COMMISSION ON SCIENCE AND TECHNOLOGY FOR DEVELOPMENT (CSTD)

Twenty-third session
Geneva, 23 to 27 March 2020

Submissions from entities in the United Nations system, international organizations and other stakeholders on their efforts in 2019 to implement the outcomes of the WSIS

Submission by

United Nations Educational,
Scientific and Cultural Organization

This submission was prepared as an input to the report of the UN Secretary-General on "Progress made in the implementation of and follow-up to the outcomes of the World Summit on the Information Society at the regional and international levels" (to the 23rd session of the CSTD), in response to the request by the Economic and Social Council, in its resolution 2006/46, to the UN Secretary-General to inform the Commission on Science and Technology for Development on the implementation of the outcomes of the WSIS as part of his annual reporting to the Commission.

**UNITED NATIONS EDUCATIONAL,
SCIENTIFIC AND CULTURAL ORGANIZATION**

**Report by UNESCO on its role and activities in implementing the WSIS Outcomes
(2019)**

Contribution to the Report for the

Commission on Science and Technology for Development (CSTD)

December 2019

Part One: **Executive Summary**

UNESCO supports Member States to build inclusive Knowledge Societies. The Organization relies upon multi-disciplinary comparative advantages through a range of programme activities in 2019 aligned to the 2030 Agenda for Sustainable Development and the WSIS+10 outcomes.

Information and Knowledge Societies embrace a vision of inclusive, multi-stakeholder, right-based, open, diverse and participatory approaches that are demonstrated to positively impact quality education, economic prosperity and poverty eradication, social inclusion and environmental protection, thus contributing to the three UN pillars of human rights, peace and sustainable development.

For over a decade, UNESCO has been committed to promoting a new vision of inclusive knowledge societies, highlighting the importance of creation, dissemination, preservation and utilization of information and knowledge using digital technologies. This approach acknowledges the increasing role of information and knowledge in society, as powerful resources for the creation of wealth, social transformation and human development.

UNESCO and stakeholders have achieved significant progress in a wide range of areas related to advancing freedom of expression and access to information. Specifically, UNESCO has explored the impact of technological advances, such as AI, the Internet of Things, big data and blockchain on freedom of expression and privacy in the digital age. It is urgent to formulate actions for unpacking the ethical, social, legal and human rights implications of the development and application of AI and to develop the policies, practices, measures and mechanisms needed for harnessing AI to advance knowledge societies and achieve the SDGs.

In this regard, UNESCO's internet universality framework and ROAM principles, advocating a human-Rights based, Open, Accessible, and Multi-stakeholder approach to digital transformation policies, have been central in ensuring dialogue and the development of frameworks for an ethical and human-centred development and deployment of artificial intelligence and other emerging technologies.

Part Two: **Analytical Overview of Trends and Experiences**

Initiatives for 2019 cover WSIS Action Lines by bringing to bear the breadth of UNESCO's multi-sectoral mandate. Quality education for all, freedom of expression, universal access to information and knowledge, and respect for cultural and linguistic diversity remain among UNESCO's highest programmatic goals moving forward to support the implementation of the 2030 Agenda.

In WSIS **Action Line C3** (Access to Information and Knowledge), UNESCO advocated for a human-rights based, open, accessible and multi-stakeholder driven development of artificial intelligence as outlined in its study "Steering AI for Knowledge Society: A ROAM Perspective." The publication analyzes challenges and opportunities related to access to information in the digital age, and provides a strategic summary on how AI will influence the sphere of human rights, openness, and access to information, and why a multi-stakeholder approach is necessary in order to ensure inclusive digital policies and programmes in this sphere.

In **Action Line C7** (ICT Applications: e-Learning and e-Science), and in follow up to the 2nd World Open Educational Resources (OER) Congress in Ljubljana, Slovenia, which adopted the Ljubljana OER Action Plan, the 40th session of the UNESCO General Conference adopted in November 2019 the UNESCO Recommendation on OER. Furthermore, UNESCO published in 2019 the Guidelines on the Development of OER Policies, and supported more than 20 countries in the development of national policies and strategies for adopting OER. In line with the standard-setting role of the Organization, UNESCO's Member States also adopted at the 40th session of the General Conference a resolution inviting UNESCO to develop, over a two year period, a new international instrument in the form of a UNESCO Recommendation on Open Science. This recommendation will ensure that scientific research and data are accessible and open.

In the framework of **Action line C8** (Cultural diversity and identity, linguistic diversity, and local content), UNESCO considers that it is essential to support linguistic diversity and multilingualism as essential pillars of fostering pluralistic, equitable, open and inclusive knowledge societies. The Organization also recognizes linguistic diversity and multilingualism as a source of enrichment for humanity and development. It encourages its Member States to develop comprehensive language-related policies, to allocate resources and use appropriate tools in order to promote and facilitate linguistic diversity and multilingualism, including the Internet and media. In this regard, the Organization promotes the development of multilingual content and systems, the facilitation of access to networks and systems, the development of public domain content and the reaffirmation of equitable balance between the interests of rights holders and the public interest through the Recommendation concerning the Promotion and Use of Multilingualism and Universal Access to Cyberspace (2003).

As the lead UN agency for the organization of the 2019 International Year of Indigenous Languages, UNESCO has worked to raise awareness of the critical status of many indigenous languages around the world, and to mobilize necessary resources for an immediate action, as well as to implement the Action Plan for the organization of the 2019 International Year of Indigenous Languages. The International Year aimed to draw attention to the critical loss of indigenous languages and the urgent need to preserve, revitalize and promote them, and to take further steps to this end at the national and international levels.

UNESCO and **Action Line C9** (media) stakeholders have achieved significant progress in a wide range of areas related to advancing freedom of expression and strengthening media's role in the digital age. Commitment to achieve SDG 16 of the Agenda 2030 was reinforced. Implementation of the Internet Universality indicators has been initiated in more than 10 Member States at national level, with a view to improving media and internet policies in line with international human rights standards. UNESCO and media stakeholders continue to explore emerging issues, such as the impact of AI, the Internet of Things, big data and blockchain onfreedom of expression and privacy.

In the area of promoting press freedom, safety of journalists and freedom of expression, UNESCO continued to provide support to the implementation of right to information laws, and contributed to the empowerment of national actors in this field. Many judges in Latin America, Africa and the Arab region are now incorporating international standards in their court proceedings.

To support **Action Line C10** (Ethical dimensions of the Information Society), UNESCO continued to focus its work on the ethical dimensions of emerging technologies, such as artificial intelligence, in accordance with commitments and actions of the UN system-wide strategic approach and roadmap for supporting capacity development on artificial intelligence, promoting the ethical development and application of AI technologies for public good.

UNESCO and stakeholders have achieved significant progress in areas related to advancing freedom of expression and access to information. Specifically, UNESCO has explored the impact of emerging issues, such as AI, the Internet of Things, big data and blockchain on freedom of expression and privacy in the digital age. It is urgent to formulate actions for unpacking the political, ethical, social, legal and human rights implications of the development and application of AI, and to develop the policies, practices, measures and mechanisms needed for harnessing AI to advance knowledge societies and achieve the SDGs.

In November 2019, UNESCO's Member States decided to mandate the Organization to develop a recommendation on the ethics of artificial intelligence. The Organization is therefore embarking on a two-year formal process in order to elaborate this international standard-setting instrument that will advise governments on policies and practices related to the ethics of AI.

In this process, UNESCO will call upon not only its Member States and an Ad Hoc Expert Group, but also stakeholders from the public and private sector, the technical community, media and academia, civil society and international organizations, to come together to discuss the elaboration of this instrument. The discussion will include civic forums and multi-stakeholder consultations that are at the heart of UNESCO's deliberative work.

In accordance with the Global Counter-Terrorism Coordination Compact, efforts have also been made to gather experiences from the national and regional levels to support initiatives related to youth and technology and more specifically online violent extremism.

Part Three: A brief description

Action line C3 - Access to Information and Knowledge

In Inclusive Knowledge Societies, people have ready access to information and communications resources in multiple languages and formats, as well as the skills to interpret and make use of them. Within this framework, promoting strategies for enhancing access to scientific scholarship on a global level has remained a central challenge in many Member States. UNESCO, with its partners, continued to pursue this objective through its programmes

on Access to Information (C3), as well as in partnership with other organizations and UN agencies.

In 2019, UNESCO brought together several Open Science platforms to join forces to improve the democratization of scientific knowledge, adopting a multicultural, multi-thematic and multi-lingual approach. The *'Global Alliance of Open Access to Scholarly Communication Platforms'* (GLOALL) was launched during the WSIS Forum 2019 in order to ensure the democratization of scientific knowledge and access to information. The platform is based on the convictions that 1) scientific knowledge generated with public funds is a public good and access to it is a human right; 2) public economic investment in open access to science must be consistent with its benefit to society and its contribution to the Sustainable Development Goals, and; 3) Open science depends on collaboration and cooperation, and must remain focused on sustainability in its research processes.

UNESCO advocated for a human-rights based, open, accessible and multi-stakeholder driven development of artificial intelligence as outlined in its study "Steering AI for Knowledge Society: A ROAM Perspective." The publication analyzes challenges and opportunities related to access to information in the digital age, and provides a strategic summary on how AI will influence the sphere of human rights, openness, and access to information, and why a multi-stakeholder approach is necessary in order to ensure inclusive digital policies and programmes in this sphere.

In line with the standard-setting role of the Organization, UNESCO's Member States, at its General Conference in November 2019, adopted a resolution inviting UNESCO to develop, over a two year period, a new international instrument in the form of a UNESCO Recommendation on **Open Science**. This recommendation will ensure that scientific research and data are accessible and open. The implementation of this recommendation will rely on the convening power of UNESCO to build a global common vision to ensure that open science is harnessed to close ongoing gaps in science technology and innovation. The consultative, participatory, inclusive and geographically balanced process that will lead to the adoption of the Recommendation reflects UNESCO's ongoing commitment to multi-stakeholder and participatory public policy development.

From the normative perspective, the elaboration of this Recommendation will build on the 2017 UNESCO Recommendation on Science and Scientific Researchers and the overall Strategy on UNESCO's contribution to the promotion of Open Access to Scientific Information and Research, adopted by the General Conference in 2011.

In order to strengthen the capability of the technical community in Africa to use AI for human-centred information management, UNESCO organized two workshops on Artificial Intelligence and Fairness at the Deep Learning Indaba 2019, which is the annual gathering of the African Machine Learning Community at Kenyatta University in Kenya.

As it concerns science policy, Open Science policy instruments are incorporated into the UNESCO GO-SPIN Platform and Open Science has remained a priority on the agenda of the international Forums co-organized by UNESCO, such as the World Summit on the Information Society, the World Science Forum and the United Nations Multi-stakeholder Science Technology and Innovation Forum.

In line with Action line C3 and C7, UNESCO partnered with Redalyc and CLACSO to initiate Amelica, which is a dedicated community-driven sustainable framework for Open Knowledge for Latin America and the Global South. It is a new configuration of strategies, in response to the international, regional, national and institutional context, which seeks a collaborative, sustainable, protected and non-commercial Open Access solution for Latin America and the Global South.

Action Line C7 - ICT Applications: e-Learning and e-Science

As it concerns **E-learning**, and in follow-up to two International Conferences on ICT and Education 2030 and the release of the [Qingdao Declaration (2015) on leveraging ICT for Achieving Education 2030](#), UNESCO convened a third International Conference with a focus on "Artificial Intelligence and Education" in China in May 2019. 50 government Ministers and Vice-Ministers, as well as around 500 international representatives from more than 100 Member States, United Nations agencies, academic institutions, civil society and the private sector attended the conference. During the event, Member States adopted the "[Beijing Consensus on Artificial Intelligence and Education,](#)" which offers guidance and recommendations on how best to harness AI technologies for achieving the Education 2030 Agenda. The Beijing Consensus is available in the six official languages of the United Nations.

The 2019 edition of the [Mobile Learning Week](#) focused on "Artificial Intelligence for Sustainable Development." More than 1,500 participants from 140 countries, including Ministers of Education and ICT, other representatives from Member States, the private sector, academia and international organizations, engaged in capacity building workshops, symposiums, policy forums and strategy labs aimed at exploring ways to harness the power of widely available mobile technology and other technological advances including Artificial Intelligence. Following the event, UNESCO published a ["Synthesis Report"](#) and a ["Compendium of promising initiatives."](#) In 2020, Mobile Learning Week will dive into the question of inclusive education in the era of artificial intelligence.

Through the [UNESCO King Hamad Bin Isa Al-Khalifa Prize for the use of ICT in Education",](#) UNESCO has identified and brought attention to innovative approaches around the world in e-learning. The most recent [prize-winning laureates](#) (2018), from Finland and the Netherlands, addressed the theme of "The use of innovative ICT to ensure education for the most vulnerable groups." The theme of the 2019 edition of the Prize is "The use of artificial intelligence to innovate education, teaching and learning." It will reward projects that use AI-powered solutions to enhance education, improve learning outcomes and empower teachers.

UNESCO continues to maintain the [Global ICT in Education Policy Platform](#) (launched in 2016) to facilitate the ongoing policy debates on leveraging e-learning to promote quality education and to advance inclusion, equity and gender equality. More than 50 countries have developed or updated their national ICT in education policies and master plans with a view to promote e-learning for all with the direct support of UNESCO.

Following its launch in 2018, UNESCO continues to operate the [Gender Assessment Tools for Teacher Education](#) to identify and address gender gaps and biases in teacher education policies, teaching-learning materials and practices. The results yielded from applying the six gender assessment tools helped to reveal areas that need to be addressed to make teacher education more gender-sensitive and gender-responsive.

In follow up to the 2nd World OER Congress in Ljubljana, Slovenia, which adopted the 2017 [Ljubljana OER Action Plan](#) and the accompanying Ministerial Statement, and further to the adoption of 39 C/Resolution 44 'Desirability of a standard-setting instrument on international collaboration in the field of Open Educational Resources (OER)', the 2019 UNESCO General Conference in November 2019 adopted the "**[UNESCO Recommendation on Open Educational Resources".](#)** In 2018-19, UNESCO provided assistance to more than 20 countries in supporting the development of national policies and strategies for adopting OER.

In 2019, UNESCO published the [Guidelines on the Development of Open Educational Resources (OER) Policies,](#) a guidebook on how to develop an OER policy from conception to implementation. Each chapter provides in-depth contextual information, real policy examples,

and guiding questions to help facilitate the process of adopting an OER policy. The book is also intended to engage stakeholders to review and assess existing OER policies as well as provide direction on the monitoring and evaluation of the implementation of OER activities.

A framework for an online monitoring resource for the implementation of the Ljubljana OER Action Plan in five strategic areas was developed with major OER networks during this period. The Ljubljana OER Action Plan five strategic areas are: building the capacity of users to find, re-use, create and share OER; language and cultural issues; ensuring inclusive and equitable access to quality OER; developing sustainability models; and developing supportive policy environments.

Throughout 2019, UNESCO also supported countries in planning and implementing projects on how to use mobile learning for literacy education and supporting teachers with mobile technology. UNESCO published 13 case studies on best practices of school-wide mobile learning initiatives and finalized the first phase of the project ICT Transforming Education in Africa, which supported Mozambique, Rwanda and Zimbabwe to pilot e-school models and e-assessment, expand open and distance learning and develop ICT in education policies. At the end of 2019, implementation of the second phase of the project will start in Cote d'Ivoire, Ghana and Senegal, focusing on education sector-wide pedagogical transformation, digital skills provision, inclusion, and ICT policy development.

As it concerns **E-science,** UNESCO harnessed artificial intelligence and deep learning to develop an observatory that improves weather forecasting and the prediction of environmental disasters. Recent ICT-led innovations in environmental sensing, data processing, and interactive visualization show promise for participatory knowledge generation. UNESCO and its partners are implementing Landslide-Environmental Virtual Observatories (Landslide EVO) to support this approach to e-science.

Within this context, ICTs play a catalytic role by enhancing linkages between science and various socio-economic and natural processes. Improved access to ICTs secures citizens' role as a partner in scientific inquiry rather than simply as beneficiaries of scientific studies. ICTs provide enhanced learning opportunities by offering flexible learning pathways, and address uneven access to scientific information that can help in achieving sustainable development. The L-EVO project brings together scientists from Nepal, UK, the Netherlands, Switzerland and Austria, with other partners including UNESCO. Through partnership, the project is developing a science driven and ICT supported methods and tools to generate information about climate induced landslides and flood risks. The project explores ways to use this information to enhance disaster resilience at various policy levels, from local village committees to national and international fora. ICT-enabled citizen science is a key element of the programme, which supports active incorporation of local communities in the knowledge co-creation process.

AI can also improve current forecasting of global and local climates, through better construction and testing of mathematical models. UNESCO has teamed up with the Indian Institute of Sciences to develop a capacity building initiative on Technology Assisted Disaster Risk Reduction, with a particular emphasis on floods. As part of the project, UNESCO developed a portal for down-scaled information, which provides technological solutions to downscale GCMs at the urban scale and empowers cities to deal with Climate Change.

UNESCO is involved in the implementation of the OPERANDUM (OPEn-air laboRAtories for Nature baseD solUtions to Manage environmental risks) project, which is developing nature-based solutions (NBS) to mitigate the impact of hydro-meteorological phenomena in risk-prone areas. This project, which received support from the European Union's Horizon 2020 research and innovation programme, reflects the recognition by the COP22 that NBS is one of the key mechanisms to address climate change.

Action Line C8 - Cultural diversity and identity, linguistic diversity and local content

UNESCO has continued to incorporate ICTs in its Culture programme, particularly in the protection and promotion of cultural heritage and the diversity of cultural expressions, in line with Action Line 8.

The United Nations declared 2019 the **International Year of Indigenous Languages** in order to raise awareness, not only to benefit the people who speak these languages, but also for others to appreciate the important contribution they make to our world's rich cultural diversity. UNESCO Headquarters and Field Offices have accordingly prioritized the theme of indigenous languages in several digital initiatives.

Despite technological progress, many indigenous peoples experience a variety of barriers to access information in own languages in cyberspace, access websites and e-content, use mobile phones and applications, television, personal computers, tables and other.

Although the commitment of the UN to the rights of indigenous peoples and their inclusion are implied in all aspects of the SDGs and articulated in other international documents such as WSIS, this does not automatically result in their inclusion in either general or targeted efforts to meet SDGs and integration into the national information and technology-related policies, practices and processes.

Existing development mechanisms do not adequately reflect the needs of Indigenous language users, who are at risk of being left behind or even excluded. It is in this context that the proclamation of a decade of indigenous languages, strongly supported by many stakeholders involved in the International Year, became a global priority, with only 10 years to go to achieve the set targets of the 2030 Agenda.

Joint efforts are required from all stakeholders, from indigenous language users themselves, to the public and the private sector, academia, and civil society organizations. Policy collaboration and continuity of action are essential for promoting, protecting and strengthening Indigenous languages as well as empowering their users around the world. This approach implies capitalizing on the full range of international, regional and national normative instruments and existing tools from previous years as well as from the lessons learned of the International Year of Indigenous Languages.

In the framework of the International Year, UNESCO has carried out a series of regional consultations that aim to identify recommendations for future actions through policy making, to be integrated in the Global Strategic Outcome Document for IYIL2019, submitted to UNESCO's General Conference in November 2019. The Strategic Outcome Document represents one of the main outcomes of the 2019 International Year, and contributes to the development of long-term plans in the area of indigenous languages. It was prepared based on the contributions and recommendations provided during regional consultative meetings. The set of conclusions, defined goals and suggested recommendations identified in the meetings provide a solid basis for action-oriented responses at different levels.

Article 15 of the WSIS Declaration of The World Summit on the Information Society states "In the evolution of the Information Society, particular attention must be given to the special situation of indigenous peoples, as well as to the preservation of their heritage and their cultural legacy". Since the adoption of the WSIS Declaration in 2003, and of the Tunis Declaration in 2005, various stakeholders addressed the issues of access to information and knowledge for marginalized groups. Numerous examples of effective usage of ICTs proved to be good practices and important means capable of improving the lives of indigenous peoples. The

adoption of the UN Declaration on the Rights of Indigenous Peoples in 2006 provided a comprehensive normative framework for the indigenous issues inclusive development.

One of the main priorities of the 2019 International Year of Indigenous Languages is capacity-building activities that promote application of latest technological solutions to address lack of accessibility to ICTs as well as ICT literacy for indigenous language users. In this respect, UNESCO has promoted the setting up of indigenous community media and radio worldwide.

There is a clear need for new research directions and business strategies to reduce the cost for developing indigenous language technologies, and to encourage knowledge-sharing practices and their mainstreaming at the international level to enhance profit as well as contribute to global development. One way forward is the organization of international conferences, workshops, as well as the out-sourcing of source-codes from tech companies to indigenous people so that they can be developed and integrated in new technologies.

In this framework, UNESCO organized a hackathon for the promotion of indigenous languages through mobile technology and free and open source software (FOSS), during FOSSASIA's Open Tech Summit in March 2019 in Singapore. Eleven innovative solutions for oral indigenous languages were proposed by the IT specialists working in cooperation with young indigenous peoples from Asia.

The UNESCO Mexico Office and INPI (National Institute of Indigenous Peoples) signed an agreement in September 2019 to orient the development of communication technologies - such as telephone and internet - to the needs and contexts of indigenous peoples; to develop media and information literacy projects; and to promote the creation of digital content for the safeguarding of national indigenous languages. To those ends, INPI launched the platform 'Codex Mexico' to present to the public linguistic, geographical, historical, and statistical information on the 68 languages of Mexico through interactive maps, audiovisual content, and other tools that allow a deeper understanding of each language and the town to which it belongs. The UNESCO Mexico Office has developed a series of digital publications and audiobooks in indigenous languages.

The UNESCO Yaounde Office created and/or refurbished some 20 community radios with an eye to promote national languages and culture through radio programmes.

In December 2019, during the 14th session of the Intergovernmental Committee for the Safeguarding of Intangible Cultural Heritage that took place in Bogotá, Colombia, UNESCO organized an itinerant audio exhibition on indigenous languages to highlight their vital contribution to safeguarding the intangible cultural heritage of indigenous peoples. The exhibition proposed an immersive sensorial experience that allowed the public to discover how languages relate to the creation of knowledge and cultural practices that evolve in response to our environment.

A major conference was organized at UNESCO Headquarters on 5-6 December 2019 on the theme of language technology ("Language Technology 4ALL"). The International Conference programme of three days, consisted of plenary oral and poster sessions, introductory presentations and thematic discussions in each session, as well as the exhibition on innovative language technologies and supporting events (such as welcome receptions). The Conference approved a forward-looking Outcome Document, which seeks to capture concrete recommendations for international cooperation, research and development. The document captured main debates, discussions and solutions for informed decision making, and will be globally distributed among various stakeholders and integrated into new follow-up activities.

Other relevant initiatives have been carried out in cooperation UN-agencies such as UNDESA, WIPO, ITU, FAO, as well as other partners, including the high-level dialogue 'ICT for all:

indigenous languages matter for peace, innovation and development' organized during the World Summit on the Information Society (WSIS) Forum 2019 in Geneva. The panelists addressed key issues related to the growing digital divide between speakers of dominant and minority languages, caused by the limited availability of, as well as lack of access to, indigenous language technologies. The High Level panel discussion provided space for open consultations and encouraged a shift of paradigm on the role that indigenous languages could play if ICTs are made accessible, inclusive and affordable for all users, including indigenous language users.

A key message to draw from the panel is that promoting multilingualism through ICTs contributes to the preservation of the invaluable traditional knowledge imbued in languages that would otherwise undergo digital extinction, but also to the application and harnessing of this very knowledge for development and innovation in different fields.

The Latin American Gathering of Digital Activists on indigenous languages was organized by the Guatemala Office (22-23 October 2019, Guatemala City); There are ongoing discussions to develop a toolkit on digital language activism for the capacity building work next year. Other similar activities have been organized by other UNESCO Field Offices.

It is critical to think collectively and concretely about how to adjust technological developments and AI to serve all languages. Multi-stakeholder partnership is one of the key pillars on which the Action Plan for IYIL2019 is based.

In 2020, UNESCO is planning to launch an online platform for the World Atlas of Languages, a repository for linguistic diversity and multilingualism. UNESCO initiated a global data collection "Survey of World Languages" in close cooperation with the UNESCO Institute of Statistics (UIS) and leading experts. It is expected that the online platform will be launched in April 2020.

The World Report will provide a situation analysis of linguistic diversity, measures taken to support, access and promote linguistic diversity and multilingualism, geopolitical impact on development, inclusion, knowledge production, rights and technological development related issues, as well as a revised strategic and methodological invitations.

In the framework of the **UNESCO Convention for the Safeguarding of the Intangible Cultural Heritage (2003),** a new online toolbox was created to demonstrate the linkages between safeguarding living heritage and sustainable development. It includes more than 30 case studies to show how communities transmit their intangible cultural heritage and, in turn, how safeguarding intangible heritage can contribute to achieving the Sustainable Development Goals.

The UNESCO Yaounde Office produced a DVD series in collaboration with local communities on the country's festivals. It particularly targets youth to increase their awareness of the importance of safeguarding intangible cultural heritage.

As it concerns the **UNESCO Convention for the Protection and Promotion of the Diversity of Cultural Expressions (2005),** the convention has integrated ICTs throughout its programmatic work in 2019, especially through collecting data, raising awareness and funding projects.

An Open Roadmap to support the Operational Guidelines on the Implementation of the Convention in the Digital Environment was approved by the 7ᵗʰ session of the Conference of Parties in June 2019. It provides States with a strategic framework that they can adapt in order to develop a national roadmap to protect and promote the diversity of cultural expressions in

the digital environment. Within this framework, UNESCO has begun to collect examples of good practice from around the world to promote knowledge exchange and peer-to-peer learning in the field of ICTs and culture.

Moreover, UNESCO has developed an innovative and interactive open-access digital tool, the 'Policy Monitoring Platform', to monitor Parties' implementation of the 2005 Convention. The platform currently hosts 2065 policies and measures for the promotion of the diversity of cultural expressions, which derive from Parties' periodic reports between 2012 and 2018.

Several public debates on the subject of ICTs and culture were organized in 2019, bringing together artists, technology specialists and academics. For example, on the occasion of Mobile Learning Week in March 2019, a debate titled "Artificial Intelligence for Creativity?" addressed the impact of AI on global societal issues, including the fair remuneration of artists, intellectual property rights, and artistic freedom.

Within the project "Retina Latina", funded by UNESCO's International Fund for Cultural Diversity (IFCD), young creators from Latin America and the Caribbean were trained in developing innovative strategies for the circulation of cinematographic works on traditional and digital screens.

With regards to the **UNESCO Convention concerning the Protection of the World Cultural and Natural Heritage (1972),** The World Heritage Youth Fora serve as a platform for bringing young professionals involved in the field of World Heritage together, to foster intercultural learning and exchange, to debate common concerns and to discover new roles for themselves in heritage conservation. The Fora are organized internationally in conjunction with the annual sessions of the World Heritage Committee and regionally in collaboration with various stakeholders. The preparation and the outcomes of the Fora (declarations/statements, videos etc.) are shared on the World Heritage Centre website and the engagement and follow-up among the participants are pushed on social media, especially by the participants.

The European Young Heritage Professionals Forum (organized as a part of the UNESCO-EU project 'Engaging Youth for an Inclusive and Sustainable Europe') that took place in May 2019 in Zadar, Croatia, provided training to young professionals on communication strategies for promoting tangible and intangible heritage. It involved various methods and tools for ICTs, including social media campaigning, in order to encourage the participants to become 'Cultural Heritage Messengers'.

In the framework of UNESCO's work on **Culture and Emergencies**, and under the Memorandum of Understanding between UNESCO and the Operational Satellite Applications Programme (UNOSAT) of the UN Institute for Training and Research (UNITAR) for the monitoring of heritage sites via satellite imagery, the UNESCO Apia Office requested a satellite-image based damage assessment of the February 2019 oil spill near the East Rennell World Heritage site in the Solomon Islands. The assessment was valuable for the UNESCO-IUCN Reactive Monitoring Mission in May 2019.

With support from UNESCO's Heritage Emergency Fund, the UNESCO Jakarta Office introduced digital capacity building for traditional weaver women in the two villages of Lombok, Indonesia, affected by the earthquake and tsunami in August 2018. In collaboration with the Digital Empowerment Foundation, India, the project taught the weavers how to use graphic design software to document and digitize traditional motifs so to maintain communities' collective memory, while easily experimenting with new designs to appeal to contemporary demand. The women also learnt how to use social media for marketing purposes.

As it concerns the **UNESCO Convention on the Means of Prohibiting and Preventing Illicit Import, Export and Transfer of Ownership of Cultural Property (1970),** the Organization

has continuously worked on raising awareness of illicit trafficking through online campaigns, for instance by producing 13 audiovisual clips to target the public, tourists and youth, and by providing the publicly available Database of National Cultural Heritage Laws. In 2019 UNESCO launched two e-learning programmes targeting the art market and the judiciary respectively, aiming to reinforce their capacities in the fight against the illicit trafficking of cultural property. Both tools were developed in the framework of projects funded by the European Union.

With regards to the integration of ICTs in **museums,** the UNESCO Apia Office provided Papua New Guinea National Museum and Arts Gallery (NMAG) with assistance to develop a mobile visitor app. The project aims to allow users to interact directly with NMAG's collections by featuring interactive curated tours including digital maps and tagged exhibits, the history of NMAG, as well as information on events. The app aims to strengthen community engagement with the museum, contributing to its vision of becoming a dynamic educational and cultural hub under its Corporate Plan (2019-2023).

The UNESCO Yaounde Office led a training workshop in Bangui in October 2019 to equip the team of the National Museum Barthélémy Bogranda with technical skills to digitize their collections using the software 'Collective Access'. This resulted in the creation of a database of 3500 objects from the museum's storage, which, apart from providing the staff with a means of efficiently managing their objects and loans, will be used to produce a documentary on the history of the museum and its collections.

Lastly, as it concerns the **UNESCO Convention on the Protection of the Underwater Cultural Heritage (2001),** and in order to foster capacity-building, the Organization has ensured the development and diffusion of online tools and training manuals. Digital tools and the virtualization of underwater archaeological sites are also used for practical trainings, such as those in 2019 in Campeche (Mexico) and in Mozambique Island (Mozambique). UNESCO is also working with its associated UNITWIN Network on Underwater Archaeology to develop digital training materials for academics.

Action Line C9 – Media

Following the approval, in November 2018, of the **Internet Universality Indicators** by the 31st Council session of the International Programme for the Development of Communication (IPDC), implementation of the Indicators worldwide has been initiated and is progressing. As of October 2019, 10 countries are expected to complete an assessment of national Internet development using these Indicators, while assessments are under consideration in another 15 countries, in 5 regions. These indicators serve as an internationally recognized toolkit to help stakeholders to assess their own national environment and develop Internet policies that will effectively advance human rights and contribute to achieving the 2030 SDGs.

To assist Member States in tracking progress on their commitments to guarantee public access to information, the monitoring mechanism developed in 2018 was implemented in 43 countries preparing Voluntary National Reviews for the UNHLPF in July 2019. Two side events were organized at the UNHLPF to present results on both target 16.10 indicators.

The 5th World Journalism Education Congress (Paris, July 2019) was supported, with 2 publications launched on this occasion: "Gender, Media and ICTs: New syllabi for media, communication and journalism," and "Setting the Gender Agenda for Communication Policy." These were compiled by UNESCO partners in the Global Alliance for Media and Gender, and the UNITWIN Network on Gender, Media and ICTs.

Media and information literacy, and support for gender equality in media continued, with research, capacity-building and convening of stakeholders in regional and international fora.

UNESCO has continued its lead role in coordinating and promoting activities aimed at creating a safer working environment for journalists and media workers. Since 2018, As coordinator of the **UN Plan of Action on Safety of Journalists and the issue of Impunity**, UNESCO chaired, together with OHCHR, the UN Network of Focal Points on Safety of Journalists. In this framework, UNESCO organized activities tackling the harassment of women journalists and specific threats faced by women journalists in over 10 countries, liaised with the CSO Coalition on Safety of Journalists and with the IFEX Network, and implemented field activities on safety in more than 30 countries (with at least 15 in Africa), including trainings and support to the creation of relevant national mechanisms.

On and around 3 May 2019, UNESCO led the celebrations of the 26th anniversary of **World Press Freedom Day**, with around 100 national events around the world. The global theme was 'Media for Democracy – Journalism and Elections in Times of Disinformation'. The main celebration, organized jointly by UNESCO, the Government of Ethiopia and the African Union, took place in the city of Addis Ababa (Ethiopia).

Since 2018, implementation of **Right to Information** laws was supported in over 10 countries, with the support of a global network of Information Commissioners. Monitoring and advocacy around RTI under the SDG 16.10.2 indicator led to 28 Member States referencing the issues in their Voluntary National Reports during 2019.

In Latin America, Africa and the Arab regions, over 12,000 judges have completed a UNESCO online training course since 2018, and have thereby been empowered to integrate international standards in their decision-making on cases related to access to information, freedom of expression and the safety of journalists, with impact on jurisprudence evident in a number of cases. Schools for judges now incorporate tools developed under a UNESCO project in their curricula for **training judges**, prosecutors and other judicial operators.

In November 2019, UNESCO marked **the International Day to End Impunity for Crimes against Journalists (IDEI)**, with several events around the world. The 2019 IDEI main event was an international seminar organized in Mexico City (Mexico) by UNESCO in collaboration with Mexican authorities. The seminar analyzed the mechanisms of prevention, protection and prosecution to bring justice to murdered journalists and reviewed the challenges and achievements of the fight against impunity in Mexico.

UNESCO's **IPDC** continues to support an extensive range of media development activities in developing countries and countries in transition worldwide. On 19-20 June 2019, the 63rd Bureau of the IPDC approved 36 new media development projects, allocating 700 000 USD in more than 22 countries. The efforts of the IPDC have had an important impact on a broad range of fields covering, among others, protecting safety of journalists, the promotion of media independence and pluralism, development of community media, radio and television organizations, modernization of national and regional news agencies, and training of journalists and media professionals. IPDC has also supported UNESCO's work in monitoring SDG 16.10.2 on access to information, and supported Member States to sustainably cover this issue in their self-assessments.

As it concerns **Media Development Indicators (MDIs),** MDI assessments in Ghana, Bosnia & Herzegovina, Haiti, Malawi, Morocco and Uruguay are being finalized following assessments in 2018. MDI assessments were started in 2019 in Ethiopia and Viet Nam. With regard to **Journalists' Safety Indicators** (JSIs), JSI assessments in Iraq and Afghanistan were completed and are currently being finalized, while JSI assessments are currently ongoing in Uganda, Colombia, Mali and Viet Nam.

On 13 February 2019, the 8th edition of the **World Radio Day** was commemorated all over the world under the theme "Dialogue, Tolerance and Peace." A total of over 474 events were registered in 100 Member States, including 22 Member States in Africa.

UNESCO participated in the 2019 edition of the **Internet Governance Forum** (25-29 November, Berlin) through the organization of two dedicated events on implementation of the Internet Universality Indicators and on issues of Artificial intelligence, specifically linked to the ROAM principles of UNESCO.

Additional significant contributions were made to various international meetings, such as the Open Government Partnership Forum 2019 and Rights Con 2019.

Action Line C10 - Ethical dimensions of the Information Society

UNESCO's work on Action Line C10 has focused on the ethical dimensions of disruptive technologies, with particular emphasis on artificial intelligence and the Internet of Things (IoT). Within the framework of its work programme for 2018-2019, the World Commission on the Ethics of Scientific Knowledge and Technology (COMEST) decided to address the topic of the Internet of Things (IoT), reflecting on the ethical considerations of IoT in relation to society, science and sustainability. This work builds on the COMEST Report on Robotics Ethics (2017). A full report on this issue will be completed during the 2020-2021 biennium.

Building on COMEST's previous and ongoing work, the Commission completed a preliminary study on the ethics of artificial intelligence to inform UNESCO's reflection in this area. The preliminary study highlighted that current debates tend to show that today, at the global level, there is a need for a general universal ethical guidance in terms of core values that must underpin the development of AI systems. Due to their transnational character, durable solutions can be found only at the global level. This study led to the adoption, by UNESCO Member States at its General Conference in November 2019, to develop a **standard-setting instrument in the form of a recommendation on ethics of AI**.

The Organization is therefore embarking on a two-year formal process in order to elaborate this international standard-setting instrument that will advise governments on policies and practices related to the ethics of AI.
In this process, UNESCO will call upon not only its Member States and an Ad Hoc Expert Group, but stakeholders from the public and private sector, technical community, media and academia, civil society and international organizations, to come together to discuss the elaboration of this instrument. The discussion will include civic forums and multi-stakeholder consultations that are at the heart of UNESCO's deliberative work.

Furthermore, a series or regional events have occurred to raise awareness of Member States on the role of artificial intelligence in meeting the SDGs, notably 1) the Forum on Artificial Intelligence in Africa that took place in December 2018 in Benguérir, Morocco ; 2) the Global conference "Principles for Artificial Intelligence: Towards a Humanistic Approach?" that took place in March 2019 at UNESCO Headquarters in Paris, France ; 3) The "International Conference on Artificial Intelligence and Education" that took place in May 2019 in Beijing, China, and; 4) the Regional Forum on Artificial Intelligence in Latin America and the Caribbean that took place in Sao Paulo, Brazil in December 2019.

At the national level, National IFAP (Information for All Programme) Committees organized national events such as the one in Pretoria, South Africa on 28 August 2019 to sensitize multiple actors on the ethical principles of artificial intelligence and its impact on countries.

Given its normative mandate, UNESCO will continue to raise awareness of different stakeholders about the ethical impact of AI on the various social, cultural and scientific aspects of society by working on the elaboration of this standard-setting instrument on the ethics of AI and capacity-building of all stakeholder groups in this field. This instrument will provide a global mechanism to document the social-cultural changes brought about by the rapid development of AI and related ethical issues. It will also serve as a means of

mainstreaming universal values into AI systems, which must be compatible with internationally agreed human rights and standards.

Considering the recent increase in the number of declarations of ethical principles on AI at the national or regional levels, the elaboration of this instrument by UNESCO is particularly timely for as the Organization will adopt a global, pluralistic, multidisciplinary, multicultural and multi-stakeholder approach, drawing from all of the Organization's areas of competence and diversity of networks.

In countering online violent extremism, capacity development initiatives have been carried out at regional level (Latin America) and national level (Albania, Burkina Faso, Ghana, Kyrgyzstan, Mali, Niger, North Macedonia, Pakistan and Palestine) addressing online violent extremism through Media and Information Literacy initiatives. Following the implementation of these pilot projects, recommendations are formulated towards innovative inclusive knowledge society policies.