Esteemed Delegates,

Welcome to SRMUN Charlotte 2025 and the United Nations (UN) International Telecommunications Union (ITU). My name is Aspen Andersson, and I have the pleasure of serving as your Director for the ITU. This will be my fourth time serving on SRMUN staff, having previously served as the Assistant Director of the Commission on the Status of Women and the Security Council and the Director of the General Assembly Plenary. I recently graduated with my bachelor's degree in Political Science with a Pre-law concentration and two minors in Spanish and English. I plan to pursue my Juris Doctor in education law and policy in the near future. Our committee's Assistant Directors will be Haley Bufka and Renee Smith. This will be Haley's third time as a staff member. Haley recently graduated with a BA in International Affairs with an applied French language concentration and a minor in African and African Diaspora Studies. This will be Renee's first time as a staff member. Renee is currently majoring in Political Science with a concentration in International Relations and a minor in Sociology.

The United Nations International Telecommunications Union, or ITU, is composed of all 193 Member States of the UN and more than 1000 companies, regional and international organizations, and universities, which provides a unique forum for multilateral discussion of the full spectrum of international issues. Established in 1865 to manage the first international telegraph communications, the ITU is the oldest UN agency and specializes in information and communications technologies (ICTs). The ITU works to facilitate international connectivity through communications networks and the allocation of global radio spectrum and satellite orbits. It also plays a significant role in developing technical standards to ensure seamless connectivity worldwide, while working to improve digital access to technology in underserved communities. The overarching mission of the ITU is to recommend diplomatic and multilateral solutions to issues involving radio communication, communication satellites, international telecommunications standards, and all digital technologies.

Focusing on the mission of the International Telecommunications Union, we have developed the following topics for the delegates to discuss at conference:

I. Evaluating Efforts to Improve Internet Access for Schools and Students in Rural and Remote Areas
II. Expanding Cybersecurity Capabilities to Protect Critical Information Infrastructure in Developing Member States

This background guide will serve as the foundation for your research, yet it should not be the extent of your research. Preparation is given to each topic to help guide delegates in their initial research, and to serve as a starting place for more in-depth studies. It is expected that delegates go beyond this background guide in preparation for their position paper and to better prepare themselves for contribution within the committee in March. Further, each delegation is required to submit a position paper for consideration. Position papers should be no longer than two pages in length (single spaced) and demonstrate your Member State's position, policies, and recommendations on each of the two topics. For more detailed information about formatting and how to write position papers, delegates can visit srmun.org. ***All position papers MUST be submitted no later than Friday, February 28, 2025, by 11:59pm EST via the SRMUN website to be eligible for Outstanding Position Paper Awards.***

Haley, Renee, and I are excited for the opportunity to serve as your dais for the International Telecommunications Union. I wish you all the best of luck in your conference preparation and look forward to meeting and working with each of you in March. Should questions arise as you begin to prepare for this conference, contacting those on your dais is always encouraged.

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Committee History of the International Telecommunications Union

Following the invention of the telegraph, the international community faced communication barriers as messages had to be stopped at national borders and translated into the different telegraph systems used by each Member State.[1] To overcome this barrier, 20 Member States met in Paris, France at the International Telegraph Conference and signed the International Telegraph Convention on May 17, 1865.[2] The International Telegraph Union – "the first incarnation of the ITU" – was subsequently founded to supervise the amendments to the agreement, including to standardize telegraph equipment, set uniform operating instructions, and make international communication more efficient.[3] Twenty years later, the International Telegraph Union adopted telephone regulations with radio being added in 1906.[4] In 1932, the committee's name was changed to the International Telecommunications Union (ITU) to fully account for all new means of communications being invented, and following an agreement with the United Nations General Assembly in 1947, it had officially become an agency of the United Nations (UN) in 1949.[5]

As the world entered the space age and satellite communications became increasingly accessible to Member States, the ITU stepped in to regulate satellite placements as well as what frequencies they should use.[6] Then, with the advent of the Internet marking the beginning of the information age, the ITU spearheaded regulating the different facets that make the Internet useful around the globe today.[7] The ITU's internet-related initiatives and regulations cover topics such as cybersecurity; promoting multilingualism on the Internet; protecting rights and privacy of users; and investing in the necessary infrastructure to keep the globe connected.[8] Through its focus on connectivity, the ITU has exposed the growing digital divide between developing and developed Member States.[9] The ITU has been committed to bridging that gap almost as long as it has been part of the United Nations.[10]

The ITU's first major initiative to bridge the technological divide began in 1952, officially participating with the UN Expanded Programme of Technical Assistance, which aims to send experts to developing Member States to help establish better infrastructure for communication.[11] This eventually fell under the command of the United Nations Development Programme, which the ITU still works with today.[12] Similar projects in Africa, the Middle East, and the Mediterranean were all successfully implemented in the 1970s.[13] A significant step in bridging this divide came in 1985, when the ITU's Independent Commission for World-Wide Telecommunications Development released *The Missing Link*, a report showing the correlation between telecommunication technologies and economic growth, directing international attention towards the issue.[14]

[1] "Overview of ITU's History (1)," ITU, accessed June 24, 2024, https://www.itu.int/en/history/Pages/ITUsHistory.aspx.

[2] "Overview of ITU's History (1)," ITU.

[3] "Overview of ITU's History (1)," ITU.

[4] "Overview of ITU's History (2)," ITU, accessed June 24, 2024, https://www.itu.int/en/history/Pages/ITUsHistory-page-2.aspx.

[5] United Nations General Assembly. *Agreement Between the United Nations and the International Telecommunication Union Approved by the Plenipotentiary Conference of the International Telecommunication Union on 4 September 1947 and by the General Assembly of the United Nations on 15 November 1947,* 316, accessed August 11, 2024. https://treaties.un.org/doc/Publication/UNTS/Volume%2030/v30.pdf.

[6] "Overview of ITU's History (2)," ITU.

[7] "Overview of ITU's History (2)," ITU.

[8] "Overview of ITU's History (2)," ITU.

[9] "Widening Digital Gap Between Developed, Developing States Threatening to Exclude World's Poorest from Next Industrial Revolution, Speakers Tell Second Committee," United Nations, October 6, 2023, https://press.un.org/en/2023/gaef3587.doc.htm.

[10] "Digital Inclusion of All." ITU, accessed August 11, 2024, https://www.itu.int/en/mediacentre/backgrounders/Pages/digital-inclusion-of-all.aspx.

[11] "Overview of ITU's History (2)," ITU.

[12] "How UNDP and ITU are Strengthening Government Capacity for Digital Transformation," ITU, February 23, 2022, https://www.itu.int/hub/2022/02/undp-itu-joint-facility-global-digital-capacity-building/.

[13] "Overview of ITU's History (2)," ITU.

[14] "Overview of ITU's History (8)," ITU, accessed August 11, 2024, https://www.itu.int/en/history/Pages/ITUsHistory-page-8.aspx.

The ITU consists of two primary governing bodies, the Plenipotentiary Conference and the Council with administrative support from the General Secretariat.[15] The Plenipotentiary Conference acts as the supreme policy-making body of the ITU, serving to "decide on the future role of the organization."[16] Due to the ITU's necessity as a neutral platform, decisions on standardization are made through consensus.[17] The 193 Member States of the UN meet every four years to decide policy, elect the next leadership team for the ITU, and develop a four-year plan for the ITU to follow until the next Plenipotentiary Conference.[18] The Council serves as the ITU's governing body during the interval between Plenipotentiary Conferences, responding to rapid changes in the telecommunications field and seeing the goals of the ITU carried out in daily operations.[19] The 48 elected Member States of the Council convene annually to handle these challenges and collaborate with other policy-making bodies.[20] The General Secretariat acts as the administrative branch, providing relevant services to organization members in matters of finance, law, logistics, communications, and more.[21]

Historically, the ITU had three major areas of regulation known as the Administrative Regulations: Telegraph Regulations, Telephone Regulations, and Radio Regulations.[22] In 1988, the Telegraph Regulations and Telephone Regulations were combined to provide a unified regulatory framework for telecommunication services, forming the International Telecommunication Regulations.[23] These regulations were revised again in 2012 to catch up to changes in technology and telecommunications.[24] The Radio Regulations act as the international standard for usage of the radio wave spectrum and cooperation regarding communication satellite orbits.[25] The Administrative Regulations are nonvoluntary, binding provisions for all Member States.[26]

The ITU Radiocommunication Sector (ITU-R) exists to maintain fair and free operation of the radio-frequency spectrum for all parties.[27] A major initiative within ITU-R is the Radio Regulations, enabling impartial access to the radio-frequency spectrum and satellite orbits in addition to setting standards for radio stations.[28] The ITU Telecommunication Standardization Sector (ITU-T) is the oldest and the only global information and communication technology (ICT) standards body.[29] Utilizing expert study groups, ITU-T creates ICT standards designed for compatibility and affordability.[30] The ITU Telecommunication Development Sector (ITU-D) is dedicated to bridging the digital skills gap in developing Member States for job creation and global inclusivity.[31]

[15] "How We Are Governed – ITU," ITU, accessed June 19, 2024, https://www.itu.int/hub/membership/how-we-are-governed/.

[16] "About PP-22 – PP-22," ITU, accessed June 19, 2024, https://pp22.itu.int/en/about/about-pp22/.

[17] "Brokering Standards by Consensus," ITU, accessed July 14, 2024, https://www.itu.int/en/mediacentre/backgrounders/Pages/standardization.aspx.

[18] "What You Need to Know About PP-22," ITU, accessed June 19, 2024, https://www.itu.int/en/mediacentre/backgrounders/Pages/what-you-need-to-know-ahead-of-pp.aspx.

[19] "About – 2024 Session," ITU, accessed June 19, 2024, https://council.itu.int/2024/en/about/.

[20] "Working Groups – 2024 Session," ITU, accessed June 19, 2024, https://council.itu.int/2024/en/about/working-groups/.

[21] "General Secretariat of ITU," ITU, accessed June 19, 2024, https://www.itu.int/en/general-secretariat/Pages/default.aspx.

[22] "Administrative Regulations Collection," ITU, accessed July 14, 2024, https://www.itu.int/en/history/Pages/RegulationsCollection.aspx.

[23] "Overview of ITU's History (2)," ITU.

[24] "International Telecommunications Regulations (ITRs)," ITU, accessed July 14, 2024, https://www.itu.int/en/wcit-12/Pages/itrs.aspx.

[25] "Radio Regulations 2020 – ITU," ITU, accessed July 14, 2024, https://itu.int/hub/publication/r-reg-rr-2020/.

[26] "Administrative Regulations Collection," ITU.

[27] "Welcome to ITU-R," ITU, accessed June 19, 2024, https://www.itu.int/en/ITU-R/information/Pages/default.aspx.

[28] "Radio Regulations 2020 – ITU," ITU, accessed June 19, 2024, https://www.itu.int/hub/publication/r-reg-rr-2020/.

[29] "ITU-T in Brief," ITU, accessed June 19, 2024, https://www.itu.int/en/ITU-T/about/Pages/default.aspx.

[30] "ITU-T in Brief," ITU.

[31] "About the ITU-D and the BDT," ITU, accessed June 19, 2024, https://www.itu.int/en/ITU-D/Pages/About.aspx.

Funding for the ITU is dependent on voluntary contributions, primarily from Member State membership fees and cost recovery strategies, such as publication sales.[32] Membership fees are divided into "contributory units," allowing all Member States to freely choose how much they want to contribute while being able to "participate actively in all aspects of ITU's activities."[33] The budget is decided upon by the Council and General Secretariat to be divided amongst the three ITU sectors: Radiocommunication, Standardization, and Development.[34] Private organizations are also encouraged to participate in the process as "Sector Members," paying contributory units to work directly with the sectors of ITU to develop technology standards, enforce technology standards, and participate in ITU Study Groups to evaluate new practices recommended by the ITU.[35]

Currently, outside of regular meetings, the ITU hosts events where experts from both the public and private sectors discuss not only technical matters, but wider issues facing telecommunications.[36] ITU Telecom World is an annual international global tech event, held regularly since 1971, where these issues are debated and discussed by experts and policy makers to develop innovative solutions and share knowledge. fostering a better digital future for the world.[37] The Artificial Intelligence (AI) for Good summit is a recent platform created in collaboration with 40 UN Sister Agencies aimed at identifying and solving problems emerging alongside AI technology.[38]Furthermore, the ITU aims to increase access for children and women to the Internet.[39] Recent initiatives taken to see this reality include the Smart Sustainable Development Model, a 2011-2018 initiative gathering the most effective information and communication technology (ICT) practices and establishing a model for recovery in the wake of disaster.[40] A current program is the ITU Academy Capacity Development programme, training ICT professionals and ensuring the proliferation of ICT skills, particularly in developing Member States.[41] One of the ITU's main objectives is to achieve universal broadband as connectivity accelerates economic growth.[42] By continuing these initiatives, the ITU will continue to create a better connected world.

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[32] "How is ITU funded?" ITU, accessed June 19, 2024, https://www.itu.int/en/mediacentre/backgrounders/Pages/how-is-itu-funded.aspx.
[33] "How is ITU funded?" ITU.
[34] "About – 2024 Session," ITU.
[35] "ITU Membership participation – ITU/UN tech agency," ITU, accessed July 14, 2024, https://www.itu.int/hub/membership/become-a-member/participation/.
[36] "ITU Conferences Collection," ITU, accessed July 14, 2024, https://www.itu.int/en/history/Pages/ConferencesCollection.aspx.
[37] "About ITU Telecom," ITU, accessed July 14, 2024, https://www.itu.int/en/ITUTELECOM/Pages/default.aspx.
[38] "About – AI for Good," AI for Good, accessed July 14, 2024, https://aiforgood.itu.int/about-ai-for-good/.
[39] "Overview of ITU's History (2)," ITU, accessed June 24, 2024, https://www.itu.int/en/history/Pages/ITUsHistory-page-2.aspx.
[40] "Smart Sustainable Development Model (SSDM) Initiative 2011-2018," ITU, accessed August 11, 2024, https://www.itu.int/en/ITU-D/Initiatives/SSDM/Pages/default.aspx
[41] "ITU-D Capacity Development," ITU, accessed August 11, 2024, https://www.itu.int/itu-d/sites/capacity-development/
[42] "Universal Broadband Connectivity," ITU, accessed July 14, 2024, https://www.itu.int/en/action/broadband/Pages/default.aspx.

I. Evaluating Efforts to Improve Internet Access for Schools and Students in Rural and Remote Areas

Introduction

In April 2020, following the outbreak of the COVID-19 pandemic, more than 190 Member States instituted national school closures, affecting roughly 1.6 billion children.[43] In an attempt to minimize the disruption of their students' education, many schools implemented or bolstered existing online learning programs.[44] However, remote learning during the pandemic exposed a deep digital divide, or a gap between communities with affordable access, skills, and support to engage with information and communications technologies, such as the internet.[45] This divide formed largely along geographic lines but included "gaps based on gender, age, and rural vs. urban populations" as well.[46] A December 2020 joint report from the United Nations International Children's Emergency Fund (UNICEF) and the International Telecommunications Union (ITU) found "2.2 billion children and young people aged 25 years or less worldwide" do not have internet access at home.[47] Furthermore, the report found a notable "inequality in internet connectivity across the world's regions."[48] Internet penetration – a metric measuring the percentage of a population with access to the internet – "is 89% in Europe, over 80% in the Americas, and 70% in the Arab States, compared to 61% in Asia and 40% in Africa."[49] Alarmingly, the digital divide disproportionately impacts indigent students, girls, and those with disabilities, "denying them access to learning resources online, the option to learn remotely, and the opportunity to develop digital skills."[50] This digital gap stretches across the globe as only 25 percent of children and young people who live in rural areas worldwide have home internet access compared to 41 percent of their urban peers.[51] The digital divide has created a wide range of social, economic, and educational consequences, as students and schools without internet connectivity lack valuable resources and opportunities.[52] With an ambitious goal to achieve universal connectivity by 2030, including internet access for all schools, the ITU must find new and innovative ways to close the digital gap for students and schools across geographic regions, as well as gender and rural vs. urban divides.[53]

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[43] United Nations Children's Fund and International Telecommunication Union, "How many children and young people have internet access at home? Estimating digital connectivity during the COVID-19 pandemic." UNICEF, New York, 2020.

[44] United Nations Children's Fund and International Telecommunication Union, "How many children and young people have internet access at home? Estimating digital connectivity during the COVID-19 pandemic."

[45] Waldrupe, Abi, Paolo Balboa, and Kristenn Fortson. "Definitions." National Digital Inclusion Alliance, August 22, 2024. https://www.digitalinclusion.org/definitions/.

[46] Signé, Landry. "Fixing the Global Digital Divide and Digital Access Gap." Brookings, July 5, 2023. https://www.brookings.edu/articles/fixing-the-global-digital-divide-and-digital-access-gap/#:~:text=Looking%20at%20access%20to%20internet,Asia%20and%2040%25%20in%20Africa.

[47] United Nations Children's Fund and International Telecommunication Union, "How many children and young people have internet access at home? Estimating digital connectivity during the COVID-19 pandemic."

[48] United Nations Children's Fund and International Telecommunication Union, "How many children and young people have internet access at home? Estimating digital connectivity during the COVID-19 pandemic."

[49] Signé, Landry. "Fixing the Global Digital Divide and Digital Access Gap."

[50] "Giga: Defining and Financing Meaningful School Connectivity." WSIS Forum 2023. Accessed August 20, 2024. https://www.itu.int/net4/wsis/forum/2023/en/Agenda/Session/407#:~:text=Around%20half%20of%20the%20world%27s,UNICEF%20and%20ITU%2C%202022).

[51] United Nations Children's Fund and International Telecommunication Union, "How many children and young people have internet access at home? Estimating digital connectivity during the COVID-19 pandemic."

[52] "Impact of the Digital Divide: Economic, Social, and Educational Consequences." Connecting the Unconnected, February 27, 2023. https://ctu.ieee.org/impact-of-the-digital-divide-economic-social-and-educational-consequences/.

[53] "Connect 2030 – An Agenda to Connect All to a Better World." ITU. Accessed August 20, 2024. https://www.itu.int/en/mediacentre/backgrounders/Pages/connect-2030-agenda.aspx#:~:text=To%20fulfil%20these%20aims%2C%20ITU%20must%20leverage%20digital%20technologies%20for,persons%20with%20specific%20needs%3B%20and.

History

Since the 1990s, the internet and Information and Communications Technologies (ICTs) have continued to expand, but, despite their increasing accessibility, rural and remote communities are consistently being left behind.[54] Even as the internet slowly spread to developing Member States, it remained a "largely urban phenomenon" unavailable to rural communities in both developed and developing Member States.[55] Internet service providers gave preference to urban communities because rural areas were spread across greater distances and offered less customers, making it expensive and less profitable to expand broadband access.[56] Additionally, on average, the lower median income and aging population of rural communities made it difficult for residents to afford quality internet access and adapt the skills necessary to effectively engage online.[57] While the invention of the internet offered new opportunities and resources to rural and remote areas, "computers and digital telecommunication services" were not high priority items for "less privileged farmers and food-insecure residents."[58] Moreover, the internet and early computers and smartphones were both expensive and complex; users had to "purchase, install, and learn how to use a computer," with much of the learning needing to take place long before the user could discernibly reap the benefits of having internet access.[59]

A lack of education around the internet and ICTs in rural communities was exacerbated by "poverty, sparse populations, thin markets, low levels of investment, out-migration, and underdeveloped human resources," all of which prevented the diffusion of the internet in rural and remote areas across the globe.[60] In addition, rapid urbanization and industrialization created an enduring "urban bias" and rural-urban income gap, which pushed governments to allocate more resources and development efforts to urban areas.[61] As a result, the rural-urban connectivity gap continued to be stretched further by the educational and economic disparities between rural and urban areas.[62] Historically, rural schools and students have less resources and are less likely to have internet access, devices for online learning, and access to affordable, quality, and high-speed broadband internet.[63] The implications of these enduring inequities are severe, as a lack of internet access can lead to poor digital literacy and lost educational and employment opportunities, negatively affecting students' social and economic outcomes and limiting economic growth in rural areas and developing Member States.[64]

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[54] "International Action Plan Agreed to Get the Most Vulnerable Online." United Nations Office of the High Representative for the Least Developed Countries, Landlocked Developing Countries and Small Island Developing States, September 2022. https://www.un.org/ohrlls/news/international-action-plan-agreed-get-most-vulnerable-online.

[55] Richardson, Don. "The Internet and Rural Development." Essay in *The First Mile of Connectivity*, 170–81. Rome, Italy: Food and Agriculture Organization of the United Nations, 1998.

[56] Read, Anna, and Kelly Wert. "Broadband Access Still a Challenge in Rural Affordable Housing." The Pew Charitable Trusts, December 8, 2022. https://www.pewtrusts.org/en/research-and-analysis/articles/2022/12/08/broadband-access-still-a-challenge-in-rural-affordable-housing#:~:text=Housing%20in%20rural%20areas%2C%20including,to%20subscribe%20to%20the%20service

[57] Read, Anna, and Kelly Wert. "Broadband Access Still a Challenge in Rural Affordable Housing."

[58] Richardson, Don. "The Internet and Rural Development."

[59] Garcia, D. Linda, and Neal R. Gorenflo. "Rural Networking Cooperatives: Lessons for International Development and Aid Strategies."

[60] Garcia, D. Linda, and Neal R. Gorenflo. "Rural Networking Cooperatives: Lessons for International Development and Aid Strategies." Essay in *The First Mile of Connectivity*, 287–306. Rome: Food and Agriculture Organization of the United Nations, 1998.

[61] Yan, Dongsheng, et. al. "Effects of Economic Growth Target on the Urban–Rural Income Gap in China: An Empirical Study Based on the Urban Bias Theory." Science Direct, October 24, 2024. https://www.sciencedirect.com/science/article/pii/S0264275124007327#:~:text=As%20a%20theory%20explaining%20the,residents%20(Lipton%2C%201993;%20Nie.

[62] Wood, Richard Mark. "A Review on Education Differences in Urban and Rural Areas." *International Research Journal of Educational Research* 14, no. 2 (March 31, 2023): 1–3. https://www.interesjournals.org/articles/a-review-on-education-differences-in-urban-and-rural-areas.pdf.

[63] Gottschalk, Francesca, and Crystal Weise. "Digital Equity and Inclusion in Education: An Overview of Practice and Policy in OECD Countries." Organisation for Economic Co-operation and Development, August 1, 2023. https://one.oecd.org/document/EDU/WKP(2023)14/en/pdf.

[64] "Impact of the Digital Divide: Economic, Social, and Educational Consequences." IEEE.org. Accessed December 13, 2024. https://www.itu.int/en/ITU-D/Statistics/Documents/publications/UNICEF/How-many-children-and-young-people-have-internet-access-at-home-2020_v2final.pdf.

Current Situation

Modern information and communications technologies (ICTs) can be broadly defined as "computing and telecommunication technologies, systems, and tools to facilitate the way information is created, collected, processed, transmitted, and stored."[65] The monumental impact of ICTs on economic development and business growth is why ICTs are "often credited with ushering in the Fourth Industrial Revolution,"[66] a period "characterized by a fusion of technologies that is blurring the lines between the physical, digital, and biological spheres."[67] Despite the exponential growth and development of new ICTs, this technology is not evenly distributed between rural and urban communities.[68] Today, affordability and lack of the necessary ICT infrastructures – "all the technologies that interfere and manage the information and communication processes," including hardware, software, and networks[69] – remain two "of the most significant obstacles to Internet access around the world."[70] For instance, connecting rural areas is often more difficult and expensive due to the significant distances from existing infrastructure – such as reliable electricity sources – and challenging terrain that makes it difficult to lay cables.[71] Additionally, lower population densities (smaller numbers of potential customers) over larger areas and lower average incomes make it less economically viable for service providers to invest in these communities, thus creating affordability challenges in rural and remote areas.[72] Despite this, rural areas have a disproportionate need for, and would greatly benefit from, improved broadband connectivity – "technology [that] allows for high-speed transmission of voice, video and data over networks and ICT applications."[73]

Nearly half of the world's population lives in rural and remote areas, and about one-fifth of them live in extreme poverty – "a rate that is four times higher than for the urban population."[74] Moreover, people living in rural areas on average have less access to education, health and other essential services.[75] In addition, roughly "half of the world's schools are offline" (not connected to the internet),[76] and 1.3 billion children aged 3- to 17-years-old do not have access to the internet at home.[77] Yet data shows "an explicit negative trend…between gross national income (GNI) per capita and the share of children and young people aged 25 years or less without internet access at home."[78]

[65] Rouse, Margaret. "Information and Communications Technology (ICT)."

[66] Rouse, Margaret. "Information and Communications Technology (ICT)."

[67] Schwab, Klaus. "The Fourth Industrial Revolution: What It Means and How to Respond." World Economic Forum, January 14, 2016. https://www.weforum.org/agenda/2016/01/the-fourth-industrial-revolution-what-it-means-and-how-to-respond/.

[68] Henry, Lester. "Bridging the Urban-Rural Digital Divide and Mobilizing Technology for Poverty Eradication: Challenges and Gap." UN. Accessed August 17, 2024. https://www.un.org/development/desa/dspd/wp-content/uploads/sites/22/2019/03/Henry-Bridging-the-Digital-Divide-2019.pdf.

[69] Leal, Andrea. "ICT Infrastructure." Green TekSolutions, 2019. https://www.greenteksolutionsllc.com/blog/The_new_Information_and_Communication_Technologies_-ICT-.

[70] "Telecommunications/ICTs for Rural and Remote Areas - ITU Publication." ITU, December 21, 2023. https://www.itu.int/hub/publication/d-stg-sg01-05-1-2021/.

[71] "Rural Broadband Policy Framework: Connecting the Unconnected." Alliance for Affordable Internet, March 2020. https://www.un.org/development/desa/dspd/wp-content/uploads/sites/22/2020/07/Rural-Broadband-Policy-Framework-Report_A4AI.pdf.

[72] "Rural Broadband Policy Framework: Connecting the Unconnected." Alliance for Affordable Internet.

[73] "Broadband Networks." ITU. Accessed August 21, 2024. https://www.itu.int/en/ITU-D/Technology/Pages/BroadbandNetworks.aspx#:~:text=%E2%80%8B%E2%80%8B%E2%80%8B%E2%80%8B%E2%80%8B,over%20networks%20and%20ICT%20applications.

[74] "Rural Broadband Policy Framework: Connecting the Unconnected." Alliance for Affordable Internet.

[75] "Rural Broadband Policy Framework: Connecting the Unconnected." Alliance for Affordable Internet.

[76] "Giga: Defining and Financing Meaningful School Connectivity." WSIS Forum 2023, March 16, 2023. https://www.itu.int/net4/wsis/forum/2023/en/Agenda/Session/407#:~:text=Around%20half%20of%20the%20world's,UNICEF%20and%20ITU%2C%202022.

[77] United Nations Children's Fund and International Telecommunication Union, "How many children and young people have internet access at home? Estimating digital connectivity during the COVID-19 pandemic."

[78] "How Many Children and Young People Have Internet Access at Home?." UNICEF, December 2020. https://www.unicef.org/media/88381/file/How-many-children-and-young-people-have-internet-access-at-home-2020.pdf.

Increasing the percentage of people in developing Member States with access to the internet from 35% to 75% alone would "boost the developing world's collective GDP by USD 2 trillion and create 140 million new jobs."[79] However, a lack of internet access prevents children and young people from developing the necessary digital skills for higher-paying jobs.[80] Moreover, people without internet access are "unable to participate fully in the global digital economy and cannot participate in remote or web-based jobs."[81] Additionally, it is nearly impossible to recruit employees and businesses to areas without broadband internet, as the ability "to upload, download, communicate, stream content, and process data at the speeds and capacity broadband provides" is necessary to "compete in [today's] global digital economy."[82]

While 60 percent of school-age children in urban areas worldwide do not have internet access at home, roughly 75 percent of school-age children in rural households do not have internet access. Access to the internet is not only divided among rural and urban lines but socioeconomic class and gender as well.[83] Among the richest households, 58 percent of school-aged children have internet access at home in comparison to 16 percent from the poorest households.[84] School children in sub-Saharan Africa and South Asia are impacted the most, with 9 in 10 children lacking internet access at home.[85] In 2023, UNICEF sent out an urgent call for action for equitable digital skills development, citing that "9 out of 10 adolescent girls and young women are offline in low-income countries."[86] Adolescent girls also have significantly less digital skills than their male counterparts with only 65 female youth possessing digital skills compared to every 100 male youth across 32 surveyed Member States and territories.[87] This gender gap is often attributed to "barriers to accessing opportunities to higher learning and the labor market, pervasive discriminatory gender norms and stereotypes, and concerns over online safety."[88]

Today, "around 97% of the world's population has access to a mobile data network,"[89] and in 2023, roughly 78 percent of people aged 10 and over owned a mobile phone.[90] While smartphones and tablets can provide a less expensive way to access the internet at home and in schools, "the percentage of individuals owning a mobile phone is greater than the percentage of Internet users" across every region and income group, creating a "usage gap" – a divide between those using and those not using mobile networks.[91] This can be partially attributed to the high costs of smartphones as "two-thirds of the individuals who live within areas covered by a mobile broadband network but

[79] Broom, Douglas. "These Are the Places in the World Where Internet Access Is Still an Issue – and Why." World Economic Forum, September 5, 2023. https://www.weforum.org/agenda/2023/09/broadband-no-luxury-basic-necessity/.

[80] "Impact of the Digital Divide: Economic, Social, and Educational Consequences." IEEE.org.

[81] "Impact of the Digital Divide: Economic, Social, and Educational Consequences." IEEE.org.

[82] "Rural Businesses Need Broadband to Prosper." Neutrality Data Centers, November 15, 2024. https://netrality.com/blog/rural-businesses-need-broadband-to-prosper/.

[83] "Two Thirds of the World's School-Age Children Have No Internet Access at Home, New UNICEF-ITU Report Says." UNICEF, November 30, 2020. https://www.unicef.org/press-releases/two-thirds-worlds-school-age-children-have-no-internet-access-home-new-unicef-itu#:~:text=The%20gap%20in%20the%20mobile,age%20children%20in%20rural%20households.

[84] "Two Thirds of the World's School-Age Children Have No Internet Access at Home, New UNICEF-ITU Report Says." UNICEF.

[85] "Two Thirds of the World's School-Age Children Have No Internet Access at Home, New UNICEF-ITU Report Says." UNICEF.

[86] "Bridging the Gender Digital Divide." UNICEF, May 2023. https://data.unicef.org/resources/ictgenderdivide/.

[87] "Bridging the Gender Digital Divide." UNICEF.

[88] "New Report Shows 90 per Cent of Adolescent Girls in Low-Income Economies Are Offline | UN News." United Nations, April 26, 2023. https://news.un.org/en/story/2023/04/1136072#:~:text=Barriers%20to%20accessing%20opportunities%20to,and%20skills%20development%2C%20said%20UNICEF.

[89] "Working Group on Smartphone Access." Broadband Commission for Sustainable Development, September 2022. https://www.broadbandcommission.org/working-groups/smartphone-access/.

[90] "New Global Connectivity Data Shows Growth, but Divides Persist." ITU, November 27, 2023. https://www.itu.int/en/mediacentre/Pages/PR-2023-11-27-facts-and-figures-measuring-digital-development.aspx.

[91] "Working Group on Smartphone Access." Broadband Commission for Sustainable Development.

who are not using mobile internet do not own a mobile phone."[92] Furthermore, many smartphone owners remain unable to utilize their devices "due to barriers such as digital skills and literacy, safety and security concerns, accessibility of enablers or services, and the availability of relevant content in local languages."[93] As a result, while smartphones and tablets provide new ways to connect rural schools and students, they do not guarantee access to high-quality internet or online learning opportunities; instead, smartphones are banned in many schools across the globe as they are often seen as a distraction rather than a tool.[94]

Despite the large digital gap between rural and urban areas, "reliance on digital technologies in education is becoming increasingly more common."[95] When the COVID-19 pandemic forced schools to transition to distance learning, issues such as the lack of digital devices in students' households, poor connectivity, and parents' low digital literacy rate left many students behind.[96] Teachers in rural and remote areas were also impacted by these issues when forced to work remotely.[97] Even today, five years after the pandemic, schools and universities increasingly require students to have digital devices and internet access to attend virtual classes, complete homework, submit applications, and prepare for standardized tests.[98] Students who lack access to the devices and infrastructure necessary to interact with remote learning resources can "struggle to complete homework and fall farther behind in school than their digitally enabled counterparts."[99] Furthermore, digital literacy is a common barrier for school-age children in low income areas and developing Member States.[100] Unable to "develop the digital skills and literacies needed for post-graduation success," students without internet access have lower education outcomes and less employment opportunities.[101]

Actions Taken by the United Nations

ITU, along with The United Nations Office of the UN Secretary-General's Envoy on Technology, established a set of measures for 2030 to achieve "universal and meaningful digital connectivity," including "a minimum connection speed target of 20 Mbps per school, or 50 kbps per student for schools larger than 400 students."[102] ITU defines "universal connectivity" as connectivity for all individuals and "meaningful connectivity" as "a level of connectivity that allows users to have a safe, satisfying, enriching and productive online experience at an affordable cost."[103] With this goal in mind, in 2019, ITU and UNICEF launched Giga – "an initiative to connect all the schools in the

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[92] Sibthorpe, Claire. "Opinion: Bridging the Mobile Connectivity Gap — 3.45 Billion Still Offline." Devex, November 29, 2024. https://www.devex.com/news/sponsored/opinion-bridging-the-mobile-connectivity-gap-3-45-billion-still-offline-108843#:~:text=The%20usage%20gap%20is%20nine,yet%20own%20a%20mobile%20phone.

[93] "Smartphone Owners Are Now the Global Majority, New GSMA Report Reveals." GSMA, October 11, 2023. https://www.gsma.com/newsroom/press-release/smartphone-owners-are-now-the-global-majority-new-gsma-report-reveals/#:~:text=In%20LMICs%2C%20adults%20in%20rural%20areas%20are,likely%20to%20use%20mobile%20internet%20than%20men.&text=Only%2025%%20of%20the%20population%20in%20the,across%20LMICs%20and%2085%%20across%20high%2Dincome%20countries.

[94] "The Growing Movement to Ban Smartphones in Schools." World Education Blog, October 21, 2024. https://world-education-blog.org/2024/10/21/the-growing-movement-to-ban-smartphones-in-schools/#:~:text=Overall%2C%20the%20new%20analysis%20from,countries%20to%20have%20introduced%20bans.

[95] "Impact of the Digital Divide: Economic, Social, and Educational Consequences." Connecting the Unconnected.

[96] "Addressing the Digital Divide." UN Habitat, 2021. https://unhabitat.org/sites/default/files/2021/11/addressing_the_digital_divide.pdf.

[97] "Addressing the Digital Divide." UN Habitat.

[98] "Impact of the Digital Divide: Economic, Social, and Educational Consequences." Connecting the Unconnected.

[99] "Impact of the Digital Divide: Economic, Social, and Educational Consequences." Connecting the Unconnected.

[100] "Addressing the Digital Divide." UN Habitat.

[101] "The Digital Access Divide." Office of Educational Technology. Accessed August 20, 2024. https://oet.wp.nnth.dev/netp/digital-access-divide/#:~:text=Defining%20the%20Digital%20Access%20Divide&text=Students%20without%20adequate%20access%20to,needed%20for%20post%2Dgraduation%20success.

[102] "Giga: Defining and Financing Meaningful School Connectivity." WSIS Forum 2023.

[103] "About Universal and Meaningful Connectivity." Universal and Meaningful Connectivity. Accessed October 3, 2024. https://www.itu.int/itu-d/sites/projectumc/home/aboutumc/#:~:text="Meaningful%20connectivity"%20is%20a%20level,experience%20at%20an%20affordable%20cost.

world to the internet and every young person to information, opportunity and choice."[104] Building off the ITU's 2009 initiative – Connect a School, Connect a Community, which aimed to connect all schools to ICTs by 2015 – Giga uses schools to establish an anchor of connectivity for surrounding communities, laying the foundation for connectivity to allow Internet service providers to later connect local businesses and services.[105] Today, Giga partners with the Swiss and Spanish governments, as well as 14 corporate and nonprofit partners of corporations, such as Eriscsson and Musk Foundation, to ensure teachers and students have the devices, skills, and content they need to be successful in the ever-changing digital learning environment.[106]

The Giga initiative has three pillars: 1) "Map the location of schools and monitor school connectivity in real-time"; 2) "Model the infrastructure, policies, regulations, and investments needed to deliver school connectivity"; and 3) "Help governments to contract connectivity for schools."[107] Using satellite technology, Artificial Intelligence models, and telemetry data, Giga maps the locations of schools – including those in "hard to reach and very remote areas" – across the world and layers that map with a connectivity and strength map, to identify zones of need.[108] Currently, Giga has mapped over 2.1 million schools on their open-source platform to help target investment to areas in need and track progress.[109] Since the start of the program, more than 2.3 million students and roughly 6,000 schools have been connected to the internet across Africa, Central Asia, Latin America and the Eastern Caribbean.[110] By 2023, Giga was operational in 30 Member States with a hope to expand its operations to 25,000 schools and 10 million students by mid-2025.[111] Giga has inspired other initiatives, such as the digital inclusion program co-designed by the ITU and the United Kingdom's Foreign, Commonwealth and Development Office (FCDO) aimed to improve digital knowledge, digital skills, and school connectivity in Brazil, Indonesia, Kenya, Nigeria and South Africa.[112]

Other current projects of the ITU are not specifically school-based but are aimed at addressing the ICT and connectivity gap among rural and remote communities and income- and gender-based digital divides.[113] In 2016, ITU launched the EQUALS Global Partnership for Gender Equality in the Digital Age, "a group of corporate leaders, governments, businesses, not-for-profit organizations, academic institutions, NGOs and community groups" aimed to end the global gender digital divide through research, policy, and programming.[114] ITU's "Girls Can Code" program is another initiative aimed at increasing digital literacy among girls across the world and bolstering their access to education and careers in technology.[115] Under the umbrella of the Global Initiative on Decent Jobs for Youth and in support of the African Union, ITU partnered with the International Labor Organization to provide African youth with enhanced digital skills, allowing them to "benefit from new opportunities in the digital economy and steer it forward with their energy and creativity."[116] In 2021, ITU also launched the Partner2Connect Digital Coalition; based on digital inclusion and SDG-focused digital development, this multi stakeholder coalition of UN

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[104] "Giga – Connecting Every School to the Internet." ITU. Accessed August 20, 2024. https://www.itu.int/en/ITU-D/Initiatives/GIGA/Pages/default.aspx.

[105] "Giga – Connecting Every School to the Internet." ITU.

[106] Sund, Christine. "Space Helps us Locate Schools and Connect them to Internet." Space for Our Planet. Accessed August 25, 2024. https://www.space4ourplanet.org/story/space-helps-us-locate-schools-and-connect-them-to-internet/.

[107] "Giga – Connecting Every School to the Internet." ITU.

[108] "Giga Is Connecting World's Students to Internet, One School at a Time." UNICEF USA, October 17, 2022. https://www.unicefusa.org/stories/giga-connecting-worlds-students-internet-one-school-time.

[109] "Giga." Giga. Accessed August 25, 2024. https://giga.global/.

[110] "Giga Is Connecting World's Students to Internet, One School at a Time." UNICEF USA.

[111] Vanoli, Christine. "Giga Expands Its Reach to 30 Countries, Advancing Universal School Connectivity." ITU, November 13, 2023. https://www.itu.int/hub/2023/11/giga-expands-its-reach-to-30-countries-advancing-universal-school-connectivity/.

[112] "School Connectivity Needed in Underserved Communities." ITU, September 13, 2021. https://www.itu.int/hub/2021/09/school-connectivity-needed-in-underserved-communities/.

[113] "ITU Global Development Initiatives." ITU. Accessed August 25, 2024. https://www.itu.int/en/ITU-D/Initiatives/Pages/default.aspx.

[114] "About EQUALS." EQUALS, 2022. https://www.equalsintech.org/about.

[115] "Girls - Engage with Us to Empower Girls through ICTs." ITU. Accessed August 25, 2024. https://www.itu.int/women-and-girls/women-in-ict/girls/#:~:text=%E2%80%9CGirls%20Can%20Code%E2%80%9D%20strives%20to,mentorship%20and%20digital%20skills%20development.

[116] "Boosting Decent Jobs and Enhancing Skills for Youth in Africa's Digital Economy." ITU. Accessed August 25, 2024. https://www.itu.int/en/ITU-D/Regional-Presence/Africa/Pages/projects/Job-Skills/default.aspx.

entities, private companies, and governments aims to mobilize resources needed to achieve universal and meaningful connectivity by 2030.[117] In 2022, Intelsat – a multinational and leading provider in satellite services – joined the Partner2Connect Digital Coalition, pledging to connect 100 schools in rural and remote areas by 2025.[118] These collaborative efforts allow the ITU to assemble and deploy diverse resources to achieve "meaningful digital connectivity" for rural and remote areas, positively impacting students and schools across the globe.[119]

Conclusion

ITU's goal to connect all schools worldwide by 2030 has been recognized as extremely ambitious.[120] While Giga is successfully operating in 30 Member States and has connected over 2.3 million students and 6,000 schools, a large digital gap remains.[121] If this divide is to be closed by 2030, ITU must spend more resources and time focused on closing the gap in rural and remote areas, where schools are less likely to have access to digital devices and the necessary digital skills to benefit from internet connectivity.[122] Furthermore, ITU must address the gender- and income-based gaps that are more prevalent among rural communities.[123] While the world has begun to put the COVID-19 pandemic in the past and schools have returned to in-person lessons, remote and digital learning is not going away anytime soon; instead, it offers new educational and career opportunities to students and schools across the globe, particularly those in rural and remote areas.[124] Schools and students must adapt to stay competitive in the global economy, and it is up to the ITU to assist rural and remote communities in achieving connectivity and – more importantly – digital literacy to take advantage of all that online learning has to offer.[125]

Committee Directive

During committee, delegates should look at how their Member State is currently involved in the topic of improving internet access for schools and students in rural and remote areas, whether directly within domestic and international foreign policies or indirectly through socioeconomic support of other Member States' actions. Delegates should research the national, regional, and global practices on how their Member State plays a role in improving internet access for schools and students in rural and remote areas, with a particular interest in broadband connectivity and closing income- and gender-based gaps. Delegates should also seek information on what their Member State is doing nationally to address the issue and how those actions may affect other Member States, both regionally and internationally. In doing so, delegates should ask themselves: What are some current national, regional, and international internet access initiatives and policies in rural and remote areas that have seen positive improvements? What can the International Telecommunications Union (ITU) do to incentivize Member States to improve internet access for schools and students in rural and remote areas? What are the consequences of ignoring the need to improve internet access for schools and students in rural and remote areas, such as educational, social, and economic effects? Overall, delegates should address these questions with realistic solutions for implementing their goals. Delegates should focus on building upon established ITU standards, initiatives, and UN and other multilateral programs rather than creating new bodies within the ITU or the UN.

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[117] "ITU Partner2connect Digital Coalition." ITU. Accessed August 25, 2024. https://www.itu.int/itu-d/sites/partner2connect/about/introduction-to-p2c/#:~:text=Building%20on%20the%20outcomes%20of,ITU%20launched%20the%20Partner2Connect%20Digital.

[118] "Intelsat Joins the ITU Partner2connect Digital Coalition." Intelsat, September 20, 2022. https://www.intelsat.com/newsroom/intelsat-makes-pledge-to-itu-partner2connect-digital-coalition-2/.

[119] "ITU Partner2connect Digital Coalition." ITU. Accessed December 13, 2024. https://www.itu.int/itu-d/sites/partner2connect/about/introduction-to-p2c/.

[120] Häubi, Rachel Barbara. "How the UN Plans to Connect Every School to the Internet by 2030." SwissInfo, July 11, 2024. https://www.swissinfo.ch/eng/international-geneva/the-un-plans-to-connect-every-school-to-the-internet-by-2030/83325727.

[121] "Giga Is Connecting World's Students to Internet, One School at a Time." UNICEF USA.

[122] Gottschalk, Francesca, and Crystal Weise. "Digital Equity and Inclusion in Education: An Overview of Practice and Policy in OECD Countries."

[123] "Bridging the Gender Divide." ITU. Accessed August 25, 2024. https://www.itu.int/en/mediacentre/backgrounders/Pages/bridging-the-gender-divide.aspx#:~:text=In%20addition%20to%20infrastructure%20roll,in%20developed%20countries%20in%202019.

[124] "Covid-19 and Youth: Covid-19 and Learning." United Nations. Accessed August 25, 2024. https://www.un.org/en/academic-impact/covid-19-and-youth-learning-and-employment.

[125] "The Digital Transformation of Education: Connecting Schools, Empowering Learners." ITU, September 2020. https://www.itu.int/hub/publication/s-pol-broadband-22-2020/.

II.   Expanding Cybersecurity Capabilities to Protect Critical Information Infrastructure in Developing Member States

Introduction

Critical Information Infrastructure (CII) is defined as material and digital assets, networks, services, and installations that, if disrupted or destroyed, would seriously impact the health, security, or economic well-being of citizens and the efficient function of a Member State's government.[126] The rapid digital transformation occurring in developing Member States calls for prioritizing expanding cybersecurity capabilities to protect CII.[127] The lack of protection for CII has increased Member States' vulnerability to cyberattacks by foreign governments and cyber criminals, disrupting essential services and causing economic instability, hampered development, data breaches, and less resilience to natural disasters in developing Member States.[128] Some Member States are taking steps to improve their CII to support their citizens better, while Member States with rudimentary CII systems in place increasingly depend on CII for healthcare, energy, and finance sectors, leaving them susceptible to cyberattacks.[129] In the last decade, Member States have struggled to adequately protect their infrastructure from cyberattacks,[130] causing significant disruptions in transportation, public sector services, telecommunications, and critical manufacturing industries across affected Member States.[131] Expanding cybersecurity capabilities will help safeguard these infrastructures, which are often unsatisfactorily protected within developing Member States due to a lack of resources, education, skilled workers, and technical expertise.[132] This topic is critical because prioritizing the protection of CII will allow Member States to not only enhance and strengthen their digital infrastructure but also mitigate and protect themselves from future cyber threats.[133] With the rapid advancement of telecommunication technologies eventually leading to the internet and its integration into many facets of CII, cyberspace has become an arena that Member States must focus on to ensure the internet is fully protected.[134]

History

The development of CII can be dated back to 1996 when the President of the United States (US), Bill Clinton, signed Executive Order 13010 to identify and protect critical infrastructure in the US, such as information systems vital to national security and the economy.[135] This order was initiated following a pair of terrorist attacks on US soil,

[126] "Critical Information Infrastructure (CII)." n.d. https://www.itu.int/en/ITU-D/Regional-Presence/AsiaPacific/Documents/Events/2020/RDF2020/Post%20Forum%20Day%203/ITU-RDF-2020-CNI-WK-Philip.pdf.

[127] "Digital Regulation Platform." n.d. Digitalregulation.org. https://digitalregulation.org/enhancing-the-protection-and-cyber-resilience-of-critical-information-infrastructure/

[128] Russu, Catalina. 2022. "The Impact of Low Cyber Security on the Development of Poor Nations | Experts' Opinions." Development Aid. September 12, 2022. https://www.developmentaid.org/news-stream/post/149553/low-cyber-security-and-development-of-poor-nations.

[129] Markopoulou, Dimitra, and Vagelis Papakonstantinou. 2021. "The Regulatory Framework for the Protection of Critical Infrastructures against Cyberthreats: Identifying Shortcomings and Addressing Future Challenges: The Case of the Health Sector in Particular." *Computer Law & Security Review* 41 (July): 105502. https://doi.org/10.1016/j.clsr.2020.105502.

[130] "Protecting the Cybersecurity of Critical Infrastructures and Their Supply Chains ICC Working Paper." 2024. https://docs-library.unoda.org/Open-Ended_Working_Group_on_Information_and_Communication_Technologies_-_(2021)/ICC-2024_Protecting-the-cybersecurity-of-critical-infrastructures-and-their-supply-chains.pdf.

[131] Allianz. 2016. "Cyber Attacks on Critical Infrastructure." Allianz Commercial. June 2016. https://commercial.allianz.com/news-and-insights/expert-risk-articles/cyber-attacks-on-critical-infrastructure.html.

[132] United Nations. 2021. "United Nations Cybersecurity in the United Nations System Organizations Report of the Joint Inspection Unit Prepared by Jorge Flores Callejas, Aicha Afifi and Nikolay Lozinskiy." https://www.unjiu.org/sites/www.unjiu.org/files/jiu_rep_2021_3_english.pdf.

[133] Luiijf, Eric, Tom van Schie, Theo van Ruijven, and Auke Huistra. 2016. "The GFCE-MERIDIAN Good Practice Guide on Critical Information Infrastructure Protection for Governmental Policy-Makers." https://www.tno.nl/media/8578/gpg_criticalinformationinfrastructureprotection.pdf.

[134] "CI Scoop: History of Critical Infrastructure Designation | U.S. Election Assistance Commission." 2017. Www.eac.gov. May 17, 2017. https://www.eac.gov/blogs/ci-scoop-history-critical-infrastructure-designation.

[135] Sachs, Marcus H. n.d. "Reflections on Executive Order 13010." McCrary Institute. https://mccrary.auburn.edu/work/insights/reflections-on-executive-order-13010/.

one on New York City's World Trade Center towers in February 1993 where a massive eruption carved out a nearly 100-foot crater several stories deep and several more high and the second on Oklahoma City's Murrah Federal Building in April 1995.[136] This executive order was a stepping stone for many Member States across the world as it identified the importance CII had on the economy and the need to protect it.[137] After the executive order, the International Telecommunication Union (ITU) recognized the lack of protection of CII across Member States and actively started promoting cybersecurity initiatives and developed the Global Cybersecurity Index (GCI) to measure each Member State's cybersecurity readiness.[138]

The beginnings of cybersecurity can be traced back to the Advanced Research Projects Agency Network (ARPANET), which was a precursor to the internet.[139] In 1971, a programmer developed a digital worm called the Creeper virus that could move from computer to computer within a network, crashing each computer as it went.[140] Eventually, another programmer created a program called Reaper, which neutralized the Creeper virus when found on a computer, becoming one of the first forms of cybersecurity.[141] In the 1980s, Member States began to realize the need for cybersecurity as numerous attacks occurred, notably to the American Telephone and Telegraph Company (AT&T), the Los Alamos National Laboratory in the US, and the National Central Security Service (CSS).[142]

In 1998, the Russian Federation introduced a draft resolution to the First Committee of the United Nations General Assembly exploring the development of cybersecurity to enhance collaboration among Member States to combat cyber threats.[143] Shortly thereafter, the first major international agreement on cybersecurity was made in 2001 by the European Council (EC) with the Budapest Convention.[144] Despite the cybersecurity treaty being signed through the EC, other Member States outside of the EC have signed similar legislation into law in collaboration with the EC and the European Union (EU).[145] These Member States include the Dominican Republic, Ghana, Mauritius, Peru, and Sri Lanka.[146]

While the first major cyberattacks took place in 1998 when a Cornell University graduate student launched software called Morris Worm to hack the National Aeronautics and Space Administration (NASA), the first major use of cyber warfare occurred in 2007. At the time, Estonia was the victim of a Distributed Denial of Service (DDoS) attack that significantly disrupted the Member State's online infrastructure, impacted government websites, media outlets, banking systems, and other critical services, bringing the Member State to a complete internet blackout.[147] This is said to have opened the general public's eyes to the vulnerability of networks and the damage that can happen

[136] "Critical Infrastructure Protection | PNNL." n.d. Www.pnnl.gov. https://www.pnnl.gov/explainer-articles/critical-infrastructure-protection.
[137] "Executive Order 13010—Critical Infrastructure Protection | the American Presidency Project." n.d. Www.presidency.ucsb.edu. https://www.presidency.ucsb.edu/documents/executive-order-13010-critical-infrastructure-protection.
[138] Sector, Development. 2024. "ITU Publications International Telecommunication Union Global Cybersecurity Index 2024 5 Th Edition." https://www.itu.int/en/ITU-D/Cybersecurity/Documents/GCIv5/2401416_1b_Global-Cybersecurity-Index-E.pdf.
[139] "Cybersecurity History: Hacking & Data Breaches." Monroe College. Accessed August 18, 2024. https://www.monroecollege.edu/news/cybersecurity-history-hacking-data-breaches.
[140] Meyer, Sophie. 2024. "Welcome to Zscaler Directory Authentication." Moxso.com. 2024. https://moxso.com/blog/glossary/creeper-virus.
[141] "Creeper to Reaper | Building Geniuses | KMC Controls." 2024. KMC Controls | Building Geniuses. July 2024. https://www.kmccontrols.com/blog/security-from-creeper-to-reaper/.
[142] "History of Cyber Security." Cyber Security Degree, October 20, 2022. https://cyber-security.degree/resources/history-of-cyber-security/#:~:text=The%20true%20birth%20of%20cybersecurity,to%20move%20over%20a%20network.
[143] "Developments in the Field of Information and Telecommunications in the Context of International Security." United Nations Office for Disarmament Affairs. Accessed August 18, 2024. https://disarmament.unoda.org/ict-security/#:~:text=The%20issue%20of%20information%20security,Assembly%20as%20resolution%2053%2F70
[144] "Treaties & International Agreements on Cyber Crime." Georgetown Law Library. Accessed August 19, 2024.
[145] Cybercrime Convention Committee (T-CY). *The Budapest Convention on Cybercrime: benefits and impact in practice.* Strasbourg: Council of Europe, 2020
[146] *The Budapest Convention on Cybercrime: benefits and impact in practice.*
[147] Heli Tiirmaa-Klaar. *The Evolution of the UN Group of Governmental Experts on Cyber Issues from a Marginal Group to a Major International Security Norm-Setting Body.* Estonian Ministry of Foreign Affairs, 2021.

from an attack, ultimately influencing Member States to increase their defense capabilities.[148] The attacks also led to the creation of international cybersecurity standards and the establishment of international cyber defense organizations, such as the North Atlantic Treaty Organization's (NATO) Cooperative Cyber Defense Centre of Excellence.[149] The Estonian attacks demonstrated the importance of identifying and protecting CII and emphasized how vulnerable critical infrastructures, such as banking systems and media outlets, are to cyberattacks.[150] Additionally, in 2008 and 2015 the US military was attacked by a hacker, further demonstrating the urgent need for increased protection for computers with vital information; the culmination of these attacks and the heightened awareness around CII vulnerability led to a greater focus on securing CII and ensuring its resilience.[151]

Current Situation

The need for cybersecurity systems and workforces in developing Member States has continued to grow at rapid rates, with cybersecurity job postings in Brazil and Indonesia rising by 76 percent and 55 percent, respectively, in 2024 alone; in contrast, there was a 35 percent average rise internationally.[152] This data shows that as the developing world continues to further invest in infrastructure and expand, it will require further investments in cybersecurity.[153] However, many of these developing Member States lack a skilled workforce to fill these necessary roles in the field of cybersecurity.[154] In 2023, the ISC2 – a nonprofit organization and leader in the field of cybersecurity professionals – revealed there was a shortage of cybersecurity professionals, with four million vacancies worldwide.[155] This shortage emphasizes the urgent demand for investments in the workforce as Member States develop further digital capabilities to meet new digital demands.[156]

While internet connectivity is becoming increasingly prevalent in developing Member States, rural areas often suffer from inadequate information infrastructure.[157] Additionally, much of the terminology used within cybersecurity can be challenging for populations that have had limited access to education given the technical knowledge required.[158] Despite these obstacles, individuals under the age of 30 in rural areas still displayed preexisting knowledge of cybersecurity practices before being introduced to cybersecurity training formally.[159] Outside of infrastructure and education, geopolitical stability plays a major role in cybersecurity preparedness for Member States, with 70 percent of respondents to the Global Cybersecurity Outlook survey stating that geopolitics has "at least moderately influenced their organization's cybersecurity strategy."[160] During political instability, digital information is

[148] World, Estonian. 2013. "Turning around the 2007 Cyber Attack: Lessons from Estonia." Estonian World. October 22, 2013. https://estonianworld.com/security/turning-around-2007-cyber-attack-lessons-estonia/.

[149] "2007 Cyber Attacks on Estonia." 2007. https://stratcomcoe.org/cuploads/pfiles/cyber_attacks_estonia.pdf.

[150] "Critical Information Infrastructure Protection Initiative - the GFCE." 2023. The GFCE. November 14, 2023. https://thegfce.org/initiative/critical-information-infrastructure-protection-initiative/.

[151] Bloomfield Jr, Lincoln. 2003. "Remarks to the Inter-American Committee against Terrorism of the Organization of American States." State.gov. Autumn 1, 2003. https://2001-2009.state.gov/p/wha/rls/rm/17116.htm.

[152] Ghislain De Salins and Anat Lewin, "' Hacking' the cybersecurity skills gap in developing countries," World Bank Blogs, November 22, 2023, https://blogs.worldbank.org/en/digital-development/hacking-cybersecurity-skills-gap-developing-countries.

[153] Ghislain De Salins and Anat Lewin, "' Hacking' the cybersecurity skills gap in developing countries," 2023.

[154] "GC3B 2023 Summary Report," Global Conference on Cyber Capacity Building, November 2023, https://gc3b.org/wp-content/uploads/2024/05/GC3B-2023-Summary-Report-1.pdf.

[155] "Household Internet access in urban areas twice as high as in rural areas," ITU, November 30, 2020, https://www.itu.int/en/mediacentre/Pages/pr27-2020-facts-figures-urban-areas-higher-internet-access-than-rural.aspx

[156] Farzana Quayyum and Giske Naper Freberg, "Designing Cybersecurity Awareness Solutions for the Young People in Rural Developing Countries: The Need for Diversity and Inclusion," Paper presented at *Universal Access in Human-Computer Interaction: 18th International Conference, Washington, DC, USA, June 29 – July 4, 2024.* https://doi.org/10.1007/978-3-031-60881-0_1

[157] Quayyum and Freberg, "Designing Cybersecurity Awareness Solutions for the Young People in Rural Developing Countries: The Need for Diversity and Inclusion."

[158] "Global Cybersecurity Outlook 2024," World Economic Forum, January 2024. https://www3.weforum.org/docs/WEF_Global_Cybersecurity_Outlook_2024.pdf

[159] "Geopolitical Factors Shaping the Future of the Cyber Domain," Critical Start, accessed October 2, 2024. https://www.criticalstart.com/geopolitical-factors-shaping-the-future-of-the-cyber-domain/.

[160] "GC3B 2023 Summary Report," Global Conference on Cyber Capacity Building. https://gc3b.org/wp-content/uploads/2024/05/GC3B-2023-Summary-Report-1.pdf.

vulnerable to interference from both internal and external parties, ranging from spreading political information to undermining election processes.[161] Cybercrime is not limited to individuals or private groups, with government-sponsored actors implicated in cyber-attacks, disrupting international cooperation.[162] Some Member States have enacted cyber agreements to better target and prevent cybersecurity threats, as is the case between the United States and the People's Republic of China, resulting in fewer cyber-attacks between the two Member States.[163] This agreement has showcased the value of cooperation to protect CII from cyber threats and the importance of international cooperation between Member States.

The lack of strong protection for CII within developing Member States increases their susceptibility to cyberattacks, potentially leading to catastrophic outcomes.[164] The lack of CII in developing Member States has continued to grow as years go by with attackers becoming more sophisticated in their attacks against Member States, using varied methods such as ransomware attacks and state-sponsored cyberattacks.[165] In 2014, the ITU recognized the lack of protection of CII across Member States, actively started promoting cybersecurity initiatives, and developed the Global Cybersecurity Index (GCI) to measure each Member State's cybersecurity readiness.[166]In 2023, 2,825 ransomware attacks were reported, with 1,193 (every 2 in 5) ransomware attacks targeting and hitting organizations in the critical infrastructure sector, which is one-third more than the amount reported in 2022.[167] Such attacks, frequently carried out by different terrorist organizations, represent a significant danger to developing Member States and can be focused on damaging and seeking to interfere with vital infrastructure, obtaining confidential data, or carrying out illegal activities within Member States.[168] Such cyberattacks on the critical infrastructure within Member States may result in interruptions of vital services such as banking and transportation, financial losses, and threats to national security.[169]

Software vulnerabilities also play a major role in the cyberattacks of CII within Member States, particularly as numerous organizations in these areas find it difficult to maintain their systems with the most recent security updates.[170] These vulnerabilities, caused by the lack of adequate software within Member States have gradually intensified by the rising use of Internet of Things (IoT) devices; IoT devices frequently have inadequate security protocols, allowing cybercriminals to take advantage of these devices and obtain unauthorized access to networks and essential infrastructure within Member States.[171]

Actions Taken by the United Nations

[161] "JCDC FAQs | CISA," CISA, accessed October 3, 2024. https://www.cisa.gov/topics/partnerships-and-collaboration/joint-cyber-defense-collaborative/jcdc-faqs

[162] "Geopolitical Factors Shaping the Future of the Cyber Domain," Critical Start, accessed October 2, 2024. https://www.criticalstart.com/geopolitical-factors-shaping-the-future-of-the-cyber-domain/.

[163] U.S. Department of State. 2024. "United States International Cyberspace & Digital Policy Strategy." United States Department of State. 2024. https://www.state.gov/united-states-international-cyberspace-and-digital-policy-strategy/.

[164] Bank, World. "Strengthening Cybersecurity and Resilience of Critical Infrastructure Insights from the Republic of Korea and Other Digital Nations," n.d. https://documents1.worldbank.org/curated/en/099705012152346616/pdf/IDU044546588061b004aaf08b5805c55aaee4128.pdf.

[165] Internet Crime Complaint Center. "Federal Bureau of Investigation Internet Crime Report," 2023. https://www.ic3.gov/Media/PDF/AnnualReport/2023_IC3Report.pdf.

[166] Sector, Development. 2024. "ITU Publications International Telecommunication Union Global Cybersecurity Index 2024 5 Th Edition." https://www.itu.int/en/ITU-D/Cybersecurity/Documents/GCIv5/2401416_1b_Global-Cybersecurity-Index-E.pdf.

[167] Kapko, Matt. "Ransomware Attacks Are Hitting Critical Infrastructure More Often, FBI Says." Cybersecurity Dive, March 11, 2024. https://www.cybersecuritydive.com/news/ransomware-hitting-critical-infrastructure-fbi/709814/.

[168] Department of Homeland Security. "Secure Cyberspace and Critical Infrastructure." Department of Homeland Security, December 1, 2023. https://www.dhs.gov/secure-cyberspace-and-critical-infrastructure.

[169] Harper, Todd. "Cyber Incident Notification Requirements." NCUA, August 14, 2023. https://ncua.gov/regulation-supervision/letters-credit-unions-other-guidance/cyber-incident-notification-requirements.

[170] UNCDF Policy Accelerator. "The Role of Cybersecurity and Data Security in the Digital Economy," n.d. https://policyaccelerator.uncdf.org/all/brief-cybersecurity-digital-economy.

[171] The GFCE. "Cyber Incident Management and Critical Infrastructure Protection - the GFCE," January 22, 2024. https://thegfce.org/theme-gfce/cyber-incident-management-and-critical-information-infrastructure/.

Four years after cybersecurity was initially introduced to the agenda of the UN, a Group of Governmental Experts (GGE) was created through GA resolution A/RES/56/19 to study the threats of cyberspace and the cooperative measures between Member States to combat them.[172] From 2004-2005, this first GGE on cyber issues was conducted through the UN Disarmament Committee; unfortunately, the GGE was ultimately unable to create a consensus report due to disagreements of the UN Security Council (UNSC) permanent members on the direction of the report as well as a general lack of interest from the broader international community on cyber stability at the time.[173] However, the 2007 cyber siege of Estonia, which led to an internet blackout across the Member State that impacted the Member State's online banking capabilities and government websites, made cybersecurity a prominent topic of interest for national and international policy makers.[174]

Discussions about cybersecurity and its role in international security started in earnest during the second GGE on cyber issues from 2009-2010, which aimed "to continue to study existing and potential threats in the sphere of information security and possible cooperative measures to address them."[175] The next consecutive GGE on cyber issues from 2012-2013 introduced four main elements to establish a framework for responsible state behavior in cyberspace.[176] These four elements are: application of existing international law, voluntary non-binding peacetime norms of responsible state behavior, confidence and cooperation measures, and capacity-building measures.[177] These discussions around cybersecurity issues and information security are foundational for addressing the issues of protecting CII in developing Member States.[178] During a session of the UNSC in June of 2024 discussing the current state of cybersecurity, Robert Persaud, Foreign Secretary of Guyana, stated many developing Member States lack the necessary resources and expertise to combat cyberthreats and build resilience.[179] The nature of national security and defense is changing rapidly due to the transnational character of cyberthreats, thus, Persaud asserted that helping developing Member States fund cybersecurity should be seen as investing in the international community's collective security.[180]

The ITU has taken several measures to address CII in developing Member States, such as the ITU Regional Development Forum (RDF) in 2020, at which a managing director of Welchman Keen – a global technology advisory firm – gave a presentation on the nature and potential components of CII, threats to CII, and how to move forward with addressing those threats to CII.[181] The ITU also released a report titled "Critical Information Infrastructure Protection (CIIP): ITU Perspective" in 2020, noting how cyberattacks with a high impact are a significantly growing global risk.[182] The CIIP ITU Perspective goes on to elaborate the ITU's role in CIIP including assisting with capacity development to improve cybersecurity capacity in least developed and developing Member States; cooperation and coordination for digital transformation and trust building; technical and policy measures for the creation of solid national cybersecurity strategies and action plans; and the enhancement of organizational

[172] "Developments in the field of information and telecommunications in the context of international security: resolution / adopted by the General Assembly." United Nations Digital Library. https://digitallibrary.un.org/record/453522?ln=en&v=pdf#record-files-collapse-header

[173] Heli Tiirmaa-Klaar. *The Evolution of the UN Group of Governmental Experts on Cyber Issues*, 2021. https://hcss.nl/wp-content/uploads/2021/12/Klaar.pdf.

[174] Heli Tiirmaa-Klaar. *The Evolution of the UN Group of Governmental Experts on Cyber Issues*, 2021.

[175] Heli Tiirmaa-Klaar. *The Evolution of the UN Group of Governmental Experts on Cyber Issues*, 2021.

[176] Heli Tiirmaa-Klaar. *The Evolution of the UN Group of Governmental Experts on Cyber Issues*, 2021.

[177] Heli Tiirmaa-Klaar. *The Evolution of the UN Group of Governmental Experts on Cyber Issues*, 2021.

[178] Heli Tiirmaa-Klaar. *The Evolution of the UN Group of Governmental Experts on Cyber Issues*, 2021.

[179] "Digital Breakthroughs Must Serve Betterment of People, Planet, Speakers Tell Security Council during Day-Long Debate on Evolving Cyberspace Threats." United Nations Meetings Coverage and Press Release, June 2024. United Nations. https://press.un.org/en/2024/sc15738.doc.htm.

[180] "Digital Breakthroughs Must Serve Betterment of People, Planet, Speakers Tell Security Council during Day-Long Debate on Evolving Cyberspace Threats."

[181] "Critical Information Infrastructure." International Telecommunication Union Regional Development Forum 2020. https://www.itu.int/en/ITU-D/Regional-Presence/AsiaPacific/Documents/Events/2020/RDF2020/Post%20Forum%20Day%203/ITU-RDF-2020-CNI-WK-Philip.pdf

[182] "Critical Information Infrastructure Protection (CIIP): ITU perspective." International Telecommunications Union. https://www.itu.int/en/ITU-D/Regional-Presence/AsiaPacific/Documents/Events/2020/CNI%202020/CIIP_ITUPerspectivev2.pdf

structures to support national commitments to cybersecurity.[183] The ITU also offers "cyberDrills" at the national and international level to enhance Member States' cybersecurity readiness, protection, and incident response capabilities which continues to contribute to tangible improvements in cybersecurity capabilities for the protection of CII in developing Member States.[184] The ITU will also likely implement new measures to assist with the newly drafted Cybercrime convention, created by an ad-hoc committee under the auspices of the UN Office on Drugs and Crime (UNODC), which is expected to be adopted by the GA soon and will be the first globally binding instrument on cybercrime.[185]

Conclusion

Cyberattacks are on the rise in a modern world that is increasingly dependent on digital services, and the threat of significant attacks to CII with disastrous effects is more serious than ever before.[186] Despite the strides made in enabling global connectivity, the cybersecurity measures in developing Member States are unable to keep up with the increase in technology usage, and therefore a focused effort must be made to expand their cybersecurity capabilities.[187] Challenges to strengthening cybersecurity capabilities in developing Member States are largely due to lack of existing infrastructure, inadequate training, and the lack of a comprehensive understanding of both information technology and cybersecurity; these issues must be addressed in order to protect CII in developing Member States.[188] The need for a regulatory framework to develop and implement cybersecurity measures in developing Member States is one of the priorities identified by the UN and the Global Conference on Cyber Capacity Building, yet existing measures are not comprehensive enough to protect CII.[189] While the ITU has done significant work towards expanding cybersecurity capabilities in developing Member States, including holding regional forums, teaching "cyberDrills," and assisting with creation and implementation of related policies, greater investments must be made in expanding cybersecurity capabilities in order to protect CII of developing Member States.[190] Overcoming these challenges will require multilateral cooperation between developed and developing Member States through infrastructure investment, personnel training, and government action.[191]

Committee Directive

Delegates should first consider their Member State's policy regarding this topic, whether directly within domestic and international foreign policies and actions taken by their Member States or indirectly through socioeconomic support of other Member States' actions. Delegates should research their Member State's initiatives on the topic and how they contribute to the topic internationally, domestically, and regionally. Questions delegates should address include: What actions has the international community already taken to address the issue? What cybersecurity programs have already shown success in protecting CII? How have implemented programs increasing cybersecurity capabilities to protect CII affected the domestic and international affairs of their Member States? What kind of cybersecurity factors affecting increased cybersecurity implementation are geographically based and what are

[183] "Critical Information Infrastructure Protection (CIIP): ITU perspective." International Telecommunications Union. https://www.itu.int/en/ITU-D/Regional-Presence/AsiaPacific/Documents/Events/2020/CNI%202020/CIIP_ITUPerspectivev2.pdf
[184] "Cyber Drills." International Telecommunications Union. https://www.itu.int/en/itu-d/cybersecurity/pages/cyberdrills.aspx
[185] "United Nations: Member States finalize a new cybercrime convention." United Nations Office on Drugs and Crime. https://www.unodc.org/unodc/en/frontpage/2024/August/united-nations_-member-states-finalize-a-new-cybercrime-convention.html.
[186] Kapko, Matt. "Ransomware Attacks Are Hitting Critical Infrastructure More Often, FBI Says." Cybersecurity Dive,zMarch 11, 2024. https://www.cybersecuritydive.com/news/ransomware-hitting-critical-infrastructure-fbi/709814/.
[187] "GC3B 2023 Summary Report," Global Conference on Cyber Capacity Building. https://gc3b.org/wp-content/uploads/2024/05/GC3B-2023-Summary-Report-1.pdf.
[188] Daniel Ochieng Otieno, "Cyber security challenges: The Case of Developing Countries." Paper presented at *Promoting Creativity, Innovation and Productivity for Sustainable Development*, November 2020. https://www.researchgate.net/publication/346485466_Cyber_security_challenges_The_Case_of_Developing_Countries
[189] "Connect 2030 – An agenda to connect all to a better world," ITU, accessed October 3, 2024, https://www.itu.int/en/mediacentre/backgrounders/Pages/connect-2030-agenda.aspx.
[190] "About International Telecommunication Union." https://www.itu.int/en/about/Pages/default.aspx.
[191] "ITU Partner2Connect Digital Coalition," ITU, accessed October 4, 2024, https://www.itu.int/itu-d/sites/partner2connect/about/introduction-to-p2c/.

effective on a global scale? Delegates should consider these questions when developing solutions and how they can be built upon existing UN programs and regulations.

Annotated Bibliography

I.   **Evaluating Efforts to Improve Internet Access for Schools and Students in Rural and Remote Areas**

Daka, Ephraim. "Cloud-enabled e-learning for rural education in rural settings." *Association for the Development of Education in Africa*, February 22, 2023.

> The Association for the Development of Education in Africa (ADEA) is an institution dedicated to policy discussion regarding the improvement of educational systems across Africa. The article "Cloud-enabled e-learning for rural education in rural settings" evaluates the challenges to establishing e-learning capabilities in rural African settings and potential solutions through policymaking. The digital divide remains a significant problem in Africa, largely due to underdeveloped infrastructure and a lack of an e-learning policy. The author recommends adopting measures such as expanding informational technology infrastructure in schools through a collaborative, community approach and expanding electricity access to underserviced areas, identifying solar energy as a growing solution to this issue.

Broadband Commission for Sustainable Development. "The Digital Transformation of Education: Connecting Schools, Empowering Learners." September 2020, https://www.broadbandcommission.org/publication/the-digital-transformation-of-education/.

> The Broadband Commission for Sustainable Development is a partnership between the United Nations and private sector actors seeking to establish universal connectivity. The report "The Digital Transformation of Education: Connecting Schools, Empowering Learners" analyzes and comments on the work of two separate initiatives establishing connectivity in schools: Giga and UNESCO's e-school Initiative. The report introduces a framework for establishing school connectivity built on the pillars of mapping, connecting, financing, and empowering educational programs. Methods of establishing each of these pillars are discussed alongside case studies for Member States seeking relevant strategies for expanding internet access to remote areas.

Fischer, Susanna Frederick. "The Global Digital Divide: Focusing on Children." UC Law SF Scholarship Repository, March 19, 2002. https://repository.uclawsf.edu/hastings_comm_ent_law_journal/vol24/iss4/2/.

> UC Law SF Communication and Entertainment Journal is a legal journal and forum for scholars to discuss topics relating to communications, intellectual property, and entertainment, including telecommunications, broadcasting, and multimedia. This article focuses on global access to information and communications technology (ICT) for school-aged children, with a primary comparative focus on the United States, the United Kingdom, Australia, France, Mongolia, and Tanzania. The paper finds the digital divide mirrors the development divide between developing and developed Member States, splitting further along race and income lines. The author concludes by charging policymakers to consider how ICTs can close the development gap and enhance or improve a child's life.

II.   Expanding Cybersecurity Capabilities to Protect Critical Information Infrastructure in Developing Member States

Department of Homeland Security. "Secure Cyberspace and Critical Infrastructure." Department of Homeland Security, December 1, 2023. https://www.dhs.gov/secure-cyberspace-and-critical-infrastructure.

>The Department of Homeland Security (DHS) recognizes and emphasizes the need to protect critical infrastructure and outlines the strategic priorities. Homeland security emphasizes the connection between physical and cyber systems by highlighting the various vulnerabilities exploited by different cyber threats. The article discusses the initiatives implemented by DHS to enhance and improve cybersecurity resilience, which includes partnerships with private stakeholders and the implementation of national standards and frameworks. The article also addresses the role the public plays in their awareness and training to strengthen defense against cyberattacks. The article is an important resource in understanding the approach by a federal government to cybersecurity and the different implications for critical infrastructure in developed and developing Member States.

Mthwazi, Guidance. "Information Technology Infrastructure sharing effects on the Environment and the Delivery of Equitable Public Services in Zimbabwe." In *Digital Transformation for Sustainability*, Springer Nature, 2022, DOI: 10.1007/978-3-031-15420-1_2.

>*Digital Transformation for Sustainability* analyzes the interactions between digital innovation and sustainable practices, showcasing new opportunities and challenges that arise from these interactions. The chapter "Information Technology Infrastructure sharing effects on the Environment and the Delivery of Equitable Public Services in Zimbabwe" focuses on the problems brought about by emerging internet service providers (ISPs) sharing Information Technology Infrastructure (ITI) with established telecommunication firms in Zimbabwe. The lack of regulatory framework regarding ITI sharing and obscurity of existing ITI data results in exploitation and obstructive bureaucratic practices for emerging ISPs. The chapter includes recommendations to address these issues, such as more rigorous ITI auditing, better contingency plans in event of ITI failure, and most notably a national infrastructure map detailing where ITI is managed.

ITU. "LDCs Infrastructure Protection Program: Sierra Leone." Accessed August 18, 2024. https://www.itu.int/en/ITU-D/Cybersecurity/Pages/LDC_Sierra_Leone.aspx.

>The ITU's "Enhancing Cybersecurity in Least Developed Countries" program is an initiative aiming to improve cybersecurity capabilities in underdeveloped Member States. The "LDCs Infrastructure Protection Program: Sierra Leone" was a workshop program with the goal of developing strategies for formulating National Cybersecurity Frameworks based on the program findings in Sierra Leone. Lack of formal training is one of the biggest challenges to handling cybersecurity threats, particularly among laypersons without a career in the field. This workshop program acted as a framework to encourage similar programs to be enacted in other Member States, spreading awareness over the importance of National Cybersecurity Frameworks. Member States may find relevant information on establishing regulatory frameworks or similar workshop programs.