other organizations.

In collaboration with the Saudi Company for Electronic Information Exchange (Tabadul), the Ministry of Finance of **Saudi Arabia** has created **Saudi Electronic Government Procurements**. The e-government procurement project is one of the projects under the broader e-government initiative in the Kingdom of Saudi Arabia. The major goal of this project is to equip the country with a unified platform to be used by all government agencies for their procurement activities (cf. **SDG 12**). The Ministry of Finance is identified as the project sponsor responsible for preparing, executing and monitoring the project’s strategic plan; and the ministry has mandated Tabadul to execute, develop and operate the project.

In partnership with ARCOM and HP, the Ministry of Municipal and Rural Affairs of **Saudi Arabia** has launched the **Municipal Elections System** (third session). The project aims in general to run the communications system, hardware and software for the electoral process in the main information centre in Riyadh and the headquarters of the local committees in the election centres in each district, so as to give the 16 local committees a
broader role in the electoral process through connectivity and integration with the main centre (cf. SDGs 5 and 16). The registration procedure and counting processes for voters and candidates go through a single centralized system across all local committees, by web and mobile apps. The system provides real-time reports and the dashboards during the electoral process for senior management.

The National Information Centre in Saudi Arabia has created Electronic Services for the Ministry of the Interior (Absher). This is one of the first projects implementing the e-government strategy in Saudi Arabia, allowing for a variety of e-services to be offered by different sectors under the Ministry of the Interior (MoI), such as traffic, civil affairs, GDP, etc., and facilitating access to services anytime, anywhere, through the MoI Absher e-portal. The widespread provision of e-services will support the attainment of SDGs 5, 8, 10, 11 and 17.

The Ministry of Justice in Saudi Arabia has launched the Justice Indicators Service. This is an online interactive service that provides enquirers with daily updated reports and statistics in the form of tables and graphs. It covers four categories of information:

- Real-estate Indicators provide information about current transactions in regions, cities and neighbourhoods during a designated period.
- Judicial Indicators report on the volume of work being handled by general, criminal and family courts in all regions of the Kingdom.
- Administrative execution Indicators report on the number of incoming administrative execution applications in the courts and departments of administrative execution in all regions of the Kingdom.
- Documentation Indicators provide statistics on documentation work in the judicial and civil notaries in all regions of the Kingdom.

This development is in line with SDGs 8 and 17.

The Ministry of Civil Service of Saudi Arabia (MCS) has set up Tawtheeq. Tawtheeq is a career incidents registration system that is being developed to:

- Enable government organizations to register their employees’ information and career incidents in an advanced, automated system
- Simplify and facilitate the process of documenting applications and incidents for MCS and other organizations
- Speed up the completion of requests, which saves time and effort on the part of both government agencies and ministry experts
- Facilitate tracking and follow-up of requests and their status
- Eliminate paperwork and manual transactions and the associated issues.
Tawtheeq is relevant to **SDGs 8, 9 and 10.**

The Ministry of Civil Service of **Saudi Arabia** (MCS) has launched **Al-Tadrib wa Al-Ebtiath.** Al-Tadrib wa Al-Ebtiath is an electronic training and scholarship (T&S) system designed to handle and support the T&S process. It has transformed the old, traditional process into a new, advanced and practical system, making the whole process much easier, faster and cheaper, and saving a huge amount of paper and files. In addition, the system accommodated integration between MCS and other government entities, thereby saving on logistical costs and making the process much easier than in the past. Al-Tadrib wa Al-Ebtiath is relevant to **SDGs 8, 9 and 10.**

The Ministry of Foreign Affairs of **Saudi Arabia** (MoFA) has launched its **Secure Mobility Service.** MoFA delivers government services through multiple channels to Saudi citizens, residents, visitors, corporate and business entities, as well as government agencies around the world. Formerly, these services were available through only limited channels, whereby beneficiaries had to be present in the designated location and MoFA employees at headquarters were immobilized in their offices all the time and unable to move around, which was highly restrictive. Outside headquarters, MoFA operates in a highly critical environment in which employees move between missions in around 120 countries, and their mobility is also constrained by the lack of a suitable technical solution. Accordingly, MoFA has embarked on a long journey to master the application of an Enterprise Mobility Management (EMM) solution in order to provide secure mobility for its employees and increase employee productivity. The secure mobility service is of relevance to **SDGs 3, 4, 5, 11 and 16.**

The Saudi Commission for Tourism and National Heritage in **Saudi Arabia** has set up the **Saudi Exhibition and Convention Bureau.**

The Saudi Exhibition and Convention Bureau is working to become a single point of contact for all stakeholders in the exhibition and convention sector in the Kingdom, in order to regulate and develop the sector, encourage investment in the sector, and market the Kingdom as a destination for exhibitions and conferences. With this aim in mind, the first phase of the Exhibition and Convention Portal was launched on Sunday, 8 November 2015, to fulfill the following purposes:

- Facilitate all aspects of the process of issuing licences for exhibitions and conferences in electronic form
- Provide a reference for the process of controlling exhibitions, conferences and premises, and collect and monitor statistics and information about important exhibitions and conferences held in the Kingdom
- Understand exhibition and conference sector behaviour, and ascertain demand and supply trends in the sector
- Provide information and support for communications among the partners in the exhibition and convention sector
- Support e-marketing for exhibition and conference activities.
The Saudi Exhibition and Convention Bureau will serve **SDGs 8 and 9**.

The Ministry of Education of **Saudi Arabia** has launched the **Certificate Equivalence System**. Certificate equivalence is an academic operation that entails evaluating all the technical aspects of an academic credential and matching it to the corresponding level and associated requirements in the hierarchy of academic degrees in Saudi Arabia. The certificate equivalence system enables Saudi students abroad having graduated from a post-secondary programme to submit an online request in respect of an academic credential on the basis of duration of study, courses and prerequisites. The system also allows graduates to follow-up their requests online, and helps staff and decision-makers review and control incoming requests and view a range of reports and statistics. All internal operations on the requests are automated, instead of being paper-based, a measure that facilitates requests for review and reference to previous actions taken on them. The system is relevant to **SDGs 4, 5 and 10**.

The Public Security Directorate in the Ministry of the Interior of **Saudi Arabia** (MoI), in partnership with the Elm Company and other MoI departments, has launched **Kollona Amn**, a system that allows citizens and expatriates to report any criminal offence or traffic violation through a mobile application. In the incident reporting process, a user can easily add an attachment (photo, video or voice message) plus information on the place of the incident (by choosing the current location). The incident reports are channelled to 39 operation centres, based on type of incident and geographical area of the incident reporter (user). Furthermore, the user should receive updates regarding the reported incident through the mobile app, by means of push notifications or text messages. The system supports the concept of sustainable cities and communities, as per **SDG 11**.

**SDGs: 11**

The National Information Centre in the Ministry of the Interior **Saudi Arabia** (MoI) has initiated **Identity and Authentication Management** (IAM).

In the physical world, entities and organizations rely on physical credentials (ID cards, passports or other documents) for the identification of individuals. Claiming a given identity consists in presenting the relevant credential to the service provider, who in turn authenticates the identity by comparing the individual’s face to the photo printed on the document. In order to safeguard the rights and privacy of individuals and also maintain the security and credibility of service providers in the virtual, digital world (online), there must likewise be a trusted mechanism to authenticate an identity claimed by someone requesting a particular service.
Consequently, MoI has expanded its physical identity infrastructure to create a National Digital Identity platform delivering a single and trusted identity, supported by a scalable and robust architecture for both public- and private-sector service providers, with the vision: “Excellence in delivering a single, trusted national digital identity for all”. In this perspective, the mission of IAM is to enable national digital identity solutions and services, safeguard the nation’s security and facilitate online identity and authentication between people, service providers and government.

The project, which relates to SDGs 3, 8, 9 and 17, involves three kinds of partnerships: (1) Local service providers (government and private); (2) GCC identity providers - GCC service providers are reaping benefits indirectly through GCC national service providers as part of the GCC IDPs Initiative; (3) Solution providers, including vendors.

The Ministry of Foreign Affairs of Saudi Arabia (MoFA) has launched E-services for Saudis abroad.

As the number of Saudi citizens abroad increases (an estimated 10 million Saudis in 2016), the need for a platform that meets the needs of this growing community has become more pressing. Saudis abroad require consular and/or emergency services that may not be readily available at their locations. Even when a Saudi consulate or diplomatic mission is available, the presence of the individual requesting the service is required. This project aims to provide a variety of services via an integrated electronic portal that does not require an individual’s personal attendance.

With this goal in mind, the Fanar project was launched in 2011. Fanar aims to support and provide 68 of the services offered by MoFA to Saudi citizens abroad, while simultaneously linking these services to Saudi government agencies in the Kingdom. This project will serve SDGs 9 and 16.

Tawasul (E-contact system) is an electronic system that provides a reliable tool for communication between citizens, non-citizens and the Ministry of Education of Saudi Arabia (MoE) in order to handle complaints, requests or suggestions. Complaints and requests would be studied and analysed by the relevant MoE departments, and the results conveyed to the submitting parties. This constitutes one of the most important e-services, allowing people to contact the minister and all levels of the ministry and be assured of a response within a given time-frame. The creation of this system contributes to gender equality and the safety of cities and promotes peaceful and inclusive societies (SDGs 5, 11 and 16).
Instant Tele-Trials is a project launched by the Ministry of Justice of Saudi Arabia (MoJ) to automate all e-services of the minister’s office, its branches, the courts and public notaries in an expeditious and secure manner. Another aspect of its mission consists in activating linked services between the ministry and other sectors in order to provide modern technological services and exchange information and experience. Private rooms for remote trials are prepared inside prison facilities and are connected with the data centre at MoJ headquarters. Each remote trial is executed under the supervision and management of the court in every city in order to guarantee inmates’ legitimate rights and protect fundamental freedoms. The project accordingly promotes the concept of peace, justice and strong institutions (SDG 16).

The Saudi Tourism Portal was developed by the Saudi Arabia Commission for Tourism and National Heritage in order to market Saudi tourism in both the Arabic and English languages. It provides a number of tourism services and other valuable interactive integrated content, such as tourist information, photos, short films and interactive maps to help tourists pre-plan their tours and interact with the site to learn more about tourist destinations, events, programmes, tracks, seasonal offers and discounts. In addition, the tourist can benefit from reservation services for hotels, flights and car rentals through the site. It also offers a prompt and secure customer service to handle tourists’ complaints. The Saudi Tourism Portal integrates with sub-sites, customer relationship management (CRM), mobile app and electronic information centres. The project is carried out in partnership with Sure International Technology, LINKdotNET Co, Riyadah Co and Telecare.
In Slovenia, the Ministry of Public Administration (MPA) has created eUprava, a state portal developed to ensure an efficient, agile, flexible and smooth e-government system for citizens. As a single point of access, it supports main state central registers so as to provide up-to-date information and enable e-processes for citizens. The portal also includes special tools customized for elderly people, youth and persons with disabilities (e.g. blind, partially sighted, deaf and hard of hearing). eUprava has been developed and maintained by MPA’s IT Directorate, which provides the IT system framework, security policy and access to state cloud services for citizens, businesses and public entities. The project, which relates to SDGs 9 and 17, is carried out in partnership with several Slovenian companies and institutions: SRC d.o.o.; Kontrastika d.o.o.; Petra Cerne Oven, Academy of Fine Arts; Barbara Predan, Academy of Fine Arts; all ministries; VIRTUA PR d.o.o.; Association of the Blind and Visually Impaired; Association of the Deaf and Hard-of-Hearing, Slovenia; Faculty of Administration; Institute for Electronic Participation; Simbioza; the Slovenian Third Age University; Mitja Mavsar; IIBA Slovenija; ALKEMIST d.o.o.; TIPK TV d.o.o.

In Turkey, UYAP is a national e-judicial system, as a part of e-government, developed by the Ministry of Justice (MoJ) in order to ensure a fast, reliable, smooth and accurate judicial system. As a central network project, it includes all the courts, all citizens, court staff, lawyers, public prosecutor services, prisons, other judicial institutions and government departments in Turkey, and makes use of ICT in all judiciary processes. UYAP is implemented by MoJ’s IT Department, with a view to improving the functioning of the judiciary and to creating an effective and less bureaucratic judiciary for the institutions and individuals concerned, thus contributing to resilient infrastructure and sustainable industrialization. As such, it advances SDGs 9 and 16.

In Turkey, the Ministry of Justice (MoJ) has set up the e-sales portal, a service for enforcement and bankruptcy offices to publish bids according to the provisions of the 2004 Numbered Bankruptcy and Insolvency Act and to provide for the electronic deposit of collateral for bids. By using technology in support of the foreclosure sale process carried out by bankruptcy and insolvency departments, which has become an indispensable part of our lives, the intention is to ensure the sale process is performed
in more transparent environment. Transparency in the executive offices responsible for auctions will enhance public confidence in the judiciary reinforce people’s rights through improved judgments. This new portal will help in achieving **SDGs 9 and 16.**

In **United Arab Emirates**, the Smart Dubai Government Establishment has launched the **Dubainow Mobile Application**, as a single smart citywide platform and single point of interaction for accessing city services. Dubainow is a citywide mobile app available for individuals (i.e. citizens, residents, visitors) which covers the daily needs of individuals in the city and eliminates the need to use multiple interfaces, in addition to providing information for potential visitors (Dubainow can be accessed in any part of the world). It supports more than 55 key services provided by 24 entities from both the government and private sectors, including utilities and bills, housing, public transport, security and justice, health, driving, residency visas, education, religion, business and employment, donations, city information, and general public services. Dubainow is citywide smart platform with a central payment gateway (DubaiPay) and a unified digital identity (DubaidID). It is also available through a portal [http://dubainow.dubai.ae/](http://dubainow.dubai.ae/). Dubainow is relevant to **SDGs 9, 16 and 17.**

In **United Arab Emirates**, in line with its strategic objective, the Dubai Electricity and Water Authority (DEWA) is committed to providing sustainable and seamless high-quality services to all citizens and residents in Dubai. Through its smart services, DEWA meets all customer expectations and needs. The **DEWA smart application** aims to serve more than 750,000 customers by supporting all DEWA’s services on the app, for all segments of society including customers, consultants, suppliers, job seekers, government entities as well as unregistered users.

The DEWA smart app was introduced to provide sustainable and high-quality smart services to suit the needs of all Dubai citizens, residents and owners. DEWA achieved 100 per cent smart transformation in June 2014, with an adoption rate of 70.37 per cent recorded in 2016. The app, which provides reliable end-to-end services available 24/7, has been enhanced by enabling new services, offering new features and improving the user’s experience and journey through different engagement channels, including usability labs. As a result, it achieved a rating of 89.55 per cent in the DEWA app Customer Satisfaction Survey 2016, and a high score in the Smart Dubai Government accessibility assessment 2016.

The app responds to several SDGs, supporting water access, modern energy for all and sustainable consumption and production patterns, the building of resilient infrastructure, as well as the taking of urgent action to combat climate change and its impacts (**SDG 9**).

In the United Arab Emirates, the **Bayanati Human Resources Information Management System** in the Federal Government is an electronic/smart integrated system, providing self-services for employees and entities. All measures and procedures related to human resources in all federal entities are
automated, according to the life-cycle structure of government employees: performance management, financial management, training and development, transfers, irregularities, end of service and career planning.

The Bayanati system ensures inclusive, equitable, quality education, achieves gender equality, and promotes inclusive and sustainable economic growth as well as peaceful and inclusive societies (SDGs 4, 5, 8, 11 and 16).

The Sharjah Chamber of Commerce and Industry (SCCI) in the United Arab Emirates is keen to include in its membership all the companies and establishments engaging in an economic activity in the emirate, be it trade, industrial or professional. SCCI has almost 60,000 clients and 180 employees. It follows the economic and civilizational development witnessed by UAE, which it naturally regards as a factor it must respond to by adapting its different services and activities accordingly. In order to provide efficient and effective services to its customers and alliances, it came up with the Membership and Certificate of Origin System project, which offers a set of automated e-services through the Jupiter application already in place. In order to make e-services scalable and accessible and to provide enhanced features, SCCI wishes to implement a new solution that can incorporate the existing process along with enhancement and optimization. The new system should be able to address current needs and provide a core framework for transforming current and upcoming development of e-services.

This new system relates to certain SDGs by building resilient infrastructure and promoting sustainable industrialization and peaceful societies (SDGs 9 and 16).

The Directorate of Public Works (DPW) project in Sharjah, United Arab Emirates, aims to ensure modern and sustainable urban development. It works very hard to achieve this objective through the electronic and smart transformation of procedures in order to provide the best services and keep pace with the latest global developments in building construction and maintenance. Thus, DPW developed a mobile application, Sharjah DPW, which contains DPW information as well as two key services, the Hotline and Project Payments. This app will support collaboration between the customer, contractor and DPW employee, and later additions will elaborate more on both services (SDG 17). The project also contributes to the building of resilient infrastructure and promotion of inclusive societies (SDGs 9 and 16).

In the United Arab Emirates, the Federal Authority for Government Human Resources (FAHR) is the legislative authority of the federal government concerned with the development of laws, rules and regulations relating to government jobs and human resources. According to the directives of the country’s wise leadership, and to keep up with the UAE Vision 2021, the FAHR Smart Application emerged
as an initiative to provide an integrated application that serves the human resources in the federal government and facilitates and helps the efficient conduct of daily HR transactions and procedures round the clock. The application has achieved a 100 per cent smart transformation. Encompassing 26 services (7 main services and 19 sub-services), it aims to provide different HR services and information and connect them to the federal government’s “Bayanati” HR information management system for the purpose of managing operations and sequences of procedures efficiently and effectively through a “self-service” system.

Accordingly, the FAHR smart app fosters quality education and gender equality, contributes to the economic growth of the country, and promotes inclusive societies and the rule of law for everyone (SDGs 4, 5, 8, 11 and 16).

Consistent with UAE’s desire to be one of the best countries in the world, the Sheikh Zayed Housing Programme (SZHP) in the United Arab Emirates launched the Zayed Complexes project, in response to the recent but increasingly widespread recognition that with a growing population there is insufficient land allocated for housing, at a time, moreover, of unstable construction material prices in the country. SZHP has therefore recently started to adopt the idea of building residential complexes as an alternative in support of UAE nationals. Zayed residential complexes comprise groups of housing units built in a certain area and containing a set of basic services for residents, such as parks, mosques, schools and other facilities. The Zayed Complexes application was developed on 24 July 2014 to provide a link between an applicant wishing to obtain housing assistance and SZHP, giving access to current and future projects, thus allowing the applicant to choose and book his or her lifetime house. The implementation of this project contributes to the building of resilient infrastructure and promotion of industrialization (SDG 9).

The Emirates Vehicle Gate (EVG) is an ambitious, innovative project in the United Arab Emirates. It provides all e-services related to drivers and vehicles by integrating government and private service providers together in one platform. The project supports the UAE e-government strategy and ensures that all government work is conducted according to a set of guiding principles that put citizens first and promote an accountable, lean, innovative and forward-looking government. EVG has achieved a high level of impact and satisfaction by simplifying all processes, improving efficiency and strengthening relations with citizens at all levels. It meets the needs of citizens and businesses and has achieved efficient allocation of resources, most importantly ensuring sustainability and business continuity.

Thus, EVG addresses a number of SDGs by fostering innovation, promoting peaceful and inclusive societies and revitalizing the global partnership for sustainable development (SDGs 9, 16 and 17).
In the United Arab Emirates, the Abu Dhabi Department of Transport’s DARB smart application traveller information system is designed to provide multimodal, real-time information and route guidance using the web (DARB upgrade), mobile phones (new mobile DARB app) and satellite navigation systems (in-vehicle and OEM). DARB provides the public with basic interactive maps, showing public transport routes and timetables, for a fast and user-friendly experience. Furthermore, the smart app provides the public with live information on road conditions, covering construction works, traffic detours and accidents and congested roads, as well as various important services related to airports, such as the location of airport halls and flight schedules. DARB informs the public about parking lots and enables them to pay for Mawaqif parking services online. Among the DARB’s distinctive services, the Book a Taxi feature allows the app users to book a taxi and set their pick-up location and destination directly from the smartphone.

All these services contribute to resilient infrastructure development, increased access to ICTs, and the fostering of innovation (SDG 9).

In the United States, the Ark Earth Foundation is a platform conducive to modelling, resourcing and deployment of an e-governance system using semantic intelligent web technologies. Ark Earth is capable of piloting the e-governance modelling of civilization and knowledge-based structures and gathering data for large-scale semantic intelligent web deployments. The data gathered will better rationalize and maximize real social, economic and ecological impact analysis. The pilot demonstration would include the use of civilization and knowledge tooling capabilities that enable the rapid deployment of change in a world driven by content providers and the semantic intelligent web.

The Ark Earth Foundation e-Governance for the Data Revolution project relates to a number of SDGs (SDGs 1, 2, 3, 4, 5, 8, 10, 11, 12, 13, 16 and 17) through the WSIS action lines.

In Qatar, the Ministry of Transport and Communications has launched the Government Financial Management Information System. The Government of Qatar undertook a government-wide financial transformation project, aimed at achieving the objectives of the Qatar National Vision 2030 by maintaining fiscal stability and avoiding financial crises through more efficient allocation of available financial resources according to national priorities. The project sought to integrate government financial management information systems in order to assist the government in planning and managing the
country’s financial resources more effectively. The specific objectives of the financial transformation project are to improve:

- transparency and compliance with international best practices in budget management;
- accuracy, timeliness and relevance of fiscal reporting;
- ensuring that payments are made in accordance with the budget and within spending limits and cash constraints;
- timeliness and accuracy of banking and reporting revenue collections;
- availability of financial management and budget execution information to the legislature for decision-making; and
- fiscal sustainability through more effective and efficient management of cash.

The Government Financial Management Information System is to be established across all government entities in Qatar to meet the above objectives, and will contribute to SDGs 3, 4, 8 and 9.

In Qatar, the Ministry of Transport and Communications, in partnership with Gemalto, has created the Qatar National Authentication Service (NAS), to act as National Identity Provider offering secure authentication, user registration, profile management and single-sign-on (SSO) for all e-government services. The main objectives of the project, in line with SDG 11, are to:

- Enable integration with government entities, creating an identity hub across government that helps drive improved IT capabilities leading to an improved end user experience.
- Provide identity management services across all government entities in Qatar that will scale up to meet the e-Government 2020 Strategy target of 100 per cent of government services online and 80 per cent of transactions conducted online.
- Develop mature account management capabilities to grant consumers complete control of the data stored in their NAS account.
- Support the development of a Qatar legislation (i.e. polices) to deliver a well-defined standard for data privacy and security.
- Ensure the NAS solution and integrated government entities follow good practices in security and can deliver the highest standard for consumers of e-services
- Support emerging authentication, authorization and SSO technologies (e.g. risk-based authentication).

C7.2 E-business

The United Nations Conference on Trade and Development (UNCTAD) is the lead facilitator for this action line, which is co-led by the International Trade Centre (ITC), Universal Postal Union (UPU) and International Labour Organization (ILO).

ITC, UNCTAD and UPU jointly organized an action line facilitation meeting on e-business during the WSIS+10 High-Level Event in June 2014. The meeting focused on identifying priorities for the e-business (C7.2) action line beyond 2015 with a view to making e-business more inclusive and sustainable. The meeting drew on inputs received during the open consultations for the WSIS+10 High-level Event. Areas highlighted included: mobile money as an enabler of financial inclusion, requirements for the interoperability of mobile financial systems, strengthening the legal and regulatory framework for e-business, the importance of engaging all stakeholders, the need to assess the social and economic impact of e-business, and the need for comparable statistics on e-business.
The new terms of reference for the e-business action line, as indicated in the WSIS+10 Vision for WSIS Beyond 2015, are as follows:

- Make it possible for businesses to use relevant ICTs and benefit fully from the information economy, including by creating an enabling environment for selling and buying goods or services via ICT networks
- Enhance the involvement of all stakeholders in promoting the benefits of e-business and stimulating the development of new e-business applications, content and services, including for mobile devices and social media
- Foster a dynamic ICT sector to underpin productive use of ICTs, sustainable growth and development, job creation, trade and innovation as part of broader strategies for poverty reduction through wealth creation
- Enhance the entry of micro, small and medium-sized enterprises (MSMEs), and youth and women entrepreneurs, into all sectors of e-business taking new technological developments into account
- Improve availability of statistical e-business data needed to assess economic and social impacts
- Actions to facilitate e-business.

As part of its 50th anniversary celebrations in Geneva, UNCTAD held a special event entitled “Cutting the costs of remittances: The role of mobile money” in June 2014. The event provided an opportunity for discussion on ways of making international remittance flows more affordable and inclusive, for example by leveraging mobile money and online transfer mechanisms. Reducing the cost of remittances could enhance financial inclusion in developing countries and is a widely-recognized development goal. This is especially relevant in the context of the post-2015 development agenda. The meeting recalled the commitment by G-20 to reduce the cost of remittances to 5 per cent.

The Trade and Development Report (TDR) 2015: “Making the international financial architecture work for development” reviews recent trends in the global economy and focuses on ways to reform the international financial architecture. It warns that with a tepid recovery in developed countries and headwinds in many developing and transition economies, the global crisis is not over, and the risk of a prolonged stagnation persists. The main constraint is insufficient global demand, combined with financial fragility and instability, and growing inequality.

The third session of the Multi-Year Expert Meeting on Enhancing the Enabling Economic Environment at All Levels in Support of Inclusive and Sustainable Development was held at the Palais des Nations in Geneva, Switzerland, on 14 and 15 December 2015. The topic for this session was decided at the 57th executive session of the Trade and Development Board in June 2013. The session also covered the topics scheduled for the fourth session. The meeting was composed of four sessions: the first three featured presentations by a panel of experts, followed by discussion by participating experts; the wrap-up session covered the outcomes of the first, second and third sessions of the multi-year expert meeting.

The Ad Hoc Expert Meeting on Data Protection and Privacy: Implications for Trade and Development was held on 19 and 20 April 2016 in Geneva, Switzerland. It commenced with the presentation of the UNCTAD Study on Data Protection and International Data Flows. Representatives from public and private stakeholders also took the floor to discuss thematic topics and present their experiences. Invited delegates included representatives from the African Union Commission, Asia-Pacific Economic Cooperation, the Commonwealth, the Council of Europe, the East African Secretariat, the ECOWAS Commission, the European Union, the Organisation for Economic Co-operation and Development, the United States Federal Trade Commission, the UNOHCHR, the International Chamber of Commerce, the Computer and Communications Industry Association, Consumer International, Google, Microsoft, and eBay and other e-commerce platforms from developing countries.
The Multi-Year Expert Meeting on Promoting Economic Integration and Cooperation took place on 14-15 April 2016 in Geneva, Switzerland. The fourth session of the Multi-Year Expert Meeting was held in accordance with the terms of reference approved by the Bureau of the Trade and Development Board. The objective of the session was to discuss how to improve all forms of cooperation and partnership for trade and development with a view to accomplishing internationally agreed development goals. In particular, it focused on identifying how developing countries can collaboratively build capacity to weather economic crises, ensure macroeconomic stability and enhance long-term resilience in ways that generate inclusive and sustainable economic growth.

The Multi-Year Expert Meeting on Commodities and Development, 21-22 April 2016, Geneva, aimed to enable commodity-dependent developing countries to identify measures in order to secure, as a priority, adequate access to food and energy, to use commodity revenues for economic growth and poverty reduction and to cope with the challenges of commodity price volatility.

The meeting was expected to provide a forum for sharing country experiences in terms of:

- Identifying and implementing appropriate policies at the national, regional and international levels
- Addressing the impacts of declining commodity prices on vulnerable groups
- Helping commodity-dependent developing countries formulate sustainable and inclusive development strategies, including those that promote value addition and economic diversification.

Finally, in relation to this action line, reference must be made to SDGs 1, 2, 5, 8, 9 and 17. SDG 1, on ending poverty, can be achieved through e-business services, such as digital currencies and mobile payments. They also empower SMMEs and youth and women entrepreneurs to have equal rights to economic resources (SDG 5). Target 2.3 aims at doubling the agricultural productivity and incomes of small-scale food producers, thus involving this action line as well as e-agriculture. Indeed, ICTs in rural enterprises can increase the productivity of small-scale food producers, conceiving international market places for food sale and distribution – as well as innovative payment solutions – and facilitating access to financial services. E-business undeniably directly contributes to the economic development of countries, sustainable industrialization and innovation (SDGs 8 and 9). Lastly, regarding the achievement of SDG 17 on global partnership, the use of relevant ICTs for businesses and their benefits in regard to the information economy could create an enabling environment for selling and buying goods or services via ICT networks all over the world.

In Algeria, the Research Centre for Scientific and Technical Information (CERIST), in partnership with the Laboratoire Stratégies d’Optimisation et Informatique intelligente, Tunisia, and the Femme, développement et solidarité sans frontières Association, Tunisia, has launched a project to help women in handicraft businesses adapt to ICT. In emerging countries, incomes are low, and women, either individually or within group, may be involved in sustainable handicraft or fair trade businesses, leading to a varying degree of economic mobility. This project, which has a bearing on SDGs 1, 5, 7, 8 and 10, aims to improve the socio-economic level of women in handicraft businesses, specifically in Algeria and Tunisia. It seeks primarily to assist craftswomen in their business activities through the use of new ICT technologies, e.g. to advertise their products, seek the best supplier of raw materials, and make the right sales and business decisions, by simplifying their communication with different actors such as suppliers, customers and other craftswomen.

In Bangladesh, the Bangladesh Computer Council (BCC) has developed the National Enterprise Architecture and Interoperability Framework for the Government of Bangladesh (GoB), in partnership with the World Bank and Ernst & Young.

As one of GoB’s apex bodies under the ICT Division of the Ministry of Posts, Telecommunication and IT, BCC has been instrumental in carving the path for the development of e-governance in Bangladesh over the last two decades. At present, BCC is in the process of laying the foundation for successful e-governance in Bangladesh through the establishment of the National Enterprise Architecture and
Interoperability Framework initiative, implemented through a World Bank financed project entitled 'Leveraging ICT for Growth, Employment and Governance'.

The transformational potential of technology, especially for the delivery of government services, can only be harnessed when the efforts towards its adoption, management and subsequent implementation are synchronized among different arms of the government. A robust enterprise architecture and interoperability framework will support achievement of the 'Digital Bangladesh' vision through ICT and emerging technologies.

The components of the Bangladesh National Enterprise Architecture, which is relevant to SDGs 5, 8, 9, 10, 11, 16 and 17, are as follows

1) National Enterprise Architecture: Establishment of the contours and broad structure for a whole-of-government enterprise architecture framework
2) E-Government Interoperability Framework: Design, development and implementation of an interoperability framework across the GoB
3) Mobile Service Delivery Platform: Preparation of the MSDP architecture and standards
4) National E-Service Bus: Development of a middleware application/platform for e-service integration
5) Capacity Building and Change Management: Delineation of broad guidelines for establishing an enabling smart e-governance organization for capacity development within government.

In China, Qingdao Kutesmart Ltd has launched a comprehensive Source Data Engineering (SDE) solution for updating traditional enterprises. SDE can be directly applied to upgrade and transform traditional enterprises, constituting a practice case of “Industry 4.0” in China today. It offers a means of using information flow to promote technology flow, capital flow, talent flow and logistics, thereby optimizing resource allocation and efficiency of the whole enterprise. It is especially useful for small and medium enterprises to upgrade successfully and suitably for the prevailing conditions in China. At present, SDE is helping to guide national enterprises towards upgrade and transformation; it has been applied in more than 20 industries and more than 60 companies. The SDE solution will be of interest for SDGs 8, 12 and 17.

In Cote d’Ivoire, TaxiJet has been launched as a technology solution to meet the basic need for safe, affordable and reliable transportation in Cote d’Ivoire. Despite being the third-largest francophone city in the world, with around 5 million inhabitants, and the economic capital of a fast-growing country (around 10 per cent annual GDP growth over the past five years), Abidjan still lacks a reliable, secure and accessible solution for daily commuters. TaxiJet, which went live last year, is the first Ivorian taxi booking platform to fill this growing needs gap. The strategy was to continuously gather market feedback and fine-tune TaxiJet’s technology-based ecosystem into a profitable and scalable model. The project, which serves SDGs 1, 3, 5, 8, 9, 11 and 17, is being carried out in partnership with Amos Ouattara: amos.ouattara@taxijetci.com; +447786459703.

In Malaysia, Pos Malaysia Berhad has launched Address for All (AFA) to enable the fulfilment of e-commerce for everyone. AFA is a newly-assigned national address initiative aimed at solving the issue of premises with incomplete addresses. No fewer than 12 per cent or 1 million Malaysian addresses are still incomplete. In the era of global e-commerce localization, it is obvious that having a proper and
correct address is crucial to ensuring the availability of e-commerce for everyone. In 2016, Pos Malaysia, in cooperation with its regulator, the Malaysian Communications and Multimedia Commission (MCMC) - www.mcmc.gov.my - has provided more than 20 000 Malaysian households with a complete premises number. By 2020, more than 100 000 households or 400 000 Malaysians will have their own addresses. This project will assist SDGs 3, 8, 9, 10, 11, 16 and 17.

The Mauritius e-Registry Project (MeRP) was launched in order to scale up to e-services, by harnessing the latest technologies and solutions that can provide integrated workflows and options for businesses, professionals and members of the public to conduct business with the Registrar General Department over the Internet. MeRP allows e-submission of documents, e-payment of duties and taxes, e-registration, e-search and e-delivery of registered documents. The Registrar General Department is the winner of the 2014 edition of the Public Service Excellence Award.

In Mexico, Labora, a platform aimed at supporting entrepreneurs and fostering a culture of innovation in order to create an economic and social impact with open data, has been established under the National Digital Strategy. It is the first hub of entrepreneurs in the world driven by an international network comprising the Government of Mexico, through the Office of the President, the Open Data Institute (ODI) and Demos (Mexican civil society), in cooperation with the Government of the United Kingdom. This synergy between citizenship and government seeks to foster a data-driven ecosystem for economic growth, solve key issues through collaboration, and promote a model that can be replicated in other countries. Labora is relevant to SDGs 8 and 9.

Women in Technology in Nigeria (WITIN) initiated a project on Inclusion and integration of disadvantaged groups and marginalized women into the global digital economy. The project targets the most disadvantaged groups, including marginalized women entrepreneurs, especially those in rural and remote communities, thus addressing a number of SDGs by combating poverty and hunger and ensuring healthy lives and gender equality (SDGs 1, 2, 3, 5 and 10). All beneficiaries’ local businesses were properly branded and put online with google maps showing the physical locations of their stores. They all have at least a basic mobile (feature) phone with which they communicate with clients and do business, thus overcoming barriers and benefiting immensely from the Internet. Launched since December 2011, and with resounding success stories, the project is being expanded to reach more beneficiaries and groups in Nigeria, thereby promoting economic development and a peaceful and inclusive society, revitalizing collaboration and ensuring sustainable consumption and production patterns (SDGs 12, 16 and 17).
In Oman, the Public Authority for Consumer Protection (PACP) was established by Royal Decree No. 26/2011 of 5 April 2011; at the same time, by Royal Decree No. 53/2011, PACP was authorized to disclose information on final goods and services, stating brands, prices, supplier name, offers and types of product.

In fulfilment of its mandate, PACP introduced the Marsad programme, which publishes the local, GCC and international prices of commodity items. Initially, the programme aimed to display 400 items for each supplier, for the benefit of consumers and key government officials. The number has now been increased to 3 million for government officials. Furthermore, efforts are under way to disseminate these prices to the public as well.

The project is thus addressing SDGs dealing with economic issues, fighting against poverty and providing decent work for society (SDGs 1 and 8).
In Qatar, the Ministry of Transport and Communications has launched the **Landscape Report for Businesses**. The “ICT Landscape 2016: Business” report reveals the trend towards the growing use of ICT among businesses over the past seven years, including through indicators such as computer penetration, Internet penetration, web presence and enhanced use of e-services and e-commerce, among others. In line with the worldwide trend, the ICT industry is helping to fuel the growth and diversification of Qatar’s economy. These findings are part of a broad-based research study that examines the current levels of ICT access and usage among businesses in Qatar and measures the development of the ICT sector. The study, based on a large-scale survey of 1,093 business establishments spread across industry sectors, was conducted between March 2015 and May 2015. In addition, in-depth, face-to-face interviews were conducted with 300 ICT providers during that same period. This research provides data and material of interest for advancing SDGs 1 and 8.

In **Qatar**, the Ministry of Transport and Communications has created the **Qatar National E-Commerce Roadmap 2015**, which is the first national e-commerce blueprint addressing the four key pillars of e-commerce: governance, technology, e-payment, and delivery. The roadmap also outlines the current e-commerce landscape in Qatar, details challenges and inhibitors to success, and provides the framework to chart a path forward. It is the result of a thorough collaborative effort with local, regional and international stakeholders across the entire e-commerce value chain — from product creation to consumer receipt of the product — and its successful implementation is dependent on strong collaboration and coordination among the different stakeholders. The roadmap is a useful tool towards **SDG 8**.

In **Rwanda**, **Tap & Go** is a product of AC Group Ltd, which is a leading provider of interactive and intelligent public transportation solutions, issuing payment cards in support of a cashless economy, and seeking regional expansion with the aim of building a regional ICT hub.

Cities in Africa are growing at a very fast rate, much faster than their means of transport. With AC Group, we are trying to exploit innovation to enable public transport to cope with the constantly evolving needs of urban transport without unnecessarily expending more resources, by digitizing payments on the bus, monitoring location and driver behaviour to reduce accidents, and optimizing operations while at the same time reducing delays that inconvenience passengers and businesses. Implementations include using Tap&Go card for payment, a bus validator on the bus for validating
payment, vehicle location, speed monitoring and fraud control. Today Tap&Go is being used in Kigali and Yaoundé, with over 670 000 users per day.

The project is carried out in partnership with the World Economic Forum, the Government of Rwanda, Kigali Bus services, RFTC, Royal Express, the Government of Cameroon, STECY, DMM.com, and Transform Africa, and relates to SDGs 8, 9, 11 and 17.

In Saudi Arabia, the Saudi Standards, Metrology and Quality Organization (SASO), working in partnership with the Ministry of Commerce and Investments (MoCI) and Saudi Label and Standards (SLS), has launched Takkad, a mobile application which enables consumers in Saudi Arabia to validate and verify the authenticity of a SASO quality mark and efficiency labels on products and to report fake SASO quality marks or efficiency labels. The app is of relevance to SDGs 7, 12 and 13.

In Saudi Arabia, the Ministry of Justice has launched the Online Administrative Execution Service, an online service that allows beneficiaries to submit a request for a court order to be executed by filling in the details of the plaintiff and the defendant, and registering specific details of the court order such as its number, date, origin and type, with consultation from the selected courthouse to complete the application process. It has speeded up the overall process of administrative execution of court orders in the Kingdom, thereby allowing society to attain justice easily and swiftly, hence advancing SDG 16.

SDG 16

In Saudi Arabia, the Ministry of Justice has launched the Muwathiq, a very important service for the establishment of an agency’s or company’s contract documentation, which enables beneficiaries (individuals and companies) to incorporate their agencies and register company contracts at times that they were previously unable to do so at the notaries. This service helps individuals who are unable to visit the notary offices in person, for instance because of their work schedule or a physical disability, to benefit from the available notary services. An individual’s involvement in the transaction is confirmed by recording his or her fingerprint through a link with the “Absher” service (National Data Centre). This modern e-service is in line with SDGs 8 and 17.

SDGs: 8, 17

In Saudi Arabia, Ataa’ automates the system of charities, moves them over to electronic transactions and links them all in one system.
The Atta’ system offers several benefits and services for the Ministry of Social Affairs, as the ministry responsible for charities in Saudi Arabia:

- Enhances the ministry’s ability to supervise and follow up the work of charities
- Unifies the system used in all charities to ensure increased effectiveness of procedures
- Builds an accurate database for charities in the Kingdom of Saudi Arabia.

The overall objectives of Ataa’ system are:

- **Integrity**: Determines the disbursement of donations and charity funds and adjusts beneficiaries’ relations to charities’ staff
- **Justice**: Ensures donations and charity reach the beneficiaries, and aims to distribute donations evenly among beneficiaries according to the world poverty standard percentage in the Kingdom of Saudi Arabia
- **Abstinence**: Reduces the difficulties beneficiaries face so that they do not need to visit the charities frequently
- **Transparency**: Helps donors identify their money and ascertain who it will go to, and helps beneficiaries find out their share of donations
- **Reliability**: Fosters increased trust in the community work of charities.

The implementation of these goals is governed by a framework of information security, privacy and confidentiality, and is consonant with a significant number of established SDGs related to WSIS action lines.

In **Singapore**, Singapore Customs, in partnership with the Government Technology Agency of Singapore (GovTech), is launching the National Trade Platform (NTP), a one-stop trade information system developed as an open innovation platform, to support firms especially in the logistics and trade finance sectors. The NTP is another example of the committed effort by the Singapore Government to continually embrace cutting-edge technologies and streamline competencies in trade and logistics. It builds upon the success of Singapore’s TradeXchange and TradeNet systems to facilitate more seamless data exchanges across global supply chains. The project takes into consideration current business needs and emerging trends in global trade. In the NTP, the government closely collaborates...
and co-creates with business communities and service providers to build a vibrant and innovative trade ecosystem. The NTP will also seek closer collaboration across borders, in order to enhance Singapore’s value-added to global trade. This project supports **SDGs 8, 9 and 11**.

**Partnership:**

**SDGs: 8, 9, 11**

The **United Nations Conference on Trade and Development (UNCTAD)** launched the eTrade for All initiative in Nairobi in July 2016 during the 14th quadrennial UNCTAD conference. This global partnership, which addresses the cross-cutting dimensions of e-commerce, seeks to assist developing countries in seizing the opportunities offered by e-commerce – a market estimated by UNCTAD to be worth some USD 22.1 trillion in 2015, and hence advance **SDGs 8 and 17**.

eTrade for All is an online knowledge-sharing platform, currently being developed, that will make it easier for developing countries to navigate the supply of technical and financial assistance from partnering institutions. The partners will work together to raise awareness of opportunities, challenges and potential solutions in their respective activities so as to leverage e-commerce prospects. They will benefit from the exchange of knowledge and information, and share best practices in respect of e-commerce development. This dedicated platform will at the same time present donors with better information on projects and programmes to potentially fund according to their development priorities.

The initiative is focusing on seven key policy areas of particular relevance to e-commerce development: e-commerce readiness assessment and strategy formulation, ICT infrastructure and services, trade logistics, payment solutions, legal and regulatory frameworks, e-commerce skills development and access to financing.

The eTrade for All online platform will be officially launched on 25 April 2017, during UNCTAD e-Commerce Week.

The partners include the African Development Bank (AfDB), Consumers International (CI), the Enhanced Integrated Framework (EIF), E-residency (Estonia), the International Association of Prosecutors (IAP)/Global Prosecutors Network (GPen), the International Civil Aviation Organization (ICAO), the Internet Society (ISOC), the International Islamic Trade Finance Corporation (ITFC), the International Trade Centre (ITC), the International Telecommunication Union (ITU), the United Nations Conference on Trade and Development (UNCTAD), the United Nations Economic Commission for Africa (UNECA), the United Nations Economic Commission for Europe (UNECE), the United Nations Economic Commission for Latin America and the Caribbean (UNECLAC), the United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP), the United Nations Economic and Social Commission for West Africa (UNESCWA), the United Nations Social Impact Fund, the Universal Postal Union (UPU), the World Bank Group, the World Customs Organization (WCO), and the World Trade Organization (WTO).
In Thailand, the Electronic Transactions Development Agency (public organization) initiated the National Payment Message Standard (NPMS) project, to set a standard for payment messaging, which is deemed to be crucial for future phases of payment systems development. The NPMS enables businesses and financial institutions to exchange payment data more conveniently by using standardized messages complying with ISO 20022 (Financial Services) in order to reduce data handling costs. The standard has been continually developed and improved by its stakeholders, which include the Thailand Payment Market Practice Group (TH-PMPG), consisting of commercial banks, financial institutes and corporations. The project is relevant to SDG 8.

In the United Arab Emirates, the Smart Navigation System (SNS) is an initiative that revolves around developing solutions, including a smart indoor positioning and navigation (IPIN) mobile application whereby users can use their smartphone to receive indoor voice-guided navigation and location-based information alerts to easily find and explore places and items in premises like shopping malls, museums or other large buildings catering to the needs of visitors.

This UAE-based SNS start-up is of relevance to certain SDGs aimed at ending poverty, promoting economic development and sustainable industrialization, and revitalizing the global partnership for sustainable development (SDGs 1, 8, 9 and 17).

In the United States, DIDXchange (DIDX) enables wholesale communication service providers to trade available direct inward dialling (DID) numbers on one convenient online platform. The project places all communication providers and operators on an equal footing, whether in the first, second or third world, when they come to expand market reach and offer phone numbers to other telephone companies quickly and efficiently. Each wholesale buyer or seller can save money and time, gain and retain users, increase sales, offer new and practical features, achieve geographical market expansion, outsource technical issues, billing and marketing at zero cost, and offer their users a “local virtual presence” via DID phone numbers traditionally exclusive to users outside their location. The project advances SDGs 8 and 10.

In Zimbabwe, Sassiestyle.com has launched the Buy Africa - Community Business Empowerment campaign, in partnership with Media360 Zim, Persuasion Inc. Zw, Craneshaw Heights Trust, and Good Girls Go To Heaven.

By giving communities food and disaster relief help, we are solving the problems in Africa only temporarily, and poverty is thus still rampaging. There are a lot of well-educated people in Africa, and if we could just unleash the continent’s hidden talent we might take our efforts in alleviating poverty in Africa a step further. To this end, Sassiestyle.com, an online trading platform, came up with a strategy to help underprivileged communities in Africa, through an online retail campaign called the Buy...
Africa – Community Based Empowerment, under which manufacturers in African communities that cannot afford to inject marketing and advertising costs into their business for their products (fashion, furniture, electrical, and artifacts) can benefit from a free marketing and advertising platform.

The project serves **SDGs 1, 2, 3, 5, 8, 9, 10, 12 and 17**.

**Zimbabwe** has launched the Zimbabwe Agenda for Sustainable Socio-Economic Transformation (ZimAsset). **WyiZe Shopper** is a company that was established to realize the vision of ZimAsset, in collaboration with Linda Ncube, Tinashe Chirongom and Sarah Makuyana. It is a business-to-business/business-to-consumer e-commerce platform for fast-moving consumer goods that seeks to disrupt the distribution of consumer goods, empower local entrepreneurs and traders to scale their operations and promote manufacturing-sector development by providing SMME manufacturers and distributors with a platform to distribute their products nationally and internationally. At WyiZe Shopper, we seek to transform Africa’s socio-economic status by creating new, inclusive value-creation models, offering our customers and clients value-added services and a remarkable user experience.

ZimAsset is relevant to **SDGs 1, 2, 3, 4, 5, 8, 9, 10, 12 and 17**.

**C7.3 E-learning**

The **United Nations Educational, Scientific and Cultural Organization (UNESCO)** is the lead facilitator for e-learning, while the co-facilitators are the International Telecommunication Union (ITU) and the United Nations Industrial Development Organization (UNIDO). E-learning in essence means the network-enabled transfer of skills and knowledge, and, specifically, the use of electronic applications and processes for learning. Applications and processes may include web-based learning, computer-based learning, virtual classrooms and digital collaboration.

It is important to mention that the e-learning action line is directly linked with **SDG 4** on inclusive and equitable quality education and lifelong learning opportunities.
In Bangladesh, the Prime Minister’s Office has created the *Teachers’ Portal for Empowerment* (TPE) as a smart mechanism to supplement Bangladesh’s ailing teacher-training system, which serves 900,000 teachers with its modern learning facility of 1,500 seats. Costly face-to-face training is often prohibitively expensive for the teaching administration and teachers. TPE, a collaborative, co-creative and problem-solving continuing professional development (CPD) platform, has fast become popular among teachers for creating/sharing digital content on all subjects. As its membership exceeds 100,000 and is growing, the portal is already the largest local repository of educational content. An offline annual conference instituted recently has also sown the seed for a vibrant community of learners. The portal thus serves to advance a number of SDGs, providing equitable quality education, reducing inequality and revitalizing the global partnership for sustainable development (*SDGs 4, 5, 10, 12, 16* and *17*).

In Colombia, the PLANEA spectrum e-learning platform is a tool, launched and managed by the National Spectrum Agency (Agencia Nacional del Espectro – ANE), that allows people in all regions of the country (even people in more remote areas, and the deaf) to access knowledge about the frequency spectrum, such as what it is and its impact on the lives of citizens, and to obtain information on the installation of antennas and electromagnetic fields. The courses posted on the platform were chosen according to citizens’ demand (based on polls and comments). The platform may be updated to include courses required by stakeholders in the future. It provides equitable education and ensures access to knowledge (*SDG 4*).

In Cuba, Leonides Alfredo Peña Turruelles, in collaboration with José Ramón Vázquez Llabona, Frangel Torres Gutierrez, Kirenia Marcheco Guizado and Mariolys Balnco Pantoja, has launched *Dominó*. Preschool Education in Cuba serves children in different programmes run by the Ministry of Education with the participation of other state entities. The “Domino” game aims to develop infants’ skills in making associations by types of geometric figures, animals and colours. The game develops group
work, affective relationships, respect for the rules of the game and the ability to follow guidelines in a logical order, as well as preserving national traditions. It thereby serves **SDGs 3** and **4**.

In **Germany**, the Diplomatic Council has launched the **Backstage** e-learning platform. Most e-learning platforms for lectures follow a technological approach of incorporating technology in lectures without supporting underlying structures and individual differences. In a more pedagogical approach, the Backstage open-source e-learning platform can address different lecture structures and personal learning styles by analysing lecturers’ and students’ behaviour, interaction and learning outcomes. With the data gathered, Backstage can help structure the lectures and assist students on a more personal level, by offering suitable learning materials and tasks. Intensive research regarding students’ attention shows that while e-learning can indeed help students to focus on lectures, more customization and structure is needed to foster better learning. The project is relevant to **SDGs 5, 10** and **16**.

The **Talking Book** service in **Ghana** significantly improves health, income and quality of life for the world’s most underserved communities by providing life-changing knowledge through innovative technology. The talking book is a low-cost audio computer designed for the learning needs of illiterate populations in the poorest areas of the world. Through partnerships with local government and non-government agencies, relevant, timely and practical audio lessons on sustainable farming methods, gender issues and key health practices are produced and recorded. The messages (in the form of interviews, songs, dramas and stories) are then loaded on to talking books and distributed. In this manner, the programme addresses a significant number of SDGs in ensuring quality education, gender equality, contribution to economic development, etc. (**SDGs 1, 2, 3, 4, 5, 6, 8, 10, 13, 15, 16 and 17**).

The Information Technology Management Centre of Women’s Seminaries (ITMCWS) in the **Islamic Republic of Iran** started its activity with the **E-Learning Integrated Solution (ELIS)** for women in 2007. Its main objective was to upgrade women’s knowledge in religious science, as a basis and prerequisite for playing a role in Iranian communities. In this regard, and in an endeavour to reduce communication deficiencies in many small cities, various custom-made software packages like Namad, Atom, Offline Maker, etc. were implemented and incorporated in ELIS. Specifically, the solution presented
and integrated by ITMCWS has increased opportunities for women in small cities or villages to access e-learning services, and has empowered women’s knowledge, thus advancing SDGs 4 and 5 on educational and gender matters.

In **Kenya**, Amref Health Africa has developed the *Leap* m-learning solution. Community health workers (CHWs) are essential to fill human resources gaps in the health sector in Africa. However, training is required to empower CHWs to deliver health services to communities. Leap is a leading m-learning solution for CHWs developed four years ago through a cross-sector partnership with Amref, Accenture and the Vodafone Group. It delivers training through SMS and audio across all geographies, using basic phone technology. It has reached over 20 000 CHWs, with preliminary monitoring and evaluation (M&E) data showing strong outcomes such as a 26 per cent improvement antenatal clinic visits and a 25 per cent increase in immunization coverage. Leap has transitioned into a social enterprise and is scaling to other countries. As well as Accenture and the Vodafone group, partners include Safaricom and the MPESA Foundation. Leap is applicable to SDGs 3, 4, 5 and 6.

In **Kuwait**, Kuwait University has launched the *E-Learning and Virtual Classroom System*. This website, which contributes to attaining SDG 4, is a learning-management system (LMS) which is integrated with a virtual classroom functionality using advanced e-collaboration and videoconferencing technology.

The virtual classroom functionality allows students and other users to join live and recorded lectures/webinars delivered by Dr Salah Alnajem at Kuwait University. The learning system allows users to participate and interact in the lectures online and in real time, through HD videoconferencing and e-collaboration technology. It also enables them to download course materials, download lecture notes and annotations (shared Microsoft One Note notebooks), track grades, track attendance, and take online exams.

In **Kyrgyzstan**, the Institute of Electronics and Telecommunications (IET) has developed the *Portal for distance education of people with disabilities*. Electronic and Internet technology has opened up new prospects for persons with disabilities. As well as supporting inclusive education, e-learning offers a convenient means for people to learn a profession, and the opportunity to receive higher education anywhere, anytime, according to an individual’s own convenient schedule.

The platform elaborated by IET offers the following advantages:

- The platform integrates social features such as virtual classrooms, chat rooms, blogs, sharing graphics and video.
- Video lectures with visual graphics can be viewed several times, interactive tests and controls are intuitively clear; and if you do not understand something, you can ask the online consultant.
Students will receive a login and password to access the personal cabinet, where they can access an electronic library, view the schedule of classes and exams, watch online lectures, participate in seminars and communicate with teachers and classmates.

The project is relevant to **SDGs 3, 4, 5, 8, 10, 11, 16 and 17**.

In **Mexico**, although high-school level education became compulsory in 2012, annual drop-out rates are high on account of demographic, economic and social issues. With this in mind, the Online National High School Service (Servicio nacional de bachillerato en línea) initiated the **Prepa en Línea - SEP** project, which is an officially recognized, inclusive, nationwide project aiming to provide free virtual high school for everyone, allowing students to develop skills through the use of ICT. The programme currently has 52 589 students from all states, of whom 2 507 have a disability. To attend to the students, 1 500 facilitators and tutors are employed so as to be able to offer a personalized service. The programme contributes to the attainment of **SDG 4**.
In the Netherlands, Chunri Choupaal has launched The Code to Change programme, whose goal is to contribute to the achievement of gender equality (SDG 5) and economic empowerment of women through digital inclusion. It further aims to address the existing skills gap in the ICT sector and the associated digital gender divide. To this end, a training programme has been designed and launched to teach women the key e-skills required to pursue a career in the ICT sector. The programme was developed out of a successful earlier initiative to highlight gender-based discrimination in the workplace, Work to Equality.

The Code to Change programme seeks to bring together ICT and IT professionals with those who are looking for ways to join the sector and update their digital skills. It also aims to provide training in new skills that will enable participants to explore careers in the technology sector, to facilitate diversity and equality in the workplace. A defining aspect of Code to Change is that it strives to establish long-term mentoring and training, focused on the individual, to equip people with the necessary skills to hold a well-paid job in the digital age.

Targets:

1) To train women (one batch of 30 women per project country) in the requisite e-skills for jobs, through training and mentoring. Current two-year target: 180 trainees.

2) To introduce the selected participants to real-life on-the-job learning opportunities, under the supervision of selected mentors, where applicable.

3) To identify and promote women leaders in the technology sector who are passionate about teaching other women the necessary digital skills to be successful in the workplace, and to act as the catalyst for change throughout the industry.

The project, which serves SDGs 4, 5, 8 and 10, is carried out in partnership with Marktplaats-eBay Netherlands, Accenture Netherlands, Microsoft NL, GitHub, RIPENCC, Amsterdam Women in Technology, technical communities, women’s rights groups and women’s shelter houses. In future, it will also be partnering with Anita Borg Institute (United States), and successful talks were held with ITU in respect of partnering for the Code to Change programme during WSIS events in 2016.

In Oman, the Ministry of Education (MoE) has launched the Education Indicators System. The education indicators dashboard is one of the most important electronic tools used in making education decisions in MoE, as it offers analytical indicators in respect of more than 200 million statements on different aspects of education work. The electronic system takes its analytical readings from huge databases provided by the Education Portal. The dashboard helps decision-makers carry out accurate planning for the future. It thus serves SDG 4.

Launched by Sultan Qaboos University in Oman, PresentationTube is a network for producing and sharing video tutorials, designed to help teachers and e-content producers in Oman and many other countries to record and share quality video tutorials effectively. The project offers free presentation recording software and an online video sharing platform. The software allows educators to narrate and annotate slides and synchronize a variety of essential visual media. The online platform uses YouTube API technology to upload and stream video content. By end January 2016, the PresentationTube project had helped more than 15 000 educators and offered more than 3 500 quality video tutorials on various subjects and in many languages, including Arabic, English, Spanish, French and Malay. Besides ensuring quality education, the project also contributes to revitalizing the global partnership for sustainable development (SDG 17).
The Pakistan Institute of Development Economics (PIDE), a degree-awarding institute in Islamabad, Pakistan, has developed the PIDE Smart Application (PSA). The app bridges the gulf between students and teachers and provides relevant information instantaneously to students. It transmits notifications to remind students about their classes in accordance with the timetable, as well as readings of the day, which are also made available through the app. With the increase in cellphone users in Pakistan, PSA will help to better control and administer student information. The inherent shortcomings in the traditional ways of sending information to students will be overcome at low cost and with a high degree of effectiveness. Furthermore, this will allow students to concentrate on studies rather than keeping check on schedules, plan changes and bus routes and important business economics news, which will be handled by PSA. The project aims to facilitate teacher-student relations and contributes to fast and effective information-sharing (SDG 4).

Under another project in Pakistan, Knowledge Platform has set up the Blended Learning Solution. This solution, which aims to reach 50,000 students across Pakistan by 2018, provides easy access to specially designed content mapped to the country’s local curricula for students in low-income areas nationwide. It also provides performance data which can be especially useful for policy-makers in the education sector. Currently, Knowledge Platform operates globally with major ventures in China and the Philippines. We hope that the blended learning solution makes an impact in the education sector in Pakistan, and are currently partnering with several foreign and local organizations to ensure scalability and effective commercialization.

The project, which is conducted in partnership with Khan Academy, Sabaq, Sindh Agricultural and Forestry Workers Coordinating Organization (SAFWCO), Idara-e-Taleem-o-Aagahi (ITA) and Jazz, addresses SDG 4.
In Pakistan, Developments in Literacy (DIL) has launched the **Mobile Taleem** project, which is in line with **SDG 4**.

Mobile Taleem significantly enhances conventional teacher-training programmes by providing in-service teachers with the resources they need to deepen their content knowledge. A product of DIL’s extensive expertise in education, and designed in collaboration with local teachers, Mobile Taleem features more than 150 localized lessons focused on the learning needs of teachers and students in Pakistan’s least developed areas, accessible through mobile smart technology.

In the pilot, average growth among teachers was 47 per cent, signalling tremendous potential for improving the quality of teaching and learning, particularly in marginalized areas. DIL is scaling up Mobile Taleem to reach 2,000 teachers and 40,000 students in 2017.

The USAID Small Grants Ambassador Fund Programme, Pakistan, funded the pilot from 2013 to 2015, and Netsol is building the Mobile Taleem application for philanthropic use.

In Portugal, Code for All has launched **Code for All Junior**. The children of today are tomorrow’s coding rock-stars, so we created a computer science learning platform called Blanc. With Blanc, children learn code with unique learning experiences through adventures, videos, challenges and games. Blanc is also the teacher’s best friend, providing all the necessary materials for each lesson as well as KPIs on students and the entire class. The lessons cut across all the SDGs, so our students also become better citizens while learning how to code. Since September 2016, some 2,000 Portuguese children have been discovering the universe of programming, so that one day they’ll program the universe.

The project serves, in particular, **SDGs 5, 8, 9, 12, 13 and 16**, and is undertaken in partnership with Start-up Lisboa; Câmara Municipal de Lisboa; Câmara Municipal do Fundão; Fundação Calouste Gulbenkian; Laboratório de Investimento Social; Millennium@Edu; Erasmus+; and Universidade de Aveiro.

In Saudi Arabia, the Ministry of Islamic Affairs, in partnership with V Heart Tech Sdn Bhd, Mohd Fazidin Jabar and azid21@gmail.com, has launched **Three-dimensional**,
multilingual and multiplatform virtual learning for Hajj and Umrah. This project aims to train people to perform the rituals of Hajj and Umrah correctly, and reduce as far as possible common mistakes made by people in the pilgrimages, through step-by-step learning techniques using the three-dimensional potential of sound and written text, as well as seeking to define non-Muslims who cannot visit the holy places in the sense of pilgrimage. The project is relevant to SDG 4.

In Egypt, the Saudi-based Islamic Development Bank, in partnership with the Egypt ICT Trust Fund (an entity established by the Ministry of ICT of Egypt), the United Nations Development Programme (UNDP) and the Ministry of Education of Egypt, has launched a project to support E-education for visually and hearing impaired students. The project exploits the power of ICT to break the vicious circle of social exclusion of people with disabilities. E-education was introduced in public schools for visually and hearing impaired students in Egypt, to improve their education quality and reduce the drop-out ratio. The project converted the curricula of the last two primary years (750 lessons) into electronic format, presented in sign language and audio files; deployed the e-lessons in schools (four schools); and shared them on a website, providing assistive technologies (around 142 000 visits so far). The project has prompted the government to consider generalizing the model to all schools for students with disabilities. This project helps in attaining SDGs 4 and 8.

The Doroob programme (meaning “paths” in Arabic) is a comprehensive national project in Saudi Arabia offering a complete range of technology-enabled tools and incentives, including theoretical knowledge through e-learning, practical experience through on-the-job training, and certifications approved and recognized by major companies in the country. The programme aims to achieve a qualitative leap in the field of national employment, increasing the employability of the population, thus supporting the country’s objectives for employment, “Saudization” of the workforce, and achieving job security in the private sector. Doroob helps to meet the objectives of WSIS Action line C7 – Information and communication applications: benefits in all aspects of life (e-learning), as well as SDGs 4 and 8.

In the United Arab Emirates, the Mohammed Bin Rashid Smart Learning Programme has launched smart school transformation, undertaken in cooperation with the Ministry of Education (school principals and teachers), and home/society and global education and learning experts, and serving SDGs 4 and 5. The Smart School Transformation Framework (SSTF) has been developed as a systematic framework to improve the outcomes of learners and the community through effective strategic leadership of ICT in schools. The framework aims to develop a critical, strategic and unified understanding of the role and value of ICT. Furthermore, it provides an understanding of the role of technology for advancing student-centered teaching and learning. The framework strives to establish effective monitoring, evaluation and coaching skills in order to drive effective use of ICT. This enables education leaders to act as agents of change so as to promote effective use of ICT across the wider school community.
In the **United Arab Emirates**, Dubai Police has launched *simulation training*, utilizing simulation and serious game technologies which have changed and improved the delivery of training.

Dubai Police realized early on the need for solutions capable of enhancing the traditional training methods they employed, in order to raise productivity, promote growth and enhance well-being, and found that investments in ICTs and human resources represent a sustainable approach to this end. Accordingly, over a period of years they researched and developed a whole series of virtual environment prototypes, with the result that they now possess a large portfolio of such products for their training needs.

This project is relevant to **SDGs 4** and **12**.

In the **United Arab Emirates**, the Deputy Prime Minister’s Office is backing *smart learning through e-games*. The Khalifa Student Empowerment Programme launched an initiative that promotes learning through smart electronic games. The initiative supports the learning and educational process through video games, which are considered the best way and means to promote learning and awareness, thanks to their widespread availability on various devices and operating systems (Apple, Android, Windows) and because they contain educational messages for adults and children presented in a fun template. The initiative is considered an innovation and a smart way to improve the quality of education, helping to offer the wider community an affordable and enjoyable means to access educational content, in line with the thrust of **SDG 4**.

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**WSIS Prizes 2017**

**SMART SCHOOL TRANSFORMATION FRAMEWORK (SSTF)**

**CATEGORY 9: e-LEARNING**
In the United Arab Emirates, the General Civil Aviation Authority has developed the Future Aviators website, at http://www.futureaviators.ae/. This activity forms part of the Emiratization campaign targeting the Emirati students and their parents, on the one hand, and the education system (teachers, principals and education counsellors), on the other, to raise awareness about the aviation sector and the potential career opportunities it offers for Emiratis. The aviation sector is considered to be one of the little-known sectors for a lot of people not only in UAE but in the world at large, leading to a shortage of staff working in the sector. The website contributes to meeting SDG 4.

The Lemann Centre for Brazilian Studies at Columbia University in the United States has studied the issue of mobile learning in Brazil ("Mobile Learning in Brazil: Management and Implementation of Current Policies and Future Perspectives"). In recent years, governments in many countries have displayed ever more intense interest in the acquisition of devices such as tablets and laptops, with increasing investments in this area. But how are these mobile technologies being integrated into public schools in Brazil? The Lemann Centre, with support from Qualcomm, carried out an 18-month nationwide study, conducted through school visits, interviews and focus groups. The outcomes are publicized in the first book on the issue, released as an open educational resource (OER), as well as through an innovative two-day event with focus on the capacity building of the participants in the study. The project is in line with SDG 4.

In Uruguay, Universidad de la República has launched the Multireferential Learning Environments (AMAs) project. Multireferential learning environments are about relationships towards knowledge and the processes of construction and socialization of knowledge. AMAs mediated by ICTs are tools that enhance new ways of learning for an intercultural citizen who resists and creates. In the Uruguayan educational context, college and university students are building new ways of learning and dealing with knowledge, oriented by telematic interaction in a cultural scenario. This project, which relates to SDGs 1, 3, 4, 5, 9, 16 and 17, is carried out in partnership with Espacios de Educación de...
Adutos, Central Management Board of the National Public Education Administration (ANEP CODICEN), Escuela 124, and Escuela 21.

In Zimbabwe, Ian Nyasha Mutamiri has launched the NatiV project. NatiV assistive learning technology is, and should be, positioned as an avant-garde, breakthrough technology on the Zimbabwean market. We are aware of the presence of other learning apps (including language apps) on the Zimbabwean and Sub-Saharan Market (which latter we intend to enter in the near future). At this point, however, NatiV’s technology is to be highlighted and singled out as the only solid alternative in terms of educational science and phonetic research coupled with intuitive technology that enhances cognitive learning for different levels of learnership. For instance, the NatiV app respects many linguistic rights and inclusive education, and even caters for dyslexics. The objectives of NatiV closely follow global benchmarks and promote cultural diversity. The cross-cutting spectrum of marketing efforts must reflect and put across these key differentiating features. We hereby present NatiV to the international audience that cares about and embraces cultural diversity and linguistic freedom.

Our partners in this project, which serves SDGs 4 and 8, are AFRINIC- FIRE (Fund for Internet Research and Education); TEEP (Tony Elumelu Entrepreneurship Programme); University of Zimbabwe; and Royal Academy of Engineering (RAE), London, through the Africa Prize for Engineering Innovation.

C7.4 E-health

The lead facilitator for e-health is the World Health Organization (WHO), while the International telecommunication Union (ITU) acts as co-facilitator. The aim of the e-health category is to promote collaborative efforts on the part of governments, planners, health professionals and other agencies, as well as the participation of international organizations, in creating reliable, timely, high-quality and affordable healthcare and health information systems and in promoting continuous medical training, education and research through the use of ICTs, while respecting and protecting citizens’ right to privacy.

E-health also facilitates access to the world’s medical knowledge and locally-relevant content resources for strengthening public health research and prevention programmes and promoting women’s and men’s health, such as content on sexual and reproductive health and sexually transmitted infections, and diseases that attract global attention, including HIV/AIDS, malaria and tuberculosis. In line with the Geneva Plan of Action, stakeholders should encourage the adoption of ICTs to improve and extend healthcare and health-information systems to remote and underserved areas and vulnerable populations, recognizing women’s roles as health providers in their families and communities.

Many governments see the need to enhance healthcare systems at the national level and to put in place policies on e-health as a priority. Various types of initiative are undertaken in order to raise awareness about health issues, create integrated public health systems and databases and build the capacity of the health sector.

The e-health category undeniably helps to achieve various SDGs, for example SDGs 1, 2 and 3 on poverty, food security and well-being of all. E-health can contribute to finally recognizing the role...
of women as health providers in their families and communities and to improving and extending healthcare and health information systems to remote and underserved areas (SDG 5). Health data and information systems are needed for alerting, monitoring and controlling the spread of communicable diseases, providing evidence for uptake and trends in e-health and its impact on other related socio-economic outcomes (SDG 17).

In Algeria, LaSTIC Laboratory, Batna 2 University, has launched the Sensor-based system for the detection and self-treatment of nocturnal hypoglycemia with diabetic children, in line with SDG 3. The system’s mission focuses on timely detection and automatic treatment of nocturnal hypoglycemia with young diabetic patients. Hypoglycemia occurs when the glucose level in the patient’s blood is very low. It is particularly dangerous when it happens during a patient’s sleep at night, and may even lead to the death if it is not treated urgently. The current solution to this serious healthcare problem relies on the patient’s parents, who have to measure – once or twice a night – the glucose level in their child’s blood and give him or her something sweet to eat (or drink) if it is found to be lower than the accepted rate. Our system intends to deal seamlessly with nocturnal hypoglycemia through two wearable modules: a hypoglycemia detection module and a hypoglycemia treatment module. The detection module includes a heart-rate sensor, while the treatment module contains a glucagon reservoir and a subcutaneous injection tool. When hypoglycemia occurs, the heart rate increases substantially, and this will be detected by the heart-rate sensor, which then orders the treatment module to inject the glucagon. If the problem persists and the glucagon reserve is consumed, the sensor sends a warning message to the parents’ smartphone and/or to the house to trigger an audible alarm.

Another programme in Algeria, the Personal medical card, is based on the idea of a magnetic card (or an element of the CHIFA health-insurance card) where electronic medical prescriptions (medical identity) are loaded. The medical card will contain personal information concerning the individual’s state of health (chronic diseases, medical prescriptions, hereditary diseases, new symptoms, allergies). Electronic registers will be created, to include all information from all different parties: doctors, pharmacists and hospitals. As soon as there is a new disease, a special programme issues an alert so it can be treated quickly. The information is established and processed in one centre, by specialists in the medical domain and scientific researchers. The centre will also provide all the regions with a range of information on economic, social, medical and scientific issues. This will help people in obtaining urgent information for different treatments easily and quickly, thus fostering healthy lives and sustainable consumption and production patterns, as per SDGs 3 and 12.

The Ministry of ICT of Bangladesh initiated a project for the development of Bangladesh National Formulary (BDNF) Online: The Authority on the Selection and Use of Medicines in Bangladesh, in partnership with the Centre for Internet & Society (CIS), Bangladesh, and in line with SDG 3.

How to take medication in the right doses and the right time? What are the possible mistakes and side effects? What are different dosages and forms of the product available? These common questions regarding the rational use of drugs (RUD) invariably occupy the minds of all categories of people whenever they need to take medicines. Regrettably, however, prior to this initiative, Bangladesh had no online version of its official drug information. Moreover, there was a risk that the drug information that is posted on the Internet could be of dubious quality and even downright misleading, owing to
cultural and language variations. The other problem is that unauthorized and commercial online drug indexes may contain advertising, as well as confusing, biased or wrong information (e.g. drug price, blacklisted drug, etc.). This situation is at odds with the Right to Information Act, 2009 and the Digital Bangladesh Vision, 2021 policy.

BDNF Online is an informative pharma-indexing website providing tailored solutions for the Bangladesh market and covering over 30,000 prescription drugs, over-the-counter medicines and natural products according to the official publications of the Directorate General of Drug Administration (DGDA) of Bangladesh. It is designed as a digest for rapid and easy reference, compiling, through ICT, drug information specifically on the drugs available in Bangladesh.

The Bangladesh NGOs Network for Radio and Communication (BNNRC) has launched Bini Suter Mala (Necklace without cotton thread) as part of the project "Nirapod - Saving women from unwanted pregnancy and unsafe menstrual regulation". The objectives of the project are to improve sexual and reproductive health of young people and assess the results of programmes on family planning and adolescent sexual reproductive health rights, violence against women, rights-based approach and menstrual regularity, by broadcasting radio programmes on seven community radio stations. The project will advance SDGs 1, 3, 4, 5 and 16.
In China, Beijing Qianyi Health Management Co. Ltd has created the Yihudaojia application. The Yihudaojia app constitutes a platform that connects doctors, nurses and patients to meet the rigid demands of on-site healthcare services for the elderly with limited mobility, pregnant women and children. At present, there are 27,000 practising nurses certified by the platform, the app has been downloaded by users more than 35 million times, and the on-site services cover 240 cities. Yihudaojia relates to SDGs 1, 3, 5, 8, 12 and 13.

In China, the China Mobile Communications Corporation Government and Enterprise Service Company has established the Medical Transportation Management System facilitated by Telemedicine Technology. The project creates a mobile cloud-based management system during emergency evacuations, applying state-of-the-art ICT to this highly specialized medical field. In view of the rapid development of global medical assistance services provided by the project’s partner, International SOS, the project has huge potential to be used in more countries and regions, and effectively improves the quality of medical service and patient experience in modern international medical evacuations. The project is also of great significance as an exploration of cross-cutting business cooperation and a development model solution which may eventually benefit social life by accelerating technical applications to meet the needs of highly specialized domains. The project is of relevance to SDG 3.

In China, Neusoft Xikang Healthcare Technology Co. Ltd, partnered with Ningbo, has developed the Ningbo Cloud Hospital. The cloud hospital, first established in 2014, is a third-party health-management service platform that integrates data collection, education, remote diagnosis and such like, by combining several leading technologies. Ningbo Cloud Hospital achieves online and offline integration of diagnosis and treatment services and promotes the development of hierarchical diagnosis and treatment systems, thereby creating value for multiple stakeholders and providing extensive
primary healthcare services to residents. The project shows how cloud hospitals can be developed and popularized in emerging markets to relieve the increasing burden on the healthcare industry. It serves the objectives of **SDGs 3, 4 and 10**.

In **Cuba**, Ileana Regla Alfonso Sánchez has launched **Infomed**: an innovating, socializing telematic health network at the service of Cuban public health. Infomed is a portal following the latest trends and capable of building communities of practice and socializing knowledge, pioneering in the use of open systems and free software. The main information resources in the network relate to the specific features of the Cuban health system. The network is a social impact endeavour continually perfecting itself with the participation of multidisciplinary talents, and using technologies to improve healthcare in Cuba and worldwide. It is applicable to **SDGs 3, 4, 5, 9 and 16**.

In **Egypt**, Marwa El Nokrashy has launched the **Telemedicine for Remote and Rural Areas in Egypt (TRRA)** programme. Despite the forward strides that have been made in the Egyptian health ecosystem in recent years, the major challenge resides in the centralization of specialized medical services in the country’s major cities, leaving more isolated and rural communities with less than adequate medical services. Accordingly, the Central Department for Community Development of the Ministry of Communications and Information Technology (MCIT) launched the TRRA programme in 2009 with a view to providing better healthcare services and enhancing the quality of people’s lives through a telemedicine solution. The programme served the Siwa oasis (average population 23 000) and the Nubia area (average population 50 000) and is now expanding its resources to cover all remote and border areas across Egypt. The project, which serves **SDGs 3, 8, 10 and 17**, is carried out in partnership with the Ministry of Health; Ministry of Communications and Information Technology (MCIT); Ministry of Higher Education; Faculty of Medicine, Alexandria University; El Kasr El Einy Hospital World Health Organization (WHO); Arab Gulf Fund for Development (AGFUND); Vodafone Foundation; Orange Group CSR; Arab Doctors Union; and local NGOs in Siwa and Nuba.

In **Germany**, the Diplomatic Council has developed the **Smart Service Power** project. The project’s goal is intelligent digitization and linking different data sources in order to support age-appropriate, technology-driven housing for elderly people. The Internet of things and smartification of a home is a not cold and inhuman phenomenon; on the contrary, it allows people who need assistance to stay self-sufficient and autonomous in their homes for a longer time. Sensors and other systems offering ambient assisted living are mainly used for alarms.
in an emergency; this project seeks to exploit opportunities to proactively support residents and to track the evolution of their condition (deterioration) through big data analysis.

The project, which is being implemented in Germany but will have a global footprint, is promoted by the European Union and the State of North-Rhine Westfalen, and carried out with a number of partners, namely VIVAI Software plc, University of Applied Sciences Dortmund, inHaus Ltd, Nursing Hübenthal Ltd, Dortmund Association for Living, Fraunhofer inHaus Centre, Duisburg. It targets SDGs 3, 11 and 16.

In Germany, the Diplomatic Council has launched Zero Mothers Die, a multistakeholder global initiative to reduce maternal and newborn mortality through the systematic use of mobile technologies and ICTs, to increase women’s access to healthcare and information, and to build the capacity of frontline health-care workers to improve maternal, newborn and child care. The project supports SDGs 3 (good health and well-being), 4 (quality education), 5 (gender equality), 10 (reduced inequalities) and 17 (partnerships). As 300 000 women die every year of pregnancy-related complications, it targets 100 000 pregnant women at high risk, by leveraging mobile technology solutions through the Zero Mothers Die app.

The initiative is led by the Zero Mothers Die Consortium, composed of the founders, the Advanced Development for Africa Foundation, the Millennia2025 Women and Innovation Foundation and the Universal Doctor Project, in partnership with UNAIDS, Airtel, Global Partnerships Forum and ZMQ, a ‘technology for development’ social enterprise. It is being implemented in Ghana, Gabon, Mali, Nigeria and Zambia.

In India, Padmaseetha Technologies Private Ltd has launched the Wearable Alternate Kidney (MIRACLE). The vision is to empower the millions of renal patients world over with a near normal lifestyle through a safe and affordable continuous ambulatory peritoneal dialysis (CAPD) solution. Patients in rural areas often have to travel many hours for their dialysis, imposing a phenomenal burden in terms of time and costs. More than 90 per cent of patients, unable to cope with the financial, clinical and psychological burden, give up hope and die, leaving a devastating impact on their dependants. Mobile CAPD (m-CAPD) allows renal patients to carry out CAPD dialysis anytime, anywhere without taking time off work, and is accessible to patients located even in remote corners of a country. Patients are always connected with their doctors through a cloud-based patient management system, taking care of consulting, consumables and logistics in the most affordable manner. MIRACLE dialysis will bring down the cost per patient per month to less than USD 200, a phenomenal tenfold reduction in relation to the current cost.

The project, which supports SDGs 3 and 17, is carried out in partnership with several agencies (BIRAC Dept. of Biotechnology, Government of India; GITA, Ministry of Industrial Product and Promotion, Government of India; IITMadras Incubation Cell; MSME, Government of India), which have provided grants for this effort to the tune of INR 10 million.
In India, ZMQ Development has developed FreedomTB - Active Compliance System for TB Control, a ‘technology for development’ initiative to combat tuberculosis through multi-level intervention using a 360-degree model. It follows a bottom-up approach, whereby patients and communities are part of the solution design. They are connected to the TB health system to improve adherence, case detection, treatment management and capacity building through digital connection and behavioural change technology tools. The initiative is based on ZMQ's fully-Technology Linked Model (f-TLM), which effectively uses ubiquity of cellphones. It is being implemented in two states of India - Haryana and Rajasthan- and in Wakisto and Kampala districts in Uganda.

The project addresses SDG 3 and is carried out in partnership with RNTCP-India (Revised National TB programme of India); Haryana State TB Office, India; Delhi State TB office, India; National TB and Leprosy Programme of Uganda, with initial support from the UK Department for International Development (DFID), Bill and Melinda Gates Foundation (BMGF) and Indian Knowledge Park (IKP).

In India, Trust+ is an innovative app solution which uses a social media app platform to connect parents, adolescent girls and boys, differently-abled children and teachers, so they can discuss sexual and reproductive health-related topics without any hesitation. Trust+ works to eradicate the social stigma which stops users from talking about their sexuality in a contextually suitable, age-appropriate, normal and humanly sensitive way. This has a high impact in preparing the next generation to combat sexual abuse in schools and at home and empowering them to talk about such topics in a respectful manner. The project relates to several SDGs, by ensuring, inter alia, healthy lives, equitable quality education and gender equality (SDGs 3, 4, 5 and 11).
In **Italy**, Intellitronika has launched the **Virgo** safety device for the protection of operators working in risky environments. Virgo is a personnel-safety warning system, able to be worn in three positions (shoulder, belt, chest), designed to alert the team when a user is at danger. Audible and visible alarms ensure the user can be easily and quickly located. Robust enough for any operating environment, the device will function seamlessly in any extreme condition. It meets the standards **IP67 - ATEX**. Virgo is equipped with sensors and functionalities that can detect functional, physical and environmental abnormalities. The acquired data are transmitted over the network to the control centre. The operator’s position is monitored by a six-axis IMU (inertial module unit), and all extended abnormal positions (loss of verticality, immobility) are considered as safety incidents and generate an alarm. The ambient temperature is continuously monitored, and an automatic alarm signal is emitted in the event of threshold levels being exceeded. Virgo can be equipped with different modules, e.g. iTemp, to control the temperature inside the PPE; DCode, for monitoring heart rate and other vital parameters.

Virgo contributes to addressing **SDGs 9, 11 and 16**.

In **Malawi**, the University of Malawi College of Medicine has created Malawi’s first professional medical network, **MedNet Malawi**. Over the last decade, increases in training capacity in Malawi have boosted the physician-to-population ratio from 1.6 per 100 000 inhabitants in 2005 to 2.9 per 100 000 in 2010 – an 81 per cent increase. Despite these achievements, many Malawians still face inadequate access to quality health services, with only 16 per cent of established posts filled. MedNet Malawi constitutes Malawi’s first web-based professional networking portal for medical specialists in and outside the country. The portal has been developed on the basis of three objectives: 1) improve networking between Malawian and international experts; 2) build a medical expert pool for Malawi; and 3) enhance access to information on specialized medical care in Malawi.

The initiative, which supports **SDGs 3, 5, 8, 10 and 17**, is undertaken in partnership with the German International Cooperation Agency (GIZ) and the European Union (Delegation to Malawi).

In **Malaysia**, the **Compact Rehabilitation Robot (CR2)** is being developed, in partnership with the National Stroke Association of Malaysia (NASAM), Universiti Teknologi Malaysia (UTM), Collaborative Research in Science, Engineering and Technology (CREST) and DF Automation and Robotics, to help therapists assist patients with rehabilitation training and boost their motivation using virtual reality games. CR2 is a compact rehabilitation robot that provides multiple customizable therapy modes, including smart assistance therapy, wherein the robot assists the patient’s training movement when required and applies resistance to improve the patient’s muscle strength. The CR2 robot offers three training modes: passive, assistive and active. The training data are uploaded to the cloud, and users can easily review progress via the Internet. With interactive robotic assistance, patients are more motivated to do physiotherapy training during the rehabilitation process, hence facilitating healthy integration into everyday life, and helping to attain **SDG 3**.
In Malaysia, the Faculty of Engineering and Technology, Multimedia University, has launched the Brainwave Control System (BCS), implemented on an ambulatory assistive device. According to the World Health Organization, the number of persons with disabilities is increasing annually. The aim of the BCS innovation is to enable all the immobilized disabled, especially those who have undergone quadruple amputation or suffer from neuromuscular disease, to regain their mobility. It involves a wheelchair-type ambulatory assistive device which can be directly controlled by human brainwaves. This ambulatory assistive device is equipped with enhancement features throughout the control system in order to provide comprehensive assistance for the users. Patents and copyrights have been filed, journal and conference papers have been accepted and the invention has won several national and international awards.

The project, which addresses SDG 3, 4 and 8, is carried out in partnership with PERKESO Rehabilitation Centre Melaka, Malaysia; Deakin University, Australia; Putra Specialist Hospital, Malaysia; National Medical Research Registrar; Neurotech (M) Sdn Bhd; and YIM Technology Resources Sdn Bhd.

Another project from Malaysia, entitled InnovaBoard, relates to a number of SDGs on health quality, education, economic development, and other domains (SDGs 3, 4, 7, 8, 10, 11, 12, 15 and 16).
InnovaBoard is an interactive wobble board, developed to help people to improve their body balance through training and strengthen their ankle muscles, and further motivate them using virtual reality games. It is a compact training device that provides multiple levels of difficulty, thus enabling patients to start with a very easy level accessible to everyone. Ankle sprain is a common injury that affects many people, not least athletes (one report estimate that 50 per cent of sprint injuries are ankle sprains, and 9 million people in America suffer ankle sprain every year). Other ankle rehabilitation solutions are available on the market, but most existing systems are complex, voluminous, too basic and less interactive.

The project is undertaken in partnership with DF Automation and Robotic Sdn Bhd, technical experts from Techcare Innovation Sdn Bhd and clinical professionals from the National Stroke Association of Malaysia (NASAM).

Surgical care in Pakistan is very scarce owing to the small number of hospitals and surgeons and the high incidence of post-operative complications. Minimally Invasive Surgery (MIS) facilitates quick recovery and reduces post-operative infections. However, it requires special skills, like expert hand-eye coordination and precise handling of instruments. These psychomotor skills can only be acquired through rigorous training. Various simulators have been developed for MIS training, but their licences are very costly, making them unaffordable for developing nations like Pakistan. In order to overcome this obstacle, a cost-effective MIS simulator called SmartSIM has been developed by the National University of Sciences and Technology (NUST), in collaboration with the Holy Family Hospital, Rawalpindi, Pakistan, and Dow University of Medical Sciences, Karachi, Pakistan. SmartSIM has been successfully used to train hundreds of surgeons in order to ensure quality health and education systems (SDGs 3 and 4).

In Pakistan, Telenor has launched Digital Birth Registration (DBR). This is Telenor Pakistan’s flagship sustainability project, carried out under a tripartite (public-, private- and social-sector) partnership in collaboration with UNICEF and relevant government departments of Pakistan, in pursuit of SDGs 3, 10, 16 and 17. The DBR project is designed to increase the birth registration rate in Pakistan, which happens to be one of the lowest in the world. It secures the fundamental right of identity for thousands of children across
Pakistan. In 2015, DBR was piloted in three villages in Pakistan, where the birth registration rate increased by 206 per cent. On the basis of the promising results of the pilot, we were able to scale up the project in 2017 to 800 union councils (villages) in nine priority districts (Pakpattan, Rahim Yar Khan, Muzaffargarh, Bahawalpur, Rajanpur and Multan in South Punjab; and Thatta, Badin and Nushero Feroz in Sindh), under the same tripartite partnership.

In Pakistan, Zeeshan Alam has launched the Medical Alert System (MAS) for dementia patients and caregivers/Helpers. The purpose of this project is to provide care and help to both dementia patients as well as caregivers. Dementia is a heartbreaking kind of serious disease suffered by millions, which cannot be cured today and has become a very common and fast-growing illness. People with different types of dementia like Alzheimer’s tend to be at greater risk of falling, which can often lead to surgery, and the death rate following a hip fracture for patients with Alzheimer’s is also higher. A fall is the most significant cause of injury for the elderly. On occasion, people with dementia may shout, moan or use abusive language, too. This can be very stressful for caregivers as well as the patients themselves. These issues can be addressed by means of digital tools that will detect falls or shouting (when a patient gets agitated and starts shouting or crying loudly).

Our two-in-one MAS system will detect both falls and shouts, using a detection algorithm which is based on a simple threshold method, and alert the caregiver on their Android smartphone; it can also send SMSs to the caregiver and doctors. In addition, it includes a pill-reminder function, which prompts the caregiver to give medicines on time. Easy-to-use, cost-effective and ethically acceptable, the system facilitates remote monitoring by caregivers and helps to reduce stress. It serves the objectives of SDG 3.

In Pakistan, Dawood University of Engineering and Technology in Karachi has launched Ferox Virtual Reality. This project investigates a novel medical rehabilitation system for curing varieties of phobia by creating different virtual environments using virtual reality (VR). The idea is to create natural environments using VR technology and, in addition, utilize a head-mounted display (HMD) to provide more realistic feelings to phobia patients. For manipulation and navigation, it will use the commercially available KinectTM motion sensor. For evaluation and monitoring of the patient’s response to the virtual environments, a separate screen will be installed which will be directly connected to the VR control system. The researchers on this project believe that VR technology can significantly improve treatment methods and can play a vital role in reducing stress and anxiety, thus enhancing the quality of a patient’s life. The project, which addresses SDG 3, 4 and 9, is a collaboration between Naima Urooj, Sadia Asghar and Benish Rashid.

Trequant is a tremor quantifier which is used to detect, monitor and track tremor-based movement disorders in Pakistan. Its aim is to help people suffering from tremors to lead normal lives and also help doctors to cure tremor patients more successfully. At present, there is no proper way to monitor essential tremors (ET) and doctors cure such patients on a trial and error basis. Data collected from the Trequant device will help pharmacies develop specific medicines for tremor patients. In this way, they might eventually be fully cured and lead normal and healthy lives. The project, which addresses SDG 3, is a collaboration between Usman Amjed, Usman Shabbir and Fawad Bhatti.
The last project from Pakistan in this category, the Parkinson’s Disease Management System, has been launched by the NED University of Engineering and Technology. Parkinson’s disease (PD) is a degenerative disorder of the central nervous system. It is a neurological disorder for which no specific diagnostic tests exist. In occasional cases, doctors may suggest surgery to regulate certain regions of the brain to improve health. Studying the symptoms and current clinical methods of diagnosis, and focusing on the proposed methods of diagnosing motion-related disorders in people, NED University has proposed a technological solution to diagnose Parkinson’s disease more accurately in its early stages by performing different (motion) tests on the patient according to the unified Parkinson’s disease rating scale (UPDRS) using a Kinect V-2 sensor powered by Microsoft. The project, which addresses SDG 3, is a collaboration between Rabea Tahir, Shaher Bano, Maseera Tehareem and Asma Afza.

In Palestine, Al-Quds University has launched the Electronic Nose for lung-cancer detection. Lung cancer is one of the malignancies causing deaths worldwide (e.g. 1.59 million in 2012). This makes it the most common cause of cancer-related mortality. There are a range of non-invasive diagnostic techniques used for cancer detection, but the problem with those currently available is that they are expensive and are not suitable for general screening purposes. In many cancer conditions, early detection increases the chances of successful treatment. An electronic nose (an e-nose is a device that identifies the specific components of an odor and analyses its chemical make-up) specifically designed for capturing and analysing breath samples may be the best solution for detecting the presence of cancer as a first-stage diagnostic technique.

The India-Palestine Centre team working on the project, which relates to SDG 3, comprises ten specialists in different fields: embedded systems, networks and security, desktop applications, and mobile applications.
In the **Russian Federation**, PJSC Rostelecom, in partnership with the joint-stock company RT Labs JSC, and in line with **SDG 3**, has launched the *Regional Medical Information System*, as a comprehensive service supporting the creation of a regional branch of a public healthcare information system, with the following benefits:

- Comprehensive informatization of the healthcare system in regions
- Relevant state and municipal services in electronic format
- Optimization of expenses of the Russian Federation’s constituent territories’ public funds for the establishment and operation of regional branches of the Uniform Public Healthcare Information System
- Substantial reduction in the time-frames for commissioning and putting into operation regional branches of the Uniform Public Healthcare Information System
- Placing application services on a secure distributed data-processing platform.

In **Senegal**, *JokkoSanté* is a connected community pharmacy. Do you have unused medicines at home? What if you could exchange them for points and save on your next prescription? In Senegal, medicines account for around 65 per cent of a family’s health spending, but drug consumption is not optimized, as surplus packaged medicines accumulate in households beyond their expiry date or are passed on without any medical control. Our solution is a circular-economy model in which surplus medicines deposited in the community pharmacy are rewarded with points which can subsequently be used to settle a new prescription. JokkoSante is also a trustworthy mobile platform to manage CSR donations with real-time follow-up and greater impact.

The project is undertaken in partnership with Ashoka (www.ashoka.org); Orange Senegal (www.orange.sn); Laboratoires Pierre Fabre; Laboratoires Boehringer Ingelheim; MicroSoft West and Central Africa; MakeSense West Africa; and Association Prévenir, and serves **SDGs 3, 10 and 12**.

The **Gezira Family Medicine Project** (GFMP) was initiated in 2010 in **Sudan**, as an in-service training model for Sudanese doctors enrolled in the project and the training programme. The main objective is to improve the quality of health services provided in primary care (in line with **SDG 3**). To achieve this goal, around 300 Sudanese doctors are recruited, trained in family medicine by means of a two-year in-service master’s degree programme, and relocated to different urban and rural areas. GFMP represents a modern model in family medicine training that responds to local needs, in consonance with the regional strategy for upscaling family medicine training. Information and communication technology is a cornerstone in fulfilling such a mission. The project will hopefully provide a suitable model for other low-income and middle-income countries that share healthcare challenges similar to those in Gezira state, Sudan.
Launched by the Ministry of Social Affairs of the United Arab Emirates, Nomow is a free smart application which detects any type of developmental delay in children aged five years or younger, in five developmental areas: physical, mental, communication, social and daily life skills. It can be applied by parents using a smartphone before the child’s referral to specialists, as part of an early-intervention programme. The idea of the app is to reach children who present a disability risk, in order to provide them with the necessary services and then bridge the gap between their developmental skills and their ages, thus preventing any early deterioration in their developmental skills.

Nomow addresses **SDG 3** by ensuring healthy lives for children, as well as **SDG 17** by helping to revitalize the global partnership for sustainable development.

Qualcomm Wireless Reach in the United States, under a public-private partnership in collaboration with Morocco’s Ministry of Health, and in partnership with Trice Imaging, Sony and Sonosite, has launched the Mobile Ultrasound Patrol programme, which addresses **SDGs 3, 5, 9 and 17**.

Every day, around the world, approximately 800 women die from preventable causes related to pregnancy and childbirth. Of those deaths, 40 per cent are attributable to injuries or conditions related to placenta complications. The only way of detecting abnormal placenta issues is through an ultrasound scan. The Mobile Ultrasound Patrol programme improves care for women in emerging countries through early detection and treatment of major causes of maternal mortality by providing medical examinations in rural villages of Morocco, with consulting physicians providing diagnoses in urban centres in Morocco and France.
In Oman, the Ministry of Health (MoH) has created the e-Health Portal, which allows citizens to access vital e-services such as scheduling appointments, blood-bank services and employment services to name but a few. The automation of services has dramatically reduced processing times. The portal supports 114 e-services, with 81 transactional services, 30 of which are for the public, 23 for employees, 8 for the government and 63 for private companies. An additional channel of delivery of services to the e-health portal is offered by the e-Sehaty mobile application, which supports several e-services for citizens and patients, including informational, interactive and transactional e-services. This e-health development is relevant to SDG 3.

In Vanuatu, the Chief Information Officer in the Office of the Government has launched the Vanuatu Inter-Island Telemedicine and Learning (VITAL) network project. The VITAL project began in the geographically isolated and remote village of Naviso on Maewo Island. A community with no cellular network successfully lobbied for Internet access to communicate with doctors at a hospital in Luganville, on Santo Island. Leveraging a multistakeholder approach, in less than six months, the two villages have engaged with doctors over 1,250 times and have helped 32 patients. This includes six life-threatening cases involving mothers and children, and ten patients who would have been permanently disabled without intervention. This project, conducted in cooperation with the Vanuatu Ministry of Health, Vanuatu Telecommunications and Radiocommunications Regulator and Maewo Telecommunications Committee, is relevant to SDGs 1, 2, 3, 4, 5, 7, 8, 9, 10, 11, 16 and 17.

In Zimbabwe, Kudakwashe, in partnership with the Zimbabwe National AIDS Council (NAC), has launched Fish-it, an innovative mobile phone-based social network application designed to assist young people, particularly in urban areas, through outreach, notifications, announcements, advertising, education, awareness and information dissemination to the most at-risk youths, on HIV and AIDS, STIs, drug abuse and unplanned pregnancies, and above all to effect behavioural change. It enables a young person to get the number of the next person in less than a minute. This innovation is all the more important insofar as youth are severely affected by these problems that plague the developing
world and which grow into broader problems and challenges, such as poverty and health concerns. The project advances **SDG 3**.

**C7.5 E-employment**

**The International Labour Organization (ILO)** is the lead facilitator for e-employment, while **the International Telecommunication Union (ITU)** is co-facilitator.

E-employment aims to encourage the development of best practices for e-workers and e-employers built, at the national level, on principles of fairness and gender equality, respecting all relevant international norms. It also promotes new ways of organizing work and business with the aim of raising productivity, growth and well-being through investment in ICTs and human resources.

Another priority for this category is the promotion of teleworking to allow citizens, particularly in the developing countries, least developed countries (LDCs) and small economies, to live and work anywhere in their societies, and to increase employment opportunities for women and people with disabilities. In promoting teleworking, special attention should be given to strategies promoting job creation and the retention of the skilled workforce.

Held from 21 to 25 November 2016 at the ILO International Training Centre, Turin, Italy, the “**International Labour Standards and Corporate Social Responsibility: Theory, trends and prospects**” five-day course aimed to foster a better understanding of the principles of the international labour standards (ILSs) as they relate to company operations and the implications for corporate social responsibility (CSR) policies and practices geared towards decent work and sustainable development. The principles contained in ILSs have become the essential reference point for companies in addressing labour issues in CSR initiatives. The course drew on the expertise of ILO in addressing labour issues at enterprise level, in particular through the ILO Helpdesk for Business. This service responded to company requests for advice regarding specific labour issues, including child labour, forced labour, freedom of association and collective bargaining, non-discrimination, conditions of work and social protection.

The Millennia2025 Women & Innovation Foundation is developing the action plans resulting from the Millennia2015 Foresight Exercise and International Working Groups (IWGs). One concrete action is Millennia2025 Solidarity-Women, designed to help women in precarious situations out of poverty by mobilizing goods and service providers, women’s NGOs, social partners, political and economic leaders and civil society in order to create a citizens’ solidarity fund1. The Destree Institute is designing actions as a replicable model that could be applied in Europe and in developing countries. To strengthen the foresight process, the Millennia2025 Women & Innovation Foundation and PROMIS®Service have joined forces, with the goal of advising women in precarious situations, and providing e-skills, knowledge, communication and support, among other things, so as to help those who lack access to communication tools but are nevertheless drivers of change. Against the backdrop of the WePROMIS® Pledge made at the European Commission’s Third Digital Agenda Assembly, the Millennia2025 e-mentoring platform powered by PROMIS® is going to structure, share and transfer knowledge among Millennia2025 Foundation members2.

Published in January 2016, the ‘**World Employment and Social Outlook: Trends 2016**’ is the ILO’s flagship report on world of work issues. Exploring the interconnected nature of macroeconomic policies on the one hand, and employment and social outcomes on the other, it analyses which policy combinations are most effective in delivering high employment and balanced incomes. The

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1 www.millennia2015.org/Solidari_Femmes
2 www.millennia2015.org/Millennia2025_WePROMIS
publication also provides readers with the most up-to-date global as well as regional labour market and social indicators\(^3\).

Another ILO report, ‘Women at Work Trends 2016’, provides the latest ILO data on women’s positions in labour markets, examines the factors behind these trends and explores the policy drivers for transformative change\(^4\).

E-employment is directly related to various SDGs, namely SDGs 4, 8, 10 and 17. Early investments in education in rural and remote areas are essential to future employment and economic development, offering affordable and flexible means to access education and enhancing the skills of rural youth, thus raising individual and collective decision-making skills (SDG 4). E-employment may evidently help in achieving Target 8.5, dealing with full and productive employment for all; indeed, teleworking could allow citizens to live in their society and work anywhere (SDG 8). It could also promote the inclusion of all: teleworking could increase employment opportunities for women, and for those with disabilities (SDG 10). Lastly, the development of best practices for e-workers and e-employers implemented at national level, supported by relevant international norms, will contribute to the implementation of effective capacity-building worldwide (SDG 17).

In Albania, the Albanian government aims to provide high-quality services for citizens that are transparent, effective and efficient, through the use of modern technologies and innovative services. To this end, under the leadership of the Ministry of Innovation and Public Administration (MIPA), the Department of Public Administration (DoPA) has built an Online Recruitment System (RPS), in order to enhance good and open governance in the recruitment process for the Albanian civil service.

The online recruitment portal improves the application process for all candidates applying for vacancies through DoPA, enabling them to register, create their personal profiles, apply for available openings and receive continuous feedback on all steps of their application status.

DoPA’s official webpage strives to enhance access to information and services for Albania’s civil servants as well as the population at large. In this context, RPS serves as a resource for information, collaboration and training, since it supports and integrates with critical front-office and back-office business applications to ensure a seamless transition of critical data throughout the recruitment workflow- from job posting to candidate screening, selection and appointment.

The development of this portal serves SDGs 4, 8, 10, 12 and 17.

In Azerbaijan, the Ministry of Labour and Social Protection of the Population of the Republic of Azerbaijan has launched the Electronic information system for the registration of labour contract notifications. Under the new system, with effect from 1 July, 2014 an employer signing an employment contract with an employee has been obliged to submit a so-called ‘employment contract notification’ (mandatory for entering into, modifying or terminating an employment contract), which is considered as an electronic document. Employers can use the services of the portal www.e-gov.az. The employment contract shall only enter into force after the system sends back an electronic registration notice, which must be provided to the employer within one working day. This system serves SDG 8.

In China, the Internet Society of China plans to set up the APEC SME Informatization Promotion Centre. With the aim of promoting employment, innovation, cooperation and sharing, and achieving win-win development, the centre will facilitate the integration of information and the development of small and medium-sized enterprises (SMEs), in order to promote cooperation among economic entities in the Asia-Pacific Economic Cooperation (APEC), as well as to improve informatization capacity building in the Asia-Pacific region. The establishment of the promotion centre will not only boost the economic development of Asia and the Pacific, but also benefit employment over the world. Thus, the project is closely related to SDG 8, as well as SDGs 9 and 10. It is being implemented in partnership with China (Nanjing) Software Park, Tsing Hua Academy of Continuing Education, and Industrial Cooperative Society of China.
In **Colombia**, the Ministry of ICT, in collaboration with the Ministry of Labour, Ministry of Justice and Law, INSEC, USPEC, the National Army and the District Secretary of the Government of Bogota, has launched the **Telework programme for people in penitentiaries**. In pursuit of resocialization programmes for the prison population, the National Government of Colombia, through the ICT, justice and labour ministries, has designed a programme focused on strengthening access to and adoption of ICTs through telework. The model consists in providing access to the ICT infrastructure, providing skills training and promoting productive activities. Since March 2015, five ‘Vive Digital’ points have been installed, and 220 persons incarcerated in eight prison establishments in the country have been certified in competitions for teleworking. This initiative is relevant to **SDGs 1, 4, 8, 10 and 16**.

In **Kuwait**, the goal of the **Manpower and Government Restructuring Programme (MGRP)** is to support and encourage Kuwaitis to work in the private sector, and find innovative solutions for the development of national employment, in line with **SDG 17**. It also aims to direct the national workforce towards approaching non-governmental organizations and supporting small businesses. Services provided under the programme, which is undertaken in cooperation with job seekers, private-sector companies and small business owners, include:

- Financial benefits for Kuwaitis who work in the private sector
- Summer training courses in private companies for students
- Nominating Kuwaiti job seekers and fresh graduates for vacancies in the private sector and paying them allowances until they work
- Opportunities for employees discharged from the private sector
- Free training courses for those willing to work in the private sector
- On-the-job training for private-sector employees
- Specialized training on request of a private company
- Monitoring the quota of Kuwaitis in private companies to ensure that they employ the maximum number of Kuwaitis.

In **Oman**, the Ministry of Manpower has developed the **E-identity service**. E-authentication services (PKI) for the ministry’s employees was introduced in a bid to benefit from the e-services that came on stream in 2015. The new service relates to e-nomination of job seekers, e-licensing and e-authentication of Omani employment contracts. The service ensures a high degree of security, accuracy and credibility, and serves **SDG 8**.

In **Oman**, the Ministry of Manpower has created the **Advanced Manpower Management system**. This single sign-on system provides information for nearly 2 million employees working in 179,000 private-sector enterprises in Oman. It has three main services, with 28 sub-services, and integrates electronically with 26 government entities. **E-employment** is designed as a single access point to all
employment services, automatically matching resources to vacancies. The e-work permit is designed as a single point for processing foreign worker permits online. E-complaint and e-claim is designed as an interactive platform allowing people to report labour violations by employers. The system serves SDG 8.

In the Philippines, the Technology for Education, Employment, Entrepreneurs and Economic Development (Tech4ED) project seeks to provide access to different aggregated, existing and proven ICT-enabled services and relevant content in one single platform. The platform, which offers content on education, literacy for special sectors, market, agriculture, industry assessment and government services, is accessible through the established Tech4ED centres in the country, which serve as a conduit for the efficient delivery of government and other services, and a potent tool for the empowerment and participation of unserved and underserved communities. The project aims to harness technology to deliver public services, thereby empowering and transforming society, and creating an inclusive, integrated and equitable countryside, combating poverty, and fostering education and equality, to advance SDGs 1, 4, 5 and 8. It is carried out in partnership with INTEL Philippines, Asus Foundation Inc., the Department of Science and Technology, Telecentre.org Foundation and the Department of Education.

In Portugal, Laboratório de Educação a Distância e Elearning da Universidade Aberta (LE@D) has launched Rebirth on the Net (REviver na Rede), a contribution to assist unemployed people in the region of Madeira, through an online platform supporting the use of Facebook to promote socialization, social integration, employability of the unemployed, and new forms of active job search. By helping the unemployed exploit Facebook’s potential in order to improve their employability and actively search for jobs, this social tool, associated with globalization, can respond to their needs and contribute to the development of local communities. The project has a strong pedagogical, social and solidarity element, providing for voluntary work in the community, on a social entrepreneurship basis. At a more advanced stage, it is intended to expand it both nationally and internationally. The project, which addresses SDGs 4 and 8, is presented in a video at: https://youtu.be/PuHTzSuqsZI.

The Ministry of Education of Saudi Arabia, in partnership with, inter alia, the Ministry of Health, ARAMCO, SABIC, the Ministry of Planning, the Ministry of the Interior, the Saudi Monetary Agency and the Ministry of Commerce and Industry, has undertaken the #YourJob_and_YourScholarship programme in order to address the critical need to create a bridge between the job market and Saudi students around the world. The third
stage of Saudi Arabia’s scholarships programme aims to align the job market, scholarship graduates and the Kingdom’s vision of moving to a knowledge-based economy. It is a massive employment/scholarship programme to create over 50,000 job opportunities while advancing citizens’ education to higher levels of knowledge and capabilities. In addition, this effort was designed to further develop Saudi Arabia’s information society commitment to gender equality, citizen’s education and empowerment, as well as social justice among citizens (SDGs 4, 5, 8, 9 and 10).

In Saudi Arabia, the Ministry of Civil Service (MoCS) has launched Jadarah, an electronic recruitment system serving Saudi citizens seeking jobs in the public sector. Jadarah is a complete system that can be used by government organizations, to register their staffing needs; by citizens, to register on Jadarah and respond to recruitment campaigns; and by MoCS staff, to verify applicants’ information and manage recruitment processes. The project is relevant to SDGs 8, 9 and 10.

In Saudi Arabia, the Ministry of Labour and Social Development has developed Electronic Advanced Services for Enterprises (EASE). The EASE labour-sector project currently serves more than 11 million working citizens and expatriates, 18 per cent of whom are female, and supports more than 1.8 million enterprises. Since 2007, it has offered a transparent, direct and easy-to-access communication channel that contributes to securing labour and employee rights. Over this period, an incremental increase in employment opportunities has been achieved through the EASE project, helping to boost the developmental renaissance in Saudi Arabia. By 2016, it had prompted an exponential increase of 723 per cent in female recruitment opportunities in Saudi Arabia. The project, which addresses SDG 8, is carried out with a number of partners: National Information Centre, Saudi Ministry of the Interior; Saudi Ministry of Foreign Affairs; Saudi Ministry of Commerce and Industry; Governmental Services Bus Centre (Saudi.Gov.sa portal); Saudi General Organization for Social Insurance; Saudi Ministry of Municipal and Rural Affairs; Department of Zakat and Income Tax; Saudi Council of Engineers; Price Waterhouse Coopers (PWC) - support for project-management consultation; Boston Consulting Group (BCG) - support for ministry workflow and policy restructuring; Peppers and Rogers Group (PRG) - support for ministry services and e-services re-engineering; Ernst & Young (E&Y) - support for ministry strategic planning and development; Palladium Group - support for ministry strategic planning and development; Horváth & Partners Management Consultants - support for ministry strategic planning and development.

In Saudi Arabia, the Ministry of Education has launched Ien Future Leaders. The ministry is seeking to optimize investment in its human resources and give qualified staff the opportunity to apply for leadership roles, in order to prepare the next generation of educational and management leaders capable of developing educational services and reviving education, accompanying Saudi Arabia’s wide-reaching development march, and helping national efforts to hoist Saudi Arabia into an advanced place amongst world nations. The project is consistent with SDGs 4, 5 and 10.

In Thailand, Advanced Info Services (AIS), in partnership with the Thai Ministry of Public Health, has launched...
**Social Network for Health Promoting Hospitals.** This is a working mobile application developed by AIS, under the concept of Thailand 4.0, for Village Health Volunteers (VHVs) to work collaboratively with Tambon Health Promoting Hospitals (HPHs). The app, which will be a key transformative feature of digital Thailand, converts a manual work process into a digital process. Information in the app is referenced by HPHs. This project aims to create sustainability in business, society and the environment, and thus distinctively focuses on **SDGs 3, 4, 8, 10 and 12**.

In the **United Arab Emirates**, Dubai Police initiated the **Smart Recruitment** project, which aims to provide a fully electronic mechanism for handling the entire job application process – from issuing the department’s vacancies to the submission of applications, posting résumés, managing interviews, sending job offers, tracking applications, receiving correspondence, setting dates for interviews and finally selecting eligible candidates.

The project meets **SDG 8** by targeting productive and full employment in the country, providing the necessary conditions to contribute to its economic growth.

**C7.6 E-environment**

**The World Meteorological Organization (WMO)** is the lead facilitator for e-environment, while the World Health Organization (**WHO**), the **United Nations Environment Programme (UNEP)**, the **United Nations Human Settlements Programme (UN-Habitat)**, the **International Telecommunication Union (ITU)** and the **International Civil Aviation Organization (ICAO)** are co-facilitators.
E-environment aims to encourage governments, in cooperation with other stakeholders, to use and promote ICTs as an instrument for environmental protection and the sustainable use of natural resources. It also encourages governments, civil society and the private sector to initiate actions and implement projects and programmes for sustainable production and consumption and the environmentally safe disposal and recycling of discarded hardware and components used in ICT devices. It establishes monitoring systems, using ICTs, to forecast and monitor the impact of natural and man-made disasters, particularly in developing countries, LDCs and small economies.

The *iSharkFin* system is an expert system that uses machine-learning techniques to identify shark species from shark fin shapes. The software was developed by the United Nations Food and Agriculture Organization (FAO) in collaboration with the University of Vigo with financial support from the Government of Japan and the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). Aimed at port inspectors, customs agents, fish traders and other users without formal taxonomic training, *iSharkFin* allows the identification of shark species from a picture of the fin. *iSharkFin* adopts an interactive process. Users only need to take a standard photo, select some characteristics of a fin and choose a few points on the fin’s shape, and *iSharkFin* will automatically analyse the information and tell you the shark species to which the fin belongs. A first version of *iSharkFin* is now available for the identification of 35 shark species commonly seen in international trade from dorsal fins, and the identification of seven species from pectoral fins, including some species listed in the CITES Appendices. Future releases will include the capability of identifying all the main shark species in trade.

E-environment relates to the achievement of various SDGs, including **SDGs 9, 11, 13, 14 and 15** on sustainable industrialization and innovation, the inclusivity and safety of cities, combating climate change, and the preservation of marine resources and terrestrial ecosystems.

In **Algeria**, the National Agency for Water Resources, in partnership with the African Development Bank (AfDB), has launched a project for the establishment of a geographic information system, with the following main objectives, consistent with **SDG 6**:

- structure all water resources data in a single repository for the exchange of information
- implement a GIS to facilitate decision-making and water resource management actions and interventions; and
- launch and implement the GIS.

In **Algeria**, the National Sanitation Office (ONA), in partnership with the EU Support Programme for the sanitation and water sector (EAU II), has launched the deployment of the national geographic information system for sanitation. ONA is modernizing by adopting a national sanitation-oriented GIS, as an aid to strategic decision-making, and a means of optimizing in-field interventions at local level by mapping heritage remediation in this GIS database. These achievements, which help to advance **SDGs 3 and 6**, have been possible thanks to the human and material resources mobilized by ONA, and technical assistance provided by the GIS expert of the EAU-II support programme.

In **Azerbaijan**, Azercosmos OJSC has set up the Azersky User Group, to support projects based on the use of Azersky satellite data and foster their development by Azercosmos. Under the terms of the arrangement, Azercosmos provides Azersky products free of charge for all areas of interest in selected projects; in return, selected candidates undertake to communicate their results to all members of the Azersky Users Group before June, 2017. Projects targeting villages and rural areas in the developing world often face time-consuming challenges, even at the most basic level of determining the most appropriate sites for pilot projects or the deployment of new systems. These processes can be facilitated by the use of images acquired by Azersky satellites. This project helps in attaining the objectives of **SDG 9**.
In Colombia, Computadores para Educar (Computers to Educate) has launched its *Environmental contribution in Colombia* project. In Colombia, the use of ICTs in educational processes is guided by Computers to Educate, a comprehensive, articulated, sustainable and efficient government programme which, with its three strategic pillars - (i) Access to ICTs, (ii) Pedagogical ownership, and (iii) Environmental sustainability in public educational institutions- contributes to consolidating education and mitigating the environmental impacts produced by obsolete technology. Through proper management and final disposal of technological waste products, Computers to Educate contributes to the protection of the environment. Likewise, it drives productive processes that leverage clean energies derived from environmental sustainability work. The project is conducted in partnership with the Presidency of the Republic of Colombia, the Ministry of ICT, the Ministry of National Education and the National Learning Service (SENA), and relates to SDGs 12, 13 and 15.

In Belarus, the Ministry of Natural Resources and Environmental Protection of the Republic of Belarus has developed *Greenmap Belarus*, a popular, free online resource which compiles, visualizes and provides easy access to environmental information in Belarus, relating to waste recycling and management, renewable energy, important nature territories, as well as environmental organizations and initiatives. The project has grown from a map of waste-recycling stations in Minsk in 2012 to a combined consolidated map aggregating environmental information for more than 115 towns of Belarus in 2016. Greenmap is the fruit of cooperation between environmental NGOs, governmental agencies and international organizations. The map is based on information provided regularly by a network of local volunteers in the regions of Belarus.

The project, which is relevant to SDGs 11, 12 and 13, involves a number of partners: Centre for Environmental Solutions (http://www.ecoidea.by/en/about); Ministry of Housing and Communal Services of the Republic of Belarus (http://www.mjkx.gov.by/); Energy Efficiency Department of the State Committee for Standardization of the Republic of Belarus (http://energoeffekt.gov.by/); Minsk City Committee of Natural Resources and Environmental Protection (http://minskpriroda.gov.by/); UNDP Office in Belarus (http://www.by.undp.org/content/belarus/ru/home.html); Delegation of the European Union to Belarus (https://eeas.europa.eu/delegations/belarus_en); the government institution "The Operator of Secondary Material Resources" (http://vtoroperator.by/); Green Network (http://greenbelarus.info/about-eng).

In China, China Mobile has undertaken the development and application of *sensor networks for cyanobacterial outbreak monitoring in Taihu*. The project is carried out in eutrophic waters, with the
aim of setting up monitoring and early warning technology to address outbreaks of eutrophic water bloom. It has established a eutrophic lake (reservoir) water-quality prediction and early warning system. The technology can also be applied in many eutrophic water sources in Wuxi and elsewhere to prevent similar outbreaks, in order to protect drinking water and hence the safety of residents. It enables China to fulfil its governance and protection role, and advances SDGs 3, 6 and 14.

The project is carried out with a number of partners: China Mobile Group Jiangsu Co., Ltd.; Wuxi Internet of Things Industry Research Institute; Nanjing Institute of Geography Limnology, Chinese Academy of Sciences (CAS); Institute of Computing Technology, CAS; Beijing University of Posts and Telecommunications; China Agricultural University; Zte Corp; Shanghai Wireless Communication Research Centre; Wuxi Municipal Environmental Protection Bureau.

In China, Jiangsu Post and Telecommunication Planning Design Institute Co. has launched the Xuzhou Smart Water Conservation project. The roll-out of this project will contribute to building a sustainable city, in line with SDG 11, by enhancing water information sharing with urban management, and hence public security; improving reliability and availability of city water tracking, monitoring of water pollution events, early warning and emergency scheduling; and enabling systematic control of urban water and drainage for the efficient use of water resources. The project outputs such as the data-sharing platform, application-integration platform, and general command and dispatching platform are replicable and can thus be popularized in other cities in China.

In Cuba, the University of Information Science launched the Pachamama Game Jam 2016. The Pachamama Game Jam event is a video-game development marathon aimed at creating concepts and prototypes of video games related to the environment. It seeks to develop ecological awareness among developers through the creation of video games, as well as promoting games that foster protection of the environment. The event runs during a weekend, and its results are then shared and released nationally. It is sponsored by the VERTEX Centre of the University of Information Science.
Science, in collaboration with the Food and Agriculture Organization of the United Nations (FAO) in Cuba and the Ministry of Higher Education (MES). The Pachamama Game Jam advances **SDGs 2, 3, 4, 5, 6, 9, 12, 16 and 17**.

In **Ghana**, the Ghana Investment Fund for Electronic Communications (GIFEC) has created the *Emergency Call Centre (112)*, a toll-free public emergency contact facility established to facilitate prompt and effective access to emergency response agencies, namely the police, fire brigade, ambulance services, the National Disaster Management Organization (NADMO) and other relief agencies. The emergency number "112" is designed to be accessed from any telephone- fixed or mobile- with seamless interoperability.

![Emergency Call Centre (112) Emblem](149x526 to 412x627)

The project partners are the Ghana Investment Fund for Electronic Communications; Sieghard Tech; NADMO; National Communications Authority; Ghana National Fire Service; Ghana Police Service; and fixed and mobile telecommunication operators, and the project relates to **SDGs 11 and 16**.

In **Germany**, the Diplomatic Council, in collaboration with Qualityminds (http://www.qualityminds.de), Apptitude (http://www.apptitude.co.th/) and Redheads Ltd (https://www.redheads.de/), has developed *Rainforest Connection*. Rainforest Connection (RFCx) transforms recycled cell-phones into "guardians of the forests" by attaching highly sensitive microphones and solar panels and placing them high up in tree-tops throughout the rainforests of the world, from where they transmit all sounds to a cloud-based artificial intelligence, Gaia, which is trained to detect a range of sounds, from chainsaws to birds, and to weigh the evidence so as to determine potential threats to forests and wildlife. When the RFCx system detects poaching or illegal logging, it sends real-time alerts to rangers who can put a stop to the illegal activity. As the capabilities of RFCx have expanded, new applications are continuously added. The system serves **SDGs 8, 9, 10, 13, 16 and 17**.

In **Greece**, Athena Research and Innovation Centre has launched *Democratizing Water Consumption Monitoring* (DAIAD), an FP7 research project developing technologies for real-time monitoring, analysis and understanding of water consumption data, aiming to induce sustainable changes in consumer behaviour. DAIAD addresses the challenges of efficient water management through real-time knowledge of residential water consumption, bringing together leading actors in the water and ICT domains, including the project’s partners: University of Bamberg, Amphiro AG, Fraunhofer Institute for Systems and Innovation Research, Waterwise and Aguas de Alicante. It is relevant to **SDGs 3, 6, 11, 12 and 13**.
In Indonesia, Iman Abdurrahman has set up the Backpack Radio Station, a radio station in a backpack made out of lightweight waterproof and fireproof materials and powered by long-lasting batteries and mini solar panels. The backpack will contain a mini radio station as well as a mini database, thus making accessible the data necessary to predict upcoming disasters such as tsunamis or volcano eruptions. The Backpack Radio Station can be a lifesaver for people living in one of the remote communities on the over 17,000 islands of Indonesia, who have no access to information and communication through ICT.

Implemented in partnership with members of the Indonesian Community Radio Network, the Combine Resource Institution, Radio FMYY, AgeofWonderland (Hivos & Baltan Laboratories) and Joris de Groot, the Backpack Radio Station is of interest to SDGs 3 and 13.

In Mexico, the National Digital Strategy provides for adoption of the Common Alerting Protocol in technical bulletins on major risk events within the country caused by natural, man-made or technological phenomena. The projected scope encompasses several types of notification, including: severe storms, volcano, tsunami, wildfire, space weather, financial and consumer. At this stage, however, implementation has been completed for hurricane and cold fronts, and is on the point of going live for amber alerts. The project partners include the National Water Commission (CONAGUA), the Attorney General for the Republic (PGR) and Google. org, and the project supports SDGs 9, 11, 13, 14 and 15.

In Nigeria, Lumos Global and MTN Nigeria have launched Lumos Mobile Electricity powered by MTN Nigeria, which tackles one of humanity’s biggest challenges: providing affordable carbon-free energy to the more than 1 billion people who live in the dark. Since January 2016, Lumos Mobile Electricity has provided electricity to more than 150,000 Nigerians, in 30,000 homes, small businesses and schools. With Lumos home solar systems, customers living off-grid can power their homes for less than 50 cents a day. And with MTN’s partnership, customers can pay easily with their mobile phones using existing airtime accounts. This project is instrumental in achieving SDGs 3, 7, 8 and 9.

In the United Arab Emirates, the Federal Authority for Nuclear Regulation (FANR) has launched the E-Licence programme. E-licence is a smart solution that automates the process of obtaining FANR’s core business services. It enables organizations to register, apply and check the status of their applications for services online; and FANR to receive, track, control, create, maintain, inspect and decide on those applications. The services covered by this smart solution include:

- Applying for a licence for a regulated activity using radiation sources
- Applying for an import/export licence for radiation sources
- Notifying FANR of the transport of radioactive materials
- Providing FANR with inventory lists
- Providing FANR with dose records
- Viewing inspection schedules and reports.

The e-licence programme, which addresses SDGs 9, 11, 13 and 17, aims to improve the services provided, enhance sustainability, protect the environment, create and maintain databases and spatial data, minimize risk, maximize emergency preparedness and optimize response, provide better control and instantaneously updated and precise records, and share such records with relevant national and international organizations as deemed necessary.
The United Arab Emirates adopted the concepts of "e-government" and "smart government" as part of the UAE Vision of 2021, in the firm belief that the provision and development of e-services is no longer an option, but a pressing necessity and a national commitment, which the ministries and governmental organizations are striving to fulfil, with the aim of developing and smoothly delivering their services to all beneficiaries, and increasing their contribution to enhancing UAE’s competitive capabilities at the international level, taking advantage of the advanced infrastructure and the increased level of awareness of use of smart technologies.

With this in mind, the Ministry of Environment and Water (MoEW) has introduced a comprehensive e-framework based on a multi-channel communication network, transforming all its services into smart services in record time. In this context, MoEW has implemented M-Environment, a smart reporting application developed as the ideal analytical tool, which helps decision-makers to analyse and monitor work progress, e/m-applications and the extent to which the service level agreement is dynamically applied, on a map of the country, along with a detailed screen with the associated statistics. M-environment aims to:

- Encourage and increase agricultural areas in the country
- Facilitate re-engineer the procedures governing the services
- Provide the latest technologies, such as online payment and multiple channels for service
- Enrich the animal wealth
- Encourage and preserve the wealth of fisheries.

The M-Environment application is an innovative tool to help sustainability and reduce the time, effort and resources needed to complete requests, by enabling the M-Environment app on different platforms and channels. It contributes to building resilient infrastructure, safety in cities, combating climate change and desertification, and conserving oceans, seas, etc. (SDGs 9, 11, 13, 14 and 15).
In the United Kingdom, Earth Aid has launched *Training in a Tab*. 'Training in a Tab' is the official name of world’s first tablet-based disaster-preparedness mass training programme. Since 2012, the programme is being administered in various areas of Bangladesh. The training is primarily targeted and delivered to people in rural areas who are often deprived of formal education and never really manage to get institutional training of any sort. From 2012 to 2017 (to date), the project has been rolled out in 20 locations in Bangladesh, and has received positive acclaim among the more than 1,200 participants, with an overarching impact on an estimated 100,000+ lives. The project has shown that the tablet-based training has indeed been successful in assisting people to acquire skills and knowledge that they would otherwise not have been able to obtain. The project, which is relevant to SDGs 4 and 13, is ongoing and being expanded to further geographic locations.

**C7.7 E-agriculture**

The *Food and Agriculture Organization of the United Nations (FAO)* is the lead facilitator for the e-agriculture component of Action line *C7*, and the International Telecommunication Union (ITU) is the co-facilitator.

This subchapter covers activities related to e-agriculture, the sector that involves the use of ICTs to improve agriculture, animal husbandry, fisheries, forestry and food security by providing ready access to comprehensive, up-to-date and detailed knowledge and information, particularly in rural areas. Thus, this subchapter contributes to such SDGs as SDGs 1, 2, 3, 4, 5, 8, 9, 12, 13 and 17 on combating poverty; achieving food security and sustainable agriculture; promoting healthy lives and lifelong learning opportunities; achieving gender equality and equal rights for everyone; promoting economic development and sustainable consumption and production patterns; combating climate change and revitalizing global partnership.

According to *‘The State of Food Insecurity in the World 2015’* (FAO, IFAD and WFP), about 795 million people globally are undernourished, down 167 million over the last decade, and 216 million fewer than in 1990–92. The decline is more pronounced in developing regions, despite significant population growth. In recent years, progress has been hindered by slower and less inclusive economic growth as well as political instability in some developing regions, such as central Africa and western Asia.

The year 2015 marked the end of the monitoring period for the Millennium Development Goal (MDG) targets. For the developing regions as a whole, the proportion of undernourished people in relation to the total population has decreased from 23.3 per cent in 1990–92 to 12.9 per cent. Some regions, such as Latin America, the east and south-eastern regions of Asia, the Caucasus and central Asia, and the northern and western regions of Africa have made fast progress. Progress was also recorded in southern Asia, Oceania, the Caribbean and southern and eastern Africa, but at too slow a pace to reach the MDG 1C target of halving the proportion of the chronically undernourished. A total of 72 developing countries out of 129, or more than half the countries monitored, have achieved the MDG 1C hunger target. Most enjoyed stable political conditions and economic growth, often accompanied by social protection policies targeted at vulnerable population groups.

The 2015 edition of the Global Forum for Innovations in Agriculture (GFIA 2015) took place from 9 to 11 March 2015 in Abu Dhabi, United Arab Emirates. GFIA, which attracts professionals from around the world across the whole value chain, represents an event of paramount importance for all stakeholders.

5 http://www.fao.org/3/a-i4646e.pdf
involved in sustainable agriculture. Among the six conferences comprising GFIA 2015, one was specifically dedicated to the use of ICT for agriculture: the “ICT for Sustainable Agriculture” conference. This event, organized in partnership with the Club of Ossiach, PROGIS Software and the Global Forum on Agricultural Research (GFAR), focused on how ICT can promote sustainable and climate-resilient agriculture and involved the participation of many key ICT4Ag stakeholders.

E-agriculture provides the basis for the global community to monitor development and validate models and methodologies, and to package and disseminate them once tested. The e-agriculture community must continue to play a role in collecting and disseminating good practices on the use of ICTs in agriculture and rural development and in examining emerging trends, the evolving role of ICTs and the challenges faced in reaching scaled, sustainable information service models.

In Bangladesh, the Bangladesh Institute of ICT in Development (BIID) has introduced the Zero-Cost Extension and Advisory Services (EAS) model to address multi-layer challenges in eco-system extension. The model consists of three major components – engagement of input supplier, integration of ICT solutions, and intense communication and awareness building. EAS is a potentially sustainable model with a win-win business proposition for all the stakeholders. Currently, BIID is implementing the model in Bangladesh in collaboration with the Bangladesh Seed Association (BSA) and its members (BRAC Seed, ACI Seed, Mallika Seed and Kishan Agro Services), with support from Katalyst. Soon the model will be scaled up with the financial institutions and other input service providers. The model is relevant to SDGs 1, 2 and 8.

Grameen Intel Social Business Limited (GISB)’s e-Agriculture venture is an ICT solution to improve the incomes of smallholder farmers through higher yields and lower costs in Bangladesh. A suite of mobile-phone and PC-based applications provides expert agricultural advice in critical areas: fertilizer, soil-nutrient analysis, crop/seed recommendations, pest/disease control, harvest management and commercialization. Working successfully in four countries, in partnership with the International Fund for Agriculture Development (IFAD); Ministry of Agriculture Forestry and Fisheries, Cambodia; International Development Enterprise (iDE); and Netherlands Development Organization (SNV), GISB is achieving yield increases of 20 to 30 per cent and potential income increases of up to 50 per cent. Through public-private partnership programmes, it is overcoming major barriers such as literacy, accessibility and affordability by applying leading-edge mobile and cloud technologies, thus contributing to SDGs around food security, nutrition, poverty alleviation, ICT-literacy and employment creation (SDGs 1, 2, 4, 5, 8, 13 and 17).
In Colombia, the Ministry of Information and Communication Technologies of Colombia (MINTIC) has launched a project on the use and appropriation of ICTs by artisanal fishermen in the Village of Taganga and Buenaventura District. The project, developed as part of the alliance between MINTIC and the Administrative Department of Science, Technology and Innovation (Colciencias), and also involving the Ministry of Agriculture and Rural Development and the National Authority for Fisheries and Aquaculture (AUNAP), aims to implement an ICT use and appropriation strategy in order to improve the competitiveness of the fishing activities of 40 artisanal fishermen, thus contributing skills and inclusion scenarios in the Village of Taganga and Buenaventura District. The starting point of the strategy is basic training in the use of ICTs and the use of apps to manage catch information and costs for artisanal fisheries, as well as access to information on marine wealth, seas and maritime cartography and to information systems of the Colombian fishing sector in order to improve fishing processes. In this way, the project meets SDGs 1, 2, 8, 12 and 14.

In Ghana, the Ministry of Food and Agriculture has launched the e-Agriculture project.

The Ministry of Food and Agriculture is a government organization of the Republic of Ghana. Its duty is to ensure food security in the country, and its mission is to promote sustainable agriculture and thriving agribusiness through research, technology, development, effective extension and other support services to farmers, processors and traders for improving livelihoods.

Electronic agriculture, or e-Agriculture, is a project under the West Africa Agricultural Productivity Programme sponsored by the World Bank, addressing SDGs 1, 2, 4 and 8. The goal of the e-Agriculture project is to create a multistakeholder, people-centred, cross-sectoral platform that will bring together stakeholders representing relevant e-agriculture constituencies, bring about modernization of agriculture and increase agricultural production and productivity; and promote e-extension as an alternative extension delivery methodology by using mobile phone and Internet facilities to disseminate information on proven technologies and also improve agricultural information outreach to very remote farmers.

Features of the e-agriculture platform:

- Bridging the gap between agricultural extension agents (officers) and farmers in Ghana
- Instituting best extension and best agronomic practices by applying ICT in information designation
- Enabling agricultural experts, researchers, farmers, processors and all other
stakeholders throughout the agricultural value chain to exchange opinions and resources relating to agriculture

- Training over a thousand extension officers in the use of smartphones, and distributing an equivalent number of smartphones to users in order to capture field data and register farmers on the platform
- Establishing an automated system for the fertilizer subsidy programme in Ghana
- Delivering services in real time and on an automated interactive voice response (IVR) system
- Call centre facility allowing executives to respond to farmers’ queries, or to connect farmers to subject matter specialists for further assistance that might not be in our data server.

In Ghana, the Ghana Investment Fund for Electronic Communications (GIFEC) has created **ICT for Sustainable Fishing**. Over the past decade, the fishing industry in Ghana has been plagued by the depletion of fishery resources, resulting in the loss of livelihoods for the almost 3 million people within the value chain. This sharp decline has compelled fishermen, particularly artisanal fishermen, to resort to unorthodox fishing practices, including fishing with lights, chemicals or explosives and using unapproved fishing nets, with the consequent effect on fish stocks and ultimately food security. To reverse the trend, GIFEC, together with the Ministry of Fisheries and Aquaculture; the Fisheries Commission; the Ghana Association for Artisanal Fisheries; and the National Canoe Fishermen Association, is promoting the use of technologies, which is stabilizing the rate of depletion and encouraging responsible fishing, with the goal of achieving food security, in line with SDGs 2, 8 and 14.

In Italy, James Marlon Azevedo Gorgen has authored the **FAO-ITU E-Agriculture Strategy Guide**. The agriculture sector stands to gain a lot through leveraging on the growth of information and communication technologies (ICTs). A strategic approach to e-agriculture will help to rationalize resources and harness the opportunity ICTs offer to meet countries’ agriculture goals more quickly. The existence of an e-agriculture strategy and its alignment with other government plans will prevent e-agriculture projects and services from being implemented in isolation. The e-agriculture strategy framework was developed under the auspices of the UN Food and Agriculture Organization (FAO) and the International Telecommunication Union (ITU), in partnership with several national governments (Bhutan, Sri Lanka, Fiji, Papua New Guinea and Philippines), and has formed the basis for developing the national e-agriculture strategies and key ICT solutions for those countries. The guide will be useful for SDGs 1, 2, 5, 8, 9 and 17.
Shekru is a smartphone-based free application in India, operating in both English and Marathi, that provides agricultural information as it relates specifically to events and schemes in Maharashtra and beyond. It lists more than 25 types of relevant items, ranging from training courses to field demonstrations. An organizer can also add a document or an audio recording describing the event. Events can be submitted by anyone, and users can express an interest in attending events and thus provide an RSVP to the organizer. The Shekru app also lists all schemes (insurance, subsidies, financial assistance, loans, etc.) of various stakeholders that involve the Ministry of Agriculture. The app will help in addressing SDGs 1, 2, 4, 5, 12 and 16.

The University of Agricultural Sciences, Raichur, India, in partnership with Tene Agriculture Solutions Pvt. Ltd., Bangalore, has initiated Electronic Solutions against Agricultural Pests (e-SAP): a complete ICT solution for crop-health management, which will help in attaining SDG 2. The e-SAP product is an ICT solution in the field of agricultural extension. It is a dedicated system that effectively integrates mobile communications, tablet-based technologies and cloud solutions to allow different players of the agricultural ecosystem, including farmers, agricultural universities and policy-makers, to interact on a single platform in real time, enabling two-way dissemination of real-time information that will strengthen the nation’s agricultural sector. The e-SAP system uniquely addresses crop-health management issues. It is structured with multimedia-based presentation of information in field devices transcending language and literacy barriers. It is the first solution to enable in-field identification and quantification of pest problems along with instant solutions. It also generates and synthesizes real-time data on pest situations in a region (country) and makes it available over its web solution to other players in the agriculture sector. The product also contributes to rural employment and entrepreneurship in local youth.

In India, Lablinks Biotech Private Limited has launched a game changing-innovation that makes biofertilizer
production very simple. Biofertilizers in agriculture need no introduction: live bacteria that colonize plant roots and provide a cheap source of nitrogen and solubilized phosphorous and potassium are symbiotic to plants and offer an alternative to chemical fertilizers. Production of biofertilizers conventionally requires expensive infrastructure and skilled operators to ensure contamination-free batches. Torocell technology using disposable plastic bags is a low-cost, easy-to-use process producing concentrated bacterial cultures. A 30-litre bag can produce the equivalent of a 1 000 litre SS vessel. Farmers can produce fertilizer to meet their own requirements. Villagers and women can be gainfully employed. This project, carried out in collaboration with Dr Prasadarao Gandlur and Anupam Das, addresses SDGs 1, 2, 8 and 15.

The University of the West Indies in Trinidad and Tobago has developed AgriNeTT, a project to promote sustainable agriculture and increase food production through ICT research and development.

AgriNeTT is an ICT-based e-agriculture project that focuses on empowering the agriculture sector in the Caribbean by developing mobile apps that assist farmers and policy-makers. It aims to increase agricultural productivity and raise the incomes of small-scale farmers, particularly family farms, women and youth.

The project addresses two major problems. The first - lack of data at farm and national level, is tackled by a solution based on two open data platforms; this distributed approach provides great flexibility in the publication and curating of data. The second - the lack of ICT tools for farmers and policy-makers, is tackled by developing a toolbox of applications (mobile and desktop) for use by farmers and policy-makers; four mobile apps have been developed.

The apps provide farmers with tools for financial management of farms, crop prices, plant pest and disease diagnosis, and crop suitability. The apps receive data from open data platforms and have data analytics modules that mine the data for trends at national level for policy-makers.

This model for development, carried out in partnership with the Ministries of Agriculture (Trinidad and Tobago, Jamaica) and the Caribbean Agriculture Research and Development Institute, and targeting SDGs 2, 4, 5, 8, 12 and 17, can be replicated in any developing country.
In **Indonesia**, ‘8Villages Indonesia PT’ has launched the *Information System for Farmers* (LISA), an education and communication application that focuses on empowering rural communities, starting with farmers but also including other micro businesses, too. It helps farmers to increase yields and micro businesses to improve and connect rural communities across Indonesia. It ultimately connects communities with MNCs, turning CSR into value. The project is carried out in partnership with Mercy Corps Indonesia, the US Agency for International Development (USAID), the German International Cooperation Agency (GIZ), Naha, CropLife International and the Government of Indonesia, and relates to **SDGs 1, 2, 3, 4 and 5**.

In **Indonesia**, iGrow has developed the *iGrow My Own Food* platform. iGrow helps underemployed farmers and under-utilized land to produce scalable and efficient organic farming outputs, funded by urban people around the world. The goal is to connect farmers, landowners, investors and crop buyers together to create a complete farming supply chain. We start by identifying crops with stable demand, prices and prospective characteristics. After that we secure the demand with the customers and look for arable land and farmers to grow such crops. We then raise capital for seeds from urban people on the platform and invest it in the chosen crops and farms. We provide a "Farmville" experience to investors. The project is relevant to **SDGs 1, 2, 3, 8, 12 and 13**.
In **Kazakhstan**, the Ministry of Agriculture of the Republic of Kazakhstan, in partnership with the joint-stock company Information Accounting Centre JSC, has launched the *State electronic register of grain receipt holders*, for automated accounting in respect of grain receipts, including the storage, processing, retrieval, distribution, transmission and provision of information on grain receipts and their holders.

In addition, for the convenience of grain market participants, an electronic map of granaries (licensed grain elevators and grain receiving points) is maintained on the web portal www.minagro.kz, with information about their technical features and their loaded and free capacity, which is automatically updated after the results of grain receipt operations are released in the information system. The portal also provides information about the cost of grain enterprise services (for receiving, drying, cleaning, storage and shipment), accredited laboratories for quality examination of grain as well as the texts of informational messages, in particular on the upcoming electronic trading of grain. The system is of relevance to **SDGs 2, 8 and 17**.

In **Latvia**, the Rural Support Service has launched the *Electronic Application System* (EAS). EAS started as a system for applying for funding to keep agricultural land in good condition. It has since been expanded with more modules, relating for example to the EU programme to provide healthy food (fruit, vegetables and milk) to schools; seasonal workers; diesel fuel for farmers; etc. EAS was developed in partnership with Tieto Latvia SIA, Autentica SIA and a number of NGOs with a view to facilitating communication and the application process to support beneficiaries, speeding up the decision-making process, reducing errors in the application process and improving access for people who live in rural areas far from main cities and customer centres. It is relevant to **SDGs 8, 13 and 15**.

In **New Zealand**, Fairtrade Australia New Zealand (Fairtrade ANZ) has launched *Linking farmers to Fairtrade markets in Papua New Guinea*, under the project ‘Technology as a Development Solution: Use of ICT to Improve Livelihoods of the Poorest in Remote Rural Areas’. Farmers and cooperatives in Papua New Guinea are challenged by isolation, compounded by poor telecommunication infrastructure and access to power, and are often unaware of the services available to businesses from telecommunication providers. Fairtrade ANZ has been supporting farmers in Papua New Guinea since 2008 to help them access the fairtrade market through Fairtrade certification. This project seeks to capitalize on ICT as a catalyst for development in Papua New Guinea, by partnering with cooperatives as well as public and private service providers to increase access to information and market opportunities through ICT. It is carried out in partnership with the University of Technology (UNITECH), Papua New Guinea, the International Finance Corporation (IFC) and the Papua New Guinea Coffee Industry Corporation (CIC), and serves **SDGs 1, 2, 5, 8, 12 and 17**.

In **Pakistan**, Telenor Pakistan is implementing *Mobile Agriculture*, in line with its vision of “Empowering Societies” and working towards the United Nations’ Sustainable Development Goals. In this context, it launched its *Khush’haal Zamindar* (Prosperous Farmer) service for smallholder farmers, who make up 89 per cent of Pakistan’s 30 million farmer base as at December 2015. The service provides localized, contextualized and customized information, including weather forecasts and timely agronomic and livestock advice, through text messages and outbound voice calls, to help increase crop yield,
reduce post-harvest losses, safeguard nutrition and better manage adverse climatic effects and natural resources. Some 2 million farmers are currently benefiting from this free-of-charge service, which covers a range of cash crops, fruits and vegetables, fodders and livestock, in three different languages.

Project partners include the Centre for Agriculture and Bioscience International (CABI), Pakistan (primary content partners); International Livestock Research Institute (ILRI) (global content partner); GSMA (GSM Association) Mobile for Development (key project facilitator acting as the liaison between Telenor Pakistan and content partners); Scaling Up Nutrition (SUN), Planet Beyond Pakistan (technology platform providers and secondary content partners); FROG Design (consulting partners for product UX and UI); Telenor Digital, Market Development Facility (MDF) and LAUNCH food. The project relates to SDGs 1, 2, 3, 5, 13 and 15.

In Tunisia, I.T.Grapes has created the Seabex e-monitoring and smart automation system for agriculture, which aims to help farmers make a better use of available resources (especially water, energy and fertilizers) and to produce more, in larger quantities, with better quality, and at less cost. The implementation to date is only the visible tip of the iceberg. Seabex in its current phase constitutes the first step towards the digitization of agriculture. Where we used to talk about drip irrigation, today we talk about smart irrigation and smart agriculture. To create a sustainable world it is necessary to be able to access the right information at the right time and act accordingly. Seabex’s mission is to make agriculture more accessible and more productive, with appropriate use of natural resources, in order to build a safe future in terms of water and food. The system is being developed in partnership with the governmental Agricultural Extension and Training Agency (AVFA) and the Institute of Arid Regions (IRA) under the Ministry of Agriculture and Water Resources, and advances SDGs 2, 3, 6, 12, 13, 14 and 17.

In Uganda, Ronald Katamba has developed the Jaguza Livestock App, a mobile (Android, Windows, iOS) as well as SMS and USSD and web (both online and offline platform) enabled artificial intelligence and computer vision system (IoT), that is aimed at improving livestock production in Uganda and on the African continent. It offers a number of modules, from which a farmer can choose one that best suits his/her needs (self-service app). Our mobile health technology start-up focuses on developing and deploying mobile and offline solutions to increase access to best farming practice in animal health for millions of smallholder farmers in African rural communities. We have developed a unique algorithm combining data crowdsourcing and machine learning with predictive analytics in order to forecast diseases early enough to help rural farmers improve their productivity. Animal health information is continuously collected from farmers and health workers, and correlated with external data sources, including laboratory data, historical
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data and early warning signals. Predictive analytics is applied to accurately predict diseases before they break out in communities.

As we are social enterprise, we are pioneering market-based approaches to bring low-cost livestock services to smallholder farmers at the base of the pyramid. We send farmers low-cost, easy-to-understand voice alerts and reminders for seeking care as well as actionable information and advice to help deal with disease outbreaks. In addition, we allow them to pay using their existing mobile credit so as to avoid any upfront seasonal costs. Jaguza App is currently operational in over 40 communities in 62 local farms in Uganda, where we are providing accurate animal health data, outbreak alerts and educational content to over 8 300 unique users every month.

The venture is implemented in partnership with the Uganda Communication Commission (UCC); Commonwealth Telecommunications Organization (CTO); Uganda National Council of Science and Technology (UNCST); Ministry of Communication and Information Technology; and National Information Technology Authority, Uganda (NITA-U), and applies to SDGs 1, 2, 3, 8 and 17.

C7.8 E-science

The main facilitator for e-science is the United Nations Educational, Scientific and Cultural Organization (UNESCO), while the International Telecommunication Union (ITU), the United Nations Conference on Trade and Development (UNCTAD), and the World Health Organization (WHO) act as co-facilitators. This category aims to promote affordable and reliable high-speed Internet connection for all research institutions, including universities, to support their critical role in information and knowledge production, education and training, and to support the establishment of partnerships, cooperation and networking between these institutions.

It also focuses on promoting electronic publishing, differential pricing and open access initiatives to make scientific information affordable and accessible in all countries on an equitable basis. E-science aims to encourage the use of peer-to-peer technology to share scientific knowledge and pre-prints and reprints written by scientific authors who have waived their right to payment. It also promotes the long-term systematic and efficient collection, dissemination and preservation of essential scientific digital data, for example population and meteorological data in all countries. Lastly it seeks to promote principles and metadata standards to facilitate cooperation and effective use of collected scientific information and data as appropriate to conduct scientific research.

Regarding water and sanitation (SDG 6), access to energy (SDG 7) and partnerships (SDG 17), this category promotes enhancement of the interface between policy, science and society by facilitating more evidence-based and better-harmonized policy-making and the greater involvement of citizens in scientific and policy processes. E-science contributes to building the resilience of the poor and those in vulnerable situations (SDG 1) and reduces their exposure to climate-related extreme events, responding to disease outbreaks and other emergencies and enabling better and quicker decision-making to avert and avoid catastrophes. Ensuring quality education for all (SDG 4) and gender equality (SDG 5) is supported by this category, as early-intervention programmes in science and technology targeting young girls increase the number of women in ICT careers; moreover, early investments in education in rural and remote areas are essential, offering affordable and flexible means to access education and enhance the skills of rural youth, thus raising the level of individual and collective decision-making skills. Climate change (SDG 13) and marine (SDG 14) and land (SDG 15) biodiversity rely on ICTs to pursue monitoring and observation of the evolution of global change issues, which may enhance the availability of scientific assessments of climate change, biodiversity and ecosystem services, health, agriculture and food security and disaster risk reduction, contributing to the sustainable management of resources and their availability to the global community.
In Ghana, the World Science Project is developing research on communication technology and networking for development.

The World Science Project was created before WSIS Phase I in Geneva for the express purpose of organizing the science side-event for WSIS Phase II in Tunisia. Its main thrusts were to (1) provide connectivity to research organizations in Africa and south Asia; (2) conduct connectivity surveys of scientists, educators, researchers and professionals in low-income areas.

Its studies represent the only global surveys to span the entire Internet era, with information collected as far back as 1994 to the present. So far, the huge benefits of connectivity have not yet resulted in the expected outcomes for social networks, particularly for women.

The World Science Project, which supports SDGs 4, 5 and 9, works with a number of partners: University of Nairobi, Kenya; Loyola College of Social Science, India; Louisiana State University, Baton Rouge; National Drylands Farming Research Centre, Kenya; Centre for Earth Science Studies, India; Water Research Institute, Ghana; Universidad de Concepción, Chile; University of the Philippines, Los Banos; University of KwaZulu Natal, South Africa.

In Kuwait, Abdel-Majeed Safer, in partnership with Ayman El-Sharkawy, has developed the histonano.com website (HNS), designed to educate readers interested in specific nanotechnology-related subjects, and of particular value for scientists and researchers. Ever since its inception in 2012, feeding and continuously updating the website’s substantive content has been ongoing. The HNS attempts to identify, certify and provide in-depth information to researchers, as well as offering the latest textbooks, journals, graphics and videos, to enhance users’ knowledge. The results of published papers concerning HNS are currently being compiled as an ongoing activity. The website serves the objectives of SDG 4.

In Malaysia, Multimedia University has designed an innovative multimodal platform for image noise filtering using single image signal-to-noise ratio estimation. In this innovative approach, an estimation technique is needed to estimate noise-free peaks in order to measure signal-to-noise ratio in terms of signal and noise energy. Since 2002, more than 20 techniques have been published. Noise filters are applied to remove noise. Two patents and nine copyrights have been filed for this innovation, and it has been the subject of many published journal and conference papers. It is useful for greyscale images such as electron microscope images which can be captured up to microscale, camera and photostat images. Developed in partnership with Telecom Malaysia (TM), this innovation advances SDG 9.

In Malaysia, Multimedia University has developed a biocompatibility platform for protein detection in latex gloves. Malaysia is the world largest latex glove manufacturer. To ensure glove quality in order to prevent latex sensitization, skin allergy reactions and such like, a high-performance liquid chromatography
(HPLC) test is performed, which takes between six and eight hours to complete. To reduce the set-up cost and time for reading protein concentration, we have designed a biocompatibility platform for protein detection that enhances sampling efficiency through automated chemical tests with image acquisition and image processing. Overall, this innovation has reduced the test duration to 30 minutes. It is the subject of two filed patents and several copyrights and accepted journal and conference papers, and has received national and international awards. The platform is developed in partnership with Top Gloves Sdn Bhd, Koon Sheng Sdn Bhd and IAC Technology Venture Sdn Bhd, and serves SDG 3.

In the United States, Project Noah: Networked Organisms and Habitat is a free public mobile and web platform (www.projectnoah.org) for documenting biodiversity, available to the general public. In its seven years of existence and with over 785,000 observations (1.5 million geo-tagged images) from 196 countries, Project Noah has directly contributed to multiple SDGs (e.g. SDGs 4, 14, 15, 16 and 17) by facilitating the involvement of schools and citizens in the scientific process, raising awareness about biodiversity, and disseminating free scientific digital content worldwide. Concrete outcomes include the discovery of new species and new locations for known species, fostering international collaborations across the economic divide, the provision of learning opportunities, and enabling local conservation projects. Project Noah is undertaken in partnership with National Geographic.
Action Line C8. Cultural diversity and identity

The United Nations Educational, Scientific and Cultural Organization (UNESCO) is lead facilitator for the C8 category, while the International Telecommunication Union (ITU) acts as partner. This category deals with cultural and linguistic diversity, which, while stimulating respect for cultural identity, traditions and religions, is also essential to the development of an information society based on dialogue among cultures and regional and international cooperation. It is also an important factor for sustainable development.

More than 50 per cent of the approximately 7,000 languages spoken in the world are likely to die out within a few generations, and 96 per cent of these languages are spoken by a mere 4 per cent of the world’s population. Only a few hundred languages have genuinely been given pride of place in education systems and the public domain, and fewer than a hundred are used in the digital world. ICTs are playing the role of enabler for preserving cultural and linguistic diversity thanks to web- and mobile-based solutions.

This category contributes to maintaining the genetic diversity of seeds, plants and animals (SDG 2) and to strengthening participation to improve water and sanitation management (SDG 6); ICTs transmit and share local and traditional knowledge and practices, founded on a comprehensive approach to specific rural environments. This action line may also be fundamental to supporting productive activities, job creation, entrepreneurship and creativity (SDG 8); indeed, the creative economy is powerful in the local context, acting as an economic driver. At the same time, it plays a crucial role as a platform for identity, dialogue and social integration, thus achieving inclusive and sustainable development. The action line plays a central role in protecting and safeguarding the world’s cultural heritage (SDG 11) and in ensuring sustainable consumption and production patterns (SDG 12). Indeed, ICTs help ensure continued access to cultural and natural heritage via archived digital information and multimedia content in digital repositories and promote the development of tools to monitor sustainable development for sustainable tourism.

In Armenia, the NGO Peace Dialogue has launched A Place for Peace and Ideas for Young Armenians. The project will provide young people with a safe, welcoming space in which to explore, discuss and discover the language, art and actions that make for a vibrant, diverse and democratic society. Many live in a world of tradition, except here at Peace Dialogue where they can come with their friends to create a new, dynamic community of ideas, growth and change, be free of the limits that bind the rest of Armenian society and dream of a world in which they want to live and build a family.

Change will only come to Armenia when there is a critical mass of people who believe that change is not only desirable but also possible. The young people who will use Peace Dialogue and its assets as a drop-in centre and technology resource will be a substantial part of that group. The work created by these young people has already made it into the mainstream of Armenian culture, and with new computers and new video equipment more of them will be able to do even more.

Peace Dialogue underpins the aims of SDGs 5 and 16.
In China, Jiangsu Post and Telecommunication Planning Design Institute Co. set up the Main Operation Centre Information System for the second summer Youth Olympic Games, to meet the requirements of “real-time, on-the-spot, dynamic, visualized, converged and dispatch-responding” provision, focusing on guaranteeing the success of the Games. By fully integrating data relating to events and the city by means of a combination of state-of-the-art technologies, including broadband multimedia digital trunking, the system is designed to provide customized command services for the main operation centre of the Games in order to guarantee the smooth running of the Games and the city. The project is in line with SDGs 3 and 16.

In Cuba, Leonides Alfredo Peña Turruelles, in partnership with Juan Carlos Jimenez Castillo, Guadalupe Martinez Diaz, Mariolys Blanco Pantoja and Ailín Alarcón Ferrá, has established the Cocina cubana multimedia platform. Cuban cuisine continues to gain international renown. It is a blend of the culinary traditions of various Hispanic, African and Asian regions. The multimedia platform developed offers recipes for preparing a wide variety of exquisite dishes. The ingredients used are typical of the insular Caribbean, characterized by various natural products, and various types of meats, complemented and seasoned with aromas of plants. The dishes are simple to prepare and the means accessible to all. This project is relevant to SDG 2.

In 2015, Egypt saw the start-up of Kotobna, the first online self-publishing platform in the Arab world, which has published more than 400 e-books, downloaded more than 25 000 times. Kotobna is an MIT Enterprise Forum Pan-Arab Region competition winner 2015. Its partners are Mohammad Gamal and Sherif Shaker. Kotobna helps to advance SDG 4 in the Arabic-speaking world.
In Italy, Swipe Story has launched an application called Il Medioevo APPadova (Middle Ages APPadua). This app is the simplest way to discover the stories hidden under the paved roads and below the stone curtains of the palaces of medieval Padua. Browsing the centuries with the tip of one finger, you will experience truly deep immersion in the daily life of the past, meet a lot of interesting characters and visit the most beautiful landmarks of one of Italy’s most important towns. The app is based on a model already trialled on real itineraries in the old town, combining written, iconographic and archaeological sources with more anecdotal information, and also giving the public the opportunity to interact with the visit by choosing to explore in more detail the facets in which they are more interested.

The APPadova app was designed for ARMPEP 2, a project of the University of Padua, and chosen as excellence project by the Fondazione Cassa di Risparmio di Padova e Rovigo. It supports SDGs 8, 11 and 16.

With fewer than 2 million native speakers, Latvian is one of the world’s least-used languages. This has severely restricted global access to Latvia’s knowledge and information. In order to overcome this language barrier between Latvia and the rest of the world and open up multilingual access to
knowledge, the Culture Information Systems Centre of Latvia, in partnership with Tilde, created its own publicly available automated translation service: Hugo.lv. By providing instant high-quality translation of Latvian content into multiple languages, Hugo.lv enriches the global information society with the enormous wealth of Latvian media, educational and cultural information, empowering the Latvian language in the digital age. In this way, the website promotes sustainable industrialization, ensures access to information for the entire Latvian population and global community and protects fundamental freedoms (SDGs 9 and 16).

In Palestine, Visit Hebron – Palestine is a Palestinian youth initiative dedicated to promoting the city of Hebron in Palestine though unique online resources, mainly a website www.visithebron.ps and a social media account www.facebook.com/visithebron, although we also offer postcards, a city map, posters and other souvenirs. Hebron boasts a number of landmarks, including its old city, holy sites, markets, the Russian Church, Abraham’s Oak and other sights. One of the world’s oldest continuously inhabited cities with a history spanning over more than six millennia, Hebron has seen its share of great events and civilizations that have left it with a tremendous cultural and human heritage. The project is in line with SDGs 10, 11, 16 and 17.

In the Russian Federation, Sputnik News Agency and Radio instituted the Sputnik.Readings poetry relay. The idea started in March 2015 as a cross-cultural project aimed at bringing people across the multipolar world closer together by reading eminent poetry about core shared values such as love, life and the beauty of the world. The project consisted in linking Sputnik newsrooms in a video relay that showed the world in all its ethnic and cultural diversity. The project, which responds to SDGs 10, 16 and 17, was implemented from March 2015 to May 2016 by Sputnik news agency and radio hubs in eight Eurasian countries: Abkhazia, Armenia, Azerbaijan, Belarus, Georgia, Kyrgyzstan, Moldova and South Ossetia.

In Spain, Telefónica S.A. has developed Movistar+ 5S, as a first step towards the aim of ensuring that television services can be accessed and used to the greatest extent possible by all people, regardless of their ability or disability. Movistar+ 5S is a service that allows people with sensory disabilities to view TV content (movies, TV series and documentaries) in Telefónica’s pay-TV platform. Thanks to this solution, they can access TV content with no additional cost via three accessibility options, namely subtitling, audio description or sign language. The service can be implemented using either a smartphone or a tablet, while the audiovisual content runs on the television or a computer. This system allows people with sensory disabilities to enjoy their television leisure time on their own or with their relatives and friends without interfering with the enjoyment of others. The service has been developed together with the Spanish University Carlos III, the Spanish SME WhatsCine S.L. and Telefónica Spain, and serves SDGs 10 and 16.

In Turkey, Turkcell has launched its “Hello Hope” mobile app for the integration of Syrian refugees.
Severe turmoil in Syria has created a dramatic refugee crisis, displacing more than 4 million refugees from that country. The overwhelming influx of refugees into Turkey has reached over 3.1 million people over the past two years, making Turkey the host country with the largest refugee population in the world. Turkcell has been a pioneer in mobilizing the power of communication for these people in distress. Serving around 1.2 million Syrian customers, Turkcell has become the operator of choice for Syrian refugees. The "Hello Hope" app was developed to ease the adaptation phase of refugees in Turkey and to give the Syrian community in Turkey connectivity to essential services.

Turkcell’s strategic partnership with the GSM Association (GSMA), the United Nations, the Red Crescent, the Disaster and Emergency Management Agency (AFAD) under the Prime Ministry of the Republic of Turkey and other NGOs, as well as use of the best technologies, will continue to support Syrian people during the period of adaptation to give them the chance of a meaningful life, far from trauma, in line with SDGs 10 and 16.

In Ukraine, Roopor has been developed, in support of SDG 4. Our daily routine leaves no time for self-improvement. We long for new knowledge and to expand our horizons, yet constantly find that time escapes us. Roopor offers a solution to this eternal dilemma. This app provides instant access to education and enlightenment from all over the world. It connects people to knowledge anytime and anywhere, on the go. No more restrictions, far-away locations or time zones. Useful information will always be there at your fingertips. Listen to exclusive lectures and plug in to the best wisdom the world has to offer. Share your experience, evolve and change the world around you.

UAEPedia (uaepedia.ae) is the online encyclopaedia of the United Arab Emirates, created by the UAE Telecommunications Regulatory Authority (TRA). UAEPedia documents the rich culture, history and heritage of the Emirates, along with the selfless leaders whose vision shaped the country. It aims to be the only authentic knowledge repository about the UAE providing information in Arabic – the native language of the land. UAEPedia is the first collaborative effort for preserving, enriching and spreading awareness about the cultural diversity and identity of the UAE. It is being developed in collaboration with 15 federal government entities. Each entity has assigned one or more “knowledge ambassadors” to contribute to UAEPedia by adding new articles and enriching existing ones. The encyclopaedia thus ensures inclusive and equitable education, contributes to the safety and inclusivity of cities and promotes peaceful societies (SDGs 4, 11 and 16).
Action Line C9. Media

The United Nations Educational, Scientific and Cultural Organization (UNESCO) is the lead facilitator for this action line, while the International Telecommunication Union (ITU) acts as partner. The Geneva Plan of Action states that the media — in their various forms and with a diversity of ownership — as an actor, have an essential role in the development of the information society and are recognized as an important contributor to freedom of expression and plurality of information.

This category encourages the media- print and broadcast, as well as new media- to continue to play an important role in the information society, through the development of domestic legislation that guarantees the independence and plurality of the media. Additionally, it takes appropriate measures - consistent with freedom of expression- to combat illegal and harmful media content, and seeks to encourage media professionals in developed countries to establish partnerships and networks with the media in developing countries, especially in the field of training.

This action line promotes balanced and diverse portrayals of women and men by the media and seeks to reduce international imbalances affecting the media, particularly as regards infrastructure, technical resources and the development of human skills, taking full advantage of ICT tools in this regard. Lastly, it encourages traditional media to bridge the knowledge divide and to facilitate the flow of cultural content, particularly in rural areas.

This action line is crucial to achieving gender equality and empowering all women and girls (SDG 5) as well as just, peaceful and inclusive societies (SDG 16), as it encourages equal opportunities for all, and an expanded media landscape built on ICTs and the Internet is central to inclusive politics and governance. Furthermore, universal and affordable access to the Internet worldwide would certainly expand the media landscape on a digital platform (SDG 9).

In Algeria, Algeria Broadcasting has launched a project to increase television broadcasting capacities. As part of the digitization of the broadcasting infrastructure, Algeria is deploying a national TV broadcasting network. This migration to digital terrestrial television, in addition to offering more programmes with better quality, will allow the deployment of broadband wireless access and therefore boost ICT capabilities.

In Bangladesh, the Bangladesh NGOs Network for Radio and Communication (BNNRC), in partnership with the 17 community radio stations and the Ministry of Information, has developed proposals to Strengthen capacity building, lobbying and advocacy to contribute to community media development, taking into account the overall growth and achievements in the community media sector, and the challenges faced and lessons it has learnt throughout the implementation of earlier phases of the project in long-term partnership with Free Press Unlimited since 2007.

Community radio can inform and educate civil society at large on media issues and make key stakeholders (governments, legislators, media, opinion-makers and decision-makers) aware of media aspects with the aim of securing public interest.

Despite the proven positive growth of the media sector in rural areas, however, the voice of rural citizens is still not reflected in mainstream media, they have less opportunity to participate in the development process of their respective locality, and they remain isolated. This is an important obstacle to participation and governance, where an active and efficient media could make a difference. The stakeholders concerned are not yet aware of how wide the gap is.
Moreover, it is evident from the project’s primary findings that civil society organizations (CSOs) are fragmented and politically polarized in Bangladesh. There is a huge lack of coordination and harmonization among CSOs working on different issues.

Although the government, through its Information Commission, is trying hard, the Right to Information Act (RTI) is still far from being properly implemented. There is too little awareness among the media and journalists on how to use this particular legislation to seek information, especially for investigative reporting. The general public also lacks awareness on how to use this law to request transparency of government decisions.

Thus, a genuine effort needs to be made to bring together all the existing CSOs and build up coordination and communication among them for addressing crucial and critical social issues. BNNRC and community radios, as the citizens’ media, can work in this area in 2017.

This project will address SDGs 1, 4, 10 and 16.

In Bangladesh, the Bangladesh NGOs Network for Radio and Communication (BNNRC) has launched the Online community broadcasting library for access to information and knowledge in Bangladesh. BNNRC has set up an online community broadcasting library (OCBL) in all 16 community radio stations in Bangladesh. Around 1,000 rural broadcasters are directly benefiting from the online library. Under the initiative, BNNRC has provided book shelves, a set of books/CDs, and ICT equipment/technical cooperation to each of the stations. It is found that the online library becomes a centre of excellence for community radio practitioners, civil society actors, human rights defenders, government officials and local media practitioners that provides them with appropriate knowledge, tools and support to respond to issues relating to the freedom of expression, right to information, safety and protection of community journalists. The effectiveness of the project, which advances SDGs 1, 2, 4, 10 and 16, stems from the strong partnership among the direct partners, the 16 community radio stations.

In Bangladesh, the Bangladesh NGOs Network for Radio and Communication (BNNRC) has launched a campaign through community radio on Improving the real situation of overcrowding in prisons in Bangladesh (IRSOP). BNNRC has implemented this information and motivation campaign project through seven community radios, as an alternative medium for upholding access to information for grassroots people in our society (cf. Action line C3), in partnership with the German International Cooperation Agency (GIZ Bangladesh). The main objective was to make the community aware of the services provided by the government and NGOs for accessing the justice system and restorative justice through alternative resolution. The project produced and broadcast a radio magazine programme entitled “Khola Janala” (open window) that included a dialogue involving guests representing different sectors, like members of the Jail Inspection Committee, advocates, representatives of Social Welfare Department and local government, etc. The project is relevant to SDGs 10 and 16.
In Bangladesh, the Bangladesh NGOs Network for Radio and Communication (BNNRC) has launched the Building capacity to produce interactive, audience-led governance programmes through community radio. BNNRC and BBC Media Action jointly implemented a pilot project in two community radio stations (Chilmary and Sagargiri) aimed at building broadcasters’ capacity to produce interactive, audience-led governance programmes. The broadcasters received training and produced two programmes on the performance of local governance in Union Parishad local government structures. Finally, guidelines have been developed on producing people-led content which are now being used by all community radio broadcasters in the country. The project links WSIS Action line C4 and SDG 4 Targets 4.4 and 4.7 by striving to develop the skills of the young radio broadcasters who are take up the future leadership of the sector, and is of relevance to SDGs 1, 4, 10 and 16.

In Burkina Faso, MediaProd has developed and launched Agribusiness TV, a web TV which aims to use videos as a promotion tool to build or restore agriculture’s positive image and make the sector more attractive to youth by showcasing success stories of young agricultural entrepreneurs and their innovations in Africa, consistent with SDG 8. As a media tool designed for mobile phones, one of the challenges of Agribusiness TV is to produce videos that will move from one mobile phone to another via Facebook, or be exchanged by Bluetooth when the connection is not good. And it works: in just nine months since the project launch, over 50 videos have been produced, which have had over 2 million views. Agribusiness TV has a growing youth audience thanks to its strong social media presence and its mobile application. Feedback from the audience and the featured entrepreneurs testifies to its impact.

Agribusiness TV is an initiative of MediaProd, in cooperation with a number of partners, including: the Technical Centre for agricultural and Rural Cooperation (CTA); VITA International; Samsa.fr; Global Open Data for Agriculture and Nutrition (GODAN); e-Agriculture; Saphyto; CommodAfrica; ACP Young Professionals Network. This project is of interest to SDGs 1, 2, 3, 5, 8, 12, 13 and 15.

In Colombia, the Ministry of Information and Communication Technologies has launched Cine Para Todos (Cinema for Everyone) in partnership with Fundación Saldarriaga Concha and Cine Colombia. Since 2013, Cine para Todos has been fostering inclusive entertainment, allowing those with visual, hearing or cognitive disabilities to enjoy movie theatres for free, thereby advancing SDGs 10 and 16. Accessibility is provided through the use and adoption of ICT. In Cine para Todos, the disabled
audience have become content prosumers thanks to capacity-building sessions where they learn how to produce audiovisual content. Moreover, a group of these new prosumers had the opportunity to participate in, and indeed win, the inclusive SMARTIC category of the Smart Films Festival. Movies are adapted with accessibility technology features like audio description, subtitling and interpretation in Colombian sign language. This is possible through the synchronization of a free app called WhatsCine made to be compatible with various technology devices. Once a month, these special cinema editions are available in some of the main theatres countrywide, and in rural areas they are displayed in the ‘Vive Digital’ points and kiosks.

In Finland, Viestintä ja kehitys-säätiö (Finnish Foundation for Media and Development) has developed the Community Radio Portal (CRP), a web-embedded distribution platform for local and community radios. CRP provides a new tool for radios to distribute their material nationally and globally. Materials can be sorted by subject and geographically. The portal is created in a close cooperation with community radio producers, and its user interface is designed to be as user-friendly as possible. Designed especially for developing economies, CRP can easily be applied to any country and also to serve diaspora. The project is carried out in partnership with MISA, Tanzania and the Community Media Network of Tanzania, and relates to SDGs 3, 4, 5, 10, 16 and 17.

In the Russian Federation, the Bonch-Bruevich St. Petersburg State University of Telecommunications, in partnership with the Saint-Petersburg Branch «Leningrad Branch of the Central Science Research Telecommunication Institute» (LO ZNIIS), has launched the Sonification of complex networks and systems project, which aggregates the studies of several international researchers in the field of sonification (the representation of data using auditory displays), post-NGN and computer music technologies. The project’s primary objective is to develop the method of universal mapping between the informational domain (network/system events, processes, status, etc.) and the auditory domain (up to eight independent channels of sound to represent the given data). Auditory displays help to provide faster solutions and improve the results of data analysis and data mining, especially in the emerging world of Big Data. Also, the approach should offer a new dimension of information understanding for visually impaired people. In our experiments, we use different network models as well as the logs of real telecommunication systems. For the sound core, we use an open language for computer music, sound synthesis and processing called Csound. The project is of relevance to SDGs 3, 4, 8, 9, 11, 12, 15 and 16.
In the **Russian Federation**, Sputnik news agency and radio was established in 2014. In 2015-2016, Sputnik focused on *strengthening cross-cultural ties and facilitating information exchange among Eurasian countries*. This initiative covered 14 countries: Azerbaijan, Armenia, Abkhazia, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Latvia, Lithuania, Moldova, Tajikistan, Uzbekistan, Estonia and South Ossetia. The cross-cultural projects undertaken by Sputnik include:

- Sputnik.Readings poetry project
- Videoconference between Armenia and Azerbaijan after the escalation of the Nagorno-Karabakh conflict
- Multimedia travel guide to Eurasian countries
- Project on national Olympic teams at the Rio Olympics

The project is relevant to **SDGs 10, 16 and 17**.

**Togo** has seen the launch of *Envi288News*. Access to sustainable development is only possible through environmental education of the population, whence the creation of the blog *Envi288news*, a dynamic and interactive reporting platform that serves as a medium for education related to sustainable development, reporting of events, specific studies, and the organization of awareness campaigns through online press and social networks. The *Envi288news* community serves as an organizational tool for improving communication on participatory development. It participates in the resolution of problems of all kinds in order to find appropriate solutions and even issue articles to denounce and propose, thus serving all **SDGs**.

In **Armenia**, the Internet Society (ISOC) based in the United States has launched the *Internet radio for people with visual impairments* (Radio MENQ), an Internet Radio created by Armenian visually impaired persons with the support of ISOC’s “Beyond the Net” funding programme. Practical and psychological matters find voice and solutions in the programming: how to get a good education, find a job, use public transport, deal with depression, reach social integration. The radio is opening up new horizons for the blind and their families and has established a platform to empower disabled people. This project provides key evidence on how the power of the Open Internet can create innovation and local solutions with global impact and achieve the **SDGs**. It is particularly applicable to **SDGs 1, 3, 4 and 8**.

In the **United Arab Emirates**, the *M-government TV programme* was created as one of a series of awareness-raising plans introduced by the committee set up by the Prime Minister’s Office to oversee the M-government Initiative of May 2013, launched by H. H. Sheikh Mohammed bin Rashid Al Maktoum, Vice President and Prime Minister of the UAE and Ruler of Dubai. It is a weekly TV programme dedicated to the M-government Initiative. As such, it highlights the progress of the initiative in terms of m-transformation and provides information about the new ways of accessing government services while stressing the ease and convenience of the innovative technology. Being accessible to a broad public, the programme contributes to reducing inequality in
the country and promotes a peaceful and inclusive society, giving everyone equal access to information (SDGs 10 and 16).
Action Line C10. Ethics

The United Nations Educational, Scientific and Cultural Organization (UNESCO) is the lead facilitator for this action line, while the International Telecommunication Union (ITU) acts as partner. UNESCO went through a reflection process for its Member States aimed at enlarging understanding, building consensus, identifying key areas of concern and pinpointing capacity gaps. The outcome of this process was a document on UNESCO and the ethical dimensions of the information society.

The information society should be subject to universally held values, promote the common good and prevent abusive uses of ICTs. It takes steps to promote respect for peace and to uphold the fundamental values of freedom, equality, solidarity, tolerance, shared responsibility and respect for nature. All stakeholders should increase their awareness of the ethical dimension of their use of ICTs and all actors in the information society should promote the common good, protect privacy and personal data and take appropriate actions and preventive measures, as determined by law, against abusive uses of ICTs such as illegal and other acts motivated by racism, racial discrimination, xenophobia and related intolerance, hatred, violence, all forms of child abuse, including pedophilia and child pornography, and trafficking in, and exploitation of, human beings. Lastly, this category focuses on inviting relevant stakeholders, especially academia, to continue research on the ethical dimensions of ICTs.

Each year, ITU hosts the Gender Equality and Mainstreaming in Technology (GEM-TECH) Awards to recognize that technology is a uniquely powerful means for transforming the lives of women and helping redress the global gender gap. The GEM-TECH Awards celebrate outstanding personal or organizational achievements and innovative strategies that harness ICTs for women’s empowerment, promote women’s meaningful engagement with ICTs, including as producers and decision-makers in the technology sector, and create policies and investments that advance women’s digital equality.

This category contributes to SDG 1 on poverty alleviation, given that digital platforms are fundamental to accessing services and to participation in all aspects of social life, thus the provision of means and capabilities becomes an ethical imperative. Indeed, assuring meaningful participation will contribute to overcoming poverty and ensuring the common good. To end hunger, achieve food security and improved nutrition and promote sustainable agriculture (SDG 2), enhancing participation, providing access to information and sharing knowledge are central to the ethical values of non-discrimination, respect for nature and promotion of the common good, all of which means that this action line is extremely relevant. In order to ensure inclusive and quality education for all and promote lifelong learning opportunities (SDG 4), it is essential to take into account the online resources that exist nowadays, and an effective user education and awareness about the risks posed online must be ensured. Capacity building and cybersecurity (with special emphasis on the protection and empowerment of children online) become ethical imperatives, thus also involving Action line C10. The pursuit of gender equality (SDG 5) and ending all forms of discrimination against women everywhere are also relevant to this action line; digital platforms are fundamental to social participation, and all barriers to women’s participation in virtual spaces must be addressed in order to allow them to benefit from the opportunities of the knowledge societies. Target 8.6 in particular, aimed at reducing the proportion of youth not in employment, has a bearing on Action line C10; the factors involved can undermine social cohesion as they militate against the individual’s sense of equality and may impair people’s ability to assume their social responsibilities, thus increasing their vulnerability to participating in illicit activities due to lack of skills and competencies. To reduce inequality within and among countries (SDG 10), the participation of all individuals in digital spaces is crucial to fostering equality, solidarity and responsibility. Action line C10 is also directly linked to making cities inclusive, safe, resilient and sustainable (SDG 11), as the creation of conditions for equitable participation in all aspects of social life is central to realizing peace and the values of freedom, equality, solidarity and shared responsibility. Ensuring sustainable consumption and production patterns is the aim of SDG 12, and therein...
**Target 12.8** - ensuring that people everywhere have the relevant information and awareness for sustainable development – has a direct bearing on this WSIS action line. **SDG 13** – dealing with climate change and its impact – is related to the WSIS action lines in so far as ICTs have enormous potential in raising awareness and enhancing education regarding climate-change mitigation, adaptation and reduction. In particular, Action line **C10** plays a central role in developing capabilities to ensure the balance between meeting current needs and the ethical values of sustainability and respect for nature. It is also linked with **SDG 16**; the protection of fundamental freedoms – quoted in **Target 16.10** – is a core aspect of the ethical dimensions of the information society and central to realization of the overarching goal of peace. Revitalizing the global partnership for sustainable development (**SDG 17**) involves developing the competencies of all peoples to participate on digital platforms, contributing to equality, solidarity, tolerance, shared responsibilities and peace. Moreover, development of the capacities and competencies of all peoples to effectively participate on digital platforms implies access to the opportunities of the knowledge societies and contributes to equality, solidarity, tolerance, shared responsibilities and peace, thus closely relating to this action line and its main values.

Incorporated in **Austria**, the International Federation for Information Processing established the **Global Industry Council**. The Global Industry Council (GIC) has been an official contributing partner to ITU for 2014, 2015, 2016 and ongoing in the implementation of all 11 WSIS action lines and all 17 SDGs. The GIC 2020 Skills Report clearly demonstrates how the GIC is executing on all WSIS/SDGs. Through its International Federation for Information Processing (IFIP) members, GIC brings considerable resources to the implementation of the WSIS action lines/SDGs. All domains are powered by their underlying dependence on ICT. GIC continues to work to ensure that the ICT profession is grounded in technical expertise guided by ethical, professional practice. GIC represents IT Societies from 56 countries/regions, covering five continents, with a total membership of over half a million. It links more than 3 500 scientists from academia and industry, organized in over 100 working groups and 13 technical committees.

In **Colombia**, the Ministry of Information and Communication Technologies (MinICT) launched **Conciencia**, a contest to combat cyberbullying in Colombian schools. In 2016, MinICT (under the “En TIC confío” programme) and Pony Malta, a well-known beverage brand produced by Bavaria S.A., decided to create the contest in order to change digital awareness and find new ways of dealing with cyberbullying between children and young people in schools (from elementary to high school). Conciencia encouraged Colombian students, teachers and schools to use their creativity to produce advertising campaigns against cyberbullying, from their point of view. The contest received 3 153 proposals from students countrywide that expose cyberbullying, address the associated problems and create successful mechanisms to combat the phenomenon. This project is relevant to **SDGs 4, 5 and 16**.

In **Cuba**, Universidad de la Isla de la Juventud "Jesús Montané Oropesa" has launched the **Base de datos del Centro de Diagnóstico y Orientación de la Isla de la Juventud**. Detection and monitoring of symptoms in children’s behaviour from an early age is a task assumed by teachers, and preventive work holds the key to avoiding behavioural disorders. The database developed by specialists in the Isla de la Juventud Diagnosis and Orientation Centre covers a wide variety of manifestations to take into account in evaluating a child’s performance in school, at home and with his or her classmates through different levels of schooling in order to diagnose attention deficit and hyperactivity. It thus contributes to better health and well-being, in line with **SDG 3**.
In Greece, Safer Internet Hellas, in partnership with Art Productions, has launched To Pantopoleion (“The Grocery Store”). The project is implemented around a short movie of the same name. In this store, used as a metaphor for the Internet, all kinds of peculiar things are available! The movie thereby highlights, in a most entertaining way, highly important issues related to responsible and ethical online surfing and critical thinking, which can be leveraged to elicit a very entertaining and useful discussion and plan relevant activities in the classroom and beyond. The project serves SDG 16.

ICT Watch is firmly committed to freedom of information and is keenly aware of the emerging challenges to online freedom of expression in Indonesia. It creates the conditions for responsible Internet use and high-quality online content, and involves multiple stakeholders as partners in the proliferation of its programmes. Through its multistakeholder Internet Sehat (Healthy Internet) digital literacy programme for the Indonesian information society, ICT Watch is endeavouring to show that people can take responsibility for their online activities.

To this end, it has released high-quality Indonesian content under a creative commons licence, such as a series of social media for social movement documentary videos (http://lenteramaya.ictwatch.id) for public screening/discussion and an updated presentation kit and how-to modules/leaflets (http://internetsehat.id/literasi) for public education/advocacy, and has endorsed several publicly-available comic books for children/youngsters containing basic knowledge about Internet safety. ICT Watch also participates in various offline activities such as workshops, as well as roadshows visiting schools, campuses and local communities, thereby simultaneously facilitating multistakeholder engagement and developing capacity of local actors/communities.

Internet Sehat is carried out in cooperation with a range of partners: Indonesian Ministry of Communication and Information Technology (MCIT/KEMKOMINFO); Indonesian Ministry of Youth and Sports (KEMENPORA); Indonesian Ministry of Foreign Affairs (MOFA/KEMENLU); Indonesian Ministry of Education and Culture (KEMENDIKBUD); Indonesian Child Protection Commission (KPAI); Indonesian Internet Service Providers Association (APJII); Indonesian Domain Name Registry (PANDI); Indonesia Infocomm Society (MASTEL); Alliance of Independence Journalists (AJI); Hivos International; Ford Foundation; Citizen Lab- Toronto University; Global Partners Digital (GPD), UK; Cyber Law Centre - Padjajaran University; Communications Research Centre- University of Indonesia; Google; Twitter; Facebook; Indonesia Internet Governance Forum (ID-IGF); Indonesian Child Online Protection (ID-COP); Indonesian ICT Volunteers (RTIK); Village Development Movement (GDM); Southeast Asia Freedom of Expression Network (SAFEnet); Digital Democracy Forum (FDD); Indonesian CSOs Network for Internet Governance (ID-CONFIG); Indonesian Internet Society (ISOC-ID); Nawala Nusantara Foundation; Internet Baik Taskforce (Kakatu, Yayasan Kita dan Buah Hati, ICT Watch, Telkomsel); Indonesian netizen/blogger local communities; WatchdoC Documentary Maker; and several Indonesian telecommunication operators.

With 73 000 Facebook and 697 000 Twitter followers, and being active on Blog, YouTube, Flickr and Slideshare, the programme provides Indonesian society with equitable quality education, promotes gender equality and fosters an inclusive and peaceful society (SDGs 4, 5 and 16).
In India, Kanyashree Prakalpa seeks to improve the status and well-being of girls, specifically those from socio-economically disadvantaged families, through the conditional cash transfers scheme, by:

- encouraging them to continue in education for a longer period of time and complete secondary or higher secondary education, or equivalent in technical or vocational streams, thereby giving them a better footing in both the economic and social spheres;
- discouraging marriage before at least age 18, the legal age of marriage, thereby reducing the risks of early pregnancies and the associated risks of maternal and child mortality and other debilitating health conditions, including malnutrition.

It was also decided that the scheme should confer more than just monetary support, and should be a means of financial inclusion and a tool for empowerment for adolescent girls. Benefits under the scheme are therefore paid directly to bank accounts in the girls' names, leaving the decision of how to use the money in their hands.

To reinforce the positive impact of increased education and delayed marriages, the scheme also works to enhance the social power and self-esteem of girls through a targeted behaviour-change communication strategy. The communication strategy not only builds awareness of the scheme, but includes adolescent-friendly approaches like events, competitions and Kanyashree clubs, and the endorsement of strong women figures as role models to promote social and psychological empowerment.

As more and more girls remain in school, it is envisaged that they will use the opportunity to gain skills and knowledge that will help them become economically independent. Even if girls do get married soon after they turn 18, it is expected that their education and enhanced social and emotional development will give them a better foundation for their adult lives. And, over time, as entire generations of women enter marriages only after they have some degree of economic independence, it is anticipated that the practice of child marriage may be completely eradicated, and women will attain their right to health, education and socio-economic equality.

The scheme contributes to the achievement of SDGs 3, 4 and 5.

In Japan, the Ministry of Justice, in partnership with the National Federation of Associations of Human Rights Volunteers, instituted the measures to be taken by its human rights bodies against harmful information on the Internet which violates human rights. When the ministry’s human rights bodies receive a complaint of violation of human rights, such as invasion of privacy via the Internet, or when the bodies consider it appropriate to begin investigations based on reports and information from relevant administrative organizations or other sources, they undertake prompt investigation as a human rights violation case, and if facts are found confirming that it is indeed a case of human
rights violation, the necessary measures are taken to give relief to the victim, such as requesting the provider to delete the harmful information.

In **Mexico**, the Federal Telecommunications Institute has launched the *General guidelines for accessibility to telecommunication services for users with disabilities*. The guidelines are intended to safeguard the rights of users with disabilities and promote their access to telecommunication and ICT services, on an equal footing with other users. They establish the necessary mechanisms and the specific obligations incumbent on dealers and authorized traders in telecommunication services, related to:

- documents with accessibility features
- user help-centre facilities
- trained personnel
- Internet websites and portals with accessibility features.

The project supports **SDGs 9, 10, 16 and 17**.

In **Nigeria**, the MindAfrica Leadership Initiative organized the 2016 *Girls in ICT Day*. Girls in ICT was a one-day programme that empowered secondary school girls between the ages of 13 and 17, mainly from underserved schools, with knowledge and skills to influence their career decisions and enhance academic success. The event was held on 28 April, 2016 in Port Harcourt, Nigeria, and was attended by 103 girls who interacted with leading female role models in ICT professions; participated in hands-on workshops and seminars; and gained insight into the fields of ICT and the opportunities it offers. The event was organized in partnership with ITU; SPE Section 103, Port Harcourt; Pepperoni Fast Foods; LocTech; IPNX Nig. Ltd.; Sasun Hotels; Chicken Republic; Oiddata Wireline Services; and Xenergi, and resonates with **SDGs 4, 5 and 8**.
The Russian Federation has created www.setevichok.org. The main purpose of this project is to build digital citizen competences for successful and secure Internet activity of schoolchildren and students in the Russian Federation and post-Soviet states. The project consists of:

1) 24/7 automated directory assistance for children to consult and obtain advice in the field of cybersecurity;
2) digital literacy quest in the form of massive open online courses (MOOCs) with learning elements in four competences: technical, information, communication and consumer;
3) online study «Teenager lifestyle online»;
4) «Setevichok Award» children’s site competition, in which children themselves choose the best children’s sites;
5) networked learning for teachers.

A total of 513 000 children, 12 000 schools and 17 000 teachers have participated in the project, which is of interest to SDGs 5, 9, 12 and 16.

In the Russian Federation, the Rossiya Segodnya international news agency runs InoSMI online. Launched in 2001, InoSMI online has been part of the Rossiya Segodnya international media group since 2013. It has established itself as the leading Russian-language online media outlet specializing in translations of foreign press articles. Its mission is to keep the Russian-language audience informed of what international experts and opinion leaders think about the key trends and developments in Russia and across the world. InoSMI also seeks to push boundaries for Russian readers by offering them insights into other countries and dispelling stereotypes, and strives to help people better understand international processes in a multipolar world. In this way, it contributes to SDGs 10, 16 and 17.
In **South Africa**, Just Associates (JASS) has published the *ICTs for Feminist Movement Building: Activist Toolkit*. JASS, Women’sNet and the Association for Progressive Communications (APC) developed the toolkit to support more effective, resilient, visible and safe movements by helping activists understand ICTs, influence how ICTs are developed and empower themselves to use ICTs and harness them to make a difference. The toolkit aims to assist activists to think through their communication strategies in a way that supports movement building. At the core, this toolkit is also about feminist practice and how to use tools to communicate in ways that are democratic and amplify women’s voices whilst challenging stereotypes and discriminatory social norms. The publication advances **SDGs 4, 5, 9, 10 and 16**.

In the **United Kingdom**, the Internet Watch Foundation (IWF) has created the *IWF Image Hash List*, a collection of digital fingerprints (hashes) compiled from IWF-assessed images of child sexual abuse. It is a revolutionary tool that allows ICT companies to stop the upload, storage and sharing of “potentially millions” of child sexual abuse images online. The list can therefore contribute to the achievement of the SDGs, particularly **SDG 16** in relation to the target of ending abuse, exploitation, trafficking and all forms of violence against and torture of children, and the WSIS goals, particularly Action lines **C4**, on building confidence and security in the use of ICTs, and **C10**, on safeguarding the ethical dimensions of the information society. This project is undertaken in cooperation with Facebook, Google, Microsoft, Twitter and Yahoo.

In the **United Arab Emirates**, the Khalifa Empowerment Programme for Students, in partnership with the Ministry of Education, the Abu Dhabi Education Council (ADEC) and the Knowledge and Human Development Authority (KHDA), has launched *Aqdar CYBER C3*. The exponential rise of Internet use in the UAE has given the country unprecedented access to a world of information and ideas. While government and individual institutions’ firewalls offer some protection against the threat posed by sites and social media platforms that are ideologically and culturally inappropriate, the rapidly evolving nature of the Internet makes it essential that all members of the UAE community become well-informed digital citizens. CYBER C3 provides a fully integrated programme of information, awareness and understanding for students in grades K-12 and in higher education that empowers them as responsible and thoughtful users of the Internet. The programme helps to achieve targets under **SDGs 4, 9 and 16**.

In the **United Arab Emirates**, the Ministry of the Interior (MoI) introduced the *Hemayati* child protection application. Under the guidance of his Highness Sheikh Khalifa bin Zayed Al Nahyan, who declared 2015 as the year of innovation, in order to strengthen the UAE’s national endeavours to be a model and an example to be followed in the field of providing care and attention to children in terms of education, health, culture and security, and to implement the national strategy for innovation, and in line with MoI’s keen desire to encourage institutional creativity and innovative ideas, the beginning of this year witnessed the launch of the **smart wearable technology service**. This is a smart band that enhances the implementation of smart security concepts for the protection and care of children in a creative and innovative style. The Hemayati child protection app and associated ventures respond to **SDGs 3, 4, 9, 11 and 16**.
Action Line C11. Regional and International Cooperation

International cooperation among all stakeholders is vital to the implementation of the Geneva Plan of Action and needs to be strengthened with a view to promoting universal access and bridging the digital divide, *inter alia* by providing suitable means of implementation. Governments of developing countries should raise the relative priority of ICT projects in requests for international cooperation and assistance with infrastructure development projects from developed countries and international financial organizations. Within the context of the UN Global Compact, and building upon the United Nations Millennium Declaration, it is important to build on and accelerate public-private partnerships, focusing on the use of ICTs in development. This action line also invites international and regional organizations to mainstream ICTs in their work programmes and assist all levels of developing countries in becoming involved in the preparation and implementation of national action plans to support the fulfilment of the goals indicated in the Declaration of Principles and in the Geneva Plan of Action, taking into account the importance of regional initiatives.

The *United Nations Department of Economic and Social Affairs (UNDESA)*, as the leading facilitator for Action line *C11*, the Vice-Chair of the United Nations Group on the Information Society (UNGIS) and administrator of the IGF secretariat, has continued its efforts to promote policy dialogue and advocacy for the implementation of the WSIS outcomes by United Nations bodies, governmental and non-governmental stakeholders and partners through a number of initiatives. It has ensured, in addition, the comprehensive exchange of views, information and experiences among WSIS stakeholders, and provided advisory services and technical assistance to developing countries. Co-facilitators for this category are the United Nations Economic and Social Council (*ECOSOC*), the *United Nations regional commissions* and the International Telecommunication Union (*ITU*).

The ITU Kaleidoscope conference took place in Barcelona, Spain, from 9 to 11 December 2015. Entitled ‘Kaleidoscope 2015: Trust in the Information Society’, it was the seventh series of peer-reviewed academic conferences organized by ITU, and brought together a wide range of views from universities, industry and research institutions in different fields.

The aim of the Kaleidoscope conferences was to identify emerging developments in ICTs and, in particular, areas in need of international standards to support the development of successful products and services.

Kaleidoscope 2015 analysed means of building information infrastructures deserving our trust. The event highlighted ideas and research that help ensure the information society’s growth in inclusivity and sustainability thanks to its trusted foundations. The conference provided an opportunity to share views on the future of the ICT sector and, in particular, to analyse the notion of “trust” in the ICT context as well as innovations embedding trust into ICT ecosystems and infrastructures to bring greater certainty, confidence and predictability to our interactions within the information society.

The 2015 edition of Kaleidoscope contributed to the celebration of ITU’s 150th anniversary, paying tribute to the extraordinary innovation of the global ICT community. The story of ITU is one of international cooperation among governments, industry players, civil society and academic and research institutes. ITU has a proud history as a key platform for the international community to bring cohesion to innovation in the ICT sector, and Kaleidoscope 2015 celebrated academia’s immense contribution in service of ITU’s mission to ‘Connect the World’.

ITU TELECOM World 2015, a platform for high-level debate, knowledge-sharing and networking for the global ICT community, took place from 12 to 15 October 2015 in Budapest, Hungary. ITU TELECOM World is the only event of its kind that brings together the major public- and private-sector
stakeholders from the world to debate industry opportunities and challenges, share knowledge, and build the framework for SME success.

As the global platform actively facilitating new ideas, businesses and partnerships in ICT development, ITU TELECOM World 2015 offered:

- Unique international exposure for small and medium-sized enterprises, start-ups and entrepreneurs in the ICT sector
- Visibility and voice for countries, organizations, products and solutions from around the world
- Unprecedented access to emerging markets
- Targeted partnership and investment opportunities
- Awareness and expert opinion on the major trends redefining the industry
- Networking and connections at the highest level.

A third deserving ITU initiative came in the form of the first ITU Asia-Pacific Centre of Excellence (CoE) Steering Committee meeting, which took key strategic decisions aimed at implementation of the approved operational processes and procedures. The key issues included evaluation of performance in 2014, the strategic direction of the ITU Asia-Pacific CoE from 2015 onwards, induction of partners, composition of the Steering Committee, the timetable of annual activities for 2015, development of content, quality assurance processes, promotion plan, pricing strategies, fee structure and financial procedures, and new partnership opportunities. Designed to offer continuous education to ICT managers in the public and private spheres through face-to-face or distance-learning programmes, the centres serve as regional focal points for professional development, research and knowledge sharing, and provide specialist training services to external clients. Under the umbrella of the ITU Academy, these regional networks are now being consolidated into a single global network sharing training curricula, resources and expertise.

The ITU Regional Development Forum for the Arab States (RDF-ARB), which was held in Rabat, Morocco, from 28 to 29 March 2016, met to present the ITU Arab Regional Office’s operational plan proposals for the next two years (2016 and 2017) and to review and discuss what has been achieved in the five Arab regional initiatives in 2015 and the activities of the ITU-D study groups and the ITU CoE Network. The forum also focused on finding mechanisms to finance and implement the regional initiatives and projects that fall under these initiatives and also to strengthen the partnership between the stakeholders.

This action line contributes to SDG 17 as it directly strengthens the means of implementation and revitalizes the global partnership for sustainable development. It is crucial in the mobilization and sharing of knowledge, expertise, technology and financial resources; indeed, ICTs can enable online discussion platforms where stakeholders from different regions can engage. They can also allow developing countries to capitalize on innovation in ICTs and the sharing of knowledge from developed nations, promoting effective public-private partnerships.

The Network of E-Government Leaders of Latin America and the Caribbean (RED GEALC) brings together the national e-government agencies of 32 countries of the Latin America and the Caribbean region through a horizontal cooperation mechanism that has had a direct impact on the design and implementation of public information technology policies aimed at open, citizen-oriented government management. Cooperating with different countries, the network provides its citizens with equitable education and lifelong learning opportunities, contributes to economic growth and reduces inequality within and among the countries (SDGs 4, 8, 10 and 17).

In Belgium, Dalberg Data Insights has launched Mobile data analytics for sustainable cities and communities. The purpose of this project is to use aggregated and anonymized data from millions of mobile phone interactions to bring to bear valuable insights on population mobility and traffic assessment, with the aim of enabling urban authorities to plan public transport networks more effectively and
assess the impact on traffic of certain events, in order to ensure sustainable cities for the growing urban population in emerging markets. The project is conducted in cooperation with the United Nations Capital Development Fund, Belgium Development Cooperation, Kampala Capital City Authority and Real Impact Analytics, and helps in attaining SDG 11.

In Cyprus, the Future Worlds Centre has launched Reinventing democracy in the digital era. Funded by United Nations Democracy Fund (UNDEF), the project, which entails both theory and activity, engages more than 1,000 young people from across all continents in weeklong face-to-face and virtual structured deliberations. The aim is to identify the shortcomings of current systems of democracy, and propose innovative/concrete characteristics of future ideal systems. A collectively-authored Manifesto will facilitate the design of democratic systems that meet 21st century expectations, leverage the digital era, are grounded in humanistic and sustainability values, counteract corruption and lack of accountability, and are authentically participatory, harnessing the collective wisdom of citizens. The project relates to SDGs 1, 4, 5, 8, 10, 11, 16 and 17.

In Mauritius, Seed Alliance has launched the Alliance to scale digital innovation. Seed Alliance seeks to help ideas grow and achieve scale by providing small grants and awards for Internet development and digital innovation. It is a multi-stakeholder partnership where member organizations - the regional Internet Registries AFRINIC, APNIC and LACNIC - and regional sponsors support the allocation of small grants and awards across the Global South. Support is channelled through three regional programmes: FIRE Africa (Africa), FRIDA (Latin America and the Caribbean) and ISIF Asia (Asia Pacific). The Seed Alliance awards and grants are complemented by a range of collaborative efforts on capacity building and networking geared towards leveraging the capacity of the initiatives supported. Over USD 2 million have been allocated to date, helping to strengthen and promote the information society within and across these regions. The alliance serves SDGs 4, 5, 8, 9, 16 and 17.

Partners include the International Development Research Centre (IDRC) (2012 to date), the Swedish International Development Cooperation Agency (SIDA) (2012 to 2016) and the Internet Society (ISOC) (2012 to date), and the regional sponsors are Google (for FIRE Africa) and the DotAsia Organization (Dot.Asia), the Internet Corporation for Assigned Names and Numbers (ICANN) and the Asia Pacific Internet Association (APIA) (for ISIF Asia).

In Malaysia, CyberSecurity Malaysia has launched the Collaborative Information Sharing Model for Malware Threat Analysis: A case study For The Organization of Islamic Cooperation – Computer Emergency Response Team. Malware is surreptitious computer code that is used for malicious intent to penetrate targeted computers and mobile apparatus and execute tasks that can lead to massive losses in terms of finance and credibility. Since the Internet cuts across the physical boundaries of countries, it is judicious for countries to embark on cross-border collaborative projects to protect their tangible
and intangible assets against this threat. CyberSecurity Malaysia introduced the Malware Research and Coordination Facility as a joint effort among the Organization of Islamic Cooperation (OIC) member countries to mitigate malware threats for the protection of critical national information infrastructure. This venture addresses SDG 16.

In Nicaragua, the Centro de Estudios Avanzados en Banda Ancha para el Desarrollo (CEABAD) has instituted ICT and broadband capacity building for the Central American region. The Inter-American Development Bank (IDB), the Ministry of Science, ICT and Future Planning of the Republic of Korea (MISP) and the Telecommunications Regulatory Entity of Nicaragua (TELCOR) established CEABAD for public officials with a view to increasing the capacity of government officials in six Central American countries and the Dominican Republic in June 2014 in Nicaragua. The centre offers e-learning programmes, face-to-face workshops, and regional forums. Currently, more than 2,444 government officials in the Central American region have been trained by the CEABAD programmes. This focus corresponds to WSIS Action line C4 and SDGs 1, 4, 8, 9, 10, 11 and 17.

In South Africa, the Association for Progressive Communications has launched the African Declaration on Internet Rights and Freedoms initiative, a Pan-African initiative to promote human rights standards and principles of openness in Internet policy formulation and implementation on the continent. The Declaration is intended to elaborate on the principles which are necessary to uphold human and peoples’ rights on the Internet, and to cultivate an Internet environment that can best meet Africa’s social and economic development needs and goals. It builds on well-established international human rights instruments, including the African Charter on Human and Peoples’ Rights, and aims to shape approaches to Internet policy-making and governance across the continent.

The initiative, which serves SDGs 4, 5, 8, 9, 10, 11, 16 and 17, is undertaken in partnership with Article 19; Civicus; Global Partners Initiative; Kenya Human Rights Commission; Media Foundation for West Africa; Media Institute of Southern Africa; Media Rights Agenda; Paradigm Initiative, Nigeria; PROTEGE QV; Support for Information Technology Centre; and Web We Want.

In South Africa, the Association for Progressive Communications (APC) and the New Partnership for Africa’s Development (NEPAD) Planning and Coordinating Agency co-organized the African School on Internet Governance (AfriSIG). AfriSIG aims to give Africans from diverse sectors and stakeholder groups the opportunity to gain knowledge and confidence to participate effectively in Internet governance (IG) processes and debates nationally, regionally and globally. It contributes to increasing the diversity, extent, quality and effectiveness of African participation in IG by creating a space that promotes multistakeholder learning and dialogue. The school responds to the challenge of inadequate participation by African and women stakeholders in the IG sphere, building knowledge across stakeholder groups and Africa’s subregions by fostering dialogue on complex issues towards mainstreaming African and women’s perspectives into global Internet governance.
AfriSIG takes place in partnership with Access Now; Afilias; African Union; African Network Information Centre; Facebook; Ford Foundation; Google; ICANN; Internet Society; NEPAD Planning and Coordinating Agency; UN Women Fund for Gender Equality; Public Interest Registry; and ZA Domain Name Authority, and is relevant to SDGs 4, 5, 8, 9, 10, 11, 16 and 17.

In the area of disability and technology, after being a member of the focus group on the Regional Arab ICT Centre for Persons with Disabilities, and recognizing that ICT services can provide engineers/researchers with many new ideas, the Association of Digital Development of Tunisia established the Zero Group Accessibility for Access to Information and Knowledge project, which works to encourage regional, national and international cooperation among various stakeholders and provide them with specific actions aimed at improving the status of persons with disabilities in the context of ICTs for increasing access to education, knowledge and information, e-learning, public information, social services and, ultimately, job opportunities. The Zero Group’s objective is to highlight and reduce digital ignorance among all persons, with or without disabilities, by providing learning platforms, mobile learning and cloud computing, as well as training for IT professionals such as educational programmers, software and content developers and web designers. More details can be found in the following useful links: http://bit.ly/1RE4EAv; http://itu150.org/story/july/; https://www.youtube.com/watch?v=vwzR88W1w2w; http://on.fb.me/1509cl5; http://on.fb.me/1SCoM6g; https://www.youtube.com/watch?v=FowJ89808zE; http://on.fb.me/1Kvr5ju; http://bit.ly/1KvsZko; http://bit.ly/1JqGAOP; http://bit.ly/1S0eZHn. The project, which is carried out in partnership with the Ministry of Communication, Technology and Digital Economy in Tunisia, thus relates to a number of SDGs, touching upon such issues as poverty, education, gender equality, access to modern energy, safety of cities, promotion of peaceful societies and revitalization of the global partnership (SDGs 1, 4, 5, 7, 11, 16 and 17).

In the United Arab Emirates, the Ministry of the Interior (MoI) organized the 5th Biennial International Cybercrimes Conference. As the UAE drives towards its aim of becoming an information economy and implements MoI’s vision of smart government, the importance of cybersecurity awareness cannot be underestimated. Over the past decade, the biennial International Cybercrimes Conference (IC3) has been the premier cybersecurity conference in the Gulf region, attracting an audience of leaders, decision-makers and professionals in the field of cybercrime and information security. Past conferences have seen high-calibre speakers who have delved into, analysed and elucidated issues around information security and cybercrime at the operational, tactical and strategic levels. Past topics covered have included online financial crime and money laundering, cyberfraud, compliance, privacy and identity management. The conference reflects SDG 17.
The **United Arab Emirates** places great emphasis on *ICT development in the Arab region*, in cooperation with the International Telecommunication Union (ITU). The UAE’s Telecommunication Regulatory Authority (TRA) is the UAE Administration at ITU. Over the past decade and since the establishment of the TRA, UAE has been at the forefront of regional and International cooperation, whether by providing assistance in the implementation of concrete regional and international ICT4D projects; chairing regional preparatory groups for major ITU conferences; hosting all major ITU events in the last five years; or supporting the implementation mechanism of the WSIS outcomes- annual WSIS Forum, including WSIS+10 High-Level Event. It has gained the reputation of a major facilitator and credible partner among the ITU Member States. With a vision to further enhance this in future, TRA looks forward to taking this international cooperation to higher levels in future. These efforts fully reflect the thrust of **SDG 17**.
### WSIS Photo Contest 2017

**WINNERS:**

<table>
<thead>
<tr>
<th>Title</th>
<th>Digitally yours</th>
</tr>
</thead>
<tbody>
<tr>
<td>By</td>
<td>Mr. Syed Tarek</td>
</tr>
<tr>
<td>Location</td>
<td>Baintala Village, Rampal, Bangladesh</td>
</tr>
<tr>
<td>Description</td>
<td>A group of women of Baintala village is participating in a disaster preparedness training at night after a long day of domestic works. Parts of Baintala still have no electricity, but this did not affect their training since solar powered Tablet devices were used.</td>
</tr>
<tr>
<td>Title:</td>
<td>Summer Holiday Camp</td>
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<tr>
<td>-----------</td>
<td>--------------------------------------------------------</td>
</tr>
<tr>
<td>By:</td>
<td>Ms. Olere Iluebey</td>
</tr>
<tr>
<td>Location:</td>
<td>Port Harcourt, Nigeria</td>
</tr>
<tr>
<td>Description:</td>
<td>During the summer holidays, MindAfrica organizes an enrichment camp for about 120 underserved students from across schools in Port Harcourt, Nigeria. This is a fun, interactive and engaging program that is interdisciplinary and collaborative in its approach. The main objective is to get students to develop problem solving, critical thinking, teamwork, and communications skills. Instructors lead students through a range of hands-on demonstrations and problem-solving designed to show the real-life applications of science, technology, engineering and mathematics (STEM).</td>
</tr>
</tbody>
</table>
The Puntos Mexico Conectado Project Program (PMC) seeks to bridge the digital divide in order to increase the access to Information and Communications Technologies (ICT) and maximize the endless possibilities they have to offer. The PMC program achieves this objective by installing one center in each state of Mexico, generally located in areas that are highly marginalized with elevated poverty rates. In this way, the program benefits those who are less likely to have access to either connectivity or computers in their everyday life.

The courses offered at PMC include classes on digital literacy, robotics and programming as well as programs for innovation and entrepreneurship, among others. Through new technologies, these inclusion-oriented spaces help users develop their skills and abilities to benefit themselves and their surroundings enhanced by technology.
Finalists:

Title: Agribusiness TV- WSIS Stocktaking Success story

Caption: Agribusiness TV is a web TV which aims at using videos as a promotion tool to (re)valorise agriculture and make the sector more attractive to youth by showcasing success stories of young agricultural entrepreneurs and their innovations in Africa. The media was launched by MEDIAPROD in May 2016, with the support of a grant received by the Technical Centre for Agricultural and Rural Cooperation (CTA). In the first year of the project, over 60 videos were produced and disseminated on the web TV.

Photo location: Burkina Faso

Submitted by: Ms. Nawsheen Hosenally (nawsheen@agence-mediaprod.com)
<table>
<thead>
<tr>
<th>Title:</th>
<th>Proud to learn the Internet of Things</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caption:</td>
<td>This little boy is proud to learn the Internet of Things which he believes could change the future of Africa</td>
</tr>
<tr>
<td>Photo location:</td>
<td>Zimbabwe</td>
</tr>
<tr>
<td>Submitted by:</td>
<td>Ms. Ilda Simao (<a href="mailto:simao@isoc.org">simao@isoc.org</a>)</td>
</tr>
</tbody>
</table>

**Image 1:** A young boy standing in front of a computer, looking pleased.

<table>
<thead>
<tr>
<th>Title:</th>
<th>First time using a computer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caption:</td>
<td>First time using a computer</td>
</tr>
<tr>
<td>Photo location:</td>
<td>Uganda</td>
</tr>
<tr>
<td>Submitted by:</td>
<td>Ms. Ilda Simao (<a href="mailto:simao@isoc.org">simao@isoc.org</a>)</td>
</tr>
</tbody>
</table>

**Image 2:** A group of children gathered around a laptop, looking engaged.
<table>
<thead>
<tr>
<th>Title:</th>
<th>Girls searching for reproductive health information in Uganda</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caption:</td>
<td>Girls searching for reproductive health information in Uganda</td>
</tr>
<tr>
<td>Photo location:</td>
<td>Uganda</td>
</tr>
<tr>
<td>Submitted by:</td>
<td>Ms. Ilda Simao (<a href="mailto:simao@isoc.org">simao@isoc.org</a>)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Title:</th>
<th>First time using a computer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caption:</td>
<td>Little children in Uganda using a solar powered computer for the first time</td>
</tr>
<tr>
<td>Photo location:</td>
<td>Uganda</td>
</tr>
<tr>
<td>Submitted by:</td>
<td>Ms. Ilda Simao (<a href="mailto:simao@isoc.org">simao@isoc.org</a>)</td>
</tr>
</tbody>
</table>
Title: ICTs empowering education for learners with print disabilities

Caption: Low-cost ICTs have empowered students with print disabilities to access DAISY-standard accessible reading contents developed for all school level curriculum text books.

Photo location: YPSA, Chittagong, Bangladesh

Submitted by: Mr. Md. Shakhawatul Islam (shakhawat30@gmail.com)
<table>
<thead>
<tr>
<th>Title:</th>
<th>KSSDA Inclusive Education</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caption:</td>
<td>Let us introduce Altynbek, student of IT Academy who has a great desire to become a high-qualified programmer!</td>
</tr>
<tr>
<td>Photo location:</td>
<td>Bishkek, Kyrgyz Republic</td>
</tr>
<tr>
<td>Submitted by:</td>
<td>Ms. Gulzada Urgunalieva (<a href="mailto:gulzada.urgunalieva@gmail.com">gulzada.urgunalieva@gmail.com</a>)</td>
</tr>
</tbody>
</table>
Using technology in a fun and practical way

With the offered courses at PMC, users can target their curiosity and boost their creativity. Regardless of their age, users can even create their own functioning robots.

Photo location: Mexico

Submitted by: Ms. Pamela Araico (pamela.araico@sct.gob.mx)
<table>
<thead>
<tr>
<th>Title:</th>
<th>ICT for all</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caption:</td>
<td>The PMC project is a national network of community centers for training and the provision of digital education that is made up of 32 centers, one in each of the conforming states of Mexico, in these centers any person can connect with new information technologies, learn how to properly use them, develop creativity skills and take on innovative entrepreneurial projects</td>
</tr>
<tr>
<td>Photo location:</td>
<td>Mexico</td>
</tr>
<tr>
<td>Submitted by:</td>
<td>Ms. Pamela Araico (<a href="mailto:pamela.araico@sct.gob.mx">pamela.araico@sct.gob.mx</a>)</td>
</tr>
<tr>
<td>Title:</td>
<td>Bridging the digital divide</td>
</tr>
<tr>
<td>------------------------</td>
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</tr>
<tr>
<td>Caption:</td>
<td>The PMC are ideal places to address the challenges we face, that derive from a low digital literacy level among the population. Our centers seek to guide, train and bring to the elderly segment of society all the benefits of employing technology in daily activities.</td>
</tr>
<tr>
<td>Photo location:</td>
<td>Mexico</td>
</tr>
</tbody>
</table>
Title: 3D-Printing Lesson

Caption: Learning how to become maker

Photo location: Ukraine

Submitted by: Mr. Vitalii Varbanets (varbanets@itstep.org)
<table>
<thead>
<tr>
<th>Title:</th>
<th>Antenatal care in Nigeria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caption:</td>
<td>A nurse conducts regular antenatal visits at a primary health centre in Ogun State, Nigeria with the aid of the PIERS on the Move phone-based decision aid. The PIERS on the Move application determines the risk of adverse maternal outcome based on symptoms and clinical signs.</td>
</tr>
<tr>
<td>Photo location:</td>
<td>Nigeria</td>
</tr>
<tr>
<td>Submitted by:</td>
<td>Ms. Marianne Vidler (<a href="mailto:marianne.vidler@cw.bc.ca">marianne.vidler@cw.bc.ca</a>)</td>
</tr>
<tr>
<td>Title:</td>
<td>She lead</td>
</tr>
<tr>
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<td>----------------------------------------------</td>
</tr>
<tr>
<td>Caption:</td>
<td>Girls are taking part in training children (boys and girls equally) on STEM fields.</td>
</tr>
<tr>
<td>Photo location:</td>
<td>Monastir, Tunisia</td>
</tr>
<tr>
<td>Submitted by:</td>
<td>Mr. Meher Bnouni (<a href="mailto:meher.bnouni.tn@ieee.org">meher.bnouni.tn@ieee.org</a>)</td>
</tr>
</tbody>
</table>
Title: Girls in STEM

Caption: Teaching girls how to build a website during one of TAWASOL's workshops.

Photo location: Monastir, Tunisia

Submitted by: Mr. Meher Bnouni (meher.bnouni.tn@ieee.org)
Lesson with Alpha UBTECH

Learning basics of robotics with Alpha UBTECH in JCA Kyiv

Kyiv, Ukraine

Mr. Vitalii Varbanets (varbanets@itstep.org)
<table>
<thead>
<tr>
<th>Title:</th>
<th>Photo Editing Lesson</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caption:</td>
<td>Student in IT STEP Baku - Stay Hungry</td>
</tr>
<tr>
<td>Photo location:</td>
<td>IT STEP Academy, Baku</td>
</tr>
<tr>
<td>Submitted by:</td>
<td>Mr. Vitalii Varbanets (<a href="mailto:varbanets@itstep.org">varbanets@itstep.org</a>)</td>
</tr>
<tr>
<td>Title:</td>
<td>National contact center for the safety of children on the internet</td>
</tr>
<tr>
<td>---</td>
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</tr>
<tr>
<td>Caption:</td>
<td>National Contact Center for the children’s safety on the internet was launched by the Ministry of Trade, Tourism and Telecommunications, based on the regulation of the protection and safety of the children using new technologies. Other institutions included in the work of The Contact Center are the Ministry of Education, Science and Technological Development, Ministry of Interior affairs, Ministry of health, Ministry of labor, employment, veteran and social affairs, as well as the republic prosecutor. The existence of a unique place for advice and registration is necessary both for children and parents, teachers and everyone else, so they can find out everything about this topic or to report any problems considering safety on the internet.</td>
</tr>
<tr>
<td>Photo location:</td>
<td>Ministry of Trade, Tourism and Telecommunications, Belgrade, Serbia</td>
</tr>
<tr>
<td>Submitted by:</td>
<td>Ms. Katarina Tomić (<a href="mailto:katarina.tomic@mtt.gov.rs">katarina.tomic@mtt.gov.rs</a>)</td>
</tr>
<tr>
<td>Title:</td>
<td>Biocompatibility Platform for Protein Detection in Latex Glove</td>
</tr>
<tr>
<td>-------</td>
<td>-------------------------------------------------------------</td>
</tr>
<tr>
<td>Caption:</td>
<td>Project with title &quot;Biocompatibility Platform for Protein Detection in Latex Glove&quot; has been selected as the WSIS Prizes 2017 Champion. This biocompatibility platform has been upgraded through a series of research works which lead by Ir. Prof. Dr. Sim Kok Swee. It is designed to reduce set-up cost and operation time to optimize the process of protein concentration. Features of this platform include digital image processing, knowledge based system, manipulator dynamics, force and position control system, and automated pneumatic stamping machine. It can now be applied as protein concentration detector for latex glove and other similar products in the market.</td>
</tr>
<tr>
<td>Photo location:</td>
<td>Centre for e-Health, Faculty of Engineering &amp; Technology (FET), Multimedia University, Jalan Ayer Keroh Lama, 75450, Melaka, Malaysia.</td>
</tr>
<tr>
<td>Submitted by:</td>
<td>Ms. Fung Fung Ting (<a href="mailto:sicily.ting@gmail.com">sicily.ting@gmail.com</a>)</td>
</tr>
<tr>
<td>Title:</td>
<td>Digital learning</td>
</tr>
<tr>
<td>---------------</td>
<td>-----------------</td>
</tr>
<tr>
<td>Caption:</td>
<td>In our modern days kids are much more clever than before, they are now familiar with new technologies old methods aren't usually used in teaching kids their primary lessons. We are now using modern technologies for both entertainment and teaching.</td>
</tr>
<tr>
<td>Photo location:</td>
<td>Notun Bazaar,Gulshan-2,Dhaka-1212,Bangladesh</td>
</tr>
<tr>
<td>Submitted by:</td>
<td>Mr. Shawon Alexander Gomes (<a href="mailto:alexgomes702@gmail.com">alexgomes702@gmail.com</a>)</td>
</tr>
<tr>
<td>Title:</td>
<td>ICT Education for Underserved Communities</td>
</tr>
<tr>
<td>-------</td>
<td>------------------------------------------</td>
</tr>
<tr>
<td>Caption:</td>
<td>Determined to bridge the literacy and digital divide for underserved students, MindAfrica designs program activities that enable students to use digital technology and communication tools to create and share information with their peers. It fosters digital storytelling skills and enables students to integrate the use of technology in non-STEM subjects like Literature and English Language subjects.</td>
</tr>
<tr>
<td>Photo location:</td>
<td>Community Secondary School, Oginigba, Rivers State, Nigeria</td>
</tr>
<tr>
<td>Submitted by:</td>
<td>Ms. Olere Iluebbey (<a href="mailto:olerei@mindafrica.org">olerei@mindafrica.org</a>)</td>
</tr>
<tr>
<td>Title:</td>
<td>ICT Education for Rural Students</td>
</tr>
<tr>
<td>-------</td>
<td>---------------------------------</td>
</tr>
<tr>
<td>Caption:</td>
<td>MindAfrica’s ICT-based, After-school Program uses technology to bridge educational gaps for students in under-resourced communities by providing ICTs that give rural students access to the same information as their counterparts in privileged urban schools. Under-served students are able to gain essential technology skills for global competitiveness and exposure to better educational opportunities.</td>
</tr>
<tr>
<td>Photo location:</td>
<td>Igwuruta Community Secondary School, Rivers State, Nigeria</td>
</tr>
<tr>
<td>Submitted by:</td>
<td>Ms. Olere Iluebbey (<a href="mailto:olerei@mindafrica.org">olerei@mindafrica.org</a>)</td>
</tr>
<tr>
<td>Title:</td>
<td>Computers For Educating-CFE</td>
</tr>
<tr>
<td>-------</td>
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</tr>
<tr>
<td>Caption:</td>
<td>CFE is the Colombian Government’s Program of greatest social impact that generates equity through Information and Communication Technologies, promoting the quality of education under a sustainable model. The program has national coverage, reaching remote locations, difficult to reach and sometimes affected by the armed conflict.</td>
</tr>
<tr>
<td>Photo location:</td>
<td>Tacueyó, Cauca.</td>
</tr>
<tr>
<td>Submitted by:</td>
<td>Mr. Juan Sebastián Bedoya (<a href="mailto:juanbedoya90@gmail.com">juanbedoya90@gmail.com</a>)</td>
</tr>
</tbody>
</table>
Title: Data Collection by Volunteers

Caption: Nutrition Club volunteers collect data on local market price of milk and profile of the traders by using Tabs

Photo location: Manikganj, Bangladesh

Submitted by: Mr. Shahid Akbar (shahid.akbar@biid.org.bd)
Title: eKrishok: Access to extension services over phone

Caption: Farmer avail eKrishok services during awareness campaign organized jointly with private sector partners

Photo location: Mymensingh, Bangladesh

Submitted by: Mr. Shahid Akbar (shahid.akbar@biid.org.bd)
Title: Beauty, culture & technology

Caption: Passion and love that children have today to get to know the technology but still not forget the cultural roots full of beauty and harmony.

Photo location: Singaraja, Bali, Indonesia

Submitted by: Mr. Handoyo Taher (handoyo.taher@gmail.com)
<table>
<thead>
<tr>
<th>Title:</th>
<th>Child and computer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caption:</td>
<td>A child, which uses the Internet, becomes a full participant of the global information society, where he might face a lot of dangers. The Internet, like any other tool, created by mankind, can carry both benefit and harm. Usage of the Internet allows you to expand the horizons, to develop the communication skills, and improve the educational level of a child. On the other hand, some of the information, which is stored on the Internet, can inflict psychological trauma on the child, instill in him the wrong moral and ethical qualities.</td>
</tr>
<tr>
<td>Photo location:</td>
<td>Odessa, Ukraine</td>
</tr>
<tr>
<td>Submitted by:</td>
<td>Mr. Vadym Kaptur (<a href="mailto:vadim.kaptur@onat.edu.ua">vadim.kaptur@onat.edu.ua</a>)</td>
</tr>
</tbody>
</table>
Title: Inclusive Community Centers

Caption: In order to reach an inclusive community where persons with disabilities have access to information and knowledge, acquire ICT training and communicate using accessible ICT infrastructure and assistive technologies, the Ministry of communications and information technologies transferred 48 youth centers into inclusive community centers by providing them with the required tools.

Photo location: Cairo, Egypt

Submitted by: Ms. Abeer Shakweer (afshakweer@mcit.gov.eg)
<table>
<thead>
<tr>
<th>Title:</th>
<th>A Museum of Technology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caption:</td>
<td>Modern museums are centers of innovation and information. The Mercedes Museum documents a continuous timeline of history and demonstrates that history can point the way ahead. The Museum exhibits its history by the most modern information and communication technologies in an outstanding architectural design which is a wonderful opportunity for a photographer.</td>
</tr>
<tr>
<td>Photo location:</td>
<td>Mercedes Museum/Stuttgart/Germany</td>
</tr>
<tr>
<td>Submitted by:</td>
<td>Mr. Henri Kandiyoti (<a href="mailto:henrikandiyoti@hotmail.com">henrikandiyoti@hotmail.com</a>)</td>
</tr>
<tr>
<td><strong>Title:</strong></td>
<td>A customer pays for a handmade wool felt by using a mPOS in a felt making workshop that is located in a small traditional village of Iran.</td>
</tr>
<tr>
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</tr>
<tr>
<td><strong>Caption:</strong></td>
<td>This picture shows that a customer pays for a handmade wool felt by using a mPOS in a felt making workshop that is located in a small traditional village of Iran named Ghasem-Abad-e-Sofla, located in the east of Gilan Province. This village has a population of 5500 with a good access to mobile and fixed broadband infrastructure and various banking services. These well-developed infrastructures and services act as an enabler for the villagers to introduce their products and perform online sales and marketing for their handcrafts.</td>
</tr>
<tr>
<td><strong>Photo location:</strong></td>
<td>Ghasem-Abade-Sofla, Gilan Province, Chaboksar District of Rudsar County, Islamic Republic of Iran.</td>
</tr>
<tr>
<td><strong>Submitted by:</strong></td>
<td>Mr. Mohammad Reza Ayatollahzadeh Shirazi (<a href="mailto:ashirazi@dpco.net">ashirazi@dpco.net</a>)</td>
</tr>
</tbody>
</table>
Title: Las TIC al alcance de todos

Caption: TIC for everyone

Photo location: La Habana Cuba

Submitted by: Ms. Lexy Gaspar Cárdenas (lexy@cha.jovenclub.cu)
Title: Divertido viaje al conocimiento

Caption: A try to the Knowledge.

Photo location: Sancti Spíritus, Cuba

Submitted by: Mr. Oscar Alfonso Sosa (osalfon19@gmail.com)
<table>
<thead>
<tr>
<th>Title:</th>
<th>Central Computer Palace</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caption:</td>
<td>Central Palace of Computing. Most important institution of the Young Club of Computing and Electronics located in Center Habana and founded 7 of March of 1991 by the commander Fidel Castro that denominated it &quot;The Capital of the Young Club&quot; and thus it has been developed throughout all these Years of work. The mission of this institution is to provide all our people with the possibility of knowing and applying Computing as a branch of knowledge, important for the technological and computer development of our country.</td>
</tr>
<tr>
<td>Photo location:</td>
<td>Palacio Central de Computación La Habana Cuba</td>
</tr>
<tr>
<td>Submitted by:</td>
<td>Mr. Alexander Díaz Meriño (<a href="mailto:alexander.diaz@jovenclub.cu">alexander.diaz@jovenclub.cu</a>)</td>
</tr>
</tbody>
</table>
Title: Telemedicine-3

Caption: Rural telemedicine operators being trained in acquiring and transmitting ECG data from a patient using an indigenously developed IT based ECG device.

Photo location: Dhaka University, Dhaka, Bangladesh

Submitted by: Mr. K. Siddique-e Rabbani (rabbani@du.ac.bd)
Kanyashree Prakalpa – ensuring digital inclusion through Kanyashree 4.0

Kanyashree Online 4.0 is Kanyashree Prakalpa’s e-governance mechanism. Kanyashree is a unique ICT driven Conditional Cash Transfer Scheme which aims at improving lives of millions of adolescent girls having poor socio-economic background. It empowers girls through protection from child marriage, and with educational Empowerment, financial Empowerment and social empowerment. Kanyashree Scheme is an exceptional example where an e-governance application reaches Digital Transformation level in a span of 3 years since inception. It goes beyond the basic mandate of e-governance and touches lives of millions who belong to the socio-economically poor strata of the society!

Kolkata, West Bengal, India

Ms. Priyanka Deb (spm.kanyashree@gmail.com)
<table>
<thead>
<tr>
<th>Title:</th>
<th>Digitally Empowered Prosperous Farmer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caption:</td>
<td>This man is one of the 2.7 Million Pakistani farmers who benefit from Telenor Pakistan’s Khushaal Zamindar (Prosperous Farmer) service to maximize their crop yields, reduce post-harvest losses, safeguard nutrition and better handle adverse climatic effects. Telenor Pakistan launched the service for smallholder farmers that make up to 89% of Pakistan’s 30 million farmer base in December, 2015. The service provides localized, contextualized and customized information which includes weather forecasts, timely agronomic and livestock advisory through text, messages and outbound voice calls that also empowers farmers by giving them direct access to market. 20% subscribers of this free of cost service are female farmers.</td>
</tr>
<tr>
<td>Photo location:</td>
<td>Punjab, Pakistan</td>
</tr>
<tr>
<td>Submitted by:</td>
<td>Ms. Farzeen Zaidi (<a href="mailto:farzeen.zaidi1@telenor.com.pk">farzeen.zaidi1@telenor.com.pk</a>)</td>
</tr>
</tbody>
</table>
Title: ICT training session

Caption: The photo pictures a training session within an ICT Mobile Center, a bus equipped with ICT equipment and internet. The training concerns a population of young women in remote desert Algerian region. A way to fight computer illiteracy and offering to these populations of young women and men new perspectives in employment and integration in modern societies...

Photo location: Mansour, Adrar, Algeria

Submitted by: Mr. Salim BABA AHMED (baba-ahmed@mfep.gov.dz)
Title: The Mobile ICT Center makes a stop

Caption: The image reflects the ICT Mobile Center gathering young women for ICT training sessions as a way to fight computer illiteracy in remote rural desert regions, especially among women population. The ICT mobile structure offers access to internet and technology services.

Photo location: bouda, Ben Draou, Adrar, Algeria

Submitted by: Mr. Salim BABA AHMED (baba-ahmed@mfep.gov.dz)
<table>
<thead>
<tr>
<th>Title: Connecting Fairtrade organisations to the Fairtrade markets in Papua New Guinea</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Caption:</strong> In 2013, Fairtrade ANZ and implementing partners began a three-year information and communication technology pilot project, funded through the United Nations International Fund for Agricultural Development with the goal of linking farmers in rural PNG to Fairtrade markets. Providing reliable access to ICT was found to go beyond this, contributing to the wider sustainability of rural communities. We found access to communication leads to increased security of women and children, that the ICT trainings targeted the broader learning gaps for farmers and their communities, and investment in solar technology encouraged producer organisations to plan for greater investment in clean energy consumption.</td>
</tr>
<tr>
<td><strong>Photo location:</strong> Papua New Guinea</td>
</tr>
<tr>
<td><strong>Submitted by:</strong> Ms. Kahukura Bennett (<a href="mailto:kahu@fairtrade.org.nz">kahu@fairtrade.org.nz</a>)</td>
</tr>
<tr>
<td>Title:</td>
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<tr>
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<tr>
<td>Caption:</td>
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<tr>
<td>Photo location:</td>
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<td>Submitted by:</td>
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<td>Title:</td>
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<tr>
<td>Caption:</td>
</tr>
<tr>
<td>Photo location:</td>
</tr>
<tr>
<td>Submitted by:</td>
</tr>
</tbody>
</table>
Title: Ural

Caption: Construction of the Northern optical flow in the Ural.

Photo location: Ural, Russia

Submitted by: Ms. Ekaterina Fomicheva (ekaterina.fomicheva@rt.ru)
<table>
<thead>
<tr>
<th>Title:</th>
<th>Fiber optic Siberia village connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caption:</td>
<td>Telemen hung a fiber-optic cable on high-voltage power transmission lines near the village Malaya Tavra. Laying communication links is carried out under a Federal project aimed at bridging the digital gap (BDG). &quot;Artinskaya BDG link&quot; is the most broad-scale telecom project in terms of fiber length and rate of construction. 100 km of the fiber cable will &quot;go&quot; through high-voltage power transmission lines. 12 small residential communities with a population of about four thousand people will get access to the Internet for the first time ever.</td>
</tr>
<tr>
<td>Photo location:</td>
<td>Village Malaya Tavra, Russia</td>
</tr>
<tr>
<td>Submitted by:</td>
<td>Ms. Ekaterina Fomicheva (<a href="mailto:ekaterina.fomicheva@rt.ru">ekaterina.fomicheva@rt.ru</a>)</td>
</tr>
<tr>
<td>Title:</td>
<td>The first Internet access point in Siberia</td>
</tr>
<tr>
<td>---</td>
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</tr>
<tr>
<td>Caption:</td>
<td>The first Internet access point in Siberia under the BDG project has been set in the village Rasskasikha, Altai Territory. The guests were greeted by entertainers from Pervomaisky District singing folk songs.</td>
</tr>
<tr>
<td>Photo location:</td>
<td>Village Rasskasikha, Altai Territory, Russia</td>
</tr>
<tr>
<td>Submitted by:</td>
<td>Ms. Ekaterina Fomicheva (<a href="mailto:ekaterina.fomicheva@rt.ru">ekaterina.fomicheva@rt.ru</a>)</td>
</tr>
</tbody>
</table>
Title: Youth Passion for Mobile

Caption: The passion and love nowadays children had for mobiles devices and PCs is very amazing and very encouraging, simple telling the world that ICT really is very impactful.

Photo location: Amaiyi Street, Aba, Nigeria

Submitted by: Mr. Victor Ekeghe Mba (victorekemba@gmail.com)
<table>
<thead>
<tr>
<th>Title</th>
<th>A Pi A Day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caption</td>
<td>Femi (11) self taught programmer runs free coding classes for kids in South London, with autism friendly workshops</td>
</tr>
<tr>
<td>Photo location</td>
<td>London, United Kingdom</td>
</tr>
<tr>
<td>Submitted by</td>
<td>Ms. shwetal shah (<a href="mailto:shwetal.shah27@gmail.com">shwetal.shah27@gmail.com</a>)</td>
</tr>
</tbody>
</table>
Title: Teleconsultation at Sehat Kahani E-Health Centre

Caption: A patient from the community of Model Colony is being assessed by a nurse, under the supervision of an online female doctor.

Photo location: Karachi, Pakistan

Submitted by: Ms. Nida Shehzad (nida.sehatkahani@gmail.com)
Title: Blind Student playing game

Caption: Khalifa Empowerment Program for Students (Aqdar) provides electronic awareness games targeting all the community, including disadvantaged people and people with disabilities. In the photo, a blind student enjoy playing one of our awareness games.

Photo location: Dubai, UAE

Submitted by: Mr. Mansoor Alrazooqi (mansoordxb@gmail.com)
Conclusion

The International Telecommunication Union (ITU) remains committed to the World Summit on the Information Society (WSIS) process, and to implementation of the WSIS goals beyond 2017. ITU recognizes and highly appreciates the extremely valuable contributions made by stakeholders to enable the continuation of WSIS monitoring and reporting. There can be no doubt whatsoever that, in today’s fast-moving world, innovation and efficiency are vital to success. Accordingly, the WSIS Stocktaking 2017 Report shares with you the most recent updates and success stories in the WSIS stocktaking process.

The Web 2.0 WSIS Stocktaking Platform continues to foster implementation of the WSIS outcomes and to facilitate exchange of information among 300,000 members representing governments, the private sector, international organizations, civil society, and other stakeholders. As the Web 2.0 platform continues to flourish, so does the promotion of social development and economic growth through ICTs. We continue to maintain and improve the WSIS Stocktaking Database, which contains around 80,000 entries this year. This encouraging outcome reinforces stakeholders’ belief in and commitment to the WSIS Stocktaking process and their desire to share best practices.

Regular reporting on WSIS Stocktaking is the outcome of the Tunis phase of the Summit, launched to serve as a valuable tool for assisting with the WSIS follow-up. Since 2005, regular reporting has been a key tool for monitoring the progress of ICT initiatives and projects worldwide. WSIS Stocktaking has played a crucial role over many years, and this role takes on even greater significance this year in the light of the WSIS 2015-2025 review process on the implementation of WSIS outcomes.

WSIS stocktaking has been evolving to be the unique global process for collecting information on actions implemented within WSIS framework, aligning the WSIS process with the 2030 Agenda for Sustainable Development, highlighting the crosscutting contribution of ICTs to the SDGs. The United Nations Economic and Social Council (ECOSOC) resolution 2015/26 on "Assessment of the progress made in the implementation of and follow-up to the outcomes of the World Summit on the Information Society", which reiterates the importance of sharing best practices at the global level and recognizes excellence in the implementation of the projects and initiatives that further the goals of the World Summit, encourages all stakeholders to nominate their projects for the annual World Summit project prizes, as an integral part of the WSIS Stocktaking process, while noting the report on the WSIS success stories.

We are also pleased to announce the imminent launch of a new and innovative interface, which will make it easier to search all WSIS-related activities. All stakeholders benefit from the sharing of interesting case studies, by the undoubtedly facilitation of the transfer of knowledge, experiences, and models for project implementation. The WSIS platform helps to create partnerships, provide greater visibility, and add value to ICT projects all around the world. The many and varied stakeholders who have implemented innovative projects and contributed to the success of the WSIS Stocktaking process deserve our sincere gratitude. ITU announces an official call for updates and new entries and urges these stakeholders, along with all Member States, international organizations, the private sector, and civil society, to continue submitting such contributions in the future as WSIS pursues the ongoing stocktaking process. We trust that readers will find this report insightful, and sincerely hope that it will inspire them to participate in the construction of a broader and more inclusive information society for all.