23 September 2019

# **First Draft Outline of the Report by the ITU Secretary-General** for the Sixth World Telecommunication/Information and Communication Technology Policy Forum 2021

*Note: This document consolidates all the contributions submitted that propose red-line changes directly to the text of the draft first outline of the SG’s Report to WTPF-21. It has not incorporated the broader comments discussed in Contributions C-001-E submitted by Japan, C-010-E submitted by the United States of America and C-011-E submitted by the Association for Progressive Communications.*

**1. Preamble**

**1.1 The Sixth World Telecommunication/Information and Communication Technology Policy Forum 2021 (WTPF-21)[[1]](#footnote-1)**

1.1.1 Originally established by the 1994 Plenipotentiary Conference of the International Telecommunication Union (ITU), the World Telecommunication/Information and Communication Technology Policy Forum (WTPF) has been successfully convened in 1996, 1998, 2001, 2009 and 2013. By [Resolution 2 (Rev. Dubai, 2018)](https://www.itu.int/en/council/Documents/basic-texts/RES-002-E.pdf), the 2018 Plenipotentiary Conference of the ITU has now resolved to hold the next WTPF in 2021.

1.1.2 The purpose of WTPF is to provide a venue for exchanging views and information and thereby creating a shared vision among policymakers worldwide on the issues arising from the emergence of new telecommunication/ICT services and technologies, and to consider any other policy issue in telecommunications/ICTs which would benefit from a global exchange of views, in addition to the adoption of opinions reflecting common viewpoints ([Resolution 2 (Rev. Dubai, 2018)](https://www.itu.int/en/council/Documents/basic-texts/RES-002-E.pdf)).

**C-002 Comment from the United Kingdom**

1.1.2 The purpose of WTPF is to provide a venue for all interested stakeholders to exchange views and information and thereby create a shared vision among policymakers worldwide on the issues arising from the emergence of new telecommunication/ICT services and technologies, and to consider any other policy issue in telecommunications/ICTs which would benefit from a global exchange of views, in addition to the adoption of opinions reflecting common viewpoints ([Resolution 2 (Rev. Dubai, 2018)](https://www.itu.int/en/council/Documents/basic-texts/RES-002-E.pdf)).

1.1.3 By [Decision 611](https://www.itu.int/md/S19-CL-C-0128/en), the 2019 Session of ITU Council decided that the theme for WTPF-21 will be “*Policies for mobilizing new and emerging telecommunications/ICTs for sustainable development”* and thatthe WTPF-21 would discuss how new and emerging digital technologies and trends are enablers of the global transition to the digital economy. Themes for consideration would include AI, IoT, 5G, Big Data, OTTs etc. and focus on opportunities, challenges and policies to foster sustainable development.

**C-004 Comment from the People’s Republic of China**

1.1.3 By [Decision 611](https://www.itu.int/md/S19-CL-C-0128/en), the 2019 Session of ITU Council decided that the theme for WTPF-21 will be “*Policies for mobilizing new and emerging telecommunications/ICTs for sustainable development”* and thatthe WTPF-21 would discuss how new and emerging digital technologies and trends are enablers of the global transition to the digital economy. Themes for consideration include AI, IoT, 5G, Big Data, OTTs etc. and focus on opportunities, challenges and policies to foster sustainable development.

**C-008 Comment from the Arab Republic of Egypt**

1.1.3 By [Decision 611](https://www.itu.int/md/S19-CL-C-0128/en), the 2019 Session of ITU Council decided that the theme for WTPF-21 will be “*Policies for mobilizing new and emerging telecommunications/ICTs for sustainable development* and thatthe WTPF-21 would discuss how new and emerging digital technologies and trends are enablers of the global transition to the digital economy. Themes for consideration include AI, IoT, 5G, Big Data, OTTs etc. In this regard, the WTPF-21 will focus on opportunities, challenges and policies to foster sustainable development.”

1.1.4 WTPF-21 shall not produce prescriptive regulatory outcomes; however, it shall prepare reports and adopt non-binding opinions by consensus for consideration by Member States, Sector Members, and relevant ITU meetings ([Resolution 2 (Rev. Dubai, 2018)](https://www.itu.int/en/council/Documents/basic-texts/RES-002-E.pdf)).

1.1.5 All information relating to WTPF-21 is posted on <https://www.itu.int/en/wtpf-21/Pages/default.aspx> .

**1.2 Preparatory process for the ITU Secretary-General’s Report**

1.2.1 Discussions at WTPF-21 shall be based solely on a single report by the ITU Secretary-General, and contributions from participants based on that report, prepared in accordance with a procedure adopted by the Council and based on the proposals of Member States and Sector Members, and on the views of Associates, Academia and stakeholders, and WTPF shall not consider drafts of any new Opinions that were not presented during the preparatory period foreseen for drawing up the Secretary-General’s report prior to the forum ([Resolution 2 (Rev. Dubai, 2018)](https://www.itu.int/en/council/Documents/basic-texts/RES-002-E.pdf)). This Report outlines a potential scope for discussions and presents some of the policy issues under consideration among different stakeholder groups on new and emerging digital technologies and trends.

**C-009 Comments from the United States of America**

1.2.1 Discussions at WTPF-21 shall be based solely on a single report by the ITU Secretary-General, and contributions from participants based on that report, prepared in accordance with a procedure adopted by the Council and based on the proposals of Member States and Sector Members, and on the views of Associates, Academia and stakeholders, and WTPF shall not consider drafts of any new Opinions that were not presented during the preparatory period foreseen for drawing up the Secretary-General’s report prior to the forum ([Resolution 2 (Rev. Dubai, 2018)](https://www.itu.int/en/council/Documents/basic-texts/RES-002-E.pdf)). This Report outlines a potential scope for discussions and presents some of the topics under consideration among different stakeholder groups on policies to mobilize new and emerging telecommunications/ICTs for sustainable development.

1.2.2 In accordance with [Decision 611](https://www.itu.int/md/S19-CL-C-0128/en) of ITU Council 2019, the ITU Secretary-General will convene an Informal Experts Group (IEG), each of whom is active in preparing for WTPF-21. A circular letter ([CL-19/34](https://www.itu.int/md/S19-SG-CIR-0034/en)) has been sent to Member States, the State of Palestine, Sector Members, Associates, Academia, and Organizations which have the right to attend ITU conferences and meetings as observers on 18 July 2019 calling for nomination of experts to constitute the IEG.

**C-009 Comment from the United States of America**

1.2.2 In accordance with [Decision 611](https://www.itu.int/md/S19-CL-C-0128/en) of ITU Council 2019, the ITU Secretary-General will convene an Informal Experts Group (IEG), each of whom is active in preparing for WTPF-21. A circular letter ([CL-19/34](https://www.itu.int/md/S19-SG-CIR-0034/en)) has been sent to Member States, the “State of Palestine”, Sector Members, Associates, Academia, and Organizations which have the right to attend ITU conferences and meetings as observers on 18 July 2019 calling for nomination of experts to constitute the IEG.

1.2.3 The preparatory process will be guided by the timetable set out as Annex 2 in [Decision 611](https://www.itu.int/md/S19-CL-C-0128/en) and in Table 1 below.

**Table 1: Timetable for the elaboration of the ITU Secretary-General’s Report**

|  |  |
| --- | --- |
| **1 August, 2019** | A First Draft outline of the report by the Secretary-General shall be posted online for comments |
| **21 August, 2019** | Deadline for receipt of comments on the First DraftDeadline for nominations for a balanced group of experts to advise the Secretary-General on further elaboration of the report and of draft opinions associated with it |
| **1st IEG Meeting (September 2019 during the CWG cluster)** | First meeting of the group of experts to discuss the First Draft of the report by the Secretary-General and the comments received |
| **1 November, 2019** | The Second Draft of the report by the Secretary-General will be posted online, incorporating discussions from the 1st IEG meetingThis draft will also be made available online for open public consultations |
| **23 December, 2019** | Deadline for receipt of comments on the Second Draft, and for contribution on broad outlines for possible draft opinions Deadline for inputs from the open public consultations |
| **2nd IEG Meeting (January/February 2020 during the CWG cluster)** | Second meeting of the group of experts to discuss the Second Draft of the report by the Secretary-General and the comments received, including from the open public consultation |
| **1 April, 2020** | The Third Draft of the report by the Secretary-General will be posted online, incorporating discussions from the 2nd IEG meeting and including outlines of draft OpinionsThis draft will also be made available online for open public consultations |
| **June 15, 2020****[C-009 Comment from the United States of America: 15 June, 2020]** | Deadline for receipt of comments on the Third Draft, and for contribution on possible draft OpinionsDeadline for inputs from the open public consultations  |
| **3rd IEG Meeting (September 2020 during the CWG cluster)** | Third meeting of the group of experts to discuss the Third Draft of the report by the Secretary-General and the comments received, including from the open public consultation |
| **1 November, 2020** | The Fourth Draft of the report by the Secretary-General will be posted online, including the draft Opinions, and incorporating discussions from the 3rd IEG meeting |
| **23 December, 2020** | Deadline for receipt of comments on the Fourth Draft |
| **4th IEG Meeting (February 2021 during the CWG cluster)** | Fourth meeting of the group of experts to discuss the Fourth Draft of the report by the Secretary-General, including the draft Opinions, and the comments received |
| **15 March, 2021** | The final report of the Secretary-General to WTPF will be posted online, including the draft Opinions |
| **Mid-May, 2021 (back to back with WSIS Forum 2021)** | Sixth World Telecommunication/Information and Communication Technology Policy Forum |

**2. Themes for WTPF-21**

**C-009 Comment from the United States of America**

Overall, we feel that the discussions under WTPF should remain focused on the theme of policies that mobilize new and emerging telecoms/ICTs for sustainable development. The first version of this report seems to focus very heavily on challenges – rather than policies to mobilize the use of these technologies.

2.1 By [Decision 611](https://www.itu.int/md/S19-CL-C-0128/en), the 2019 ordinary session of Council decided that the theme for WTPF-21 is “Policies for mobilizing new and emerging telecommunications/ICTs for sustainable development” and that it would discuss how new and emerging digital technologies and trends are enablers of the global transition to the digital economy. Themes for consideration would include AI, IoT, 5G, Big Data, OTTs etc. In this regard, the WTPF-21 will focus on opportunities, challenges and policies to foster sustainable development.

**C-004 Comment from the People’s Republic of China**

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**C-008 Comment from the Arab Republic of Egypt**

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2.2 New and emerging digital technologies have the potential to accelerate progress towards the achievement of the 2030 Agenda for Sustainable Development by facilitating enabling action by ICTs on each and every one of the 17 Sustainable Development Goals. In this regard, they are also expected to drive progress in alignment with the WSIS Action Lines. As the world stands on the cusp of the fourth industrial revolution, breakthroughs in telecommunications/ICTs are transforming the global digital economy addressing issues across diverse sectors such as health, education, employment, transportation, agriculture, nutrition, disability, youth, social inclusion, gender equality and poverty.

**C-009 Comment from the United States of America**

*Proposed new section 2.2. bis* Improved mobilization of emerging telecommunications/ICTs depends on fostering an enabling policy environment that promotes investment and innovation through competition, transparency, flexibility and the active participation of all relevant stakeholders. Removing barriers to innovation and investment is essential to accomplish the full potential of emerging telecommunications/ICTs and will better enable the global transition to the digital economy.

**C-009 Comment from the United States of America**

2.2 New and emerging telecommunications/ICTs have the potential to accelerate implementation of the WSIS framework as the foundation through which the ITU helps contribute towards the achievement of the 2030 Agenda for Sustainable Development . Breakthroughs in telecommunications/ICTs have the potential to bring tremendous benefits and transform diverse areas including health, education, employment, transportation, agriculture, nutrition, disability, youth empowerment, social inclusion, gender equality and poverty reduction. Indeed, emerging telecommunications/ICTs are fostering innovation, increasing productivity, generating new services and creating new opportunities for individuals and businesses.

2.3 This transformative power comes with complex policy challenges in various areas including, inter alia, equality and equity (inclusion), trust, interoperability, transparency and accountability.

**C-002 Comment from the United Kingdom**

2.3 This transformative power comes with complex policy challenges in various areas including, inter alia, equality and equity (inclusion), gender equality, an enabling environment for investment, education and skills, investment in infrastructure and consumer protection.

**C-009 Comment from the United States of America**

2.3 The transformative potential of emerging telecommunications/ICTs also comes with complex policy challenges as they may have disparate effects within, and between, societies and economies.

**C-012 Comment from the People’s Democratic Republic of Algeria**

The transformative force of new technologies must be delivered with consideration of complex strategic challenges, particularly with regard to network security and stability, the preservation of the health and safety of individuals and the protection of their privacy, and also with the protection of the environment.

2.4 Concerns regarding the various implications of emerging technologies are not new, and the world has previously witnessed similar paradigm shifts across society, industry and economy that lead to new models of growth and innovation. There is a policy imperative to learn from these past experiences to better inform strategies to maximize the benefits promised by these technologies and foster innovation through balanced and considered policies.

2.5 Policy-making in this respect, therefore, is critical for facilitating country efforts, particularly in developing and least developed countries, to address a range of potentially common issues across these technologies that will help drive meaningful innovation for sustainable development. These issues include, *inter alia*, infrastructure needs, investment, regulatory environment, training and skills development, market environment, institutional cooperation, the role of development aid, etc.

**C-002 Comment from the United Kingdom**

2.4 There are concerns regarding the various implications of emerging technologies and the particular challenges faced by developing countries to mobilize them for sustainable development. These kinds of concerns are not new, and the world has previously witnessed similar paradigm shifts across society, industry and economy that lead to new models of growth and innovation. There is a policy imperative to learn from these past experiences to better inform strategies to maximize the benefits promised by these technologies and foster sustainable development through balanced and considered policies.

**C-009 Comment from the United States of America**

2.4 The world has previously witnessed similar applications of technology across society, industry and economy that lead to new models of growth and innovation. There is a value in learning from these past experiences to foster innovation and maximize the benefits promised by new and emerging telecommunications/ICTs.

**C-002 Comment from the United Kingdom**

2.5 Policy-making in this respect, therefore, is critical for facilitating country efforts, particularly in developing and least developed countries, to address a range of potentially common issues across these technologies that will help drive sustainable development. These issues include, *inter alia*, infrastructure needs, investment, regulatory environment, training and skills development, market environment, institutional cooperation, the role of development aid, etc.

**C-009 Comment from the United States of America**

2.5 Effective policy-making is critical for facilitating country efforts, particularly in developing and least developed countries, to promote innovation and contribute toward sustainable development. These issues include, *inter alia*, infrastructure needs, investment, regulatory environment, training and skills development, market environment, institutional cooperation, the role of development aid, etc.

2.6 In this regard, some of the broad questions that could be addressed while considering the opportunities and challenges of new and emerging digital technologies include:

2.6.1 Looking ahead, what are the new and emerging digital technologies and trends that ITU membership would consider the key enablers of the global transition to the digital economy? Given the inter-connections or -dependencies in the use and deployment of such technologies, what is the role that policymakers can play to foster an enabling environment that creates a holistic and agile ecosystem to enable sustainable use of new and emerging digital technologies?

**C-012 Comment from the People’s Democratic Republic of Algeria**

2.6 On the main issues that could be addressed when discussing the opportunities and challenges of new digital technologies, the following issues will need to be addressed:

- What is the role of international fora, including the ITU, in supporting developing countries in the use of ICTs to achieve the SDGs?

- How to promote a real multi-stakeholder collaboration that will enable developing countries as part of the global chain to benefit from the revenues generated by the digital economy.

**C-002 Comment from the United Kingdom**

2.6 In this regard, some of the broad questions that could be addressed while considering  *policies for mobilizing new and emerging telecommunications/ICTs for sustainable development* include:

**C-009 Comment from the United States of America**

2.6 In this regard, some of the broad questions that could be addressed while considering policies to mobilize new and emerging telecommunications/ICTs for sustainable development include

**C-003 Comment from the Hong Kong Applied Science and Technology Research Institute**

Blockchain/Distributed Ledger technology, Quantum computing, neuro technologies, energy technologies

* Facilitate people and technology interaction- Understand how new technologies connect with one another and its influence, whether they reflect or amplify human values as we make decisions on investment, design, adoption, reinvention.

For example, DLT/blockchain technologies can reduce transaction cost of coordinating diverse parties. It is driving force behind massive flow of value in digital products and services, and can create secure digital identities that can make new markets accessible to anyone

* Encourage system thinking, not pieces of technologies
* Empowering people with technologies, not people driven by technologies. Encourage approaches which put human value ahead of technology efficiencies
* Promote human-centered design – design is part of the technology/system development from the very beginning, instead of after thoughts
* Unearth the true or dominant value in the technology itself, and keep discussion/debate/watch on the technologies as they are developed
* capture the “windows of opportunity” to shape the future and direction of emerging technologies

**C-002 Comment from the United Kingdom**

2.6.1 Looking ahead, what are the new and emerging digital technologies and trends that ITU membership would consider the key enablers of the global transition to the digital economy? Given the inter-connections or -dependencies in the use and deployment of such technologies, what is the role that policymakers and other stakeholders can play to foster an enabling environment that creates a holistic and agile ecosystem to enable sustainable use of new and emerging digital technologies

**C-009 Comment from the United States of America**

2.6.1 Looking ahead, what are the new and emerging telecommunications/ICTs that ITU membership would consider the key enablers of sustainable development and the global transition to the digital economy? Given the inter-connections or -dependencies in the use and deployment of such telecommunications/ICTs, what is the role that policymakers can play to foster an enabling environment that creates an agile ecosystem to enable sustainable use of new and emerging telecommunications/ICTs?

2.6.2 As key decision makers, how does ITU membership envision the role of new and emerging digital technologies in accelerating sustainable development, keeping in mind the current and future needs of both developing and developed countries as well as all segments of the population? What are the trends in developing the whole-of-government, multi-stakeholder collaborative policy approaches that are forward-looking, flexible and evidence-based that can contribute to this goal?

**C-002 Comment from the United Kingdom**

2.6.2 As key decision makers, how does ITU membership envision the role of new and emerging digital technologies in accelerating sustainable development, keeping in mind the current and future needs of both developing and developed countries as well as all segments of the population? What are the trends in developing the joined-up, multi-stakeholder collaborative policy approaches that are forward-looking, flexible and evidence-based that can contribute to this goal?

**C-009 Comment from the United States of America**

2.6.2 How does ITU membership envision the role of new and emerging telecommunications/ICTs in contributing to sustainable development, keeping in mind the current and future needs of both developing and developed countries as well as all segments of the population? What are the trends and best practices in developing the whole-of-government, multi-stakeholder collaborative policy approaches that are forward-looking, flexible and evidence-based that can contribute to this goal?

**C-003 Comment from the Hong Kong Applied Science and Technology Research Institute**

Technologies alone will not provide meaningful opportunities for all, as their developers usually follow the business ROI. It is vitally important that key decision makers engage all stakeholders so that societal values and inclusive solutions are considered from the start.

Multi-stakeholder approach means collaboration of leaders across business, government, civil society, and academia, including the engagement of younger generations.

Technology alone is not enough to bring whole society up to equal benefits. For example, mobile telecom revolution and new infrastructure (in Africa) has not fostered innovation. It mainly benefits the consumers but not the technology producers. Hence a new industry has not been established. It needs a complementary evolution in other areas as well, for example, innovation, entrepreneurship, other infrastructure, and industrialization policies.

When new technologies and automation diminishes the role for low-cost unskilled labor, how can an agrarian or low-industrialized economy be transformed into knowledge-driven economy that is able to acquire, deploy, and develop new technologies? It depends on whether or not it is possible to close the gap in education and R&D. It takes time. We may use advanced technologies like AI to help this process. For example, leverage AI to make sense of big data, find patterns and unearth insights across education and scientific disciplines.

On the other hand, there is value to be gained to bring up tech development in developing countries. Up until now, the developed countries or western values and economies have been dominating the technology development. Along with it comes the bias in the tech development as well. If technologies are to empower people, not to determine an under-developed region, then we have to design and encourage more diversified technology development to unearth more value for human and society.

The future for a sustainable development lies not in the hands of experts, but also every citizen. For example, with a mobile phone, everyone can be a monitor point for environment. For more sustainable path, we may use digital tech (3G/DLT) for mobile carbon trading (each person is allocated an equal quota), water allocations and deforestation (satellite imaging, drones), ocean/ship mgmt. and protection (satellite, sensors, data processing), network of nano-satellites/fleets of drone ships to track the health of the oceans.

Gender divide is an issue that tech may increase or decrease it. Now only 30% women in scientific research, even smaller in STEM, less than 25%. Its downside is obvious, leaving millions of good ideas and input out of the conversation, and holding back much-needed knowledge production. It is important for right policies to help unleashing women’s potential.

Emerging technologies can transform the way we perceive gender, age, and the body itself. People can maximize their output given the right environment and opportunities.

2.6.3 What are the key opportunities and challenges facing the development and deployment of such new and emerging digital technologies?

**C-006 Comment from the Russian Federation**

*Proposed new section 2.6.3. bis* What international standards and regulatory mechanisms should be developed for effective and efficient implementation of new and emerging technologies, including the mechanisms to ensure safety for all, especially for the most vulnerable?

**C-003 Comment from the Hong Kong Applied Science and Technology Research Institute**

a) continually expanding bandwidth… improving compression technology

b) dense long-term storage (use DNA to store info, 100K times flash mem)

c) always-on computing … fragile … power outage … familiar with primitive/fallback systems

d) ubiquitous computing has social impacts (less human interaction, declining empathy among young people)

e) environmental externalities … data centers 2% electricity use … sustainability and energy efficiency of computing methods and hardware; e.g. “cloud computing” energy/security/privacy … where to store data … for real-time insight and decision making, mesh computing / distributed computing more agile solution without incurring scalability costs

f) equality of access: development of affordable technologies, e.g. NVideo $99 GPU with advanced deep learning engine; … all environ (intermittent power, temperature shift, or radiation) e.g. Raspberry Pi sold 12m devices since 2012

g) reduce first movers dominance (for fair access), fair taxation, competition policy, consumer rights … super-platforms can wield outsized power over their value chains … access huge amounts of data allows price discrimination among consumers, putting disadvantaged competitors out of business

h) trust in institutions and in technology is under threat. As computer indistinguishable in daily lives, securing system and protecting privacy vital to restoring trust among citizens, governments and corporations.

**C-002 Comment from the United Kingdom**

2.6.3 What are the key opportunities and challenges facing the mobilization of such new and emerging digital technologies for sustainable development? [What are the development and deployment issues involved?]

**C-009 Comment from the United States of America**

2.6.3 What are the key opportunities and challenges facing the development and deployment of such new and emerging telecommunications/ICTs?

2.6.4 How can the benefits of new and emerging digital technologies be made more accessible to all? Along with the challenge of connecting the unconnected through infrastructure, what can be done to ensure that everyone, particularly women and girls, has affordable access to new technologies; that people have the skills to leverage an environment where they can learn, share, and engage; that there is presence and use of balanced incentives for continued innovation; and that an environment of trust and inclusion is fostered? How can better international cooperation contribute to these efforts?

**C-003 Comment from the Hong Kong Applied Science and Technology Research Institute**

Promote value based governance, not technology driven follow up or drags in policy makings. Build value into tech development processes to reflect society’s values rather than solely those of their creators.

Proactively consider ethics, values, and social ramifications thru development stages, which can impact how tech integrate and support the collective human well-being.

Emerging technologies are usually developed by specialized communities with narrow interests, sometimes in areas where the values have not established yet. How to add “ethics” as a feature into technologies? It is not an easy task. It is as complex as adopting new methodologies, cultivating organizational culture, changing market mentality of the economics that is driving the development. In other words, the whole business model may need to be thought over again.

Digital technologies can be employed in multiple ways. All of their risks and impacts need to be assessed carefully. Need to engage socially responsible processes from the very start with a broader view of the potential impacts on the society.

**C-002 Comment from the United Kingdom**

2.6.4 How can the benefits of new and emerging digital technologies be made more accessible to all? Along with the challenge of connecting the unconnected through infrastructure, what can be done to ensure that everyone, particularly women and girls, has affordable access to new technologies; that people have the skills to leverage an environment where they can learn, share, and engage;; and that digital literacy and consumer protection and inclusion is fostered? How can better international cooperation by all stakeholders contribute to these efforts?

**C-009 Comment from the United States of America**

2.6.4 How can the benefits of new and emerging telecommunication/ICTs be made more accessible to all? Along with the challenge of connecting the unconnected through infrastructure, what can be done to promote affordable access for everyone, particularly women and girls, to build the skills necessary to leverage a changing environment where people can learn, share, and engage; and to foster incentives for continued innovation and an environment of trust and inclusion? How can better international cooperation contribute to these efforts?

2.6.5 How can the global community continue building local and inclusive innovation ecosystems that enable the use and building of trust in new and emerging digital technologies?

**C-003 Comment from the Hong Kong Applied Science and Technology Research Institute**

Realize the collective impacts that digital technologies on humanity and on our lives. They mediat our interactions, facilitate our economies, impact our bodies/environs, and process info that we depend upon day in and day out. We need to have the trust like pilots trust the instrument in the navigation of dark nights.

There is a tradeoff in technology development. Tech pursuit requires freedom to push boundaries, but it also requires to contextualize new capabilities with reflection on purpose and meaning. Both curiosity, ambition, and collective responsibility are important.

Need to develop code of ethics, culture of org or profession/sector. Always aware what is at stake in research, analysis, and application of technologies so that self-reflection and restraint can be exerted.

Seek opportunities at every important junction points where true values can become effective tools for shaping technologies and their development process. For example, decisions which are difficult for humans often involve intangible or invaluable features of life. When faced by machines, these unmeasured or un-measurable criteria will have to be reduced to code. An evolving consensus will have to be built and adaptive in the context of real-life situations. Such discussion and debate is an on-going effort, reflecting all the important considerations and value proposition throughout the process.

**C-002 Comment from the United Kingdom**

2.6.5 How can the global community continue building local and inclusive ecosystems that enable the mobilization of new and emerging telecommunications/ICTs for sustainable development?

**C-009 Comment from the United States of America**

2.6.5 How can the global community continue building local and inclusive innovation ecosystems that enhance consumer trust and enable the deployment and use of new and emerging telecommunications/ICTs?

2.6.6 What are the ways in which stakeholders can work together to drive progress towards ensuring interoperability of technological solutions based on these emerging technologies to facilitate, among other things, greater access for all?

**C-002 Comment from the United Kingdom**

*Proposed new section 2.6.7* What policies are needed to promote education, skills and training to develop a skilled workforce? How can policy-makers and other stakeholders help to identify, retain and develop the necessary skills base?

*Proposed new section 2.6.8* How best can development aid support the mobilization of new and emerging technologies for sustainable development? What policies are needed to promote effective development partnerships?

**C-003 Comment from the Hong Kong Applied Science and Technology Research Institute**

Technology solutions are built upon the value proposition that the target system will provide. A value focused approach can smooth out the interoperability challenges if the value is commonly agreed upon and carried out during the development process.

**C-002 Comment from the United Kingdom**

2.6.6 How can policy-makers build an enabling environment for investment? What policies can help ensure that the regulatory and market environments help mobilize new technologies for sustainable development?

**C-007 Comment from Facebook**

2.6.6 What are the ways in which stakeholders can work together to drive progress towards promoting interoperability of technological solutions based on these emerging technologies to facilitate, among other things, greater access for all?

**C-009 Comment from the United States of America**

2.6.6 What are the ways in which stakeholders can work together to drive progress to facilitate greater access to new and emerging telecommunication/ICTs?

2.7 *Note: These overarching questions will be considered in conjunction with more detailed and specific analysis of the topics set out in* [*Decision 611*](https://www.itu.int/md/S19-CL-C-0128/en)*. Such analysis in each of these sections could potentially be broadly divided into three parts – opportunities, challenges, and policies to foster sustainable development.*

**C-007 Comment from Facebook**

*Note: These overarching questions will be considered in conjunction with more detailed and specific analysis of the topics set out in* [*Decision 611*](https://www.itu.int/md/S19-CL-C-0128/en)*. Such analysis in each of these sections could potentially be broadly divided into three parts – 1) Contributions of new and emerging telecommunications/ICT to sustainable development 2) policies for mobilizing new and emerging telecom/ICT for sustainable development and 3) challenges to implementing the policies to mobilize new and emerging telecom/ICT.*

**C-009 Comment from the United States of America**

2.7 *Note: These overarching questions will be considered in conjunction with more detailed and specific analysis of the theme for WTPF-21 and topics set out for consideration in* [*Decision 611*](https://www.itu.int/md/S19-CL-C-0128/en)*. Such analysis in each of these sections could potentially be broadly divided into three parts – opportunities, challenges, and policies to foster sustainable development.*

**2.8 Sub-Themes for Discussion**

[Decision 611](https://www.itu.int/md/S19-CL-C-0128/en) lists various sub-themes for consideration as indicated below.

**C-006 Comment from the Russian Federation**

Consider include “Virtual Reality” in the list of topics to be considered.

**C-008 Comment from the Arab Republic of Egypt**

**2.8 Themes for Discussion**

[Decision 611](https://www.itu.int/md/S19-CL-C-0128/en) lists various themes for consideration as indicated below.

**2.8.1 Artificial Intelligence (AI)**

**C-009 Comment from the United States of America**

2.8.1 *Deleted section.*

2.8.1.1 AI solutions and technologies have the potential to transform areas as diverse and critical as education, healthcare, finance, mobility, agriculture and energy.

However, they also bring with them several implications of risks to aspects such as security, trust and inclusion, as well as issues of transparency and accountability – in AI algorithms, tools, and the data they depend on.

**C-002 Comment from the United Kingdom**

However, they also bring with them several challenges and risks.

**C-007 Comment from Facebook**

2.8.1.1 AI solutions and technologies have the potential to transform areas as diverse and critical as accessibility, connectivity, education, healthcare, finance, mobility, agriculture and energy.

However, they also bring with them several issues related to security, trust and inclusion, as well as issues of transparency and accountability – in AI algorithms, models, and the data they depend on.

2.8.1.2 Some examples of AI-related policy questions that could be considered include:

a. What are the key policy imperatives driving decision makers to explore and harness the potential of AI-based solutions and technologies to enable the global transition to digital economy?

**C-002 Comment from the United Kingdom**

a. How can AI solutions and technologies promote sustainable development? What are the key policy imperatives driving decision makers to explore and harness the potential of AI-based solutions and technologies to enable sustainable development?

**C-007 Comment from Facebook**

a. How can decision makers help leverage the potential of AI-based solutions and technologies to enable the global transition to digital economy and meet the Sustainable Development Goals?

b. How do AI technologies support or challenge the development of telecommunications/ICTs? Conversely, how can telecommunications/ICTs enhance and disseminate inclusively the positive externalities of AI?

c. How can AI help the developing countries to better benefit from the use of advanced data-driven technologies?

**C-007 Comment from Facebook**

c. How can AI help the developing countries to better benefit from the use of advanced data-driven technologies? How can developing countries access and benefit from AI-based technologies?

**C-002 Comment from the United Kingdom**

b. *Deleted*

**C-007 Comment from Facebook**

b. How can AI technologies support the development of telecommunications/ICTs? Conversely, how can telecommunications/ICTs enhance and disseminate inclusively the positive externalities of AI?

d. What are the challenges facing the deployment and use of AI technologies? How can issues such as trust, transparency, accountability, bias and representativeness be best addressed?

**C-002 Comment from the United Kingdom**

d. What are the challenges facing the deployment and use of AI technologies?

**C-007 Comment from Facebook**

d. What are the main challenges facing the deployment and use of AI technologies? How can issues such as trust, fairness, transparency, accountability, bias, inclusion and representativeness be best addressed?

e. How can stakeholders foster innovation while also ensuring that the future of AI is synonymous with a safe, inclusive and sustainable future for all?

**C-002 Comment from the United Kingdom**

e. How can stakeholders promote the development and use of AI technologies to support sustainable development?

**C-007 Comment from Facebook**

e. How can stakeholders foster innovation through AI while also ensuring that AI is built, deployed, and used in a safe, inclusive and trustworthy way?

**C-003 Comment from the Hong Kong Applied Science and Technology Research Institute**

a) Trust issues become paramount – machines need to learn from observation and decipher human values,…,mediating layer through which human interpret the world, like a pilot trusts the instruments in inclement weather…AI/robotics will migrate into positions of power, responsibility, and accountability… requires extensive governance

b) Value alignment problem – AI objectives need to align with human’s… the solution AI finds is “provably beneficial system”…unknown or uncertain objective is better than partial or erroneous objective ..learning human value from human behavior is difficult

c) Research challenges, common sense problem or replicating situational awareness without large data training…

d) Automation could undermine industrialization in developing countries by undercutting their labor cost advantage

e) Security vulnerability, AI applications can be tricked, hacked, or confused… ensure that decisions made by machines are programmed in a secure manner, resistant to being subverted or exploited through cyber-attacks.

f) AI/ML decisions opaque… concerns of delegating authority to them… justification and trust are deeply linked….AI needs to explain its reasoning…algorithms show bias after examining data sets that reflect human bias (misspecification or unrepresentative training data)… unpacking their processes is technically possible, but AI will likely modify its approach for the next decision. This means it is difficult to verify results. Limits the ability for humans to learn from machines as they make independent decisions.

g) AI resource are open source … w/o transparency it is hard to isolate problems and make critical adjustments. How to ensure such technologies are not used by “bad” guys?

h) Organize data for AI system

i) Ethical standards and normative expectations of AI

j) AI and robotics governance, foresight challenge for policy makers…. Space for innovative governance procedures and potential creation of new types of committee, agencies, advisory groups with authority to be defined.

k) Conflict resolution: no framework or best practices exist for resolving conflicts associated with AI applications and systems…e,g, AI research not regulated, but products may be.

l) Impact of AI depends on how we adopt them. Decision making processes for boards and managers in determining where and when to use them become important

m) AI, robots and humans work better when they work together

**C-007 Comment from Facebook**

*Proposed new section f.* How can policy and decision-makers promote innovative and beneficial uses of AI while ensuring its responsible development?

*Proposed new section g.* How should this technology be governed in order to maximize its potential while minimizing its risks?

**C-012 Comment from the People’s Democratic Republic of Algeria**

2.8.1.1 With the emergence and the expansion of AI, it is very crucial for developing countries to discuss the following issues, including:

- How to deal with the problems of inequality, racist robots triggered by AI?

- How to share the wealth created by machines?

- How to solve the problems of ethics related to the use of the AI, and which authority will be able to validate the regulations related to this domain?

- What are the socio-economic impacts of AI for states and for people's daily lives?

- How to deal with the challenges related to the expansion of AI on the privacy?

- What is the legal future of these robots that are able to perceive and act?

**2.8.2 Internet of Things (IoT)**

2.8.2.1 The IoT and connected sensors are driving improvements to national growth and human wellbeing in a range of areas such as healthcare, water, agriculture, natural resource management, resiliency to climate change and energy.

However, while IoT is increasingly responsible for connectivity-based service models in the aforementioned diverse areas of application, capturing its full potential will require an understanding of where real value can be created and a successful effort to address a set of systems issues, including interoperability.

**C-002 Comment from the United Kingdom**

However, policymakers and other stakeholders may need to address several challenges if they are to capture its full potential.

**C-009 Comment from the United States of America**

2.8.2.1 The IoT and connected sensors are driving improvements to national growth and human wellbeing in a range of areas such as healthcare, water, agriculture, natural resource management, environment and energy.

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2.8.2.2 Some examples of policy questions that could be considered to provide a better understanding of efforts needed to successfully deploy IoT include:

**C-002 Comment from the United Kingdom**

2.8.2.2 Some examples of policy questions that could be considered to provide a better understanding of efforts needed to successfully mobilize IoT for sustainable development include:

a. What are the key challenges and opportunities facing policymakers for ensuring that IoT applications create real value? What is the role that policymakers can play in developing an ecosystem at the national and international level that best supports the cross-sectoral nature of such applications?

**C-002 Comment from the United Kingdom**

a. How can the Internet of Things promote sustainable development? What are the key challenges and opportunities facing policymakers for ensuring that IoT applications create real value?

**C-005 Comment from Australia**

a. What are the key challenges and opportunities facing policymakers for ensuring that IoT applications create real value? What is the role that policymakers can play in developing an ecosystem at the national and international level that best supports the cross-sectoral, public and private nature of such applications?

**C-009 Comment from the United States of America**

a. What role can policymakers play to support industry-led development of an IoT ecosystem at the national and international level that best supports the delivery of IoT solutions within and across sectors?

b. How can stakeholders ensure that technologies continue to evolve, providing lower costs and more robust analytics, to support use of these applications? How can the critical issues of interoperability and trust be addressed?

**C-002 Comment from the United Kingdom**

b. How can stakeholders ensure that technologies continue provide lower costs and more robust analytics, to support use of these applications?

**C-005 Comment from Australia**

b. How can stakeholders ensure that technologies continue to evolve, providing lower costs and more robust analytics, to support use of these applications? How can the critical issues between interoperability and data security, analytics and public confidence be addressed?

**C-009 Comment from the United States of America**

b. How can stakeholders ensure continued innovation in the development and deployment of IoT solutions?

c. What steps can be taken to ensure that the benefits arising from the use and application of IoT systems are more equitably accessible, across countries and populations?

**C-002 Comment from the United Kingdom**

c. What steps can be taken to ensure that the benefits arising from the use and application of IoT systems are more accessible to everyone, including women and girls?

**C-009 Comment from the United States of America**

c. What steps can be taken to promote access to the benefits from the deployment and use of IoT solutions?

**C-003 Comment from the Hong Kong Applied Science and Technology Research Institute**

a) Lack of standards, lack of interoperability, like WWW consortium to set standards and protocols;

b) security concerns, hacking risks for companies and users, e.g. cyberattacks hacked cameras and monitors sending traffic to cripple websites; requires management of multiple risks, including stopping use of insecure devices to attack 3rd parties, preventing improper control of IoT devices, securing private/public services, data privacy and cross-border data communication, balance btw protecting consumers and enabling companies for policy-makers across jurisdictions; procedures and protocols for sharing and storing data

- e.g. use technology to find balance. “edge computing” is a compromise

c) risks associated with users and public when they become too dependent on connectivity and power conditions, e.g. loss of important skills or become fragile – more complex tightly coupled systems are more exposed to normal accidents

d) legacy equipments e.g. no connectivity or embedded sensors

e) technology immaturity (e.g. large scale analytics)

f) business model challenge, uncertain ROI: how firms manage new business models created around data analytics and services attached to connected assets; data multiuse, it can render value to multiple parties in a variety of contexts … who owns the data, who profits from its use, how it can be valued properly

g) environ or social benefits from IoT, e.g. reduction of waste or energy usage; optimal benefits for society not equal business benefits, how we value the utilization of infra and m-to-m communications in areas where productivity isn’t the most important outcome

h) collaborative opportunities across businesses, e.g. mobile data for insurance premiums… disassembling the value that is created and apportioned to each party, … fair outcome

i) availability of knowledge … will not exploit others… fair practice

j) IoT will create volatility just like internet did in media, entertainment, and travel industries. Policy makers and businesses need strategies to manage the fallout. Best practices or early industry transitions … requires collaboration from industry and government.

k) Lack of skilled workers e.g. data scientists

l) societal concerns (economic dislocation), reduce demand for routine, manual work, - empowering integrated digital-human workforce with value delivered through augmentation rather than replacement; each of these technologies alone may reduce, but together may enable

**C-009 Comment from the United States of America**

*Proposed new section d.* How can stakeholders create an enabling environment for IoT that fosters innovation, investment and competition while ensuring IoT is secure, inclusive and sustainable for all?

*Proposed new section e.* Given the increasing number of devices connected to telecommunications/ICT networks, how can stakeholders best manage bandwidth, accessibility, and cybersecurity?

*Proposed new section f.* What policies can help mobilize IoT to enable applications of big data and AI for sustainable development?

**C-012 Comment from the People’s Democratic Republic of Algeria**

2.8.2.2 the following should be considered and discussed in the IoT section:

- What are the challenges and consequences of collecting data (with connected objects) for state security?

- How to ensure the privacy protection (of people) with IoT?

- How is the management of personal data and their storage?

**2.8.3 5G**

**C-006 Comment from the Russian Federation**

Change the name of technology “5G” to “IMT-2020/5G”

2.8.3.1 5G has the potential to act as the connecting tissue of tomorrow’s digital economy, linking everything from smartphones to wireless sensors and industrial robots to self-driving cars.

**C-005 Comment from Australia**

2.8.3.1 5G has the potential to be one of the key technologies enabling tomorrow’s digital economy, linking everything from smartphones to wireless sensors and industrial robots to self-driving cars.

**C-009 Comment from the United States of America**

2.8.3.1 5G has the potential to enable tomorrow’s digital economy, linking everything from smartphones to wireless sensors and industrial robots to self-driving cars.

It could play a key role in supporting governments and policymakers in transforming cities into smart cities - allowing citizens and communities to realize and participate in the socio-economic benefits delivered by an advanced, data-intensive, digital economy.

**C-009 Comment from the United States of America**

5G could play a key role in transforming cities and rural communities into smart cities/communities - allowing citizens and communities to realize and participate in the benefits delivered by an advanced digital economy.

Harnessing the potential of 5G’s capabilities will require addressing several challenges relating to its deployment including, inter alia, costs and infrastructure.

**C-009 Comment from the United States of America**

Fostering the potential of 5G’s capabilities will require addressing several elements relating to its deployment including, inter alia, costs and infrastructure.

2.8.3.2 In this respect, some essential questions include:

a. What are some of the key uses/application for 5G technologies that can drive global development? What are the main challenges relating to deployment of such technologies?

**C-002 Comment from the United Kingdom**

a. How can 5G promote sustainable development? What are some of the key uses/application for 5G technologies that can drive global development? What are the main challenges relating to deployment of such technologies?

**C-009 Comment from the United States of America**

**a.** What are some of the key uses/application for 5G technologies that can drive global development and adoption? What are the main challenges relating to deployment of such technologies?

**C-003 Comment from the Hong Kong Applied Science and Technology Research Institute**

- AI/ML/Big Data can be more powerful with broader applications and solid business cases

- AR/VR can be applied for remote immersive applications like training/education/remote operation/medical operations etc

- low latency applications like auto driving and always-on apps

- virtual games and infotainment industry

- new digital assets from crypto space and DeFi (decentralized finance)

- Equally important B2C/C2C applications (in addition to B2B applications) as many P2P and decentralized networking formed to complement the cellular networks

- New business models will emerge as partners/businesses collaborate with operators in deploying base stations for providing 5G services, thanks to technologies like Blockchain which can incentivize various parties with reliable record and consensus contribution

Challenges:

- large deployment cost needs solid business return to justify – existing telecom service economy and fee structure short of expectation

- new collaboration business models to support flexible partnership and innovative collaborations

- technical challenges in other related technology areas, for example, enhanced user interface to take advantage of 5G capabilities, data privacy and protection, security issues, big data processing, battery life of terminals etc.

- ROI consideration when there are uncertainties in standards and the imminent future standards e.g. 6G and beyond

- 5G technology alone cannot make much return, it depends on a host of other related emerging technologies

b. What is the role that policymakers can play to ensure that policies and strategies supporting 5G implementation provide benefit and access to all?

**C-003 Comment from the Hong Kong Applied Science and Technology Research Institute**

- Adopt new license models, instead of the old wavelength auction model, other collective bidding or more innovative or inclusive models can be devised to encourage community, businesses, personal contribution/involvement and support benefits for larger society

- More operators may get the licenses since 5G is micro-cell based with more concentration. Careful analysis is needed to balance the business viability versus competition and fair services for consumers

- With big data and other technologies (IoT, cloud/edge computing), it is possible to devise system and performance benchmark (e.g. reguTech) to closely monitor the utilization of the resources. This is useful for pricing the public resources.

- Policy makers can leverage some revenues (for example via tax) to support or promote the educations in 5G and other related technologies (e.g. AI, big data, IoT etc). 5G education shall not be conducted by operators alone, neither the existing educational program can address it sufficiently.

**C-002 Comment from the United Kingdom**

b. What are the roles that policymakers and other stakeholders can play to ensure that policies and strategies supporting 5G implementation provide benefit and access to all?

**C-005 Comment from Australia**

b. What is the role that policymakers can play to ensure that policies and strategies support technological solutions, including 5G implementation, that provide benefit and access to all?

**C-009 Comment from the United States of America**

b. What is the role that policymakers can play to ensure that policies and strategies supporting 5G implementation aim to provide benefit and access to

c. What are the steps that all stakeholders can take to foster an innovation ecosystem and new business partnership models to maximize the benefits for all while minimizing associated costs, financial and otherwise?

**C-009 Comment from the United States of America**

*Proposed new section d.* What policies can help mobilize 5G technologies towards enabling applications of big data and AI for sustainable development?

**C-003 Comment from the Hong Kong Applied Science and Technology Research Institute**

- Start from the value-focused design and overall system approach (rather than technology alone)

- Encourage all stakeholders’ involvement with clear incentives and targets

- Innovative partnership models

- innovative business models enabled by new de-centralized architecture such as blokchain/DLT

- Clear boundary of data ownership and proper usage

- Cost effective or incentive based monitoring system

- backup plan when new techs/solns/things fall apart

- Use joint effort by technology, human, group, and society, to come up innovative solutions

**C-009 Comment from the United States of America**

c. What are the steps that all stakeholders can take to foster a 5G innovation ecosystem and new business models to maximize the benefits for all while minimizing associated costs, financial and otherwise?

**2.8.4 Big Data**

**C-009 Comment from the United States of America**

2.8.4 *Deleted section.*

2.8.4.1 Big Data has the potential to create significant value for the world economy and consumers everywhere - enhancing the productivity and competitiveness of the private and public sector globally.

However, policymakers may need to address several challenges if they are to capture its full potential.

**C-002 Comment from the United Kingdom**

However, policymakers and other stakeholders may need to address several challenges if they are to capture its full potential.

2.8.4.2 In this respect, some of the key questions to be considered include:

a. What tools, technologies and techniques can stakeholders apply to fully harness the potential of Big Data?

**C-002 Comment from the United Kingdom**

a. How can Big Data promote sustainable development? What tools, technologies and techniques can stakeholders apply to fully harness the potential of Big Data for sustainable development?

b. What are the key safeguards that policymakers could consider to ensure that the use and application of Big Data benefits all?

**C-003 Comment from the Hong Kong Applied Science and Technology Research Institute**

- rich data + smart analytics = contextual data reflecting events in wider environment, which can harness the real potentials of the big data

- machine or device data tells how it performs, where to extend the value. User data can tell the impact of the usage – how/when/why users take actions – which reshape our knowledge so that we can provide better/more proper solutions, and prioritize how we make decisions based on big data.

- innovative business model coupled with technologies can generate most impact. For example, with big data, we can know the specifics of machines, so that we can have new business models in terms of rental of machines instead of purchase. If we know the specifics of the users, we can provide tailor-made solution or services to customers without incurring extra system/platform costs.

- Innovative business models also include new peer-to-peer based business opportunities and new channels for delivering value

**C-008 Comment from the Arab Republic of Egypt**

a. 5G and cloud computing to harness big data at low cost proliferation of cheap smart phones in low income countries is important to have access to new technologies and data

**C-003 Comment from the Hong Kong Applied Science and Technology Research Institute**

- data privacy and protection

- fair usage of data

- fair usage of computational model/algorithms and computational resources

- business model matching that of the usage of the technologies

- flexible framework and structure to solve potential disputes when things go sour

- consumer choice with clear understanding of the situation and potential benefits/downsides the system provide. Hence consumer education, preferably through a trusted or impartial 3rd party become helpful

**C-002 Comment from the United Kingdom**

b. What are the key steps that policymakers and other stakeholders could consider to ensure that the use and application of Big Data benefits all?

c. How can Big Data challenges be addressed? How can data be made available to all in a responsible manner? What can be done to ensure that Big Data applications also respond to those not generating data on their needs, i.e. typically those left furthest behind?

**C-012 Comment from the People’s Democratic Republic of Algeria**

2.8.4.2 In the section of Big Data it will also be necessary to consider the following:

- What gains can developing countries generate from data created by their citizens, shared on the Internet and exploited by large companies? and how can we collaborate for a win-win approach?

- How to guarantee the protection of the privacy of individuals;

- How is the management of personal data and their storage.

- How to deal with the unauthorized use of data in the areas of e-commerce and AI?

**C-003 Comment from the Hong Kong Applied Science and Technology Research Institute**

- Holistic systematic approach and design

- user centric design with all stakeholders in mind from the very beginning

- human value in consideration and right framework

- establish multi-party data exchange and inter-operable protocols such that data privacy and protection can be implemented – equally important is the flexibility of the data access and monetization such that big data innovation is enabled rather than deterred by layers of processes and protection functions- there is a trade off involved here, which again can be measured by quantifiable measures (even if such measure may be fluid or changeable at the initial stage)

- there is a need for decentralization of value creation and exchange, such that 1) data quality is as important as data volume; 2) data generation and transferring incurs cost, which need to be weighed against its benefit; 3) fair usage of resources means data, storage, bandwidth, computation, energy, attention, and a host of other human and natural factors

**C-002 Comment from the United Kingdom**

c. How can the challenges of mobilizing Big Data for sustainable development be addressed? What can be done to ensure that Big Data applications also respond to those left furthest behind?

**2.8.5 OTTs**

2.8.5.1 The emergence of OTTs has been driving growth, connecting people, and advancing innovation in the global economy. These services are reshaping and expanding the entire communications ecosystem, while also providing social and economic benefits to consumers worldwide and the global economy.

At the same time, the economic impact on the traditional model of the telecommunications industry and on telecom operators is being increasingly analyzed, including inter alia, the competitive environment, the level of regulatory exposure, the level of substitutability between OTTs and traditional telecom services and the interconnection between OTTs and public networks.

**C-002 Comment from the United Kingdom**

At the same time, the economic impact on the traditional model of the telecommunications industry and on telecom operators is being increasingly analyzed. Further analysis is needed of policies for mobilizing OTTs for sustainable development.

**C-007 Comment from Facebook**

2.8.5.1 The emergence of OTTs has been driving growth, connecting people, and advancing innovation in the global economy. These applications are reshaping and expanding the entire communications ecosystem, whilst they have been strengthening ubiquitous connectivity while also providing social and economic benefits to consumers worldwide and the global economy.

At the same time, the economic impact on the traditional model of the telecommunications industry and on telecom operators is being increasingly analyzed.

Consideration of the economic impact of OTTs should be based upon recognition of the fundamental differences between traditional telecommunication operators and OTTs, including inter alia, control of broadband Internet access, level of regulatory exposure, barriers to entry, competitive environment, level of substitutability between OTTs and traditional telecom services and the interconnection to public networks.

**C-008 Comment from the Arab Republic of Egypt**

At the same time, the economic impact on the traditional model of the telecommunications industry and on telecom operators is being increasingly analyzed, including inter alia, investments, the competitive environment, the level of regulatory exposure, the level of substitutability between OTTs and traditional telecom services and the interconnection between OTTs and public networks.

**C-009 Comment from the United States of America**

2.8.5.1 The emergence of OTTs has been driving growth, connecting people, and advancing innovation in the global economy. OTTs are reshaping and expanding the communications ecosystem, while also providing benefits to consumers worldwide and and helping to advance sustainable development.

**C-009 Comment from the United States of America**

*Proposed new para* Resolution 206 of the 2018 ITU Plenipotentiary Conference provides a comprehensive policy framework for the economic implications of OTTs, including issues relating to consumer benefits, competition and innovation. The foundation of the Resolution recognizes that the mutual cooperation between OTTs and telecommunication operators can be an element to foster innovative, sustainable, viable business models and their positive roles in fostering socio-economic benefits. The Resolution encourages collaboration among Member States, Sector Members, international telecommunications service providers and OTTs in order to fully realize those benefits.

2.8.5.2 In this regard, some examples of OTT-related policy questions that could be considered include:

a. What are some of the key policy opportunities and challenges associated with OTT services?

**C-003 Comment from the Hong Kong Applied Science and Technology Research Institute**

- 5G and other emerging technologies bring new opportunities for services/applications, as well as new collaboration and business models. OTT may extend to include other partners/communities/businesses which might provide last mile access coverage, helping cover the cost of BS deployment, as well as more versatile and flexible applications/services. The challenges come from the license issues, accountability, fair usage, competition, and justifiable business arrangement/profit sharing etc.

**C-002 Comment from the United Kingdom**

a. What are some of the key policy opportunities and challenges for mobilizing OTT services for sustainable development?

**C-007 Comment from Facebook**

a. What are some of the key policy opportunities and challenges associated with OTTs?

**C-008 Comment from the Arab Republic of Egypt**

a. What are some of the key policy opportunities and challenges associated with OTT services? How can the Telecom Regulators ensure fair and competitive environment between OTTs and Traditional Telecom operators?

**C-009 Comment from the United States of America**

a. What are some of the key policy opportunities and challenges associated with OTTs?

b. How can OTT players and other stakeholders offering application services contribute in those aspects related to the security, safety and trust of the consumer?

c. What approaches might be considered regarding OTTs to help the creation of an environment in which all stakeholders are able to prosper and thrive?

**C-003 Comment from the Hong Kong Applied Science and Technology Research Institute**

- Value driven approach incorporating all stakeholders at the very beginning

- Promote open API and flexible system architecture such that de-centralized or federated architecture and business model can be supported

- Allow technical flexibility in future-proof system design

- Human-centered design over technology-driven design

**C-007 Comment from Facebook**

c. What approaches might be considered regarding OTTs to help the creation of an environment in which all stakeholders are able to innovate and compete?

**C-009 Comment from the United States of America**

c. What approaches might be considered regarding OTTs to help foster of an environment that promotes competition and improves the range of all services to businesses, consumers, academic institutions, etc.?

**C-003 Comment from the Hong Kong Applied Science and Technology Research Institute**

- Transparency of the usage of consumer data, including access, function, historical data etc.

- Open access for other smaller application/service providers

- Freedom for consumers to choose various channels or service providers

- Public education for critical issues related to security, privacy, and safety

- Encourage open API for applications so that full eco-system may be developed openly

**C-002 Comment from the United Kingdom**

b. *Deleted*

**C-009 Comment from the United States of America**

b. How can stakeholders promote greater consumer trust in connection with OTTs?

d. How can OTT players and telecom operators best cooperate at local and international level? Are there model partnership agreements that could be developed?

**C-003 Comment from the Hong Kong Applied Science and Technology Research Institute**

Blockchain is a suitable solution here when multiple parties with different interests and locations are involved.

**C-002 Comment from the United Kingdom**

d. How can OTT players and other stakeholders best cooperate at local and international level to promote sustainable development?

**C-007 Comment from Facebook**

d. *Deleted*

**C-009 Comment from the United States of America**

**d.** How can OTT players and telecom operators best engage with one another at local and international level? Are there model partnership agreements that could be developed?

**C-008 Comment from the Arab Republic of Egypt**

*Proposed new section e.* How can the member states deal with the taxation matter for OTT?

**C-012 Comment from the People’s Democratic Republic of Algeria**

2.8.5.2 In the OTT section, it will be necessary to look further into the following questions:

- How should the OTT providers contribute to the economic development of the countries (where the users are)?

- How do OTT providers manage, store and reuse the personal data of their customers?

**C-009 Comment from the United States of America**

*Proposed new section 2.8.6* Mobilizing New Solutions for Connectivity

2.8.6.1 Mobile telecommunications/ICTs have the power to transform lives, offering life-enhancing financial, health, education, and many other services, the ability to participate in the digital economy, and the means to participate in communities.

Yet millions of people in emerging markets lack access to these services, due to the limited reach of reliable, secure, and affordable communications infrastructure in many countries. In addition, low income populations with access frequently do not adopt services, because of constraints arising from limited affordability and social norms that can bar access to communications technology to certain vulnerable populations such as women and girls.

To bridge these gaps, innovations in technology and business plans are being developed and explored by providers, governments, academia, and civil society actors. These include but are not limited to: low-cost solar-powered mobile radios that can open up rural areas to new connectivity options; new, higher-capacity satellite services that can offer lower cost internet backhaul to remote locations; and business models that deliberately work to include women and broader communities in the provision of network services to bring down social barriers to technology use.

2.8.6.2 In this respect, some of the key questions to be considered include:

a. What types of technologies and business models should decision-makers learn more about when determining how to address connectivity access and adoption gaps in their own unique market contexts?

b. How can the private sector’s interest in innovation be mobilized to solve unique market contexts of emerging markets?

c. How can we more closely align funding mechanisms with the already-active community of innovators working on these solutions, particularly where those solutions require risk capital to fully explore alternative business models? What tools should be used to help mitigate those risks, and how should those tools be combined with policy solutions that advance competition and vibrant civil society participation in the ICT sector?

d. How can we facilitate greater collaboration and knowledge sharing between the innovator and investment communities to accelerate the development of these innovations?

**C-009 Comment from the United States of America**

***Proposed new section* 2.8.7 Mobilizing an Enabling Policy Environment for New and Emerging Telecommunications/ICTs**

2.8.7.1 The mobilization of emerging telecommunications/ICTs depends on fostering an enabling policy environment that promotes investment and innovation through competition, transparency, flexibility and the active participation of all relevant stakeholders. Removing barriers to innovation and investment is essential for achieving the full potential of emerging telecommunications/ICTs and will enable the global transition to the digital economy.

2.8.7.2 In this regard, some examples of questions related to fostering an enabling environment include:

a. What policy or regulatory approaches can mobilize investment and innovation related to new and emerging telecommunications/ICTs?

b. What principles should guide stakeholders in promoting an enabling policy environment for mobilizing new and emerging telecommunications/ICTs?

c. What roles do various stakeholders play in promoting an enabling environment for new and emerging telecommunications/ICTs? How can policymakers foster greater stakeholder participation in efforts to create an enabling policy environment?

d. How can stakeholders foster skills development related to the creation of an enabling policy environment for new and emerging telecommunications/ICTs?

e. How can stakeholders mobilize an environment that fosters innovation, investment and competition in new and emerging telecommunications/ICTs that could enable big data and AI technologies for sustainable development?

**3 Conclusion**

This draft is intended as a preliminary outline for the Secretary-General’s Report to WTPF-21, serving as a reference for experts as they develop draft Opinions on themes indicated in [Decision 611](https://www.itu.int/md/S19-CL-C-0128/en). This report will be further elaborated in subsequent drafts taking into consideration the written inputs received from experts as well as discussions during physical meetings of the IEG.

**C-009 Comment from the United States of America**

This draft is intended as a preliminary outline for the Secretary-General’s Report to WTPF-21, serving as a reference for experts as they develop draft Opinions on some of the themes indicated in [Decision 611](https://www.itu.int/md/S19-CL-C-0128/en). This report will be further elaborated in subsequent drafts taking into consideration the written inputs received from experts as well as discussions during physical meetings of the IEG.

1. Note: The title of WTPF-21 is specified in ITU Council 2019 [Decision 611](https://www.itu.int/md/S19-CL-C-0128/en). [↑](#footnote-ref-1)