Global Symposium for Regulators (GSR) 2023

Sharm El-Sheikh, Egypt, 5-8 June 2023

Chairman's report

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Regulation for a sustainable digital future

22nd edition

14 Interactive sessions

Ministerial panel

Global Symposium for Regulators 2023

+750 participants

+25 contributions GSR23 Best Practice Guidelines

+100 countries represented

+50 VIPs

The 22nd edition of the Global Symposium for Regulators (GSR-23), held in Sharm El-Sheikh, Egypt, from 5 to 8 June 2023, attracted over 750 participants including Government Ministers, Heads of Regulatory Authorities and C-level industry executives from over 100 countries. GSR-23 was organized by the International Telecommunication Union (ITU) in collaboration with the Government of Egypt, under the auspices of H.E. President Abdel Fattah El-Sisi.   The Symposium was chaired by Eng. Hossam El-Gamal, Executive President of Egypt's National Telecommunications Regulatory Authority (NTRA), under the theme "Regulation for a sustainable digital future".

A series of pre-events took place on 5 June, including the Regional Regulatory Associations' Meeting (RA), which saw the launch of ITU's new The Digital Regulation Network (DRN): The Collaborative Network of Networks initiative, the Industry Advisory Group on Development Issues and the Private Sector Chief Regulatory Officers (IAGDI-CRO) Meeting, the Heads of Regulators' Executive Roundtable, and further included two signing ceremonies between ITU and partners. On 7 June, a roundtable of the Network of Women (NoW) in the ITU Development Sector (ITU-D) was held providing women delegates with the opportunity to exchange views on how to develop gender-mainstreamed policies. A technology exhibition was held showcasing

the latest digital innovative technologies and applications from international and local ICT companies.

Throughout the GSR programme, discussions focused on novel regulatory approaches for digital transformation, trustworthy and resilient digital infrastructure, spectrum for tomorrow, online child and youth safety, digital accessibility, affordability of the devices, emergency public early warning systems, going green with the digital transformation, and harnessing the opportunities of the metaverse. In sharing experiences, regulators and industry players explored innovative approaches to collaborative regulation for meaningful universal connectivity to accelerate the achievement of the 2030 Agenda for Sustainable Development (SDGs).

Regulators from around the world identified and endorsed the GSR-23 **Best Practice Guidelines on regulatory and economic incentives for an inclusive sustainable digital future**. The Guidelines address and identify incentives that can be used to expand connectivity, and support access, adoption, and use. The Guidelines also identify novel, innovative, ground-breaking, evidence-based cross-sector digital policy and regulatory principles to support a sustainable digital future for all people everywhere. The guidelines are included in annex to this report and can also be found on the GSR-23 website at: www.itu.int/gsr23.

Special sessions

Regulatory Associations' Meeting

The 2023 Regional Regulatory Associations (RA) meeting, held on 5 June 2023, was chaired by Eng Abdullah Almubadal, Deputy Governor, on behalf of H.E. Dr Mohammed Al Tamimi, Governor, Communications, Space and Technology Commission (CST) of Saudi Arabia, and Chairman of the Arab Regulators Network of Telecommunications (AREGNET).

A new BDT Initiative was formally launched by Dr Cosmas Luckyson Zavazava, Director, ITU Telecommunication Development Bureau (BDT). The Digital Regulation Network (DRN): The Collaborative Network of Networks will benefit Regional Regulatory Associations and national regulatory authorities (NRA) globally and aims to provide increased cross-regional and sectoral collaboration. This initiative, he said, will include twinning efforts to facilitate exchange of experiences and information and enrich collaboration among regulators. He called for support and commitment of partners to achieve impactful and tangible results. On behalf of H.E. Dr Al Tamimi, Governor, Communications, Space and Technology Commission (CST) of Saudi Arabia, Eng. Abdullah Almubadal, Deputy Governor, expressed Saudi Arabia's pleasure in supporting ITU on this DRN initiative.

Participants emphasized the importance of collaboration and the need to consider multiple perspectives, to align policies and regulatory approaches for global and regional consensus on addressing common issues related to digital transformation and the delivery of digital services.

Regional Regulatory and other Associations present at the RA meeting, in particular APT/SATRC, EaPeReg, CRASA, CTU, Fratel, Regulatel, and WATRA highlighted ongoing activities and priorities that could be taken into consideration for The Digital Regulation Network (DRN) activities, including among others, innovative regulatory approaches; infrastructure sharing, quality of service, consumer protection, OTT services and applications; emergency communications preparedness and response, protection of critical infrastructure (e.g.:

submarine cables); 5G rollout; spectrum-related issues; satellite requirements and challenges related to Non-Geostationary Orbit (NGSO) constellations; and digital literacy.

The Regional Regulatory Associations congratulated ITU for launching the Digital Regulation Network initiative, noting the importance of collaboration, cooperation, and exchange of ideas among regional regulatory associations and regulators everywhere.

At the end of the meeting, two agreements were signed between the Director of BDT and two Regional Regulatory Associations. These agreements represent important building blocks of the newly launched DRN Initiative.

- A Memorandum of Understanding (MoU) between ITU and the European Mediterranean Regulators Group (EMERG) to establish a high-level framework of cooperation in the area of electronic communications and introducing more structured way of cooperation aiming at translating policy aspirations into concrete actions.
- A Joint Declaration between ITU, EMERG and the Eastern Partnership Electronic Communications Regulators Network (EaPeReg) on National Broadband and Infrastructure Mapping Systems.

Industry Advisory Group on Development Issues and Private Sector Chief Regulatory Officers (IAGDI-CRO)

The meeting of the Industry Advisory Group on Development Issues and the Private Sector Chief Regulatory Officers (IAGDI-CRO) was held on 5 June 2023.

The meeting facilitated a constructive exchange of perspectives, experiences, and concrete proposals for cross-border industry collaboration on regulation, and innovative approaches for fostering enduring partnerships. The IAGDI-CRO meeting focused on the urgent need to rapidly expand access to the Internet for the remaining 2.7 billion people worldwide who are not yet connected by 2030. The exchange of insights by participants also helped refocus on addressing regulatory challenges, seizing opportunities, while reaffirming the industry's preparedness to support regulatory endeavors around the world.

All participants acknowledged that societal and industry dynamics have changed, with different technologies now available to drive connectivity. This requires not only intensified collaboration between terrestrial and non-terrestrial service providers, but also collaboration between service providers and regulators with respect to adaptation of regulatory frameworks that strike a balance for all ICT industry stakeholders.

The IAGDI-CRO re-affirmed in its Outcome Statement the Private Sector's commitment to supporting governments, particularly the Regulators, during today's volatile and everchanging environment to achieve common goals both in the near and long term.

Heads of Regulators Executive Roundtable

The Heads of Regulators Executive Roundtable held under the theme "Regulatory and Economic Incentives for an Inclusive Sustainable Digital Future", brought together over 100 participants.

BDT Director opened and moderated the roundtable. In starting the discussion, Dr Zavazava emphasized that the GSR best practices guidelines serve as an invaluable tool designed to help regulators to identify and navigate the regulatory challenges ahead and thanked all participants who contributed to the development of these guidelines.

In presenting the GSR-23 guidelines for adoption, Eng. Hossam El-Gamal, Executive President, NTRA, Egypt and GSR-23 Chair, thanked all regulators and stakeholders for their contributions to the consultation. He emphasized that even though we have extended our best efforts to ensure inclusive connectivity to our citizens, we still face major obstacles in connecting the unconnected. These guidelines on "Regulatory and economic incentives for an inclusive sustainable digital future" are launched as an attempt to overcome these obstacles, he stressed.

An interactive discussion, followed on national collaboration experiences, starting with the sharing of experiences from selected countries in which collaborative digital regulation country reviews were conducted by ITU which include Colombia, Egypt, Kenya Mexico, Saudi Arabia, Senegal.

The discussion continued with regulators from other sectors (financial, domain name, publication and film) and regulators whose mandate spans over multiple sectors (including space) sharing their experience and perspective on cross-sectoral and cross-regional collaboration in the digital space. Over 30 Heads of Regulators from all regions shared their views and insights.

The following key messages were emphasized:

- Regulatory and economic incentives are essential to stimulating the deployment of digital infrastructure in rural, unserved, and underserved areas. These incentives could include subsidies, grants, low-interest loans, and reduced regulatory fees.

- Cross-sectoral and cross-regional collaboration is essential to promoting digital transformation, silos are still common in national institutions and policy implementation. This collaboration could involve governments, businesses, civil society, and other stakeholders. We need to work together, said one intervener.

- The importance of inclusive and collaborative digital regulation that protects the rights of all users was stressed. This regulation should be based on principles such as openness, transparency, and non-discrimination.

BDT Director concluded the roundtable by highlighting that we are moving to future ready digital transformation in all regions that will require a system thinking approach, to rethink and rebalance our portfolio, and consider more robust legal instruments to accelerate digital transformation in line with the evolution of digital markets.

At the end of the meeting, an agreement was signed by BDT Director and Eng. Naif Sheshah, Assistant Deputy Governor for Planning and Development, CST, Saudi Arabia, for a project on Developing and Implementing E-waste Policy and Regulation for a Circular Economy.

Network of Women (NoW) in ITU-D

The Network of Women (NoW) in ITU-D encourages gender balance in all activities of the development sector. At GSR-23, NoW in ITU-D hosted small-group mentoring sessions (6 June); as well as a substantial Power Session with networking luncheon (7 June). The small-group sessions revealed considerable appetite for mentoring and the value of facilitating this at future ITU meetings.

The Power Session, attended by nearly 300 women and men, set out to explore the chain of meaningful participation and leadership and examine practical enablers. It featured female and male speakers representing all six ITU regions. Many common themes emerged across the different regional accounts including the importance of women's empowerment for sustainable economic growth for both developing and developed countries; the important role of having a mentor in the personal and professional paths; the importance of teamwork to bring about debate, better understanding, and ultimately results; the need for groundwork to overcome invisible barriers and cultural beliefs for women in the workplace; the need for the development and design of policies and strategies to create more interest in Science, technology, engineering, and mathematics (STEM) as well as development into leadership portfolios within the governance ecosystem.

In the sharing of situational and personal contexts, challenges and triumphs, speakers highlighted the importance of ITU-D's Network of Women and Girls in ICT Day initiatives. Many attendees expressed fervent interest in learning more and participating. The moderator proposed the inclusion of a NoW session within the formal GSR programme in future, to which the BDT Director expressed his support.

Core sessions

Opening ceremony

The opening ceremony welcomed distinguished guests:

- H.E. Dr Amr Talaat, Minister, Ministry of Communications and Information Technology (MCIT), Egypt
- Ms Doreen Bogdan-Martin, ITU Secretary General
- Eng. Hossam El-Gamal, Executive President, NTRA, Egypt
- Dr Cosmas Luckyson Zavazava, Director, ITU BDT

In his opening address, **H.E. Dr Amr Talaat** welcomed participants to Sharm El-Sheikh, meeting again five years after World Radiocommunication Conference (WRC-19). Challenges such as geopolitical crisis, environmental changes, and economic turbulence require a re-evaluation of policies and goals. The ICT sector is closely related to sustainable development and must contribute relentlessly. Egypt aims to become a digital nation, focusing on seamless services, infrastructure development, and digital capabilities for its citizens. Universal accessibility, closing the digital gap, and providing Internet as a basic right are priorities for Egypt as well as inclusivity, protecting citizens' rights, and addressing cyber threats that are key considerations for a digital future. Building digital culture and enabling digital literacy are important for economic and social empowerment, especially for women.

After thanking the Government of Egypt and NTRA for their warm hospitality and for hosting GSR for the second time in less than 10 years, **Ms Bogdan-Martin** stressed that as COVID hit, so much was accomplished in little time and that we can't wait for the next crisis to make that next jump. As the world is facing a triple planetary crisis, digital can help us move forward on all fronts. Tech won't wait, regulators need to move faster. Technology is a means, not an end, she added. We need to redefine how we understand and measure economic prosperity and progress stressing, in doing so, the importance of international, regional, and inter-governmental collaboration and cooperation. She reminded participants of the SDG Digital Day, convened by ITU and partners to contribute to the SDG Summit, on 17 September, in New York and of WRC-23, at the end of the year in Dubai, United Arab Emirates.

Eng. El-Gamal welcomed all participants and international delegates who travelled to attend GSR-23 and be able to share their views and expertise on major regulatory issues to community. He stressed that, despite the negative effects of COVID-19 on life's different aspects, it has had a tangible positive impact on speeding up inclusive digital transformation. This breakthrough is obvious in the frequency of using modern applications and technologies, he added, which reduced years of traditional development. He further pointed out that it was necessary for NTRA to issue new governance frameworks, aiming at two goals, first promoting and attract new investments to the digital market, second to disseminate digital culture to all society segments, while addressing the challenges and risks associated with that growth, especially regarding cybersecurity.

Dr Zavazava thanked the Government of Egypt and NTRA for their hospitality and the beautiful facilities provided for the event. He emphasized that we need to regulate for People, the Planet and Prosperity. The road to success is always under construction, he added. In that construction, there is need for dialogue with policy makers, other sector regulators, with industry and private sector and with consumers. We are moving from narrow to cross-sectoral, from silos to collaborative regulation, and bridging silos and leaping gaps is now more important than ever. We need collaborative and constructive regulation across sectors, across borders, and across regions, he stressed. He thanked the organizations who contributed to the GSR-23 best practice guidelines and GSR Chair, Eng. Hossam El-Gamal for his leadership. As part of the Regional Regulatory Associations meeting, a new initiative was launched, the Digital Regulation Network. He concluded by emphasizing that today, more than ever, collaboration is the name of the regulation game.

Leadership segment: How can policy and regulatory innovation drive universal and meaningful connectivity and sustainable digital transformation?

The Ministerial Panel welcomed esteemed guests:

- H.E. Mr Moses Kunkuyu Kalongashawa, Minister of Information and Digitization, Malawi
- H.E. Dr Abraham Samuel Peya Mushelenga, Minister of Information and Communication Technology, Namibia
- H.E. Mr Mohlopi Phillemon Mapulane, Deputy Minister of Communications and Digital Technologies, South Africa
- H.E. Mr Hiroshi Yoshida, Vice-Minister for Policy Coordination, Ministry of Internal Affairs and Communications, Japan

Moderated by BDT Director, the Ministerial Panel discussed the readiness for digital transformation, and the groundwork for an inclusive and sustainable digital future, highlighting the importance of collaboration, regulation, and infrastructure development. The interactive panel composed of regulators and industry players that followed addressed matters related to enabling and fostering of a competitive, safe, and inclusive digital environment that promotes innovation and help attract investment, emphasizing the need for global collaboration, affordability considerations, proactive policy and regulatory frameworks, and technological advancements to ensure universal connectivity and successful digital transformation.

The following experiences were shared:

- Malawi is implementing a digital economy strategy focused on improving connectivity and affordability. This involves connecting schools, extending Internet access to rural areas, updating the curriculum for digital literacy, and developing infrastructure through the Universal Service Fund (USF). They are also exploring local device assembly and diplomatic data corridors to address high bandwidth costs. The strategy emphasizes digital services, including government initiatives, financial services, and e-commerce to enhance sector activities and competitiveness. Collaboration between the regulator and service providers has successfully lowered data prices by up to 70%, providing a model for other countries facing similar challenges.

- Namibia's national digital strategy prioritizes accessibility, security, and affordability. Efforts are underway to increase 4G coverage and develop plans for 5G spectrum assignment. Landing stations and subsea cables have been established to facilitate regional integration and infrastructure development. Affordability is being addressed through tax regulations and negotiations with suppliers, while legislation is being developed to combat cybercrime and protect user rights. Collaboration with government, other sector regulators and service providers is encouraged. The implementation of free Wi-Fi services is being considered to improve connectivity.

- South Africa is implementing policy and regulatory reforms based on recommendations from a presidential commission. The focus is on strengthening regulation in areas like data policy and AI, upgrading traditional industries, and integrating technologies such as the Internet, cloud computing, big data, and AI. Efforts are underway to finalize the digital economy strategy, expand digital connectivity, and drive structural reforms. Collaboration with other sector regulators is key to reducing communication costs, streamlining infrastructure investment and deployment, and addressing issues like digital government and harmful online content.

- Japan has gained experience in digital transformation through proof-of-concept projects using Internet of Things (IoT) and private 5G networks. They have achieved high coverage of ICT infrastructure in rural areas and promote innovation and entrepreneurship. Japan hosts the Internet Governance Forum and emphasizes global collaboration and the importance of digital infrastructure.

  Subsidies are provided to deploy infrastructure in rural areas and ensure affordable services. Coordination between policy and regulation bodies is considered vital for success in Japan's digital initiatives.

Interactive Panel with regulators and industry players

The panel was composed of the following distinguished panelists:

- H.E. Dr Mohammed Al Tamimi, Governor, Communications, Space and Technology Commission (CST), Saudi Arabia

- Mr Dan Sjöblom, Director General, Swedish Post and Telecom Authority (PTS), Sweden

- Ms Bety Aichatou Habibou Oumani, President, Autorité de Régulation des Communications Electroniques et de la Poste (ARCEP), Niger

- Mr Jacek Oko, President, Office of Electronic Communications (UKE), Poland

- Ms Isabelle Mauro, Director-General, Global Satellite Operator's Association (GSOA)

- Mr Osamu Kamimura, Vice President and Head of Spectrum Policy Division, Softbank Corp., Japan

The following key messages were emphasized:

- Connectivity and digital skills are crucial for universal connectivity and digital transformation. Efforts should be made to bridge the digital divide and to ensure that society develops at an equal pace.

- Spectrum allocation plays a fundamental role in expanding network coverage, for both terrestrial and non-terrestrial networks, to connect the unconnected.

- The regulatory environment needs to address forward-looking issues and keep up with technological developments such as digital platforms, AI, and cybersecurity.

- Suitable new technology is necessary for universal connectivity. Regulatory barriers and coordination challenges should be overcome through proactive preparation and global coordination.

- The establishment of new laws, regulatory reforms, and collaboration with international organizations were highlighted as measures taken to increase competition, foster infrastructure sharing, reduce telecommunication costs, and promote innovation to overcome the digital divide.

- Collecting data on network infrastructure is key to the mapping process to stimulate network development and expansion. Having balanced information from operators and other service providers is critical for effective network planning, whether it involves public investments or commercial activities.

- The satellite industry plays a key role in achieving inclusive digital transformation by providing reliable and efficient connectivity. Collaboration between different industries is necessary to develop viable business models. Policy and regulatory frameworks should promote innovation, investment and protect consumers.

- Spectrum allocation is essential for the satellite industry and other sectors to function, innovate, and thrive. Regulators need to consider future innovations and ensure sufficient spectrum availability, for both terrestrial and non-terrestrial networks to connect the unconnected.

Session 2: Trustworthy Digital Infrastructure: how to bridge the gap?

Moderator: Eng. Irene Kaggwa Sewankambo, Ag. Executive Director, Uganda Communications Commission.

Keynote: Mr Vint Cerf, Vice President Chief Internet Evangelist, Google

Panelists:

- Prof. Kostantinos Masselos, President, Hellenic Telecommunications & Post Commission (EETT), Greece and BEREC Chair
- Mr Choolwe Nalubamba, Director General, Zambia Information & Communications Technology Authority (ZICTA),
- Mr James Cameron, Member, Australian Communications and Media Authority (ACMA)
- Ms Margarita Lizania Pérez, Executive Secretary, COMTELCA
- Mr Muhammad Dawud Saifullah, CISO and Cybersecurity Management Head, Maxis Berhad

The session discussed how to ensure resilience of infrastructure while preparing better for online threats, strengthen online security and safety, and build confidence as digitalization of all sectors and services is accelerating across economies, emphasizing the need to address the security vulnerabilities and risks associated with the adoption of ICTs and IoT to ensure a secure digital transformation.

Key messages emphasised during discussions included:

- Safety and security online represent a significant challenge that can be addressed through a combination of technological measures, post hoc enforcement by regulators, and moral persuasion to establish behavioral norms.
- Accountability and agency are crucial in the online environment. Parties should be identifiable and held responsible for their actions, while individuals and organizations should be empowered to defend themselves through training, awareness, and reliable authentication processes. The concept of "providence", understanding the origin and ownership of information, is important in combating misinformation and disinformation.

- IoT devices need secure measures to prevent large-scale attacks. Open-source software requires regular monitoring and testing for security.
- Strong authentication is essential to prevent impersonation and address quantum threats. Investing in standards enhances digital security, safety, and trust.
- Future networks require attributes beyond speed, including software-defined networks, quality of service, low latency, privacy protection, network slicing, and protection against attacks.
- Cybersecurity is therefore paramount for future networks to ensure the security and safety of digital infrastructure and telecom networks, especially for services with socio-economic impact like autonomous driving and telemedicine. Safeguarding critical infrastructures and maintaining secure and resilient networks are essential for the proper functioning of the digital economy.
- At the regional level, the Body of European Regulators for Electronic Communications (BEREC) has set strategic priorities, that include promoting fruitful connectivity, supporting open and sustainable digital markets, and empowering end users. They actively work on cybersecurity issues and contribute to the development of regulations and risk management frameworks.
- The importance of human intervention in cybersecurity was emphasized. Assessing critical infrastructure, adopting appropriate policies and regulations, building capacity in people, and fostering collaboration and communication are key measures to address cybersecurity and online harms.
- Collaboration, information sharing, and organizational resilience in cybersecurity is paramount. Private sector involvement, agility, trust and safety are crucial aspects of principle-based regulation. Collaboration with regulators and learning from experiences are important for effective management, as well as collaboration with multiple stakeholders, codesigning processes and raising public awareness.

Session 3: Spectrum for Tomorrow

Moderator: Mr Mario Maniewicz, Director, ITU Radiocommunication Bureau (BR)

Panelists:

* Ms Yolisa Kedama, Acting Chairperson, Independent Communications Authority of South Africa (ICASA), South Africa
* Mr Ethan Lucarelli, Chief, Office of International Affairs, Federal Communications Commission (FCC), United States
* Mr John Janka, Chief Regulatory Officer Global Government Affairs, Viasat Inc.
* Mr John Giusti, Chief Regulatory Officer / Ms Luciana Camargos, Head of Spectrum, GSMA
* Ms Jayne Stancavage, Vice President Policy and Regulatory Affairs, Intel Corporation
* Dr Shiv Bakhshi, Vice-President, Industry Relations, Ericsson

The session discussed the importance of market access decisions, spectrum allocation, and regulatory frameworks in driving connectivity, bridging the digital divide, and fostering innovation while considering socio-economic factors and sustainability in the space economy. Participants were reminded that WRC 2023 will take place in Dubai, United Arab Emirates (25 Nov. - 15 Dec. 2023) and will address spectrum needs for various communication services, including fixed, mobile, broadcasting, and satellite issues.

The following key messages were emphasized:

* ITU's aims for efficient spectrum use and equitable access to satellite orbits, as well as the sustainable use of resources, particularly concerning radio spectrum and associated space orbital resources. ITU therefore plays a crucial role in this area, especially for developing countries and those facing difficulties in accessing these limited natural resources.
* There is a need for balance in providing connectivity solutions, considering the diverse topography and population density of a country. This requires leveraging different technologies, approaches, and business models, including licensed and unlicensed terrestrial, as well as space-based connectivity.
* While space seems infinite, the orbits closer to Earth are finite and need to be shared with all nations. We need to "do more with less". Four areas that should be considered: spectrum, collision, physical lanes in

space, tolerable impact of activities in space (impact on astronomy, and on ozone layer). There is a need to develop adequate provisions for spectrum and orbits and to discuss the impacts of new satellite constellations.

* Large constellation Low Earth Orbit (LEO) operators should invest in long-term space safety and sustainability. Efforts are needed to improve rules and share best practices to increase the amount of capacity in space in LEO. There is a need to create room and opportunities for both Geosynchronous Equatorial Orbit (GEO) and non-GEO systems to innovate and contribute to a wide range of services.
* National regulators should adopt flexible licensing models that include a mix of large and small license areas, shared access regimes, and data-driven use to close connectivity gaps. They should avoid relying solely on one system or technology and ensure there are multiple paths for different services to be deployed.
* The focus should be on bridging the digital divide and ensuring inclusivity in the digital economy. Spectrum management approaches should prioritize the benefit of all citizens and consider socio-economic issues.
* Harmonization of spectrum bands globally enables economies of scale, lower costs, and global roaming. Different countries can use spectrum at different paces based on geographical and socio-economic factors. Closing the 40% usage gap requires appropriate policies and partnerships.
* Regulators should consider propagation characteristics and bandwidth to facilitate greater broadband connectivity for businesses and society. The combination of low, mid, and high bands is necessary to provide comprehensive mobile services. Regulators should consider and ponder both the advantages of innovative sharing mechanisms with the benefits of incumbent uses of spectrum and ease of integration into devices.
* Spectrum allocation should support the growth of both licensed and unlicensed technologies. Policymakers and regulators play a crucial role in guiding the market and ensuring socially desirable outcomes. Spectrum should be treated as a valuable resource that drives economic development and connectivity.

Session 4: How to protect children and youth online?

Moderator: Mr Daud Elvin Suleman, Director General, Malawi Communications Regulatory Authority (MACRA)

Keynote: Baroness Beeban Kidron, Crossbench Peer in the UK House of Lords and Chair of 5Rights Foundation

Panelists:

- Mr Ibraheem Alfuraih, Advisor to the Governor, National Cybersecurity Agency (NCA), Saudi Arabia
- Ms Adrienne Corboud Fumagalli, President, Commission fédérale de la communication (ComCom), Switzerland
- Mr Konstantinos Karachalios, Managing Director, IEEE Standards
- Mr Joe Welch, Vice President, Media Entertainment Industry, Government and Policy Expert, Disney
- Ms Nina Vollmer, Children's Rights and Business Research Director, Global Child Forum
- Ms Tayma Abdalhadi, Gender Champion, GC-ARB Youth Envoy, State of Palestine

Intervener: Mr Tim Scott, Director of Public Policy, UK and Middle East, Roblox

The session discussed concrete examples of policy, regulatory and technical approaches stakeholders can take to ensure child and youth online safety considering areas and challenges that can be best tackled by regulation, taking into consideration other solutions and alternatives to bridge the gaps, mitigate risks and avoid harm. In recent years, numerous regulatory efforts arose in the global political landscape which explored unprecedented approaches to children's rights online. Hence, their priorities and success can inform future developments in the sector.

The following key messages were emphasized:

- There is an urgent need to protect children's safety and rights in the digital environment considering the negative impact of the current digital landscape on children.

- The solutions proposed resolved around a child rights-based approach, focusing on both protection and participation rights, while embedded in a coordinated global collaboration.

- Preventing children and youth from accessing explicit content and addressing the related challenges is key. Privacy protection, age verification, and certification measures need to be taken more seriously. Specific existing legal approaches, such as the General Data Protection Regulation (GDPR) and AI Act, or the Age-Appropriate Design Code, can serve to protect privacy. Several age-appropriate design methodologies exist.

- Concerns were raised about restricting children from accessing certain online spaces, rather suggesting that education, digital skills and new technological solutions for age verification may be more beneficial and sustainable.

- Children and youth should be considered as active stakeholders and involved in the design and development of services. It is important to engage with them, understand their needs, and involve them in the process of shaping the digital world.

- All relevant stakeholders, including children themselves, their families, their educators, the government leaders, NGOs, as well as the ICT industry need to work together to protect child and youth online, they each have an important role to play. Technical communities and industry should also share this responsibility and engage more in addressing issues related to child online safety. While some progress has been made, there is still a lack of commitment and transparency among many companies.

- In creating global solutions for child online protection, collaboration between the various stakeholders at local, regional and global levels, is essential to build a better digital environment for future generations.

Session 5: Digital accessibility - the key to an inclusive society

Moderator: Ms Ekaterine Imedadze, Commissioner, Communications Commission, Georgia

Keynote: Eng Abdul Rahman Omran, Egypt's first Innovator and Consultant to the Chairman of the Board of Directors, Electronics Factory of the Arab Organization for Industrialization for Artificial Intelligence projects, Egypt

Panelists:

- Dr P.D. Vaghela, Chairman, Telecom Regulatory Authority of India (TRAI)
- Ms Cynthia Reddock-Downes, Chief Executive Officer/Executive Director, Telecommunications Authority of Trinidad and Tobago (TATT)
- Eng. Belal Al-Hafnawi, Commissioner and Board Member, Telecommunications Regulatory Commission (TRC), Jordan
- Mr Mohammed Al Mousawi, Planning and Quality Manager, Communications Regulatory Authority (CRA), Qatar
- Ms Tatiana Lawrence, Vice President, International Regulatory, Iridium

The session discussed digital accessibility policies, regulatory measures, appropriate strategies and technical approaches required to ensure that all users, regardless of age, gender, ability to use the technology can access and use the digital information, products and services.

The following key messages were emphasized:

- Persons with disabilities have unique abilities that can positively impact the world, and it is important to recognize and support their dreams and aspirations. It is important to live in a world that looks at persons with disabilities with love and respect and take actions to support their quality of life.
- Accessibility and connectivity are crucial for every nation, regardless of socio-economic backgrounds.
- Enhancing accessibility requires focusing on coverage, affordability, and digital literacy.

- Efforts in Trinidad & Tobago include using data-driven approaches, Wi-Fi in public spaces, extending broadband to rural areas and providing mobile phones with assistive technologies for persons with disabilities.
- Satellite communications enable real-time communication, coordination, and accessible dissemination of emergency information. Collaboration between regulators and satellite operators is essential for ensuring digital accessibility.
- New technologies, including 5G, can lead to exclusions if accessibility and connectivity are not prioritized.
- Digital accessibility is a must, and both regulators and private industry have a responsibility to provide it.
- India's *Digital India Programme* aims to reach every citizen, scale benefits, promote collaboration, and ensure safe connectivity. India has achieved high mobile broadband coverage and plans to provide 4G connectivity to all villages by 2023. The Open Network for Digital Commerce in India allows all digital commerce companies to join, increasing consumer choice. The open network aims to empower small and medium enterprises (SMEs) and democratize access to eCommerce.
- ITU-D Study Group 1 Chair invited the audience to submit contributions to Study Group 1 focusing on connectivity matters, and specifically Question 7/1 dealing with accessibility.
- Participating in events and Study Groups helps to share information and develop a common understanding of emerging technologies and appropriate regulations.

Session 6: The remaining access gap – how to get affordable devices to the unconnected?

Moderator: Ms Christine Arida, Executive President Advisor for Strategic Affairs, NTRA, Egypt

- Ms Emilia Nghikembua, Chief Executive Officer, Communications Regulatory Authority of Namibia (CRAN)
- Ms Wendy Jap-A-Joe, Director, Telecommunications Authority Suriname (TAS)
- Mr Louis-Marc Sakala, Director General, Agence de Régulation des Postes et des Communications Electroniques (ARPCE), Republic of Congo
- Ms Lele Modise, Group Chief Executive - Legal and Regulatory Officer, MTN

The session discussed ways to promote inclusive access to smart devices, focusing on financing options, policies and regulatory measures and business strategies. It also explored the role of policymakers and regulators in facilitating smart device adoption and raising consumer confidence in using these devices.

The following key messages were emphasized:

- The pandemic has accelerated Internet usage, mobile adoption, and coverage, but 2.7 billion people remain unconnected due to challenges linked to lack of skills, language, and device affordability. Policymakers and regulators should focus on financing schemes, collaboration and innovative ideas to improve device adoption and Internet usage.
- A stable network and device affordability are essential for closing the usage gap. Investing in infrastructure is crucial for enabling coverage, and a multi-pronged approach is needed to improve data and voice service usage by providing affordable devices. Device financing, micro asset financing,

and government support can address affordability challenges.

- Policymakers and regulators should consider using Universal Service Funds (USF) to provide subsidies for poorer communities to support affordable devices to unconnected. Governments should prioritize device affordability through public investment, active policy implementation, offering subsidies, and engaging in public-private partnerships.
- Collaboration between governments and the industry can create opportunities for affordable devices, working together to produce affordable smartphones and feature phones. Addressing regulatory obstacles that discourage refurbished smartphone use can increase affordability.
- Creating a unified approach among countries to engage device manufacturers could help reduce device prices and improve connectivity. For instance, the Africa Free Trade Agreement should be leveraged to address the device gap.
- Encouraging mobile network operators (MNOs) to reuse 2G and 3G equipment in rural unserved and underserved areas, as urban cities upgrade to 4G and 5G, could be a solution to improve connectivity. In addition, implementing tax reduction incentives for network operators investing in rural areas can contribute for long-term profitability.
- Digital literacy should also be improved, ensuring communities have access to devices and the necessary skills to use them effectively is crucial for fully benefiting from the services and content enabled by connectivity.

Session 7: Saving Lives: Emergency Public Early Warning System

Moderator: Mr Randol Dorsett, Chairman, Utilities Regulation & Competition Authority (URCA), Bahamas

Keynote: Mr Selwin Hart, Special Adviser to the UN Secretary-General on Climate Action and Just Transition

Panelists:

- Mr Javier Juárez Mojica, Acting Chairman of the Federal Telecommunications Institute (IFT), Mexico
- Mr Ömer Abdullah Karagözoğlu, Chairman and President, Information and Communication Technologies Authority (BTK), Turkey
- Mr John Omo, Secretary-General, African Telecommunications Union (ATU)
- Ms Valerie Risk, Vice President Public Safety International (Remote)/Ms Rachele Gianfranchi, Director Public Affairs, Everbridge

Intervener: Mr Bapon Fakhruddin, Lead Water Sector, Division of Mitigation and Adaptation, Green Climate Fund

Demo: Mr Saurabh Basu, Project Head of Common Alerting Protocol based Integrated Alert System, Department of Telecommunications (DOT), India

The session highlighted the important role that regulatory authorities have for disaster management and developing efficient early warning systems. The recently launched UN Early Warning for All (EW4all) initiative, an important climate adaptation plan, calls for every person on earth to be protected by an early warning system (EWS) by 2027. The session further discussed ways in which regulation can help take advantage of the growing opportunities of digital tools and ICT services and networks for achieving this initiative.

The following key messages were emphasized:

- Regulatory frameworks are important to advise stakeholders on their roles and responsibilities, drive the adoption of public warning systems, advocate and share knowledge across communities, and help drive alignment by bringing together relevant stakeholders. A regulatory approach is particularly valuable for countries that are staring to implement public EWS.
- Recognizing the diversity of communities at risk, panellists from the private and public sector agreed on the need to understand how people can be reached, and to promote a multi-channel approach that is able to reach people via different communication channels, including radio, television, social media, sirens, satellite, mobile networks, etc.
- Effective early warning systems requires using technology and engaging public and private sector stakeholders, including disaster management agencies, meteorological offices and mobile network operators.
- Too few developing countries are taking advantage of existing technologies to make sure that warning dissemination and communication effectively support a multi-hazard early warning system. Given the spread and reach of mobile networks and high levels of mobile phone ownership, the opportunities of implementing mobile EWS, including cell-broadcast, which allows public alerting authorities to send geo-located warnings (only to people in at-risk areas) to mobile handsets was stressed.
- Considering a regulatory approach to drive the uptake of mobile EWS could be a key driver for achieving the EW4all initiative. In addition, countries were invited to integrate the ITU standardized Common Alerting Protocol (CAP), to ensure a harmonized format and approach to sending alerting messages over different networks.
- An increasing amount of development funds are available for climate adaptation initiatives and countries should make disaster preparedness a priority. The need for developed countries and financing institutions to provide technical and financial support was discussed.
- Only a closing of the digital divide will eventually allow countries to reach and protect everyone, everywhere.

Industry Fireside Chat: Partnership and Collaboration for Sustainable Digital Transformation

Moderator: Mr Bocar Ba, CEO, Samena Telecommunications Council and Broadband Commission Commissioner

Panelists:

- Ms Maria Alexandra Velez, Senior Director of Government and Regulatory Affairs, SBA Communications
- Mr Jose Manuel Toscano, Managing Director, Government Affairs, Intelsat
- Mr Ahmed Riad, Senior Director, Strategy and Industry Development, Huawei Technologies
- Ms Elizabeth Migwalla, Vice President International Government Affairs, Qualcomm

The following key messages were emphasized by industry representatives:

- Collaboration is critical for the ICT ecosystem, and that innovative, flexible, and sustainable partnerships are key for digital transformation. To foster sustainable partnerships, it is essential that all actors engage in collaborative efforts throughout the ICT ecosystem. This includes active involvement from manufacturers, operators, cloud providers, industry standard organizations, and regulators.

- Achieving sustainable partnerships necessitates a shared interest and alignment of objectives among all stakeholders. While each party brings unique expertise and outcome expectations, it is crucial to ensure that the collective engagement benefits everyone involved.

- Governments view the industry as a reliable source of technical expertise and a trusted partner in achieving the shared goal of improving situations in all countries in a sustainable way. Participants shared the view that any technology, and in particular AI, should put the human at the centre and be viewed and used as a means to an end, not an end in and of itself. The debate should be focused on if and how technology can serve humanity to realize an improvement of the human condition and a better, more equitable and sustainable world.

- Digital technologies are gaining importance in today's world and with such importance comes the accountability and responsibility. Hence, industry players and organizations like ITU play a vital role in collaborating and creating impact in the digital revolution.

Session 8: Going green with digital transformation

Moderator: Mr Ansord Hewitt, Director General, Office of Utilities Regulation (OUR), Jamaica

Panelists:

- Ms Julissa Cruz, Executive Director, Instituto Dominicano de las Telecomunicaciones (INDOTEL), Dominican Republic
- Mr Serge Abiteboul, Member of the Board, Autorité de Régulation des Communications Électroniques et des Postes (ARCEP), France
- Ms Mana Aïdara, Director of Economy and Telecom Market, Autorité de Régulation des Télécommunications et des Postes (ARTP), Senegal
- Ms Qi Shuguang, Vice Chair of ITU-T Study Group 5 "Environment, EMF and Circular Economy", CAICT, China
- Ms Noha Ashraf Abdel Baky, Generation Connect Youth Envoy (GC-AFR), Egypt

The session focused on the environmental impact of the ICT sector and the role of regulators in promoting green digital transformation. Two key aspects were explored: the involvement and role of regulators in reporting greenhouse gas (GHG) emissions data and regulating e-waste originating from the ICT sector.

The following key messages were emphasized:

- Establishing responsibilities for both the public and private sectors is a key goal in e-waste management. This includes examining producer responsibility and addressing the entire e-waste value chain. An effective e-waste management policy should cover production, distribution, collection, recycling, and disposal. Consumer behavior should also be considered, with the implementation of collection points and outreach campaigns.
- Collecting data from stakeholders such as equipment manufacturers, data centers, content

providers, and operators is crucial for assessing the lifecycle and environmental impact of digital technologies. A regulatory approach can facilitate this process. Robust data will allow regulators to effectively set targets and develop evidence-based policies that address key areas of environmental concern and promote sustainable practices. Efforts are needed to expand data collection, identify indicators, and engage multiple stakeholders in this important endeavor. It is crucial to collaboratively establish globally reliable and available data and robust methodologies which will enable homogeneous and usable data.

- Regulators play a key role in enforcing standards and enabling effective implementation. This promotes compliance and a culture of sustainability. Organizations can contribute to environmentally responsible technology by adopting and implementing green standards. Utilizing ITU Recommendations, from ITU-T Study Group 5 for example, allows regulators to monitor Greenhouse Gas Protocol (GHG) emissions and regulate e-waste, contributing to global environmental sustainability.
- Promoting longer device lifecycles is key to reducing e-waste. Many electronic devices are replaced prematurely. This emphasizes the importance of balancing technological progress with environmental considerations. Although technology fosters innovation, it is essential to acknowledge the environmental consequences of frequent device turnover.
- Young innovators and entrepreneurs play a vital role in developing eco-friendly technologies and generating green jobs. They see sustainability as a key priority for the ICT sector through practices like designing low-impact products and utilizing recyclable materials.

Session 9: Harnessing the opportunities of the metaverse

Moderator: Ms Sinead Bovell, Generation Connect Board Member, Futurist and Founder of Waye

Keynote: Mr Seizo Onoe, Director, ITU Standardization Bureau (TSB)

Panelists:

- Ms Cristiana Camarate, Superintendente, Agência Nacional de Telecomunicações ANATEL, Brazil, and Rapporteur ITU-D Question 6/1 - Mr Ramy Ahmed Fathy, Sector Head Strategic Planning, NTRA, Egypt

- Mr Chris Duffey, Tech Futurist and Creative Director, Adobe and Author of "Decoding the Metaverse"

- Mr Marc Vancoppenolle, VP and Head of Government Affairs International, Nokia

The session explored the challenges and opportunities of the metaverse environment relying on connectivity, digital devices, platforms and immersive reality technologies, defining what an immersive virtual reality is, examining the technical, commercial, social and regulatory implications of this virtual digital environment.

The following key messages were emphasized:

- The metaverse is projected to have a significant market value, potentially reaching 800 billion US dollars by 2024. This highlights its immense economic potential and growth opportunities.

- The metaverse offers new avenues for accelerating digital transformation across various sectors. Examples from the medical and legal fields demonstrate how the metaverse can have a tangible impact on our physical world, unlocking innovative solutions and enhancing experiences.

- As the metaverse continues to evolve, it raises new regulatory challenges that need to be addressed. The ITU Focus Group on metaverse plays a pivotal role in providing a collaborative platform for shaping an open and interoperable metaverse. This collaborative effort is crucial in establishing international standards and frameworks that ensure the metaverse benefits all stakeholders.

- The metaverse includes consumer, enterprises, and industrial metaverses, each with unique applications and benefits. Collaboration with industry stakeholders can drive the development of industrial metaverses. Each of these metaverse categories will have distinct applications and requirements, presenting diverse opportunities and challenges for various sectors.

- Digital Twin already plays a significant role in enabling the industrial metaverse and supporting smart city planning. Its capabilities in simulating and mirroring real-world assets and processes could contribute to enhanced productivity, efficiency, and innovation in industries.

- Panelists agreed that safety and security considerations are paramount in the metaverse. As users immerse themselves in this digital realm, measures must be taken to protect their privacy, data, and overall well-being. Ensuring a safe and secure metaverse environment is a key priority, with special consideration for children.

- Trust-enabling technologies like blockchain and decentralized apps are necessary for ensuring security and integrity. Network requirements for the metaverse include high-speed connectivity, low latency, additional spectrum capacity, and energy efficiency. Artificial intelligence can optimize resource usage and predict network requirements, enhancing energy efficiency and sustainability.

- The transformative power of the metaverse will reshape our way of living. It will fundamentally change how we interact, work, and engage with technology. Embracing this transformation opens new possibilities and opportunities for individuals, businesses, and society.

- Regulators must address regulatory issues, including distinguishing between real and fake experiences, identity verification, legal frameworks, privacy and data protection. Providing legal recourse for crimes committed within the metaverse is crucial.

Closing session

BDT Director underlined that GSR provides an ever-expanding body of knowledge to help participants understand, and act on, the very frontiers of regulation and policymaking. Knowledge exchange he said, breaks down key barriers that lie in our path to the power of digital transformation and a sustainable digital future for everyone.

Summarizing the discussions and outcome statement of the IAGDI-CRO meeting, **Mr Ba**, AGDI-CRO Chair, emphasized the urgent need to rapidly expand access to the Internet for the remaining 2.7 billion unconnected people worldwide by 2030, noting the requirement to explore innovative approaches to foster enduring partnership.

Reporting on the outcomes of the Regional Regulatory Associations (RA) Meeting on behalf of H.E. Dr Mohammed Al Tamimi, Chairman of the Arab Regulators Network of Telecommunications (AREGNET) and Chair of the RA-23, **Ms Bridget Linzie**, Executive Secretary, Communications Regulators' Association of Southern Africa (CRASA), emphasized the importance of collaboration and the need to consider multiple perspectives in aligning policies and regulatory approaches for global and regional consensus on addressing common issues related to digital transformation and services. She further stressed that Regional Regulatory Associations welcomed the launch of **Digital Regulation Network**: **The Collaborative Network of Networks**, noting the importance of collaboration, cooperation, and exchange of ideas among regional regulatory associations and regulators everywhere.

In presenting the **GSR-23 best practice guidelines on regulatory and economic incentives for an inclusive sustainable digital future**, GSR-23 Chairman, **Eng. El-Gamal**, thanked all policymakers, regulators, international organizations, private sector and civil society who contributed to the consultation process. He called upon everyone to disseminate and use these guidelines to move forward.

In his concluding remarks, **Dr Zavazava** expressed his gratitude to the Government of Egypt for hosting the symposium. He thanked Eng. El-Gamal for his commitment and dedication to GSR-23 and for leading and coordinating the GSR-23 best practice guidelines. He delivered a Certificate of Appreciation and the GSR Chairmanship Award to Eng. El-Gamal. He further thanked NTRA for the hard work and dedication of the team and the warm welcome received.

In closing the meeting, **Eng. El-Gamal** expressed his appreciation to ITU Secretary-General, Ms Bogdan-Martin and BDT Director, Dr Zavazava, for enabling Egypt to host GSR-23. He presented BDT Director, Dr Zavazava with an NTRA gift. He thanked all participants, ITU and his team for making GSR a resounding success.

Summarizing GSR-23!

Annex 1

Best Practice Guidelines
Regulatory and economic incentives for an inclusive sustainable digital future

The future of sustainable and inclusive digital transformation will depend on the right regulatory and economic incentives, encouraging innovation, creating a level playing field for all stakeholders, will foster social welfare and economic growth contributing to a better digital future for all.

Dr Cosmas Luckyson Zavazava
Director, Telecommunication Development Bureau (BDT), International Telecommunication Union (ITU)

Digital has become increasingly important in today's society. The lack of connectivity, inclusive access to and adoption of digital services can be a significant barrier to socio-economic development, making regulatory and economic incentives essential to stimulating sustainable infrastructure deployment, innovative solutions, and affordable use.

Eng Hossam El Gamal
Executive President and GSR-23 Chair National Telecom Regulatory Authority (NTRA) Egypt (Arab Republic of)

Best Practice Guidelines

Regulatory and economic incentives for an inclusive sustainable digital future

We, the regulators participating in the 22nd Global Symposium for Regulators, recognize the importance of defining regulatory and economic incentives to stimulate the deployment of digital infrastructure everywhere, in particular in rural, unserved and underserved areas. We encourage policy makers and regulators to introduce emerging digital technologies, foster innovative business models, address regional and global challenges, and accelerate sustainable digital transformation.

We have collectively contributed, identified, and endorsed these regulatory best practice guidelines to continue moving toward an inclusive and sustainable digital future.   Recalling the series of GSR Best Practice Guidelines since 2003 that capture established regulatory principles for a competitive, safe and inclusive enabling environment, our focus here is on novel, innovative, ground-breaking evidence-based approaches and tools to support a meaningful and sustainable digital future for all people everywhere.

Incentives towards achieving meaningful connectivity

Digital technologies have connected people and businesses across different countries, creating new opportunities and driving inclusive and sustainable growth. However, the digital divide remains a significant challenge, especially in rural, unserved and underserved areas everywhere.

- **Market access:** Policy makers and regulators are encouraged to ensure a competitive environment in all layers of the digital ecosystem by providing incentives for incumbents, new entrants, and startups that bring new solutions and technologies to the market to meet national connectivity goals. This could include establishing safe spaces for experimentation and innovation such as sandboxes and testbeds.

- **Universal access and service:** Policy makers and regulators could consider incentives for network deployment in rural, unserved and underserved areas that may include subsidies, grants, low-interest loans, loan guarantees, reducing regulatory fees, introducing fee exemptions (e.g., customs waivers on import duties) or giving tax breaks for investors or tax holidays for market players after reaching certain investment thresholds in these areas.

- **Universal service funding:** Policy makers and regulators can employ Universal Service financing mechanisms to address the needs of rural, unserved and underserved areas and populations in vulnerable situations.

- **Balancing fiscal policies**: Policy makers and regulators could consider broadening the base of contributors taking into consideration the characteristics of markets and new developments.

- **Innovative regulatory last mile connectivity solutions:** Policy makers and regulators are encouraged to consider facilitating last mile solutions to connect the unconnected, through means such as municipal, community and mesh networks and social enterprises, as well as spectrum and infrastructure sharing and co-investment to extend networks and services to unserved and underserved areas.

- **Research & development (R&D):** Policy makers and regulators may consider providing financial or fiscal incentives to support research and development in emerging digital technologies, open technology innovation and innovative business models according to the priorities of the population.

- **Spectrum reform:** Policy makers and regulators could take steps to make sufficient spectrum available to support rapid deployment of next generation services, innovation and investment in terrestrial and satellite infrastructure and spectrum-based services. Unlicensed spectrum use, spectrum refarming and redeployment, could be part of the regulatory tools employed to facilitate deployment in rural, unserved and underserved areas.

- **Green digital transformation:** Policy makers and regulators could consider eco-friendly financial and regulatory incentives such as tax reductions or holidays for companies that adopt sustainable business practices, such as using renewable energy sources in network operation and deployment.

Incentives to support access, adoption and use

Policy makers and regulators are encouraged to implement regulatory and financial incentives to support access, adoption and use to bring the benefits of meaningful connectivity to everyone, everywhere.

- **Demand-side interventions**: Policy makers and regulators could introduce demand-side interventions as part of universal service policies or other mechanisms (partnerships between public, private and non-governmental actors) to promote literacy and advanced digital skills and foster the development and adoption of relevant and local content and solutions to enhance local livelihood and business opportunities.

- **Digital skills and educational programmes:** Policy makers and regulators can play an important role in facilitating educational and a wide range of digital skill programmes in schools especially for young generation as well as, training for the elderly, including rural, unserved and underserved areas, and populations in vulnerable situations to fully harness opportunities brought about by digital transformation.

- **Lowering barriers to access digital devices and equipment:** Policy makers and regulators could consider measures to encourage and facilitate cost reduction in the manufacturing, purchase and importation of hardware equipment and devices to achieve universal service goals, in particular for open-source hardware, and for green technologies.

- **Incentives for digital services and device adoption:** Policy makers and regulators could consider introducing incentives for the provision of affordable digital services and devices at special rates for local communities and low-income population.

Cross-sector digital policy and regulatory principles

Policy makers and regulators each play key and complementary roles in their autonomy by engaging with all stakeholders to identify the changes and levers that are needed to take national, regional and global digital transformation readiness to the next level.

- **Regulatory coordination in the digital landscape:** The coherence and mutual reinforcement of rules and the proactive coordination between adjacent regulatory regimes is key to a resilient, consistent and enabling digital policy and regulatory environment. Policy makers and regulators could reinforce legal and institutional frameworks for collaboration that outline the processes, mechanisms and tools to be used across sectors and parts of government.

- **Inclusive decision-making cycles:** Policy makers and regulators should foster regular dialogue across government authorities, sectors and stakeholder groups to ensure that stakeholders are engaged on key developments in digital markets while identifying areas of concern and shaping targeted policy alternatives, for example through public consultations, stakeholder forums or collaboration networks and platforms, to ensure that all people have access and benefit from the digital transformation.

- **Data and benchmarks:** Regulators need the resources and capacity to collect relevant data to support their decisions in an open and transparent manner and to establish metrics and benchmarks to measure regulatory compliance and progress towards achieving connectivity targets and policy goals. This evidence collected helps inform and more appropriately target regulatory interventions, thus enhancing the effectiveness of regulation.

- **Research and foresight capacity:** Regulators increasingly need internal research capacity and resources to explore and anticipate market trends, regulatory challenges, and the impact of new technologies on markets and consumers. Strategic research and foresight are important to inform regulatory discussions and decisions in a timely and systematic manner, enabling proactive, proportionate, and targeted regulatory action.

- **Alignment with international standards**: Policy makers and regulators can consider aligning their policies, regulations and national standards with relevant international standards and guidelines to promote, where appropriate and to the extent possible, the harmonization of regulatory regimes in key areas enabling digital transformation to enable coordinated response to cross-border issues.

- **Regional and international collaboration and representation**: Regulators should continue working together leveraging regulatory association (RA) networks at regional and international level to accelerate digital transformation for a sustainable digital future including, where appropriate, through developing common approaches to collaborative digital policy and regulation across economic sectors and across borders.

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