Data Sharing Toolkit

Module 2

Country data profile – Ethiopia

Guide

Ethiopia – Agriculture data country profile

This document is a learning resource for the Bill & Melinda Gates Foundation program officers that provides background information on the data policy and a wider context for agriculture projects in Ethiopia.

This research was produced by the Open Data Institute (ODI) and CABI in March 2020.

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Data and technology – capacity and infrastructure

This section provides an overview of the data and technology capacity of the country and infrastructure currently in place.

What is this country's access to technology and internet like?

- 65% of the Ethiopian labor force is currently employed in the agricultural sector.[1] The government has considered the agricultural sector the main driving force of the Ethiopian economy and with the sector a main focus for government investment. According to Ethiopian officials and the UN Growth and Transformation Plan II, investing in high-tech mechanization plays an important role in their efforts to improve productivity.[2]

- Ethiopia's economic model has prioritised an export-led industrialisation of its agricultural and manufacturing sectors, with a key focus of technological acquisition and upgrading. It is now focusing on technological learning and upgrading, and building innovation capacity.[3]

  - The share of capital goods in total imports relative to consumption goods is one of the highest in Africa, accounting for over 40% of the country's total import bills, indicating the importance of technological learning and innovation.[4]

  - The government has created a number of new ministries to lead this process, including the Ministry of Innovation and Technology (MINT), Information Network Security Agency (INSA), and the Agricultural Transformation Agency (ATA). It has demonstrated its ambitions with projects such as launching its first observatory satellite into space in December 2019.[5]

1. World Bank. 2020 "Employment in agriculture (% of total employment) (modeled ILO estimate) – Ethiopia." Accessed 1 March 2020 https://data.worldbank.org/indicator/SL.AGR.EMPL.ZS?locations=ET

2. Van Olst, Andrew., 2019 "The Future of Work for smallholder farmers in Ethiopia." Policy paper by The West Wing Think Tank for the Dutch Ministry of Foreign Affairs, Accessed 22 June 2020 https://www.government.nl/documents/reports/2019/07/04/the-future-of-work-for-smallholder-farmers-in-ethiopia

3. United Nations Conference on Trade and Development. 2020 "Science Technology and Innovation Policy Review" Accessed 22 June 2020

4. Ibid.

5. Ibid.

- However, there is a gap between policy formulation and implementation, with institutions, goals and guidelines prioritized over actual implementation.[6]
  - Ethiopia has "policies, regulations, background studies and roadmaps in place necessary to kick-start a successful process of technological learning, innovation and technological upgrading… but faces challenges in policy implementation across public institutions related to capacity constraints and sub-optimal allocation of efforts and resources."[7]
- Ethiopia is near the bottom of world rankings on internet access and speed, and it is repeatedly referenced as a key development challenge:
  - International Telecommunication Union (ITU) – Ethiopia Profile (2018)
  - Internet World Stats – Africa Internet Users 2020
  - Huawei Global Connectivity Index (GCI) – Country Profile Ethiopia
  - Speedtest Global Index – Ethiopia September 2020
- Less than half of Ethiopians are mobile phone users and less than a quarter are online. These conditions have made it difficult for the country to embrace the digital economy and leverage innovations such as mobile banking, mobile money services and mobile telecom services.[8]
- The government has also historically shut down the internet across the nation in response to periods of local and civil unrest, including once reportedly to stop students cheating in national examinations.[9]

[6] United Nations Conference on Trade and Development. 2019, "How to launch Ethiopia's tech and innovation lift-off" Accessed 22 June 2020 https://unctad.org/en/pages/newsdetails.aspx?OriginalVersionID=2246

[7] Ibid.

[8] Fokui, Roku., 2019. "In Ethiopia, digital development just took a major leap forward." World Bank Blogs, Accessed 22 June 2020 https://blogs.worldbank.org/digital-development/ethiopia-digital-development-just-took-major-leap-forward

[9] Bright, Jake., 2019. "Days after pledging to expand internet, Ethiopia's government shuts it off." Accessed 22 June 2020 https://techcrunch.com/2019/06/14/days-after-pledging-to-expand-internet-ethiopias-govt-shuts-it-off/?guccounter=1

- The internet in Ethiopia has largely been controlled by one government owned telecom, Ethio Telecom, though there is commitment from the government to partly privatize it.[10]

  - Proclamation for the Regulation of Communications Services (June 2019): a landmark piece of legislation introducing an entirely new regulatory framework that will allow for the development of an open telecom market and reinforcing consumer rights.[11]

  - The law already provides for the establishment of an independent regulatory body, the Ethiopian Communication Authority (ECA). The agency will be responsible for regulating the telecom sector as well as the technical elements of broadcasting, and for granting licenses to new operators in line with standard practices around the world. It will also oversee important regulatory issues, such as the spread of mobile money.[12]

- Ethio Telecom is a member of GSMA, the global organisation representing the mobile industry. GSMA utilises its member telecom operator data in its policy and advocacy work, notably its Mobile for Development initiative which aims to drive innovation in digital technology to solve development challenges.[13]

[10.] Fokui, Roku., 2019. "In Ethiopia, digital development just took a major leap forward." World Bank Blogs, Accessed 22 June 2020 https://blogs.worldbank.org/digital-development/ethiopia-digital-development-just-took-major-leap-forward

[11.] Federal Democratic Republic of Ethiopia. 2019. "Proclamation for the Regulation of Communication Services" https://eca.et/wp-content/uploads/2019/10/Communications-Service-Proclamation-No.-1148-2019.pdf

[12.] Ibid.

[13.] GSMA.,"Mobile for Development." Accessed 23 June 2020 https://www.gsma.com/mobilefordevelopment/

Is there existing capacity related to data management in this country?

- Public universities have increased from four to more than 40, while undergraduate enrollments have increased to more than 800,000, with female students accounting for 35% of tertiary enrolment in 2015/16.[14]

  - "The Government intends to develop competent local technicians, engineers and scientists through national education and training systems. Around 70% of university entrants are enrolled into science and technology related subjects. There are concerns, particularly in the business community, that the expansion has been achieved at the expense of quality and standards...The poor quality of education contributes to a large percentage of unemployed graduates."[15]

- The Ethiopian Government Technical and Vocational Education Training programme is also aimed at providing the technical skills that young people need to work in productive sectors.[16]

- The state hosts an impressive number of research institutes, though R&D in Ethiopia is uneven in terms of regional dispersion and sectoral priorities.[17]

  - 73% of the country's R&D institutions are concentrated in three geographical locations, the Oromia subregion, Addis Ababa city and the Amhara subregion.[18]

  - The country's research strengths are confined to agriculture and health-related sectors.[19]

14. United Nations Conference on Trade and Development. 2020 "Science Technology and Innovation Policy Review" Accessed 22 June 2020 https://unctad.org/en/PublicationsLibrary/dtlstict2020d3_en.pdf

15. Ibid

16. Ibid

17. Ibid

18. Ibid

19. Ibid

- R&D capacity is also underutilized.[20]
  - Among agricultural research institutions, scientific equipment was not operational 83% of the time, with lack of skilled or professional technicians identified as the main cause of poor operation, maintenance or repair of equipment.[21]
- Other organisations with data management specialisms include:
  - Ministry of Innovation and Technology
  - Ministry of Science and Higher Education
  - Central Statistical Agency of Ethiopia (CSA)
  - Ethiopian Geospatial Information Institute (EGII)
  - National Data Management Center (NDMC) for Health
  - Ethiopia Institute of Agricultural Research (EIAR)
  - Ethiopian Standards Agency (ESA)
  - National Metrology Institute (NMI)
  - Information Network Security Agency (INSA)
  - Technology and Innovation Institute
  - Science and Technology Information Center (STIC)
  - Ethiopian Space Science and Technology Institute (ESSTI)
  - Regional Agricultural Research Institutes
  - Ethiopian Development Research Institute (EDRI)
  - Water and Land Resource Center
- Addis Ababa is the headquarters of the UN Economic Commission for Africa and the African Union

20. *Ibid*
21. *Ibid.*

Wider political and technological trends

This section provides an overview of the wider political and technological landscape that may impact data collection and publication.

Has there been any recent political volatility? Could this volatility be linked to land and borders, and therefore potentially impact agriculture data collection and publication?

- Until the launch of its successor party, the Prosperity Party, in December 2019, the Ethiopian Peoples Revolutionary Democratic Front (EPRDF) have been in power since the end of the Ethiopian Civil War in 1991. They have operated a state led development model which has been successful in reducing poverty and contributing to manufacturing and agricultural industrialization in the country.[22]

- Ethiopia is a highly ethnically and regionally diverse country inhabited by over 80 different tribes and ethnic groups speaking more than 70 mother tongues. Tensions under the previous EPRDF governments and the current Prosperity Party government of 2020 have seen mounting anti-government protests.

- The protests which led to the resignation of former PM, Hailemariam Desalagn, started as protests from Oromo farmers (the largest Ethiopian ethnic group) against the expansion of Addis Ababa, a national capital territory that is a political and administrative enclave within the Oromia region, into nearby Oromo farming lands. These protests also saw some foreign-owned businesses targeted, though this has not occurred since.[23]

- Prime minister Abiy Ahmed came to power in 2018 and embarked on a wave of liberalisation reforms, including releasing thousands of political dissidents, opening up political

[22] Clapham, Christopher., "Th Ethiopian Developmental State", Third World Quarterly, 39:6, 1151-1165, https://www.tandfonline.com/doi/abs/10.108 0/01436597.2017.1328982?src=recsys&journalCode=ctwq20

[23] Aglionby, John., and Edith Honan, "Ethiopian protesters ramp up attacks on foreign companies." Financial Times, Accessed 22 June 2020 https://www.ft.com/content/a1ceca0e-8b11-11e6-8cb7-e7ada1d123b1abs/1 0.1080 /01436597.201 7.1328982?src=recsys&journalCode=ctwq20

discourse and resolving the long-running border war with Eritrea. Following these reforms however, previously exiled political forces returned to Ethiopia, raising the political temperature and contributing to ongoing tension between some regions.

Is there ongoing political tension? Could this tension be linked to land and borders, and therefore potentially impact agriculture data collection and publication?

- Tensions have continued to flare across the country, including the 2019 Amhara Region coupe d'état attempt, the Hachalu Hundessa riots in 2020, and violent attacks elsewhere in the country

- Following the government's political liberalisation, boundaries between the ethnically aligned regions have continued to be contentious making collecting boundary data difficult.

Has there been any technology recently introduced to the country that could affect the agricultural data landscape? Have any technologies been replaced, or made obsolete or undesirable?

- The Government of Ethiopia established the Agricultural Transformation Agency (ATA) by Federal Regulation in December 2010 as a catalyst for positive, transformational and sustainable change. The agency has introduced a number of important projects:

  - The Ethiopian Soil Information System (EthioSIS)

  - Shallow Groundwater Mapping

  - Visual Institution Survey

  - Summary Tool for Agriculture (VISSTA) projects

- EDACaP – a digital agro-climate advisory platform, aimed at putting resilience at the center of agricultural livelihoods. EDACaP's pilot phase has already reached 82,000 smallholder farmers across Ethiopia and is expected to reach 16.7 million farmers once scaled through the Ministry of Agriculture (MoA) and the country's more than 60,000 agricultural extension agents.[24]

- YeZaRe, developed by the social enterprise Echnoserve, is a digital mobile system that provides weather and market data to smallholder farmers, as well as connecting these farmers to markets, ensuring their income and safeguarding revenues by reducing reliance on middlemen.

- Ethiopia launched its first observatory satellite into space in December 2019. The remote sensing satellite is to be used for agricultural, climate, mining and environmental observations.The government also plans to launch a communication satellite in three years.[25]

[24.] Samuel, Sebele., "How Ethiopia is harnessing technology to boost smallholder agriculture in the wake of climate change" The Reporter, Accessed 22 June 2020 https://www.business-humanrights.org/en/how-ethiopia-is-harnessing-technology-to-boost-smallholder-agriculture-in-the-wake-of-climate-change

[25.] Adegoke, Yinka., "Ethiopia has launched its first satellite into space with China's help", Quartz Africa, Accessed 22 June 2020 https://qz.com/africa/1772671/ethiopia-launched-its-first-space-satellite-with-chinas-help/

Data regulation and laws

This section provides an overview of the general data policy context.

[26] Ministry of Communication and Information Technology, 2018. "The Consultation on the Recommendations and Working Text of the National Open Data Policy of The Government of Ethiopia." Accessed 22 June 2020 https://drive.google.com/file/d/1TRiS6K7SKz6d3JwZpR41HJSZoNl6vRJk/view

[27] Ibid.

[28] Ibid.

To what extent is there an open data policy or strategy for this country, including open data or data access?

- The Consultation on the Recommendations and Working Text of the National Open Data Policy of The Government of Ethiopia was launched by the Government of Ethiopia in January 2018. It aims to enable the provision of, and provide a platform for, the proactive and open access to data generated through public funds by the various departments and agencies of the Government of Ethiopia.[26]

  - This was built on an Open Data Readiness Assessment (ODRA) Study in June 2014. According to the 2014 ODRA, compared to other countries in the region, Ethiopia has a remarkably strong supply side. A Right to Information framework is in place and there is a well-established political will to introduce an Open Data Initiative across ministries and agencies.[27]

  - Although the draft policy document emphasizes open data, it also recognizes the existence of restrictions imposed by organizations:[28]

    - Restricted data: Data accessible only through a prescribed process of registration and authorization by respective departments and organizations.

    - Sensitive data: As defined in various acts and rules of the government.

    - Shareable data: Data not covered under the scope either of restricted or 'sensitive' with regards to privacy, national security,

public order and safety, or other confidentialities. This category of data can be accessed freely and openly.

- The National Open Data Portal has been launched and several key ministries have established procedures to collect and manage data, as well as cross-government initiatives.

- Sectoral organisations instituting data policies including the Public Health Institute Guideline for Data Management and Sharing[29] and the ATA Geospatial Data Security and Sharing Guidance[30]:

  - Both documents are strong on summarising the lengthy list of challenges facing the adoption of geospatial and health data policies, including institutional, legal, policy and technological challenges. They have identified that they have a complete lack of standards both technically and organisationally, however there is limited understanding of what kinds of specific issues they can solve first or how they can solve them.

  - The positive socioeconomic benefits of sharing data are acknowledged, and there is a recognition of how not sharing data is currently impacting resources. Although next steps are not clear, there is a strong understanding of the potential benefits are, such as:

    - avoiding the duplication of efforts in data collection

    - improving data quality

    - increasing the number of complementary data resources that may support sectors' missions

    - ensuring that data is created once, maintained regularly, and used many times

[29] Ethiopian Public Health Institute, 2016. "Public Health Institute Guideline for Data Management and Sharing." Accessed 22 June 2020 https://drive.google.com/drive/u/0/folders/1AWn4Sgfgr3Vd6CSL1avie-u2tV8ZQYRF

[30] Agricultural Transformation Agency, 2018. "ATA Geospatial Data Security and Sharing Guidance" Accessed 22 June 2020 https://drive.google.com/file/d/1U1lSBDgFXgBMum1Tbd1SxIi1s9iObkTG/view

- enabling organisations to be respected as valued data producers
- The strategies tend to have ambitious high level goals (collecting all national health data by 2021) but lack implementation descriptions or guidance, for example around the standards which need to be used.

- The Soil and Agronomy Data Sharing Policy of the Government of Ethiopia.[31]
  - Owned by the Ministry of Agriculture, the policy is designed to provide an overarching framework that must be applied to Soil and Agronomy Data sharing in Ethiopia, and it is incumbent on all Data Rights Owners and Data Stewards to implement the policy into their working processes.
  - Scope: To increase the availability and use of Soil and Agronomy Data to support the creation of market-led modern agriculture.
  - Data ownership:
    - Any soil and agronomic data collected, created or generated from Ethiopian soil is owned by an Ethiopian data steward.
    - Permissions to allow soil or plant material to be removed from Ethiopia for analysis should ensure resulting soil and agronomy data is shared, in line with this policy.
  - All Soil and Agronomy Data relating to Ethiopian soil must be findable, accessible, interoperable and reusable (FAIR).
    - Data is stored in a publicly accessible database to be developed by the MoA.
      - Metadata should be collected for both new and pre-existing Data.
      - Data will be stored electronically and machine-readable by default.

- Data should conform to agreed open standards with a standardised data sharing process across organisations to be developed by MoA and harmonised with appropriate international standards.

  - Existing organisational processes and newly designed processes must conform with this process.

  - If any organisation or party can not store data in a defined standard it should be stored with the Ministry of Agriculture under an appropriate data licence.

  - Soil and agronomy data and metadata should be available to share as soon as possible after collection or creation unless exempted by MoA guidelines.

  - Soil and agronomy data to be restricted as confidential data if the process set by MoA and authorities to determine confidential data is followed.

  - Data will be stored with clear permissions, including rights to use and share (licenses) and where possible published as open data.

- In September 2019, the Ministry of Science and Higher Education of Ethiopia (MoSHE) adopted a national open access policy for higher education institutions. The policy requires universities to ensure that all publications based on publicly-funded research are deposited in the National Academic Digital Repository of Ethiopia (NADRE) as well as in an institutional repository, if the university has one. NADRE is supported by MoSHE, and also harvests and aggregates deposits from institutional repositories.[32]

32. Mekonnen, Solomon., 2019 "Ethiopia adopts a national open access policy." Open Knowledge Foundation, Accessed 22 June 2020 https://blog.okfn.org/2019/10/09/ethiopia-adopts-a-national-open-access-policy/

Is the country a member of any international organisation that promotes a specific type of data access, use and sharing?

- The African Union established the Privacy and Personal Data Protection Guidelines for Africa as a blueprint for member states' data protection policies in 2018.

- The African Union Convention on Cyber Security and Personal Data Protection was adopted in 2014 to establish a 'credible framework for cybersecurity in Africa through organization of electronic transactions, protection of personal data, promotion of cyber security, e-governance and combating cybercrime.'[33] The convention requires members to protect data security and notify users of risks to data about them and of data transfers to third parties.

  - Ethiopia is yet to ratify the convention.

- In 2015 the Africa Data Consensus was adopted by the African Development Bank, African Union Commission and Economic Commission for Africa following a High Level Conference on Data Revolution in Addis Ababa. The consensus is 'a partnership of all data communities that upholds the principles of official statistics as well as openness across the data value chain, which creates a vibrant data ecosystem providing timely, user-driven and disaggregated data for public good and inclusive development'.[34]

  - The African Statistical Yearbook is part of an effort by the African Development Bank Group (AfDB), the African Union Commission (AUC), and the UN Economic Commission for Africa to provide users with quality statistical information to inform Africa's development initiatives.

[33.] African Union, 2020 "The African Union Convention on Cyber Security and Personal Data Protection." African Union, Accessed 22 June 2020 https://au.int/en/treaties/african-union-convention-cyber-security-and-personal-data-protection

[34.] African Union-Economic Commission for Africa, 2015 "Africa Data Consensus." United Nations Economic Commission for Africa, Accessed 22 June 2020 https://repository.uneca.org/bitstream/handle/10855/22669/b1152568x.pdf?sequence=1&isAllowed=y

- The Africa Information Highway (AIH) was established as part of the AfDB's statistical capacity building program (SCB) in Africa. AIH is a mega network of live open data platforms (ODPs) electronically linking all African countries and 16 regional organizations. The overall objective is to significantly increase public access to official and other statistics across Africa, while at the same time supporting African countries to improve data quality, management and dissemination.

- The United Nations Global Geospatial Information Management (GGIM) Africa Action Plan was established to develop common frameworks, standardization and compliance for interoperable geospatial information. The action plan aims to enforce specific geospatial information policies in its member states so that national geospatial datasets are available, discoverable, better accessible, shareable, interoperable and reusable.

- World Intellectual Property Organisation (WIPO): Ethiopia is a signatory to the WIPO Convention on accession. WIPO's two main objectives are to promote the protection of intellectual property worldwide, and to ensure administrative cooperation among the intellectual property Unions established by the treaties that WIPO administers.

- World Bank Access to Information policy is based on the concept that any information held by the bank is publicly accessible including a range of specific Ethiopia indicators and datasets. The policy allows for an exception though for 'Information Provided by Member Countries or Third Parties in Confidence'.

- The Food and Agriculture Organisation (FAO) promotes open data access in its guidelines for sharing through the Global Soil Partnership and supports minimal additional restrictions on use for those countries without open data policies.

- UN Food and Agricultural Organisation: FAOSTAT provides free access to food and agriculture data for over 245 countries and territories and covers all FAO regional groupings. Data is subject to national confidentiality policies.

- A number of organisations and donors have also worked with Ethiopian government and agencies to improve data access: the Coalition of the Willing (CoW), a voluntary group of people and institutions involved in agricultural research including the EIAR, the Alliance of Bioversity, Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), CABI and the ODI received funding from the Bill and Melinda Gates Foundation to produce the Soil and Agronomy Data Sharing Policy for the Government of Ethiopia.

What data protection laws apply in this country?

Though Ethiopia has not enacted a specific law to address personal data collection and processing issues, the country's legislative framework is understood to require that personal data be collected and processed with due care and only for an intended lawful purpose.

- Ethiopia has several laws that relate to privacy and data security, including the 1995 Constitution of the Federal Democratic Republic of Ethiopia, the 2005 Criminal Code of the Federal Democratic Republic of Ethiopia, the 1960 Civil Code, the Computer Crime Proclamation No. 958/2016 and the

Freedom of the Mass Media and Access to Information Proclamation No. 590/2008.[35]

- Detailed analysis of these laws with regard data protection can be found in Privacy and Personal Data Protection in Ethiopia. In summary: 'Findings from the report reveal that privacy is a legal and practical concept that has not fully been conceptualised in Ethiopia. Despite the provision of privacy protection in the constitution and several subsidiary laws, the existence of similar laws limits the right to privacy. Findings further indicate that several Ethiopians have little regard to personal privacy or its protection. This has a lot to do with the social, economic and political state of the country. Findings also indicate that social and cultural factors coupled with the lack of awareness about privacy protection contribute to the poor state of data protection and privacy in Ethiopia. This is worsened with the massive collection of personal data by both government organs and non-governmental actors without adequate legal, regulatory and policy frameworks.'[36]

- The Ministry of Communication and Information Technology (MCIT) prepared a draft data protection proclamation in 2009 and revised it in 2010. The draft has not been adopted, though the text can be seen below:[37]

  - "personal data" means data which relate to a living individual who can be identified: i. from those data, or ii. from those data and other information which is in the possession of, or is likely to come into the possession of, the data controller, and includes any expression of opinion about the individual and any indication of the intentions of the data controller or any other person in respect of the individual.'[38]

35. *Ibid*.

36. Taye, Berhan., and Roman Teshome, 2018 "Privacy and Personal Data Protection in Ethiopia." CIPESA, Accessed 22 June 2020 https://cipesa.org/?wpfb_dl=301

37. Taye, Berhan., and Roman Teshome, 2018 "Privacy and Personal Data Protection in Ethiopia." CIPESA, Accessed 22 June 2020 https://cipesa.org/?wpfb_dl=301

38. *Ibid*.

- The Consultation on the Recommendations and Working Text of the National Open Data Policy of The Government of Ethiopia states that a National Data Protection Law is in place: 'The Government of the Federal Democratic Republic of Ethiopia has put in place laws and legislation to promote access to online data and information. These include Freedom of the Mass Media and Access to Information (Proclamation No. 590/2008); the National Data Protection Law, E-commerce Law, Computer Misuses and Cybercrime Law and the E-signature Law. The enactment of these laws provides for the availability of data in open formats while safeguarding the privacy and security of institutions and individuals.

  - 'Section 6.7 lays out the legal framework: However, there is currently no specific legislation setting out the rules and guidelines on access and re-use of government data, and the existing legal framework is limited on regulating the type and amount of data to be released."

  - '….In addition, the policy recognizes a need to enact new laws and regulations, or amend the existing ones including those related to Right to Information, Privacy and Data Protection and other laws relevant for the implementation of Open Government Data.'[39]

- A number of sources, however, state the absence of a national data protection law[40], including:

  - Global bodies such as the United Nations Conference on Trade and Development (UNCTAD)[41]

  - Ethiopian legal organisations such as Abyssinia Law[42]

[39] Ministry of Communication and Information Technology, 2018. "The Consultation on the Recommendations and Working Text of the National Open Data Policy of The Government of Ethiopia." Accessed 22 June 2020 https://drive.google.com/file/d/1TRiS6K7SKz6d3JwZpR41HJSZoNl6vRJk/view

[40] Taye, Berhan., and Roman Teshome, 2018 "Privacy and Personal Data Protection in Ethiopia." CIPESA, Accessed 22 June 2020 https://cipesa.org/?wpfb_dl=301

[41] United Nations Conference on Trade and Development (2020), "Data Protection and Privacy Legislation Worldwide", https://unctad.org/en/Pages/DTL/STI_and_ICTs/ICT4D-Legislation/eCom-Data-Protection-Laws.aspx

[42] Abyssinia Law (2015), "Sources of Ethiopian Privacy Law", https://www.abyssinialaw.com/blog-posts/item/1544-sources-of-ethiopian-privacy-law

- International legal organisations such as DLA Piper[43]
- Civil society organisations such as Global Information Society Watch (GISWatch)[44] [45]

What other laws apply in this country that might affect the use of data and agriculture data in particular?

- An Information Network Security Agency policy document on sharing geospatial data (2016) states the importance of reducing reliance on foreign technology through building national spatial technology capabilities, as well as spatial information collection, storage, processing and distribution processes.
The policy requires data gathering and storage to conform to national security policies. As the agency is mainly concerned with national security, data gathering, storage and sharing is based on its national mandate. Although the policy is applicable to organizations and individuals engaged in the spatial information and technology sectors in Ethiopia, meaning all organizations and individuals involved in spatial information generation, storage and use have to abide by this policy and governed by subsequent legal documents.[46]
- See section on agricultural laws for detail specific to agricultural data.

43. DLA Piper (2019), "Data Protection Laws Of The World", https://www.dlapiperdataprotection.com/index.html?t=law&c=ET

44. Global Information Society Watch (2014), "Ethiopia" https://www.giswwatch.org/en/country-report/communications-surveillance/ethiopia

45. DLA Piper, "Data Protection Laws of the World". Accessed 21 June 2020 https://www.dlapiperdataprotection.com/index.html?t=law&c=ET

46. Coalition of the Willing (CoW), 2020. "Coalition of the Willing for soil and agronomy data access, management and sharing: Data Sharing Guidelines." Ethiopian Institute of Agricultural Research (EIAR), Available at 22 June 2020 https://cgspace.cgiar.org/handle/10568/107988

To what degree are data protection laws, and other laws that might affect the use of agriculture data, devolved, for example, to regions, states and cities?

- Laws concerning data are enacted and enforced through federal institutions, however a number of agriculture laws require community participation or stipulate ownership of community knowledge or resources. See section on agricultural laws for more detail.

What organisations are responsible for enforcing data protection laws, and other laws that might affect the use of agriculture data?

- Ethiopian courts are responsible for enforcing data protection and privacy provisions in the law.[47]

- Proclamation No. 808/2013 updating the mandate of INSA to formulate national policies, laws and standards to ensure security of information and oversee its enforcement.[48] The draft data protection law also makes INSA a regulator, mandatorily registering all personal data processing entities, save those only doing simple processing. However, indexes state that there is no data protection authority[49] and the INSA mandate has now been transferred to the EGII.

- The Ministry of Communication and Information Technology (MCIT) partly takes on oversight of the collection and processing of data by public and private bodies, but has neither the full mandate nor the required expertise to undertake this task.[50]

47. DLA Piper, "Data Protection Laws of the World". Accessed 21 June 2020 https://www.dlapiperdataprotection.com/index.html?t=enforcement&c=ET&c2=

48. Federal Negarit Gazeta, 2013. "A Proclamation to Re-Establish the Information Network Security Agency" Accessed 25 June 2020 https://chilot.files.wordpress.com/2014/09/proclamation-no-808-2013-information-network-security-agency.pdf

49. DLA Piper, "Data Protection Laws of the World". Accessed 21 June 2020 https://www.dlapiperdataprotection.com/index.html?t=authority&c=ET

50. Taye, Berhan., and Roman Teshome, 2018 "Privacy and Personal Data Protection in Ethiopia." CIPESA, Accessed 22 June 2020 https://cipesa.org/?wpfb_dl=301

To what extent are data protection laws and other laws that might affect the use of agriculture data enforced?

51. *Ibid.*

- In both the private and public sector, organisations continue to collect personal data without putting in place terms and conditions of use or adequate transparency safeguards.[51]

- The low level of general awareness on data protection issues also means that cases are not brought to courts where legislation may be enforced.

- Due to the lack of mandate from MCIT, organizations with institutional policies and guidelines are relied on, though without stringent enforcement measures. For example, organisations that hold soil and agronomy data must implement processes that enact the Soil and Agronomy Data Policy to be deemed acceptable data stewards by the Ministry of Agriculture.

What is this country's ranking on the Open Data Barometer?

- 81, according to the 4th edition in 2016

Agriculture law

The next section gathers any agriculture specific context that would need to be considered for a project.

What types of laws exist in this country that affect agriculture more widely, and any specific area the investment is looking into, and what organisations are involved?

Laws impacting agriculture:[52]

- National Seed Industry Policy (FDRE, 1992)

  - Encourages the participation of farmers in germplasm conservation, seed production, and distribution.

  - Aims to ensure the collection,conservation, evaluation and use of plant genetic resources by national research and development programs.

  - Affirms farmers' rights to share benefits arising from the use of local varieties they have developed over generations.

- A National Seed Industry Agency Establishment Proclamation (FDRE, 1993b)[53]

  - The Agency was mandated to "issue regulations and procedures regarding import and export of seeds; and prepare a list of non-restricted and restricted crops, varieties and hybrids for use of foreign seed companies and joint ventures."

- The Constitution of the Federal Democratic Republic of Ethiopia (FDRE, 1995b)[54]

  - Asserts the importance of peoples' rights to full participation in the planning and implementation of environmental policies and development plans.

52. Mulesa, Teshome Hunduma., Ola Westengen, 2020. "Against the grain? A historical institutional analysis of access governance of plant genetic resources for food and agriculture in Ethiopia." The Journal of World Intellectual Property, 39 (1), Accessed 25 June 2020 https://www.researchgate.net/publication/338843565_Against_the_grain_A_historical_institutional_analysis_of_access_governance_of_plant_genetic_resources_for_food_and_agriculture_in_Ethiopia

53. Ibid.

54. Ibid.

- Stipulates law enactment for the conservation and sustainable utilization of natural resources for a healthy ecosystem and the well being of the people.

- Establishes that the ownership of natural resources lies with the state and the people of Ethiopia.

- Stipulates the deployment of these resources for the benefit and development of the people.

- Environmental Policy of Ethiopia (FDRE, 1997a)[55]

  - Ensures community participation and use of traditional methods and knowledge to promote in situ and ex situ systems as the primary target for conservation and sustainable use of wild and domesticated biological diversity.

  - Ensures that the import, export and exchange of genetic resources is subject to legislation, for example, to ensure the safeguarding of community and national interests, the fulfilling of international obligations and national plant quarantine regulation.

- Patent law-Inventions, Minor Inventions and Industrial Designs (FDRE, 1997b)[56]

  - Prohibits the exclusive appropriation of any life form or patentability of "plant varieties"and "essential biological processes" for the production of plants.

- National Policy on Biodiversity Conservation and Research (FDRE, 1998a)[57]

  - Asserts the importance of community participation to ensure that Ethiopia's biological resources are conserved, developed, managed and sustainably utilized for the country's overall socioeconomic development.

55. *Ibid.*
56. *Ibid.*
57. *Ibid.*

- Asserts national sovereignty over genetic resources and develops mechanisms (access and benefit sharing, biosafety, plant breeders' and farmers' rights regulations) to ensure the effective control of the movement and management of genetic resources.

- Supports the implementation of international conventions, agreements and obligations on biodiversity to which Ethiopia is a party, based on national legislation.

- Environmental Impact Assessment (EIA) Proclamation No. 299/2002[58]

  - Requires an EIA process for any planned development project or public policy which is likely to have a negative impact on the environment, and must be authorized by the relevant environmental agency.

  - EIA reports must be made accessible to the public and provide for public input.

- National Biodiversity Strategy and Action Plan (IBC, 2005)[59]

  - Ensures the conservation and sustainable utilization of Ethiopia's biodiversity and ecosystems for improving food security and alleviating poverty.

  - Asserts national sovereignty over genetic resources and establishes targets to develop laws and regulations to control access to genetic resources and ensure equitable benefit-sharing.

- Access to Genetic Resources and Community Knowledge, and Community Rights (FDRE, 2006a), and Council of Ministers Regulation (FDRE, 2009)[60]

  - Intends to facilitate farmers' and communities' access to ex situ and in situ/on-farm plant genetic resources.

[58] Federal Negarit Gazeta, 2002. "Environmental Impact Assessment (EIA) Proclamation No. 299/2002" Accessed 25 June 2020 http://extwprlegs1.fao.org/docs/pdf/eth44281.pdf

[59] Mulesa, Teshome Hunduma., Ola Westengen, 2020. "Against the grain? A historical institutional analysis of access governance of plant genetic resources for food and agriculture in Ethiopia." The Journal of World Intellectual Property, 39 (1), Accessed 25 June 2020 https://www.researchgate.net/publication/338843565_Against_the_grain_A_historical_institutional_analysis_of_access_governance_of_plant_genetic_resources_for_food_and_agriculture_in_Ethiopia

[60] *Ibid*.

- Provides a special access permit for the same resources (for non-commercial purposes) for national public research institutions and intergovernmental institutions based in Ethiopia, in order to enhance research and development of the country.

- Establishes that the ownership of genetic resources lies with the state and that the ownership of community knowledge lies with those communities.

- Asserts that access to plant genetic resources is subject to prior informed consent of the competent authority (EBI), a benefit sharing agreement and for international users, a letter from the competent authority of the applicant's domicile assuring that it shall uphold and enforce the access obligations.

- The second Growth and Transformation Plan/ GTP II (FDRE, 2016)[61]

  - Ensures community participation to increase conservation and sustainable use of biodiversity.

  - Aims to increase access and benefit sharing licenses to meet food security goals and economic growth.

- Plant Breeders' Rights Proclamation (FDRE, 2006b, 2017)[62]

  - Recognizes the enormous contribution of smallholder farmer and pastoral communities in conserving plant genetic resources, and provides them the right to save, use, exchange and sell farm-saved seed of any variety (including protected varieties) at noncommercial scale.

  - Gives plant breeders the right to protect new plant varieties, and exclusive rights to produce for market and/or sell the protected seed or the propagating material of the protected variety.

[61] *Ibid.*

[62] *Ibid.*

Key governmental and quasi-governmental authorities are:

- Ministry of Agriculture (MoA)
- Ministry of Environment, Forest and Climate Change (MoEFCC)
- Ministry of Trade and Industry (MoTI)
- Ministry of Water, Irrigation and Electricity (MoWIE)
- Agricultural Transformation Authority (ATA)
- Ethiopian Institute of Agricultural Research (EIAR)
- Ethiopian Standards Agency (ESA)
- Agricultural Inputs Supply Enterprise (AISE)
- Regional Bureaus of Agricultural and Rural Development (RBARD)
- National Fertilizer Industry Agency (NFIA)
- Federal Cooperative Agency (FCA)

Are there any upcoming regulations that will affect agriculture and any specific area the investment is looking into?

- Draft National seed policy (MoA,2019a)d[63]
  - Ensures conservation and sustainable use of plant genetic resources, promotes diverse seed systems, protects community knowledge and farmers' and pastoralists' rights in line with international agreements.
  - Require participation of farmers and pastoralists in the identification, registration, conservation and sustainable utilization of traditional varieties as well as development of new plant varieties.
  - Asserts national sovereignty over genetic resources and stresses the need to ensure benefit sharing from these resources for the stewards.

[63.] Ministry of Agriculture, 2019. "The National Seed Policy." Accessed 25 June 2020 http://dae.portal.gov.bd/sites/default/files/files/dae.portal.gov.bd/page/dd7d2be1_aeef_452f_9774_8c23462ab73a/NSP_eng.pdf

- Aims to establish a traceability mechanism for identification of plant genetic resources used in new plant varieties that plant breeders wish to protect.

At a high level, what are the respective roles of the public, private and third sector in the agriculture sector?

- Agricultural extension has been a key focus of the EPRDF government, seeing raising productivity of smallholder farmers as essential for development and as a basis of support for the government.[64]

- Multilateral, bilateral and other donors provide significant investment for agricultural extension programs though policy agency is notably retained by the GoE.[65]

- The EPRDF with its historical Marxist-Leninist roots has an ideological commitment to strong state-party leadership of the development agenda, however, it has also taken a pragmatic and collaborative approach.[66]

  - The Bill & Melinda Gates Foundation, for example, were invited by the GoE to conduct a review of the agricultural extension system in the country and provided foundational support for the Agricultural Transformation Authority.[67]

  - NGOs engage and provide advice in agricultural extension projects in particular localities, and may pilot methodologies that can later be adopted in other areas. However, in all cases NGOs are expected to work closely with local state extension staff.[68]

  - Formal liberalisation has occurred in the agricultural inputs system (e.g. fertilizer, seeds), though the market is dominated by government tied and public sector suppliers

[64] Berhanu, Kassahun., and Colin Poulton, 2014 "The Political Economy of Agricultural Extension Policy in Ethiopia: Economic Growth and Political Control." Development Policy Review." 32, https://onlinelibrary.wiley.com/doi/pdf/10.1111/dpr.12082

[65] Ibid.

[66] Ibid.

[67] Ibid.

[68] Ibid.

while prohibitions on repatriation of foreign exchange reduce multinational involvement.[69]

- The GoE has also encouraged large scale transnational and local land investment, sometimes controversially, making it one of the most attractive destinations for foreign land investment.[70] Multinationals have also invested in agriculture, for example brewers investing in the Ethiopian brewery industry have started local sourcing of malt barley, including Heineken, Diageo and Castel Group.[71]

Who is involved in or shapes the collection, use and sharing of agriculture data in this country?

- The Ethiopian government agencies listed above are all involved in agricultural data collection, use and sharing in the country.

- The Agricultural Transformation Authority (ATA) aims to:

  - Identify systemic constraints to agricultural development and, based on studies and analysis, recommend prioritised interventions.

  - Supports the establishment of strong linkages and coordination among agricultural stakeholders and related institutions and projects to ensure effective agricultural development activities.

  - Holds significant soil survey and mapping datasets through the EthioSIS project (Soil Information System).

- Research-based soil and agronomy data is collected and held primarily by researchers from federal and regional agricultural research institutions, and higher learning institutes.

[69.] *Ibid.*

[70.] Burgis, Tom., The Great Land Rush- Ethiopia: The Billionaires Farm." Financial Times, Accessed 25 June 2020 https://ig.ft.com/sites/land-rush-investment/ethiopia/

[71.] Delelegne A. Tefera, Jos Bijman and Maja A., Slingerland (2020) "Multinationals and Modernisation of Domestic Value Chains in Africa: Case Studies from Ethiopia." The Journal of Development Studies, 56 (3), https://www.tandfonline.com/doi/full/10.1080/00220388.2019.1590551

The Ethiopian Institute of Agricultural Research aims to:

- Coordinate the research activities of the Ethiopian Agricultural Research System.

- Generate, develop and adapt agricultural technologies that focus on the needs of overall agricultural development and its beneficiaries.

- Build research capacity and establish a system that will make agricultural research efficient, effective and based on development needs.

- Popularize agricultural research results.

- The Water and Land Resource Centre of Addis Ababa University collates national soil datasets, and generates and shares data to inform policy and practice in land and water resource management in Ethiopia.

- Major multilateral and bilateral organisations providing funding and technical assistance and acting as data stewards include the United Nations Development Programme (UNDP), International Fund For Agricultural Development (IFAD), Food and Agriculture Organization of the United Nations (FAO), World Bank, the African Development Bank Group (AfDB), European Commission, China, USAID, the Foreign, Commonwealth & Development Office (FCDO) (formerly the Foreign & Commonwealth Office (FCO), and the Department for International Development (DfID)), and the Netherlands Development Corporation.

- Other NGOs also provide support and technical assistance, including the Bill & Melinda Gates Foundation, CABI, McKnight, GODAN, Global Food Security Project, Food and Land Use Coalition, and GIZ.

- At the international level, there are also ongoing activities to harmonize and integrate agriculture data, especially for soil profile data, through the Global Soil Partnership, the World Data Centre for Soils and the World Soil Survey Archive Centre.

- International academic research institutions and organisations such as:

  - International research institutes such as the International Livestock Research Institute, International Crops Research Institute for the Semi-Arid Tropics, International Center for Tropical Agriculture, International Maize and Wheat Improvement Center

  - EIAR research partners include CGIAR Research Centres, Alliance for a Green Revolution in Africa (AGRA), Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA), Virginia City University, Cornell University, Purdue University, University of Bern and University of Queensland.[72]

Have there been any high profile failures or successes related to the collection, use and sharing of agriculture data?

- The ATA is seen to be successfully "getting work done".[73]

  - The Ethiopian Soil Information System (EthioSIS) is one of the ATA's most successful projects and the first of its kind in Africa. The digital soil fertility map covers 748 of the country's 800 woredas (districts) and is built from information gleaned from hundreds of thousands of soil samples and remotely-sensed satellite imagery, comprising 22 different soil property maps and fertilizer recommendations for each region. However, the underlying data has not yet been made publicly available.

[72] Ethiopian Institute of Agricultural Research, "Partnership and communication." Accessed 25 June 2020, http://www.eiar.gov.et/index.php/en/about/partnership-and-communication

[73] Mann, Christian., 2019. "Tracing Agricultural Transformation in Ethiopia." Accessed 25 June 2020 https://www.csis.org/analysis/tracing-agricultural-transformation-ethiopia

- Among other projects, the ATA has also developed a toll-free hotline for smallholder farmers with interactive voice response and short message service (IVR/SMS) capabilities. The hotline details when and how to plant different crops and how to identify and treat diseases like Wheat Rust and Fall Armyworm. The service fields questions in five different languages with over a third of Ethiopian small-holder farmers using it to date.

- Water and Land Resource Centre information management systems (WALRIS)

  - WALRIS displays spatial and non-spatial data and information, maps, synthesized documents and tools, and relevant publications to respond to the needs of policy makers, planners, researchers and development practitioners.[74]

  - EthioGIS (Geospatial Information System) provides a major national geospatial dataset integrating terrain, soil, land cover and use, climate, drainage, infrastructure, population and agriculture.[75]

Are there any developments, pressures or opportunities not specific to the sector that may affect the collection, use and sharing of agriculture data, and any specific area the investment is looking into?

- The political situation discussed may continue to cause difficulties in collection of data in certain areas and boundary zones

- COVID-19 has imposed travel restrictions across the world and in country lockdowns. Data collection will be severely affected while the pandemic lasts. The economic resources and institutional capacity required to fight the virus may also impact on future project implementation.

[74] Water and Land Resources Centre, "WALRIS." Accessed 25 June 2020 https://www.wlrc-eth.org/project-component/information-management/walris

[75] Water and Land Resources Centre, "EthioGIS." Accessed 25 June 2020 https://www.wlrc-eth.org/project-component/information-management/walris https://www.wlrc-eth.org/project-component/information-management/ethio-gis

- Previous experiences demonstrate that restructuring of organizations is common and mandates change frequently, affecting the implementation of data use and sharing policies at all levels. For instance the INSA mandate related to geospatial data access and sharing transferred to EGII 2018.

- Analogue formats continue to be widely used for data collection and as recorded data, constraining data sharing and access. Poor coordination between organizations and technological compatibility is also a key constraint.[76]

- Low awareness amongst researchers about the benefits of open data as well as an existing preventive culture to data access is a constraint to data sharing, with researchers, even in international research organizations resisting access to their data.[77]

- Other developments, however, include a collaboration between Ministry of Health and Dimagi, whose data collection app CommCare, specifically designed for use in the field, has enabled frontline health workers to collect data more efficiently by supplementing or eliminating the need for paper records as well as providing them with a work aid that supports counseling, decision-making and referrals for emergencies.[78]

[76.] Coalition of the Willing (CoW), 2020. "Coalition of the Willing for soil and agronomy data access, management and sharing: Data Sharing Guidelines." Ethiopian Institute of Agricultural Research (EIAR), Available at 22 June 2020 https://cgspace.cgiar.org/handle/10568/107988

[77.] Coalition of the Willing (CoW), 2020. "Coalition of the Willing for soil and agronomy data access, management and sharing: Data Sharing Guidelines." Ethiopian Institute of Agricultural Research (EIAR), Available at 22 June 2020 https://cgspace.cgiar.org/handle/10568/107988

[78.] Dimagi. "Commcare for Maternal and Newborn Health" Accessed 25 June 2020 https://www.dimagi.com/sectors/maternal-and-newborn-health/

Related grants

This section provides an overview of previous initiatives in the country and any lessons learned.

Are there any other grants within the portfolio that are funded in this location?

Grants where the Program Officer is currently being support by the CABI/ODI team on data management and access:

- Soil Acidity
- Farmstack
- Seed SAT
- Africa Centers of Excellence (ACE II) Project
- Supporting Evidence-Based Interventions (SEBI)

Are there any current grants in this location, co-funded or funded outside of the Foundation?

A multitude of NGOs and donors work with the Ethiopian government to deliver specific agricultural programmes. Examples from major donor assistance programmes include:

- AfDB
  - The Agriculture Fast Trach Fund supports financially sound, environmentally sustainable and socially beneficial food security projects.
  - Sustainable Energy Fund approved a $995,000 grant to support the roll out of a sustainable procurement framework for Independent Power Producers (IPPs) in Ethiopia.
- Alliance for a Green Revolution in Africa (AGRA)
  - Country support and policy engagement which involves supporting GoE to implement the GTP II,provide advisory

services to the Ministry of Agriculture, collaborate with the ATA in implementation of the Agriculture Commercialization Cluster (ACC) Strategy and facilitate the creation of an enabling environment that attracts increased private sector investments.

- Scaling up system and farmer level initiatives in Amhara, Oromia, Southern Nations, Nationalities, and Peoples' Region (SNNPR) and Tigray regions.

- Strengthening input supply systems and linkages to output markets in order to facilitate the uptake of yield-enhancing agricultural technologies.

- Enhancing input distribution and accessibility through electronic voucher systems.

- Expanded market access through value addition, structured trade, quality enhancement and aggregation.

- GoE and the private sector will be AGRA's scale and sustainability partners in Ethiopia.

- Agri-Tech Catalyst

  - The Catalyst offers funding to deliver innovation in agriculture and food systems in Africa for private sector and academic collaborative research and development projects.

- IFAD

  - Rural Financial Intermediation Programme III – The objective of the programme is to improve livelihoods and to reduce vulnerability and poverty through increased incomes, and provide better risk management through financial and nonfinancial measures.

  - Participatory Small-scale Irrigation Development Programme II – PASIDP II envisages the development of about 18,400

hectares of small-scale irrigation schemes in four regions: Amhara, Oromia, Tigray and the Southern Nations, Nationalities and People's Region. PASIDP II will also train participants to take charge of the development process and encourage women to join the decision-making bodies of water users' associations.

- Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)

  - To ensure food security and secure land tenure rights for communities in the context of large-scale commercial land investment, the Ensuring food security and land tenure project has promoted internationally recognised principles and guidelines such as the Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests (VGGT), and Responsible Agricultural Investment (RAI).

- DfID

  - Land Investment For Transformation (LIFT) supports the Government of Ethiopia in the provision of map based land certificates to farmers in four regions, and assists them to benefit fully from increased investment and productivity through the development of the rural land market and its supporting operations.

- USAID

  - Feed the Future Strategy in Ethiopia focuses on three core components: inclusive and sustainable agriculture-led economic growth, strengthening the resilience of people and institutions, improving nutrition, and fostering a regulatory environment and private sector conducive to economic growth.

- United Nations Development Programme (UNDP)

  - Integrated Landscape Management (ILM) to Enhance Food Security and Ecosystem Resilience in Ethiopia. The ILM project aims to enhance long-term sustainability and resilience of food production systems by sustainably managing key environmental resources.

  - ILM combines land management choices and Integrated Natural Resources Management (INRM) with water- and climate-smart agriculture, value chain support and gender responsiveness. It ensures multi stakeholder platforms, establishes systemic monitoring, learning and knowledge management, as well as strengthening of institutional frameworks for better policies that fosters sustainability and resilience.

- The World Bank

  - The International Development Association (IDA) of the World Bank is Ethiopia's largest provider of development assistance. Projects include the Second Agricultural Growth Project aimed at increasing agricultural productivity and commercialization of small-holder farmers. The project aims to increase access to public agricultural services, increase the supply of demand-driven agricultural technologies, increase access to and efficient utilization of irrigation water, increase access to input and output markets, and provide capacity building.

Resources

Collect here all the useful places to use when updating the country profile.

- World Bank indicators: https://data.worldbank.org/indicator/SL.AGR.EMPL.ZS?locations=ET

- Food Security Portal: http://www.foodsecurityportal.org/ethiopia/indicators

- Ethiopia data portal: https://ethiopia.opendataforafrica.org/

- Internet World Stats: https://www.internetworldstats.com/stats1.htm

- Speed test global index: https://www.speedtest.net/global-index/ethiopia

- International Telecommunications Union https://www.itu.int/en/Pages/default.aspx

- UNCTAD Data Protection and Privacy Legislation Worldwide: https://unctad.org/en/Pages/DTL/STI_and_ICTs/ICT4D-Legislation/eCom-Data-Protection-Laws.aspx

- DLA Piper Data Protection Laws of the World: https://www.dlapiperdataprotection.com/index.html?t=law&c=ET

- NGO Aid Map https://ngoaidmap.org/location/gn_337996?level=1&site=12

- ATA website http://www.ata.gov.et/

- EIAR website http://www.eiar.gov.et/

Data Sharing Toolkit

CABI Data Sharing Toolkit

open data institute

BILL & MELINDA GATES foundation