Comments of the Civil Society Organisations and Academia to the Ethiopian Communications Authority on the Telecommunications Licensing Directive No. 1/2020

16 June 2020

In Public Notice "Stakeholder Consultation on Directives", May 28, 2020, Ethiopian Communications Authority (ECA) invited interested stakeholders to submit their comments on the issues raised in the Draft for Stakeholder Consultation for the Telecommunications Licensing Directive No. 1/2020.

The stakeholders presenting this feedback believe that it is important for the government to consider creating a supportive mechanism for the local stakeholders (including community networks[1] and small-scale commercial operators) to participate in the competitive telecom market. To this end, we present some general and specific recommendations to be considered in the upcoming steps before the final adoption of the Telecommunications Licensing Directive. We do so with the firm belief that they can be appropriately integrated in the current draft to support the growth of the local ICT industry by Ethiopians without jeopardizing the spirit of introducing a competitive telecom market including foreign investors.

The following organizations contributed in the production of this document (for a detailed description of each, please refer to section "ABOUT THE CONTRIBUTORS", at the end of the document):

- Association for Progressive Communication (APC) – www.apc.org
- Bahir Dar University, Bahir Dar Technology Institute, ICT4D (Information and Communication Technology for Development) Research Center
- Council for Scientific & Industrial Research - www.csir.co.za
- Internet Society Ethiopia Chapter[2] - www.internetsociety.et
- Internet Society – www.internetsociety.org/
- Network for Digital rights for Ethiopia - www.ndrethiopia.org

All of them are moved by the common objective of supporting the ECA in the creation of a vibrant ICT ecosystem, with quality and affordable telecommunications, and in favor of digital inclusion and the socio-

---

[1] Rey-Moreno, Carlos. Supporting the Creation and Scalability of Affordable Access Solutions: Understanding Community Networks in Africa. (2017) https://www.internetsociety.org/wp-content/uploads/2017/08/CommunityNetworkingAfrica_report_May2017_1.pdf.

[2] Under the coordination of the ISOC Ethiopia Chapter, there has been a series of stakeholders' consultation in the country since the beginning of May through a webinar organized on May 5 on which over 60 participants attended. Since then, the various stakeholders have been grouped in different working groups. This working group that looked into the privileges that Ethiopians should be given to participate and benefit from the opening up of the telecom market. Accordingly, the sub-group has been undertaking a series of online meetings brainstorming the various options, strategies and actions that the Ethiopian government could take to ensure the growth of the local ICT industry. The following are comments on the specific aspects of the directive on licensing as well as the general observations and recommendations that the government needs to consider to benefit Ethiopian Nationals and support the growth of the local ICT industry. <ISOC ET Chapter>

economic development of all Ethiopians. It was in particular a very emotional endeavor for the more than 200 Ethiopians from within Ethiopia and the diaspora who had for the most part have had the opportunity to contribute with their knowledge to building a better ICT environment for their country, for the first time at this level (See Annexes IV & V).

Before proceeding, let us underscore that we appreciate the opportunity to comment on the Draft for Stakeholder Consultation for the Telecommunications Licensing Directive No. 1/2020.[3] Furthermore, we are encouraged to see that the Ethiopian Communications Authority is seeking input from various stakeholder groups before producing the final version of the document. And, finally, we commend the adoption of this collaborative, multi-stakeholder approach, which has demonstrated value in sustainability and creation of viable digital ecosystems for the telecommunications services development and market opportunities in the country .

---

[3] As a matter of fact, some of those organizations listed here have already contributed to previous Public Consultations from the ECA. Please refer to: Telecommunications Sector Stakeholder Consultation No. 001-2019. November 2019 https://www.apc.org/en/pubs/contribution-ethiopian-telecommunications-sector-stakeholder-consultation-no-001-2019.

TABLE OF CONTENTS

GENERAL COMMENTS & RECOMMENDATIONS ON THE DIRECTIVE'S FRAMEWORK

From a high level perspective, we would kindly recommend that the Ethiopian Communications Authority considers the following comments and recommendations in the next steps of the drafting process:

- We urge the Authority to *review the use of overarching and broadly-defined expressions such as "danger to the public order, public morality, or national security"*, . We acknowledge that an application for a License shall be accepted on condition that the service applied for does not pose a real danger to the public order, public morality, or national security. However, in view of intensifying the provision of Communications Service (for the purpose of this directive), the terms 'public order', 'morality' and 'national security' shall be construed narrowly.

- We recommend that, for the Internet, the Authority adopts in due time *complementary rules related to issues such as interconnection, creating incentives for peering among different networks as opposed to mandatory interconnection*. For instance, having prerequisites for local operators, who bid to offer Internet services to Government and its agencies, to be connected to the local Internet Exchange Points (IXPs) is a way to ensure that intra-government traffic stays local. This may yield a larger impact compared to regulation. Similar approaches that present fiscal incentive to operators will ensure self-compliance**.**

- Relatively to the topic of Internet Exchange Points, we underscore that a large percentage of *IXPs are established as neutral, non-profit entities - owned and operated by the membership of networks that connect to the IXP*. As a result, this ownership model inherits self-regulation in the interest of maintaining neutrality, independence and voluntary interconnection.

- We also recommend that the Authority adopts in due time *complementary rules related to universal service provision* in order to expand the access to telecommunication services in the benefit of Ethiopian users and businesses in the country

- We strongly recommend that the Authority *recognizes Community Networks and small scale operators (including by adopting innovative licensing frameworks for rural and underserved regions)* as a complementary solution to more traditional private sector-led models of connectivity and also as a major driving forces for economic and social change.[4]

- Operator Licensing: We encourage the Authority to consider the following principles in the establishment of a *licensing framework for telecommunications operators*:

  - *Technology neutrality*: In order to be as future-proof as possible telecommunications operator licenses should allow operators to adapt to technology innovations in order to provide the most effective and affordable access solutions.

  - *Layer separation*: In order to inhibit vertical integration that may stifle competition, we encourage the establishment of licenses that promote competition at both the infrastructure and application layers of telecommunication networks.

  - *Scale sensitivity*: In order to promote the growth of community networks and small-scale commercial operators, we encourage a tiered approach to licensing with lower administrative and financial burdens for smaller operators. In particular, we encourage

---

[4] For additional information on that matter, please see: https://www.itu.int/en/ITU-D/Study-Groups/2018-2021/Pages/OngoingWork.aspx.

the establishment of a specific license or alternatively license-exemption for non-profit network operators.

- Spectrum Licensing: We encourage the Authority to ***develop innovative, transparent and accessible spectrum licensing schemes*** that enable complementary local infrastructure solutions, such as Community Networks, access to radio spectrum for network service delivery. Those frameworks may include the following options for the consideration of the Authority[5]:

  - Provision within national IMT spectrum licenses that affirm the right of the regulator to grant additional authorisations to allow the use of licensed spectrum in underserved areas[6].

  - Social purpose licensing of IMT spectrum in rural areas[7]

  - License exempt use of ISM frequencies, in particular but not limited to Wi-Fi spectrum in 2.4GHz and 5.8GHz[8]

  - Dynamic spectrum management approaches allowing secondary use of spectrum such as TV White Space technology[9]

  - Innovative licensing fees approaches for closing the digital gap

- In any case, we encourage the Authority to incorporate the input provided by written resources submitted by key stakeholders, such as local communities and working group members in unserved and underserved areas, who may have a better understanding of the local and regional needs.

---

[5] Flexible spectrum licensing and usage, and spectrum sharing broadband network standards (such as TVWS, IEEE 802.22, IEEE802.xx,...) should be promoted by the authority to promote intelligent utilization of national spectrum resources and development of a heterogeneous wireless ICT service provider sector. This can be achieved by introducing emerging spectrum sharing technologies, such as unlicensed but managed spectrum licensing (TVWS & geo-location spectrum database assisted), License shared access (LSA), Spectrum Access Systems (SAS), Opportunistic Spectrum Access (OSA/ISM),...), LTE_unlicensed, as applied to heterogeneous mobile networks. This will lead to an efficient utilization of national spectrum resources and a spectrum innovation eco-system supporting the community network provision and accelerate socio-economic development of rural underserved communities. Supporting spectrum sharing and flexible spectrum management also makes network deployments future secure and ready for emerging 5G and beyond wireless networks.

[6] As an example of this we refer to the following clause 4.2 in UK regulator OFCOM's licensing of the 800MHz and 2.6GHz bands:: "For the avoidance of doubt the Licences will not guarantee exclusive use of the spectrum awarded. In the future we may grant additional authorisations to allow the use of all, or part, of the spectrum, including the spectrum that is the subject of this Award Process. We would develop and consult on the conditions of use under any such additional authorisations in order to manage the risk of harmful interference"
See.https://www.ofcom.org.uk/__data/assets/pdf_file/0022/32872/im.pdf for more detail.

[7] For further reference on the topic of social purpose licensing, see: Unleashing Community Networks: Innovative Licensing Approaches, page 9: https://www.internetsociety.org/wp-content/uploads/2018/05/Unleashing-Community-Networks_Innovative_Licensing_Approaches-2.pdf. In the case of Ethiopia, it is really important that social purpose licensing schemes be designed to serve non- traditional network operators, such as community network operators, especially in rural unserved and under-served areas.

[8] Unleashing Community Networks: Innovative Licensing Approaches, page 10, https://www.internetsociety.org/wp-content/uploads/2018/05/Unleashing-Community-Networks_Innovative_Licensing_Approaches-2.pdf

[9] *https://techcentral.co.za/infographic-solving-broadband-access-for-sa-with-tv-white-spaces/98089/*

SPECIFIC RECOMMENDATIONS & SUGGESTED CHANGES TO INDIVIDUAL CLAUSES

The items below indicate a group of suggested additions and modifications in terms of language in order to contribute with more granular interventions in the current existing text of the Directive.

Note: in this document, we have adopted the following convention when we propose changes in the draft directive:

- **Deletions to the original draft directive are indicated with a strikethrough of the text to be deleted**
- **Additions to the original draft directive are indicated by putting in bold and undeligning the text that we want to be added**

Part One - On Definitions

● We recommend the addition of the following definition: *"Internet Exchange Point: An Internet Exchange Point (IXP) is a network facility that enables the interconnection of more than two independent Autonomous Systems, primarily for the purpose of facilitating the exchange of Internet traffic."*

● We propose the following change to item 2(10) [deletion: strikethrough, addition: bold and underlined]: "*Internet Exchange Point (IXP) License: Internet Exchange Point (IXP) License: means a License issued by the Authority for provision of physical infrastructure through which* ~~*Internet service providers (ISPs) exchange Internet traffic between their networks (autonomous systems)*~~ **_Internet networks (autonomous systems) exchange traffic_**."

Part Two - On Licensing Requirement, Process, and Exemptions

● With the aim of enabling the growth of the local ICT private sector industry, we recommend **_providing priority privileges for Ethiopians with regard to ownership of licenses_** for telecom operation and services provided under the category of 'CLASS LICENSES'.

● With the aim of **_encouraging local ownership and participation of the Ethiopian ICT private sector in the telecom market_**, the licensing framework for telecom operation and services ~~under~~ the category 'INDIVIDUAL LICENSES' needs to include requirements for upcoming national telecom operators (foreign companies) including the following :

  ○ To float at least 10 to 20 percent of their shares to Ethiopians (local ICT companies) within a specified period of acquiring the license. Such joint venture mechanisms will facilitate technology and knowledge transfer to enhance the technical and managerial skills of Ethiopians and local companies.

  ○ At least 50 per cent of the board should be Ethiopian Nationals/ Ethiopian descent.

  ○ Unless the operator proves that there is no Ethiopian with the skill set for a specific position, they should not be allowed to hire non-Ethiopian national/Ethiopian descent.

  ○ 4 Call center service license' definition above needs to include any business process that can be done by phone, web or email to be outsourced to other service centres. Given the important principle of licensing related to service and technology neutrality, it would be useful not to limit the call center service definition to telephone only.

- Propose the following addition to item 5(1) [bold and underlined]: "*No person shall operate a Telecommunications Service or Network without obtaining a License **or granted a license exemption** consistent with this Directive or any other regulation.*"

- Propose the following addition to item 5(2) [bold and underlined]: "*No person shall use the Radio Frequency Spectrum without obtaining a License from the Authority, consistent with the Proclamation and this Directive, **unless when using license-exempt frequencies as defined herein or in other relevant directives**.*"

- We propose the following addition to item 6(1) [bold and underlined]: "*(...) pursuant to **open and** transparent **Multi-**Stakeholder Consultation **(including but not limited to all current license holders as well as relevant civil society organizations and groups)** (...)*"

  - *We recommend adding the following item after 6(1): "This license targets persons that may wish to connect specifically defined communities and not-for-profit social-purpose organizations to telecommunications services. A community shall, for this purpose, include a group of persons living in the same geographical location, having particular characteristics and interests in common."[10]*

- We propose the following change to item 6(2) [deletion: strikethrough, addition: bold and underlined]: "*Such an exemption shall not jeopardise the Authority's mission ~~to promote fair competition and investment in the sector~~ **as presented in point 3 of the present Directive.**"

- We propose the following change to item 6(3) [deletion: strikethrough, addition: bold and underlined]: "*The Authority shall, before granting an exemption order, ensure that the service to be provided will not interfere or cause harm to ~~Telecommunications Service providers~~ **other active telecommunication services** or consumers.*"

- We suggest the following complement for item 6(4): the authority should grant exemption licensing requirements for community network providers with fewer than 5,000 users in rural unserved or underserved areas. Moreover, CN providers must notify the authority of their intent to provide service and comply with certain equipment authorization rules in line with article 6(3).

- We recommend that the ECA should be able to align the text of the Directive to the Sustainable Development Goals (SDGs)[11]. In order to do that, we propose the following addition to item "6" [bold and underlined]: ***6(5) The need to align ICT deployment in Ethiopia and the achievement of universal coverage of basic ICT services in the areas of health, education, finance, transport sector and energy, in the terms of the Sustainable Development Goals**.*

- We suggest keeping item 7(1) as it currently stands in the document.[12]

---

[10] Uganda provides currently this type of license:
http://www.connectingafrica.com/author.asp?section_id=761&doc_id=757077&print=yes

[11] For instance: New entrant licensees and technology providers should (1) support local ICT industry growth; (2) be involved in the local ICT education institutes; (3) support digital start-ups based on locally relevant student projects; and among other things (4) be involved in public and private sector supported digital literacy campaigns. For a full description of the SDGs, please see: https://sustainabledevelopment.un.org/sdgs.

[12] For the record: "*7(1) A License issued by the Authority shall authorize its holder to own and operate a Telecommunications Network, and/or provide a Telecommunications Service as prescribed in the License conditions and terms.*"

- After item 7(1) and before item 7(2) as they currently stand in the document, we propose the following addition [bold and underlined] : *"7(x) The Authority shall, before granting a license, ensure that the service to be provided will not interfere or cause harm to ~~Telecommunications Service providers~~ **other active telecommunication services** or consumers."*

● We propose the following addition to the wording of what currently stands as item 7(2) in the document [bold and underlined]: *"A Licensee shall not provide any service or operate any facility that is not expressly stated in its License, **unless when those activities are not directly connected to the purposes of the license**."*

- After item 7(2) and before item 7(3)*, we propose the following addition [bold and underlined] : **"7 (x) The Authority shall consider allowing the Licensee a maximum of (6) months period until the definite receipt of the respective license."**)

● We suggest the following complement for item 7(3)[13]: consider allowing the provider of the service therein referred to operate for an additional period of (6) months until the definite receipt of the respective license.

● Propose the following change [deletion: strikethrough] 8(2): *"An application for a License shall only be valid, if the applicant: (...) c) ~~Possesses sufficient financial capacity to roll-out and operate a network and/or provide long term Telecommunications Service to the satisfaction of the Authority (...)~~"*

● In item 8(2)(c), bearing in mind the recommendation above that suggested the adoption of a *"tiered approach to licensing with lower administrative and financial burdens for smaller operators",* we recommend that the Authority do not restrict the evaluation of a license application solely on the basis of financial sustainability, but also on other criteria such as the relevance of the telecommunication network or service for closing the digital gap as well as its aggregated contribution for local economic and social development, especially in rural and under-served areas.

● In item 10(2), we recommend extending to 20 working days the number of days given for applicants to provide additional information and documents upon a request made by the Authority.

Part Three - On Individual Licenses

● Propose the following addition to 15(2) [bold and underlined]: *"An applicant shall pay the relevant License fee within thirty (30) days of the receipt of the Offer Letter**, with the exemption for cases covered by a Social Purpose License**."*

● Still, relatively to IXPs, we would like to call the attention of the Authority for the unintended consequences that may arise proposed licensing requirements remain as they stand in the text of the Draft Directive under consultation:
  - Classifying IXPs under the Individual Licenses category may subject them to highly restrictive and stringent licensing methods.

---

[13] To keep track of the change, we refer to this item: *"7(3) A person or entity providing a service or facility that has not been designated as a licensable Telecommunications Service shall immediately cease from providing the service or facility once it has been designated as a licensable Telecommunications Service."*

- Barriers to IXPs can deter local content production and hosting which requires expensive international links to access.
- Eliminating barriers to entry for new IXP(s) in any market and avoiding the creation of an IXP monopoly also provides checks and balances complacency. This ensures competition and continued innovation of the IXP(s).
- Licensing an IXP to operate may not encourage or promote local peering.

Part Five - Radio Frequency Spectrum Licenses

- We encourage the Authority to adopt "use it or share it" provisions for unserved and underserved regions to ensure that the goal of affordable access for all is addressed.

- We propose the following change to item 32(1) [deletion: strikethrough, addition: bold and underlined]: *"Where a Licensee fails to renew its Radio Frequency Spectrum License, the Authority shall issue a reminder notifying the Licensee of the expiration of the Radio Frequency Spectrum License and demanding that an application for the renewal of License with the necessary payment be made within* ~~fourteen~~ **twenty** *(~~14~~ **20**) working days."*

- We recommend adding an item under "33. Radio Frequency Spectrum Usage" to provide a definition of "efficient spectrum usage", where the Authority clearly states **"the need to assert efficient usage in an open, bottom-up and transparent way with the support of local stakeholders, including with the support of the private sector and civil society organizations, and the use of technologies such as the GLSD[14] to identify unused spectrum and coverage gaps".** In order to complement that specific clause, we further recommend that in calculating the spectrum usage fee, the Authority should adopt parameters such as the size of the area being covered, and whether the area is urban or rural or whether the spectrum sharing is enabled.

- We suggest the addition of a section under Part Five that specifically signals intent to enable the use of license-exempt spectrum. We propose that frequencies in 2.4GHz and 5.8GHz that are used around the world for WiFi technologies be specifically recognised for their potential to deliver broadband both as an Access Point technology and as a technology for Point to Point (PtP) and Point to MultiPoint (PtMP) broadband backhaul. We suggest that regulations differentiate power output levels for these different use cases of WiFi in order to maximise their utility for broadband access. See Annex 1 for more detail.

Part Six - Cancellation and suspension of licences

- We recommend adding an item under 34(2) with the following cause for the revocation of a license: ***"If the Licensee fails to provide the proposed services to the majority of geographic regions described in the license application."***

---

[14] For further information on GLSD Technologies, please see: http://dynamicspectrumalliance.org/wp-content/uploads/2019/03/DSA_DB-Report_Final_03122019.pdf.

FINAL REMARKS

We are happy to provide the Ethiopian Communications Authority with further information and resources related to the considerations above, the scope of work and deliverables of the Telecommunications Licensing Directive No. 1/2020.

As a final comment on the topic under consultation, we would like to underscore that unlike the banking and financial sector which has been open for local private sector investment for the last over two decades, the telecom sector has been maintained under government monopoly without being open to either local or foreign investment. While it contributed for government investment on infrastructure to expand coverage and reach out to the rural areas, one has to recognize that it is not enough and much more needs to be done to connect the unconnected in the Country.

Also, there have been little opportunities for Ethiopians Nationals/descendents to participate in the national ICT industry. Hence, Ethiopians are tremendously disadvantaged to compete in the privatization of the Ethiopian telecom industry. Independently from the results achieved with the adoption of the Telecommunications directive, it is important that the Authority facilitates the creation of a competitive local ICT private sector and guarantees its sustainability. The government in partnership with the banking and financial institutions and other international funding institutions needs to make funding available for Ethiopian start-ups and tech hubs to participate into the provision of telecom network & ICT services.

Furthermore, it is important to encourage and incentivise both the incoming/incumbent licensee network providers and local start-ups to preferably use and deploy green and energy efficient network technologies.

Last, but not least, cyber security is of national strategic importance. In any case, we believe that cybersecurity oversight requirements for the operation of telecommunication services should be proportional to the scope and scale of the network.

Again, we appreciate the opportunity to contribute to this important work and are looking forward to contributing to the next phase of the process.

APPENDICES / ANNEXES

Appendix I - The Role of Internet Exchange Points (IXPs) for the development of the Internet ecosystem at the national level

A study of the Kenya and Nigeria IXPs in 2012 and 2020 respectively has shown the impact IXPs play in anchoring the development of the Internet ecosystem at the national level.

The Internet Exchange Point Federation (http://www.ix-f.net/ixp-definition.html) defines IXPs as a network facility that enables the interconnection of more than two independent Autonomous Systems, primarily for the purpose of facilitating the exchange of Internet traffic. In practice, the IXP provides neutral, reliable and scalable access to a standard Ethernet Switch. The IXP Switch is configured to offer OSI layer 2 functionality. This means that the networks connected maintain control of their network's reachability – or access other networks – across the IXP switch.

We request the Commission to consider any unintended consequences that may arise as a result of the proposed IXP licensing requirement. As proposed in the Telecommunications Directive, IXPs have been classified under the Individual Licenses category, whose license issuance is subject to highly restrictive and stringent methods. Experience has shown that barriers to entry through regulation could be detrimental to the establishment of IXPs and to the development of the local Internet industry. For instance, experiences drawn from South Africa and the UK show that the emergence of new IXPs without any regulatory barriers was instrumental in advancing the peering ecosystems. Further, in India and Egypt, where national IXPs are regulated, have been unable to realize local content development. Instead the majority of the local content is hosted outside of these countries. The reasons for content being hosted outside is due to lack of local content hosting providers - who emerge as a result of a vibrant local interconnection ecosystem that is anchored around the IXP(s). The knock-on effect from absence of hosting providers, is lack of investment in local carrier neutral data centers. The ripple effect is the inability for the local IXP and country to attract International CDNs to set up points of presence in the local market. The end result is that the majority of the Internet traffic consumed by users will have to be accessed through expensive international links. As a landlocked country, this will be at considerable cost to Ethiopia in the form of forex expenditure for payments of International links that are billed in major global currencies.

Most importantly, a larger percentage of IXPs are set up as neutral non-profit entities - owned and operated by the membership of networks that connect to the IXP. As a result, this ownership model inherits self-regulation in the interest of maintaining neutrality and independence. Most liberalized Internet markets have an initial IXP that serves as a positive indicator of a growing Internet economy. The maturity of the Internet peering ecosystem often results in the emergence of new private or community operated peering locations (IXPs) that offer choice to operators in that market. It is well documented that in the absence of alternative options, a single operator can become complacent. Therefore, eliminating barriers to entry for new IXP(s) in any market and avoiding the creation of an IXP monopoly is also a check and balance for complacency. This ensures competition and continued innovation of the IXP(s).

Further, licensing an IXP to operate may not encourage or promote local peering. In practice, Autonomous Systems that connect to local IXPs also consider the business implications for peering. For instance, it is common and accepted practice for a transit provider(s) not to peer with its customers at an IXP for two reasons. First, it is technically difficult for the transit provider to differentiate which traffic, destined to its customer, should go via the peering or transit link. Second, peering with a customer takes away the commercial incentive for the transit operator. Equally, connecting to an IXP does not mean that the network will announce all its networks at that location for business reasons. In other cases, networks

can operate their links at near maximum capacity and fail to upgrade for various reasons. These issues make it difficult to enforce optimal peering for networks and especially those that feel compelled to be at peering locations they do not wish to be at. As a result, it may be more meaningful for policy and regulations to provide incentives for peering as opposed to regulation that is difficult to enforce.

An alternative approach is to offer incentives over regulation. For instance, having prerequisites for local operators, who bid to offer Internet services to Government and its agencies, to be connected to the local IXPs is a way to ensure that intra-government traffic stays local. This may yield a larger impact compared to regulation. Similar approaches that present fiscal incentive to operators will ensure self-compliance.

Appendix II: Background to policies and regulations supporting community networks

Different international organizations acknowledge the role of community networks in bridging the digital divide, and the type of policy and regulatory support they require.

The Broadband Commission, in its report "Connecting Africa Through Broadband: A strategy for doubling connectivity by 2021 and reaching universal access by 2030" assumes that *"connecting the last 15-20 percent of the population in rural and remote areas, depending on the population density level, requires innovative business models"* [15].

The Report of the UN Secretary-General's High-level Panel on Digital Cooperation, among the four factors to consider to promote inclusivity, it refers to more concrete solutions and considers that to "creating the foundation of universal, affordable access to electricity and the internet will often require innovative approaches, such as community groups operating rural networks, or incentives such as public sector support." [16]

This is consistent with earlier documents such as the Recommendation 19 ITU-D: Telecommunications for rural and remote areas - The World Telecommunication Development Conference[17] that includes the following recommendation:

"*that it is important to consider small and non-profit community operators, through appropriate regulatory measures that allow them to access basic infrastructure on fair terms, in order to provide broadband connectivity to users in rural and remote areas, taking advantage of technological advances;*"

Along these lines, the Broadband Commission also mentions community networks in 3 of its 8 steps within its Roadmap. Of particular relevance is, the text within "Objective 1 Ensure that the commercial broadband ICT market is open and structurally prepared for competitive" which within its "Immediate/Short-Term Actions" recommends "*Adopt open wholesale and retail telecommunications market entry policies, especially competitive and unified licensing regimes [...]. Such policies should also*

---

[15] Broadband Commission for Sustainable Development. 2019. Connecting Africa Through Broadband: A strategy for doubling connectivity by 2021 and reaching universal access by 2030. International Telecommunications Union *and* UNESCO. [Available https://www.broadbandcommission.org/Documents/working-groups/DigitalMoonshotforAfrica_Report.pdf]

[16] Report of the UN Secretary-General's High-level Panel on Digital Cooperation. Available at:https://www.un.org/en/pdfs/DigitalCooperation-report-for%20web.pdf

[17] ITU. 2017. World Telecommunication Development Conference (WTDC-17), Final Report. Buenos Aires, Argentina, 9-20 October 2017, International Telecommunications Union [Available https://www.itu.int/en/ITU-D/Conferences/WTDC/WTDC17/Documents/WTDC17_final_report_en.pdf]

accommodate community and nonprofit focused network operators who offer services in underserved areas".

Similarly, in a recent Declaration from the Specialized Technical Committee on Communications and ICT, African member states have directed the African Union to:
 "*Promote the formulation of strategy and pilot projects for Unlocking Access to Basic Infrastructure and Services for Rural and Remote Areas including Indigenous Community Networks , and develop guidelines on legislation on deployment of technologies and ICT applications, to accelerate infrastructure role out in collaboration with ATU and other regional institutions;*" [18].

Annex I - Why License Exempt Spectrum

Excerpts of the study *"Innovations in Spectrum Management: Enabling community networks and small operators to connect the unconnected"* by Stephen Song, Carlos Rey-Moreno & Michael Jensen

"The value of being connected to a communication network is steadily rising. And yet, half of the world population remains unconnected to the Internet. Traditional solutions are showing signs of having reached their limits. Attempts to address this problem, whether through universal service strategies/funds, private sector initiatives or philanthropy, have met with limited success.

This presents a conundrum for policy-makers and regulators where value continues to accrue to those with affordable access to communication infrastructure while the unconnected fall further and further behind by simply staying in the same place. In order to address this issue, fresh thinking is required. (...)

In particular, regulators and policy makers are encouraged to consider evidence of innovative spectrum management in the following topics:

- *The rapid spread of license-exempt spectrum use in the form of Wi-Fi is an important lesson about the power of frictionless innovation and about the pent-up demand for affordable Internet access. It makes sense for regulators to leverage this success by expanding the range of frequencies designated for license-exempt use, particularly in the 5 GHz and 6 GHz bands, and by further reducing tax and administrative costs associated with their use. Regulators should also consider increasing the power levels allowed when using directional antennas with Wi-Fi for fixed backhaul, recognising the reduced chances of interference with highly directional communication.*

- *In addition to the traditional Wi-Fi license-exempt bands, there are other bands that currently can be used without a spectrum license in many countries. Of particular interest are the 24 GHz band, 60 GHz (V-band) and from 71 GHz onwards (E-band), also known as mmWave as the wavelength of these higher frequencies is in the range of millimetres (mm). These frequencies could be used by small operators and community networks to provide "fiber-like" connectivity. Regulators and policy makers should consider enabling the use of these bands on a license-exempt basis.*

- *The reduced harmful interference from antennas that can focus wireless communication along very narrow beams/paths has led some regulators to expand the use of some bands, like the 11 GHz band for fixed PtP backhaul links. Regulators should consider the market availability of low-cost microwave solutions in 11 GHz and other frequencies and adapt regulation to encourage*

---

[18] Report from the Third Ordinary Session of the African Union's Specialized Technical Committee on Communication and Information Technologies in Sharm El Sheikh, Egypt, from 22 to 26 October 2019
https://au.int/sites/default/files/decisions/37590-2019_sharm_el_sheikh_declaration_-_stc-cict-3_oct_2019_ver2410-10pm-1rev-2.pdf

their uptake. This could take the form of a light-licensing scenario for the cooperative assignment of geo-located frequency assignments.

- *Rising costs for exclusive-use, licensed spectrum, stands in stark contrast to license exempt spectrum that is available at no cost. Dynamic spectrum offers the opportunity to establish a middle ground between both. While TV White Space regulation has been implemented in a few countries, its real potential may yet to be realised as an affordable access technology in developing countries where UHF spectrum is largely unoccupied. Regulators should accelerate the adoption of TVWS regulation and explore the application of these management approaches to other frequency bands.*

- *While demand for spectrum often exceeds its administrative availability in urban areas, large amount of licensed spectrum lies unused in sparsely-populated, economically poor regions. A variety of low-cost 2G and 4G manufacturers have emerged in recent years that offer the potential to dramatically change the cost model for sustainable rural mobile network deployment. Regulators should consider frameworks for sharing spectrum for mobile network services in rural areas that may not have value for incumbent operators, but which will have a significant impact for small operators and community networks. An economic study to understand the economic cost of unused spectrum and approaches to incentivize its use would help to make the business case for this. This could lead to set-asides of small spectrum blocks for those providing affordable connectivity in underserviced areas. This could be a particularly effective strategy to ensure that the upcoming 5G spectrum assignments to do not lead to a deepening of the digital divide.*

- *Auctions as a strategy for spectrum assignment should be reviewed in terms of their role in increasing affordable access in underserved regions. Wholesale approaches to spectrum assignment targeted at difficult to serve regions should be explored. Similarly, more granular approaches to calculate the fees that operators need to pay to use spectrum can open opportunities for frequency reuse and provision of affordable access. The inclusion of factors like the location where the spectrum will be used and assigning smaller weights to the final fee when used in underserviced areas will incentivize the extension of the current infrastructure.*

- *Not all innovations in spectrum management need to come from national regulatory authorities and policy makers. Industry associations have the potential to become venues for self-regulation. They also play a key role in advocacy for spectrum regulation that is aligned with the needs of those providing complementary solutions for universal affordable access. One of the most innovative examples of self-regulation comes from managing the telecommunications infrastructure as a common-pool resource. This generates economies of scale and incentives for infrastructure sharing that contributes to the reduction of costs to the final user.*

- *The innovations presented in this paper should be included in an overall licensing framework that is conducive for small operators and community networks. High licensing fees as well as obligations attached to the license and compliance issues create a barrier for complementary operators to benefit from innovations in Spectrum.*

- *The rise of spectrum as a critical resource in the delivery of affordable access has led to the need for a more inclusive public debate. This places an obligation on regulators to increase transparency and communication with regard to spectrum management issues, licensing and telecommunication infrastructure in general. (...)"*

Annex II - Sources for further consultation

- Policy Brief: Spectrum Approaches for Community Networks

- Infographic: Solving broadband access for SA with TV white spaces

- Study: "Broadband development and connectivity solutions for rural and remote areas".

- Study: Unleashing Community Networks: Innovative Licensing Approaches

- Study: Innovations in Spectrum Management: Enabling community networks and small operators to connect the unconnected

- Study: Supporting the Creation and Scalability of Affordable Access Solutions: Understanding Community Networks in Africa

- Study: Community Connectivity: Building the Internet from Scratch

- Book: Wireless Networking in the Developing World

- Book: TV white spaces: A pragmatic approach

- Report: Becoming Broadband Ready: A Toolkit for Communities

- Online Courses: Introduction to Network Operations; Building Wireless Community Networks

Annex III - ABOUT THE CONTRIBUTORS

Association for Progressive Communication (APC) – www.apc.org

The Association for Progressive Communications is a global network of civil society organisations whose mission is to empower and support organisations, social movements and individuals in and through the use of information and communication technologies (ICTs) to build strategic communities and initiatives for the purpose of making meaningful contributions to equitable human development, social justice, participatory political processes and environmental sustainability.

Bahir Dar ICT4D Information and Communication Technology for Development (ICT4D) Research Center

Bahir Dar Information and Communication Technology for Development (ICT4D) Research Center is established with a view to promoting and advancing the role of ICT for change in the socio-economic landscape of the country. The research center runs five research groups i.e. mobile and wireless communication, Natural language processing, electronic services, Artificial Intelligence and privacy & security.

Council for Scientific & Industrial Research, www.csir.co.za

The Council for Scientific and Industrial Research, commonly known as the CSIR, is a world-class African research and innovation organisation established through an Act of Parliament in South Africa in 1945. The CSIR undertakes directed, multidisciplinary research and technological innovation that contributes to improved quality of life. CSIR acts as an accelerator of socioeconomic prosperity in South Africa and regionally through leading science & technology research & innovation. Collaboratively innovating and localising science & technologies while providing knowledge solutions for the inclusive and sustainable advancement of industry and society. The CSIR works with private-sector industry, state-owned companies, academia, government and other partners in Science & Technology innovations to develop new technologies locally, and localise emerging technologies in collaboration with industry, including those of the 4th Industrial Revolution (4IR) developed overseas.

CSIR has developed a research capacity in effective radio frequency spectrum utilization and telecom regulatory frameworks. CSIR contributes to standards for a new wave of emerging wireless technologies based on spectrum sharing, and community networks to enable affordable broadband & wireless ICT infrastructure. The CSIR works with international standardization organizations to address the under-utilization of over 40-60% of spectrum allocated to existing services, due to the current static spectrum allocation. The CSIR has therefore developed innovative technologies for smart spectrum sharing and is willing to share and help telecom regulators the know-how to avoid wastage of one of the most expensive national resources: the radio frequency (RF) spectrum. The CSIR has developed intellectual property and internationally certified technologies such as the geo-location spectrum database (GLSD) for smart spectrum sharing. The CSIR GLSD can identify and automatically detect unused RF spectrum areas and intelligently allocate them for broadband internet services with minimum interference. CSIR is involved internationally in supporting emerging economy countries to accelerate deployment of affordable wireless ICT infrastructure and promote SMMEs providing broadband internet services. CSIR has built capabilities in affordable broadband connectivity, emerging technology regulation as contribution for the digital transformation of societies, digital inclusion and industrial beneficiation in the upcoming 4th industrial revolution. The CSIR has supported SMME's to deploy TVWS broadband networks in rural underserved communities enabling digital inclusion and socio-economic development in Africa.

Internet Society Ethiopia Chapter – www.InternetSociety.et

Internet Society Ethiopia Chapter (ISOC ET) is a national, non-profit, and multi-professional association established under the Ethiopian law. It is the officially chartered chapter of the Internet Society that aims to promote the development and use of the Internet as a resource to enrich people's life. The chapter advocates for open, globally-connected, secure and trustworthy Internet for everyone with a greater emphasis on addressing local challenges. The chapter was formed by a distinct combination of disciplines from academia and the technical community with memberships from all regions of Ethiopia and beyond. The chapter welcomes all individuals, organizations, and stakeholders with a desire to contribute to the advancement of Internet development in Ethiopia.

Internet Society– www.internetsociety.org

Founded by Internet pioneers, the Internet Society (ISOC) is a non-profit organization dedicated to ensuring the open development, evolution and use of the Internet. Working through a global community of chapters and members, the Internet Society collaborates with a broad range of groups to promote technologies that keep the Internet safe and secure, and to advocate for policies and infrastructure that enable universal access. The Internet Society also provides a corporate home for the administrative entity that supports the Internet Engineering Task Force (IETF).

Since our establishment 27 years ago, the Internet Society has been a leader in pioneering catalytic initiatives that range from capacity building, community support, and building and improving Internet infrastructure and resilience. As we work for an Internet that is open, globally-connected, secure, and trustworthy, the Internet Society has been collaborating closely with global, regional and local entities on the development of Internet infrastructure, technologies, open standards, and policy frameworks. In 2020, we will continue to work towards realizing our vision by building, promoting, and defending a bigger and stronger Internet. A stronger Internet is a precondition to the Internet's use and growth. A bigger Internet means not only increasing the reach and reliability of the Internet in the short term, but also ensuring the foundations for continued growth are solidly in place. Community Networks (CN) are a way to bridge the connectivity gap.

The Internet Society has a long history of making a difference in this area, and to meet current connectivity challenges we have worked to support CN deployments, create capacities in communities by training local people, built new communities of interest, and focused on changing policies and regulations to encourage the development and deployment of Community Networks. We have been working with partners to build Community Networks since 2010, and have continued year-on-year to scale our work and partnerships. Our Activities In the field has shown us the importance of reaching out to communities to get them involved in any effort that aims to bring connectivity to the unconnected, enabling alignment between project development and theneeds/ways of living in specific communities.

Network for Digital rights for Ethiopia - www.ndrethiopia.org

Network for Digital Rights for Ethiopia (NDRE) is an open membership network working to advance digital rights in Ethiopia by creating awareness, establishing communities online and offline, influencing policy, laws and regulations that affect digital rights for the socio-economic advancement of Ethiopia.

Annex IV- Process used by Internet Society Ethiopian chapter to review the draft directive

Since an open, globally-connected, secure and trustworthy Internet for everyone is one of our core objectives as Internet Society Ethiopia Chapter, the privatization of Ethiopian telecom sector is one of the crucial topics that we as a chapter closely follow. Briefly following the public consultation call from Ethiopian Telecommunication Authority on the 27th of April, our chapter has put together a webinar that aimed at producing a collaborative comment to the draft directives.

We strongly believe that the upcoming telecom environment soon to be our official reality will only be as good as the regulation and policies put in place. So, Internet Society Ethiopia Chapter has taken its civil society role to call on its community and relevant stakeholders for a discussion on what matters to us as an Ethiopian. In this first historic online gathering, we were able to attract 197 unique registration from all around the world and employees from different sectors of the economy within and outside of Ethiopia.

Table 1: Categories of Organization from which our first webinar participants belong to

Categories of Organization	List of Organizations
Ethiopian Law Offices	
Ethiopian Private Banks	
Ethiopian Private Technology Companies	
Ethiopian Universities	Addis Ababa University, Bahirdar University, University of Gonder, Addis Ababa Science and Technology University, Wolkite University, Diredawa University,
INGOs working in Ethiopia	USAID, NRC, United Nations

Ethiopian Government Institutions	Ethiopian Gov Institutions (Ministry of Finance, Civil Service Commission, EEP, Ethio telecom and MINT)
External Organizations	Facebook, Microsoft, Telus, VISA, Huawei, African Union Commission, World Wide Web Foundation

The first session mainly intended to give a highlight on the process of the privatization and invited Ethiopian telecom and legal experts to weigh in their opinion. It finally gave a focus direction on three of the below most crucial topics for the chapter to focus and make a contribution.

- Privileges of Ethiopian in the Telecom Sector
- Rural Connectivity
- Consumer Right Protection

The chapter later on created three subgroups to address each topic and conducted several independent meetups that work toward reviewing and commenting on the draft directives. In doing so, as a newly formed association, We have learned the potential of brainstorming and collaborative working for a common objective; contributing towards a better regulatory framework in the Ethiopian telecom industry.

Annex V- Participants of Internet Society Ethiopian Chapter process

First Name	Last Name	Job Title	Organization	City	Country/Region Name
Melaku	Beshah	Country Director	Excellerent Technology Solutions	Addis Ababa	Ethiopia
Tomas	Lamanauskas				United Kingdom
Kebadu	Belachew				United States of America
Romel	Mulugeta				Ethiopia
Michael	Girma				United States of America

Natnael Aklog	Laike	Junior Associate	Mesfin Tafesse & Associates	Addis Ababa	Ethiopia
Tebibou	HAILEYESUS				France
Mastewal	Taddese			NYC	United States of America
Dawit	Kidane	Lawyer	Dawit & Associates Law Office (DALO)	Addis Ababa	Ethiopia
Dagnaw	Wale			AA	Ethiopia
Yoseph	Bekele	Chief Executive Officer	Premier Switch Solutions sc.	Addis Ababa	United Kingdom
BunnaITSec		IT Infrastructure and System Security Manager	Bunna International Bank S.C	Addis Ababa	United States of America
Berhan	T				Afghanistan
Abreham		GENERAL MANAGER	AADVENTURE STUDIO	Addis Ababa	Ethiopia
Abebe	Bekele	ICT Coordinator	iNGO	Addis Ababa	Ethiopia
Abebe Chekol	Hunegnaw	ICT for Development Expert	Independent ICT4D Consultant	Addis Ababa	Ethiopia
Adugna	Necho	Lecturer	Bahir Dar University	Bahirdar	Ethiopia
Abiy	Temesgen	Team Lead			Ethiopia
Samuel	Kassa	Co-CEO and CTO	iWork PLC	Addis Ababa	Ethiopia
Abdisa	Demissie	Lecturer	Bahir Dar University	Bahirdar	Ethiopia

Berhane	Gebreselasie				United States of America
Atnafu	Lambebo			Wolaita Sodo	Ethiopia
selam	Gebrehiwot	Associate	private law office	Addis Ababa	Ethiopia
H. Susan	Atim			Kampala	Uganda
Temtim	Assefa	Assistant Professer	Addis Ababa University	Addis Ababa	Ethiopia
Dawit	Birhanu	CEO	WebSprix	Addis Ababa	United States of America
Abiyu	Seyoum	Senior Network Administrator	University of Gondar	Gondar	Ethiopia
Tsegazeab	Solomon	CEO	Allenatech Electronic Technologies SC	Mekelle	Ethiopia
Roba	Olana				United Arab Emirates
Dessalegn	Yehuala	Lecturer and Independent Researcher	Addis Ababa University, Department of Computer Science	Addis Ababa	Ethiopia
Kidus	Dagnachew	CEO	KULU Network	Addis Ababa	Ethiopia
Mesfin Alemu	Asibe	Fixed service advance support specialist	ethio telecom	Addis Ababa	Ethiopia
Defaru	Afework	Manager	Bank of Abyssinia S.C.	Addis Ababa	Ethiopia
Teshager	Kesamo	IT		Hawassa	Ethiopia
OPPO	A3s				Ethiopia

Emebet	Wondimu	ICT Officer	NRC	Addis Ababa	Ethiopia
Girmay Abadi	Kidanu			Addis Ababa	Ethiopia
Tesfa	Tegegne				United States of America
Teddy	Tassew			Addis Ababa	Ethiopia
Abraham	Minwyelet			Addis Ababa	Ethiopia
abenezer					Ethiopia
Adugna	Bekana				Ethiopia
Yetnayet	Assefa	CEO	InfinEth	Addis Ababa	Ethiopia
Natan	S				Israel
Mo	Hafez				South Sudan
Yohannes	Ayalew	PhD Researcher	Monash University	Melbourne	Australia
Effeson	Hailemichael				Ethiopia
kedir ali	Adem	Cyber Security Manager	Ministry of Finance	Addis Ababa	Ethiopia
Nebiyou	Yirga	Owner	Self Owned	Addis Ababa	Ethiopia
Abraham	Rega	Associate	MTA Law Office	Addis Ababa	Ethiopia
Mahlet Tsegaye	Belete	IT Head	AAWSA	Addis Ababa	Ethiopia
Abel	Solomon	Project Manager	Digital Transformation Program	Addis Ababa	Ethiopia

surafel	Berhanu		Addis Ababa institute of Technology	Addis Ababa	Ethiopia
Wondmagegn		Senior Payment App Analyst	Finance House PJSC	Dubai	United Arab Emirates
Sintayehu Wallelign	Ejigu				Ethiopia
Henok	Sisay	IT Project Manager	B-Square IT Solutons	Addis Ababa	United States of America
Kidist	zegeye	Managing Director	private	AA	Ethiopia
Leyou	Tameru				Ethiopia
Yacob	Tsegaye	Director of Internet Services	WebSprix	Addis Ababa	Ethiopia
Gebremichael	Teklemariam	Enterprise Network Services Team Lead	IE Network solutions PLC	Addis Ababa	Ethiopia
Yemane	Gebretensay	Manager	et	Addis Ababa	United States of America
Kaleab	Berhane	Business Development Officer	Nest Ventures	Addis Ababa	Ethiopia
Yilkal	Abate				Ethiopia
Meried Bekele	Woldemariam				Ethiopia
Ashenafi	W				United States of America
Dawit	Alemseged	Teacher	Bahirdar University	Bahirdar	Ethiopia
Robel	Kitaba		Facebook		Ireland
KIFLE	BERHANE			Addis Ababa	Ethiopia
Samuel	Lemma	Chief accountant	Sse	Hawassa	Ethiopia

abiy	Yeshitilla				Ethiopia
Bahakal Abate	Yimer	Partner	Aman Assefa & Associates Law Office		Ethiopia
RUFAEL	TESFAYE	General Manager	Pixel Technology	addis ababa	Ethiopia
Ermias	Endalamaw	ISP Manager	IE Network Solutions	Addis Ababa	Ethiopia
Andualem Chekol	zerihun				Ethiopia
Nesredien	Suleiman			Addis Ababa	United States of America
Karanja	Gichiri				Kenya
Yemane Gebrehiwot	Bezabih	IS offers program Expert	Ethiotelecom	Addis Ababa	Ethiopia
ermias	teshome				United States of America
Rahel	Kifle				United States of America
Mekonnen	Kassa	Director of Security Engineering	Microsoft	Mekonnen	United States of America
Lamesgin Addis	Almaw	Lecturer	University of Gondar	Gondar	Ethiopia
Hilina	Legesse	Country Manager	Ethiojobs	Addis Ababa	Ethiopia
Behailu	Aregahgn				
HAILESELASSIE	ABEBAW	Owner	Vibrant digital technologies	Kigali	Rwanda
Melaku	Lemma	Lecturer	Addis Ababa University	Addis Ababa	Ethiopia

Gashaw	Assefa		Private	Addis Ababa	Ethiopia
Addisu	Negusie	System Administrator	EIC	Addis Ababa	Ethiopia
Gemechu	Taye	Project Officer, Developers Lead	Eng Ethiopia	Addis Ababa	Ethiopia
Amanuel	Belaineh	Social Media Manager	SimplaTec IT Solutions PLC	Addis Ababa	Ethiopia
Desalegn	Asmamaw	Network Administrator	University of Gondar	Gondar	Ethiopia
Woubakal	Tesfaye			Addis Ababa	Ethiopia
Getachew	Endris	MPLS Network consultant	HUAWEI Techchnologies	Manama	Bahrain
Victor	Ndonnang		Internet Society		United States of America
TEDLA	SEIFU				
Falema	Garedow	Assistant Lecturer		Addis Ababa	
Tsega	Melesse			Addis ababa	Ethiopia
Moges	Beyene				
Bereket	Dessalegn	G. Manager	NODTECH Engineering	Addis Ababa	Ethiopia
Ramasamy	Srinivasan	Professor	AddisAbaba Science and Technology University	Addis Ababa	Ethiopia
Eliyas	Mammo			Addis Ababa	
Kalkidan	Mulugeta	Co-founder	ClearSkies Technology		

Biruh	Gage		TRADE COMPETITION AUTHORITY	Addis Ababa	Ethiopia
hailemariam	tesfaye	attorney	private	Addis Ababa	Ethiopia
Hermela	Asrat	Electrical design expert		Addis Ababa	Ethiopia
Fasil	Mengistu	Engineer		Stockholm	Sweden
Muhammed	Wusayin	Lecturer	Addis Ababa University	ADDIS ABABA	Ethiopia
Kuma	Yadi	Assistance lecturer	Wolkite University	Bahirdar	Ethiopia
Moctar	Yedaly		AU Commission	Addis Ababa	Ethiopia
Roba	Olana				
Endalkachew	Girma	Lecturer	Admas University	Asella	Ethiopia
Dejen	Yemane	PhD candidate	Addis Ababa University	Dessie	Ethiopia
Menberu	Weldemariam	CEO	MYD IT Solutions	Addis Ababa	Ethiopia
Demeke	Ayele	Asst prof.	AAU	Addis Ababa	Ethiopia
Olu	Olutola	Regional Connectivity and Digital Advisor	USAID	Nairobi	Kenya
Ibrahim	Besher			Addis Ababa	Ethiopia
Lisha	Adam				United States of America
Molalign	Asmare		Dire Dawa University	Addis Ababa	Ethiopia

Elias	Worku	Lecturer	Addis Ababa University	Addis Ababa	Ethiopia
Tolassa	Moti	Seller and designer	Tolii electronics and advert	Addis ababa	Ethiopia
Solomon	Bishaw	Managing Director	Instwork Consulting	Addis Ababa	Ethiopia
amnuale	alemu			addis ababa	Ethiopia
Nebyou	T				
Selamawit Tezera	Chaka				Ethiopia
Muluadam	Temesgen	CEO	Instant Systems Software Development PLC	Bahirdar	Ethiopia
Korabza S.	Wonjo	Dean	Wolkite University	Wolkite	Ethiopia
Lawrence	M				
Hafiz	Mo	Information technology consultant			
Michael	Tekie		AXIOM	Addis Ababa	Ethiopia
Zelalem	Getahun				
Dagmawit	Assefa			Wellesley Hills	United States of America
Abebe	Gebrekirstos		Telus	Scarborough	Canada
Naol	Edesa	Google digital skills trainer	Africa118	Addis Ababa	Ethiopia

Yordanos	Nigussie	Key Account Manager	Ethiopian Investment Commission	Addis Ababa	Ethiopia
Pawlos	Girma			Addis Ababa	Ethiopia
Anwar	Adushe				
Sentayehu	dessalegn	Self employed	Private	alexanderia	United States of America
Terefe Hanchiso	Sodango	Researcher and Lecturer	Wolkite University	Wolkite	
Yihenew	Getachew				
Fesseha	Atlaw				United States of America
Firomsa	Wakjira	Lecturer	University	Addis Ababa	Ethiopia
Abeselom Samson	Yosef				
Mulualem	Anley	Lecturer	University of Gondar	Gondar	Ethiopia
Tucha	Kedir	Lecturer,Bule Hora University,Department of IT		Bule Hora	Ethiopia
Minilik	Assefa	D.Project Manager	Civil Service Commission	Addis Ababa	United States of America
Dawit Wubshet	Gebremedhin	Internet analyst		Addis Ababa	Ethiopia
Dawit	Beshah		Visa Inc.	Austin	United States of America
yihenew	mengistu	System administrator	Amhara Region Civil service commission	Bahirdar	Ethiopia
Goitom	Kebede	Senior Programmer and Analyst	OMFI	Hawassa	Ethiopia

jemaneh	aklog				
Bekele	Abera	Vice Dean at College of Science and Technology	Oromia State University	Bishoftu	Ethiopia
Seleshi	Yirga	Network Administrator	Ethiopian Insurance corportion	Addis Ababa	Ethiopia
Mekonnen	Assefa	Executive Director	Kodastropi Marketing Solutions	Addis Ababa	Ethiopia
Mamil	W		Job Riders	Addis Ababa	Ethiopia
Meseret	Wondirad	Research Manager	JETRO	Addis Ababa	Ethiopia
Ashenafi	Adane	CEO	DICO	Addis Ababa	Ethiopia
Jibat	Biri			Nairobi	Kenya
Sinit	Zeru	Senior Advisor	Tony Blair Institute - Government Advisory		United Kingdom
Biruk	Abera			Addis Ababa	Ethiopia
Wendwesen	Endale	Co founder	SelamTech	Addis ababa	Ethiopia
Tewodros	Kerie			Bahirdar	Ethiopia
Yihenew	Getachew	Information Security Analyst	EEP	Addis Ababa	Ethiopia
Ephream	Sileshi		None	Addis Ababa	Ethiopia
Solomon	Zewde	Professor	Higher Institution	Houston	United States of America
Abdurahman	Seid			Addis Ababa	Ethiopia

Daniel	Ergete			Addis Ababa	Ethiopia
asebe	teka	lecturure	wolkite universtiy	wolkite	Ethiopia
Valery	Bishala	Network Assistant	United Nations	Kampala	Uganda
Beruk	Mengestu			Addis Ababa	Ethiopia
Wasyhun	HM				
Eyob	Alemu		Xidian University		United States of America
Tebibou	HAILEYESUS				
Yomile	Yadeta		AfroET		Canada
Amanuel	Teferi				
Natnael	Alemayehu	markting manager	cave zone	Adama	Ethiopia
Mehari	Kinfe			Addis Ababa	Ethiopia
Fitsum	Tadesse	Cyber Security Architect	Private	Chicago	United States of America
Ameha Mekonnen	Asfaw	Chair/Director	NDRE/LHR	ADDIS ABABA	United States of America
Amsalu Tomas	Chuma	Software Engineer, Lecturer	Addis Ababa Science and Technology University	Addis Ababa	Ethiopia
Belay	Telale	Lecturer	University of Gondar	Gondar	United States of America
Bezawork	Tilahun	Assistant Lecturer	Bahir Dar University	Bahirdar	Ethiopia

Gizaw	Simeon	Application and Database Division Manager	VisionFund MFI	Addis Ababa	Ethiopia
Getu	Kumbi	Resident Engineer-RE of Aysha-II Wind Power Project	Ethiopian Electric Power-(EEP)	Addis Ababa	Ethiopia
Abebe	Semie	Researcher	AAU	Addis Ababa	Ethiopia
Selam	Assefa			San Francisco	United States of America
Abel	Alemu			Addis Ababa	Ethiopia
Abdirshikur	Mubarik	Postal regulation excerpt	ECA	Addis Ababa	Ethiopia
Golan	Jamber	Co founder	JERWAY		Israel
Sintayehu Tsigie	Demessie	Health Information Counselor	MoH	Addis Ababa	Ethiopia
Melsew	Belachew	Lecturer	University of Gondar	Gondar	Ethiopia
Yonas	Tsegaye	Software Developer		Carmichael	United States of America
Onica	Makwakwa	Head of Africa, Alliance for Affordable Internet	World Wide Web Foundation	Johannesburg	South Africa
Dawit Bekele	Serbessa	RVPA	Internet Society	Addis Ababa	Ethiopia
Bruk	Geremew	Attorney		Addis Ababa	
Esubalew	Asmare	Lecturer	University of Gondar	Gondar	Ethiopia
Segniwork	Lemma	Telecom Marketing		Addis Ababa	Ethiopia
Ali	Fathy	Project manager	Alkancit	Addis Ababa	Ethiopia

Contact Person for this contribution

Dr. Dawit Bekele, Regional Vice President - Internet Society
bekele@isoc.org, +251913885959