Standards Alliance

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YEAR 7: 2019-2020

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INTRODUCTION AND BACKGROUND

The following report contains a summary of the major activities completed and outcomes achieved during the seventh year of implementation of the Standards Alliance, a public-private partnership between the American National Standards Institute (ANSI) and the U.S. Agency for International Development (USAID). Additional information is provided through quarterly performance reports submitted to USAID by ANSI.

The Standards Alliance was announced by USAID in November 2012 as a new funding facility designed to provide capacity-building assistance to developing countries, specifically related to the implementation of the World Trade Organization (WTO) Technical Barriers to Trade (TBT) Agreement. In May 2013, USAID and ANSI entered a public-private partnership, which coordinates subject matter experts from the private sector-led U.S. standardization system to deliver training and other technical assistance to interested Standards Alliance countries.

EXECUTIVE SUMMARY

The Standards Alliance engages five countries across the African continent on a wide range of capacity-building activities. The program focuses on continually building participating countries' capacity to fulfill World Trade Organization (WTO) obligations and increasing practical knowledge on the WTO Technical Barriers to Trade (TBT) Agreement. As a major part of this effort, the Standards Alliance engages partner countries on the development and implementation of international standards and best practices for conformity assessment, amongst other topics. These standards and conformity assessment procedures are foundational to the global trade system and efforts under the Standards Alliance help cultivate self-reliance, as well as fertile ground for reciprocal, two-way trade between the U.S. and Standards Alliance partner countries.

Over the past seven years, the Standards Alliance has supported sustainable partnerships and promoted self-reliance through targeted assistance to develop quality infrastructure and institutions that support strong quality systems. These efforts help bolster market confidence and expand market access by decreasing barriers to trade, increasing transparency, improving regulatory developments, and fostering market predictability. These efforts also contribute to health and safety improvements of consumers in participating countries through increased understanding and utilization of international best practices for consumer products.

In year 7, the Standards Alliance restructured its work plan activities, organizing them into three strategic pillars, to ensure that the program continues to achieve strategic goals and effectively utilize allocated resources. These pillars include: (I) Transparency (notification, stakeholder engagement); (II) National Quality Infrastructure (international standards, good regulatory practices and regulatory impact assessment); and (III) Resilience (building institutional and government capacity). In year 7, the Standards Alliance completed nine TBT-related trainings, undertook two detailed policy diagnostics, and began four long-term advisory projects. Training events alone included more than 300 participants. These activities advanced U.S. business interests in a variety of export categories, paved the way for U.S. investment, and helped partners countries move a step forward in their path towards self-reliance, as described further in this annual report.

As in previous years, Standard Alliance activities in Year 7 built on the strong foundation laid throughout past programming, resulting in national, regional and continent-level initiatives, which highlight the growing strategic significance of the program and its projects. For instance, the Standards Alliance's most recent accomplishment was the appointment of a technical advisor focused on TBT to the African Union (AU) and African Continental Free Trade Area (AfCFTA) Secretariat.

African Leaders Pose at the Extraordinary Summit on the AfCFTA in Kigali, Rwanda, where the Agreement was signed.

In coordination with the AU, the technical advisor will support the implementation of TBT-related commitments under the AfCFTA, and help facilitate greater cooperation between the U.S. and Africa, as the AU implements the largest free trade area since the establishment of the World Trade Organization (WTO). This high-level activity underscores the Standards Alliance's multi-year progression from hosting stand-alone events and small-scale workshops to continent-wide engagements with significant two-way trade and investment implications for the U.S. and Africa. Moreover, this activity will directly benefit U.S.-Africa trade relations and policy by providing a platform for the promotion and advancement of U.S.-friendly objectives in light of vast EU funding and interventions that already exist across AU divisions and the African continent. The EU has invested more than $10.5 million (USD) in support of the TBT section of the AfCFTA alone[1].

While the outbreak of the COVID-19 pandemic presented unique hurdles for the Standards Alliance in the recruitment and onboarding process of the technical advisor, his swift appointment emphasized the ability of the program to quickly adapt to new demands and leverage existing relationships in Africa to accomplish its stated objectives. As a result of the strong relationships built over the seven-year program, long-term, high-impact projects such as the AU embed are a testament to the capability and value the program brings to the standards space.

The Standards Alliance will continue to support and encourage programming that emphasizes self-reliance and ensures long-term, sustainable results in the five partner countries and African continent more generally. The Standards Alliance also continues to emphasize the development of robust transparency mechanisms to bolster credibility and legitimacy while ensuring awareness and market access for U.S. stakeholders. As the first phase of the Standards Alliance enters its final year, capacity building assistance with a long-term vision toward self-reliance and sustainable partnerships will pave the way for increased market access, improved investment climates, and augmented two-way trade.

[1] European Commission: EU External Investment Plan; retrieved from https://ec.europa.eu/commission/presscorner/detail/en/IP_17_4884

COVID-19 IMPACT AND MANAGEMENT

In response to the COVID-19 pandemic and subsequent travel restrictions that occurred during Q1 2020, the Standards Alliance established contingency plans to offset negative impacts to ongoing activities. These plans included interventions to maintain regular communication with partners and to pivot resources, ensuring activities continued outside of in-person meetings. While travel restrictions affected a few scheduled programs in the spring and summer of 2020, they did not affect the long-term objectives of ongoing projects and led to creative and innovative solutions and suggestions from partners.

The Standards Alliance was able to continue engaging partners on the ground and maintained effective and frequent communication with all stakeholders. Due to these efforts, major projects were able to move forward and scheduled activities were restructured to accommodate remote/web-based formats. For example, the Standards Alliance previously planned to conduct a follow-up Regulatory Impact Assessment (RIA) Training in Zambia; however, due to travel restrictions the training was first postponed and then adapted to a web-based event. The training will include pre-recorded videos and live working sessions for interactive portions of the event. The strong partnerships and effective communication channels the Standards Alliance has established have enabled seamless adaptation to push forward projects. This flexibility highlights the resilience of the Standards Alliance and emphasizes that partners and stakeholders continue to view program activities as critical work that should remain ongoing, even if that requires new models of collaboration.

The sections below include an overview of the project activities that were scheduled to take place in year 7 of the Standards Alliance (2019-2020) and the strategic pillars that apply. Due to COVID-19, some projects have been delayed or put on hold as ANSI awaits further guidance from the Center for Disease Control (CDC), U.S. government and international partners. Nonetheless, approximately 60% of planned activities have been able to move forward despite the pandemic, and the Standards Alliance team continues to pursue innovative solutions that will allow the remaining budget to be spent on-schedule in the final year of phase 1.

SUMMARY OF PROJECT OUTPUTS

According to the "Standards Alliance Year 7 Plan" (August 2019), the list of activities below were identified for execution. Additional activities beyond the Year 7 Plan were also carried out, as agreed with USAID and when appropriate for the scope and resources of the project.

The primary outputs of the seventh year of the Standards Alliance included:

- ISO37101 Sustainable Cities Workshop in Côte d'Ivoire (August 2019)
- Workshops on Standards to Support SMEs in Zambia (August 2019)
- High-Level Regulatory Impact Assessment (RIA) Trainings in Zambia (September 2019)
- Building Capacity for Petroleum Standards Development in Côte d'Ivoire (November 2019)
- Training to Improve Biofuel Standards for Household Cooking and Transportation in Mozambique (November 2019)
- NQI Diagnostic in Côte d'Ivoire (Ongoing 2020)
- Diagnostic Assessment of the Ghana Building Code (January 2020)

- Strengthening RIA Capacity in Zambia (Ongoing 2020)
- ISO37101 Sustainable Cities Pilot Program with the Director-General of Decentralization and Local Development (Ongoing 2020)
- Improving Solar Photovoltaic Technicians Standards in Senegal (Ongoing 2020)
- Embedding of the African Union (AU) Technical Advisor on TBT (Ongoing 2020)
- NQI Handbook Development (Ongoing 2020)

All of the projected outputs described in the Year 7 Plan have been completed, have begun or were rescheduled for Year 8. The most cited reason for activity postponement was the outbreak of the COVID-19 global pandemic, which put a halt to international travel and the possibility of in-person events. The 2019 – 2020 outputs and related states are summaries by country/ region in the table below. A summary of what each strategic pillar covers is also included below the table.

2019 - 2020 WORK PLAN & DESCRIPTION OF STRATEGIC PILLARS

ACTIVITY	PROPOSED COUNTERPART	OUTPUT	STATUS	EXPECTED IMPACT
Strategic Pillar #1: Transparency				
Côte d'Ivoire				
1. **Workshop on Good Regulatory Practices in Côte d'Ivoire**	CODINORM, Ministry of Trade and Industry	Capacity Building Workshop	March, 2020 **POSTPONED due to COVID-19**	Increased understanding of international best practices and familiarity with U.S.-based organizations, leading to an improved trade environment for U.S. companies
Senegal				
2. **Workshop on Good Regulatory Practices and TBT Principles in Senegal**	ASN, DCI, and relevant local industry	Capacity Building Workshop	March 2020 **POSTPONED due to COVID-19**	Increased understanding of international best practices and familiarity with U.S. – based orgs, leading to improved trade environment for U.S. companies
Ghana				
3. **Workshop on Good Regulatory Practices in Ghana**	GSA, relevant Ministries, and relevant local industry	Capacity Building Workshop	March, 2020 **POSTPONED due to COVID-19**	Increased understanding of international best practices and familiarity with U.S. – based orgs, leading to improved trade environment for U.S. companies

Strategic Pillar #2: National Quality Infrastructure (NQI)					
Côte d'Ivoire					
4.	**NQI Health Check and development plan in Côte d'Ivoire**	CODINORM, Ministry of Trade and Industry, other relevant organizations	Capacity Building and routine maintenance	March, 2020 **IN PROGRESS (modified to remote work where possible)**	To assess current NQI gaps in an effort to support the development of sustainable quality systems and foster a predictable business climate. A final report will position Côte d'Ivoire to apply for international support to enhance existing NQI based on U.S. suggestions.
Mozambique					
5.	**Workshop on certification and Inspection (ISO 9001 and 29001/API Q1) in Mozambique**	INNOQ, SPEED+, relevant ministries and relevant local industry	Capacity Building	Q1 2020 **POSTPONED due to COVID-19**	Improved understanding of international best practices supporting a more stable business climate. Will include supply chain development to increase local capacity in the oil and gas industry.
6.	**Regional Certification and Inspection Workshops (Nambala and Tete Provinces) in Mozambique**	INNOQ, CTA, SPEED+, other relevant industry associations	Capacity Building	TBD 2020 **POSTPONED due to COVID-19**	Building on the broader certification workshop, this event aims to improve understanding of International best practices supporting a more stable business environment. Further institutionalization of best practice in locations outside the capital, which will support national implementation of international best practices and create space for trainings on sector specific standards issues
7.	**Standards for Clean Liquid Fuels**	INNOQ, CTA, SPEED +, and relevant industry associations	Capacity Building Workshop	November 2019 **COMPLETE**	Sensitizing Mozambique's government to the role and importance of international standards to support clean, safe, and reliable fuels for consumers as well as to support U.S. market access. Intended to tee up future trainings to support the development of clean fuel standards and regulations that are relevant to Mozambique.
Senegal					
8.	**Sector Specific Standards Workshop in Senegal**	ASN, DCI, relevant ministries and relevant local industry	Capacity Building	July 2020 **POSTPONED due to COVID-19** **(moved to late 2020)**	Improved understanding of international best practices leading to an improved business environment for U.S. companies. Intended to tee up future trainings to support the development of clean fuel standards and regulations that are relevant to Senegal

Southern and West Africa				
9. **NQI Handbook Development**	CODINORM, ZABS, GSA, ASN, DCI, INNOQ, Other relevant ministries	Materials development support trainings	Spring 2020 **IN PROGRESS**	Training materials to support ongoing and future activities as well as to advertise the competencies of each national standards body to their citizens
Zambia				
10. **Sector specific standards training (potentially organic certification, sustainable agricultural practices, GHS for chemical handling, or other)**	ZABS, ZEMA, ACC, and relevant local industry	Capacity Building	TBD 2020 **POSTPONED due to COVID-19**	Training to support Zambia's capacity to utilize international best practices. Bring Zambia in line with International best practices will help improve the investment climate and trade opportunities in Zambia
Strategic Pillar #3: Resilience				
Côte d'Ivoire				
11. **ISO37001 Implementer and Auditor Training**	CODINORM and relevant industries	Capacity Building	TBD 2020 **CANCELED**	Improved understanding of international best practices for government and business practice to decrease corruption and improve the business climate in Côte d'Ivoire
12. **ISO 37101 Pilot**	CODINORM, Ministry of Interior, and relevant local industry	Capacity building and pilot project	TBD **IN PROGRESS- (modified to virtual events where possible)**	Improved understanding of best practices for urban planning to help augment trade and investment opportunities in the Côte d'Ivoire. Improved understanding of international best practices for city planning and sustainable development to support CDI initiatives to empower urban planners.
Ghana				
13. **Standards to Support the Ghana National Building Code**	GSA and relevant ministries and local private sector	Capacity Building	2020 **ASSESSMENT COMPLETE,** **FURTHER ENGAGEMENT CANCELED**	Improved understanding of international best practices leading to an improved business environment for U.S. companies. Increased understanding of AGOA requirements for sector specific items. Setting up a conversation for regional building standards.
14. **Standards to Support SMEs**	GSA, MOFA, Relevant ministries, and local private sector	Capacity Building and awareness building	2020 **POSTPONED due to COVID-19**	

	Senegal				
15.	**Improving Solar Photovoltaic Technicians Standards in Senegal**	Remote Energy, ASER, DAUST, Outback Power, Relevant Technicians	Capacity Building	2020 **IN PROGRESS-** **(developing online courses)**	To expand the access and familiarity of the West African PV installation standards established by ECOWAS. To further support training capacity for rural electrical technicians by supporting local universities
	Zambia				
16.	**Best Practices to Support the Development and Adoption of Energy Efficiency Standards in Zambia**	ZABS, BRRA, MTCI, Ministry of Mines, Energy and Water; and Zambian AmCham	Capacity Building and Technical Training	TBD 2020 **POSTPONED due to COVID-19**	Increased awareness of international best practices and standards to support sustainable mining practices and to promote a more stable investment environment for U.S. companies
17.	**RIA Sensitization for Ministers and Permanent**	BRRA, MCTI, and other relevant ministries and industry	Awareness building and strategic planning	September 2019 **COMPLETE**	Institutionalize RIA by gaining political will and identifying regulatory agency leaders
18.	**In depth Regulatory Impact Assessment (RIA) training and Train the Trainer event**	BRRA, Ministry of Commerce, Trade and Industry, Zambian Regulators	Capacity Building	Q2 2020 **IN PROGRESS-** **(ongoing discussions for online training)**	Support regulatory review and Regulatory Impact Assessments (RIA), which will boost private sector confidence in the Zambian regulatory environment by supporting early notification and stakeholder engagement
	West Africa (Côte d'Ivoire, Ghana, and Senegal)				
19.	**Workshop to support the harmonization of ECOWAS Petroleum Standards Capacity**	CODINORM, GSA, ASN, relevant ministries, and other relevant ECOWAS members (Nigeria, SON)	Capacity Building and knowledge sharing Workshop	October 2019 **COMPLETE**	Support ECOWAS efforts to harmonize petroleum standards for transportation, distribution, and exploration that will support increased investment opportunities in West Africa by creating predictable and consistent regional standards and regulation for petroleum.
	Mozambique				
20.	**Solar PV Training Module for Mozambique**	Remote Energy, Outback Power, Eduardo Mondale University, relevant technicians	Capacity Building	Late 2020 **MOVED to SA2 PIPELINE**	To expand the access and familiarity of Mozambican installers and developers to international standards for solar PV installations. To further support training capacity for rural electrical technicians and addressing the gender gap in technical fields by supporting local universities.
21.	**Technical Advisor to African Union**	African Union, ARSO (TBC through further coordination with USAID	Embed technical advisor to support capacity building	July 2020 **IN PROGRESS (Advisor appointed)**	Support capacity building for AU institutions addressing implementation of the AfCFTA and expand opportunities for U.S. companies through AfCFTA implementation

Strategic Pillar #1: Transparency

Strengthening and expanding transparency in standards setting and rulemaking has been a cornerstone of Standards Alliance programming since the project's inception. Supporting national TBT enquiry points and notification authorities has led to an overall increase in the number of notifications partner countries submitted to the WTO, which helps increase predictability for U.S. companies and reduce compliance costs for market access. Project activities that support transparency may include training on WTO notification obligations and enquiry point operations; notice and comment practices for standards and regulation; and stakeholder engagement throughout the standards development and/or regulatory process.

Strategic Pillar #2: National Quality Infrastructure (NQI)

NQI is critical to countries' growth, including increasing economic growth and innovation, as well as protecting the environment, plant and animal health, and human health and safety. An NQI includes the foundation and institutions that support this system, from standards to testing and certification, accreditation, and metrology. By supporting the growth of these institutions and the overall NQI in partner countries, the Standards Alliance will also help the countries meet its WTO obligations and expand the reach of attractive markets for U.S. products and services. Project activities that address NQI may include training on national standards body operations or international standards activities; the development of conformity assessment schemes in line with international best practices; good regulatory practices such as regulatory impact assessment; or accreditation and metrology related subjects.

Strategic Pillar #3: Resilience

The ultimate goal of the Standards Alliance is to build resilience in partner countries by fostering greater institutional capacity and good governance. This will be even more impactful when matched with U.S. private sector priority areas for each market. By building capacity at key institutions and strengthening connections between host governments and U.S. stakeholders, a sustainable growth plan can be realized that also paves the way for future U.S. company access and success. Project activities that support resilience may include elements of good regulatory practices; and training for government entities on industry priorities such as solar energy, building codes, or natural resources.

In year 7, the Standards Alliance also reviewed its initial needs assessments prepared for each of the five partner countries in 2016, and update those baseline observations. The updated needs assessments serve as a compilation of country-specific strategies, which can be tied to the strategic pillars and work plan activities described above, and referred to in the annual report along with the performance indicators. More information on the updated needs assessments are included as Annex documents on page 19.

Activity Cancelations and Postponements

Year 7 of the Standards Alliance included a greater number of activity cancelations and postponements that usual. The vast majority of these changes were made in response to the global health crisis stemming from the COVID-19 pandemic. This included the postponement of activities 1, 2, 3, 5, 6, 8, 10, 14, 16, and 20.

For example, the West Africa Good Regulatory Practices roadshow as well as the Mozambique Workshop on Certification and Inspection using ISO9001 and ISO29001 (activities 1, 2, 3, and 5) were planned and ready for execution in late March 2020. However, in rapid response to growing health and safety concerns

for U.S. speakers, Standards Alliance staff, and local partners, the Standards Alliance postponed these activities.

Following the initial postponement of these four activities, the Standards Alliance began to monitor national and global health guidelines closely to develop a schedule for in-person implementation of pending work plan activities. During this assessment, the Standards Alliance assessed work plan activities to consider which programs could retain their intended impact through virtual delivery. Upon review, the activities listed as postponed were considered to have the most impact on local stakeholders through in-person delivery.

The year 7 work plan also included two canceled activities: ISO37001 Implementer and Auditor Training in Côte d'Ivoire and Standards to Support the Ghana National Building Code (Activities 11 and 13). The planned ISO37001 training was canceled due to the government of Côte d'Ivoire taking the initiative to self-fund the piloting of this standard with select government agencies through its High Authority for Good Governance (HABG). This positive development demonstrates the high interest that the government of Côte d'Ivoire placed on improving its management practices through self-funded initiatives but also made additional Standards Alliance funding redundant.

The Standards Alliance, in coordination with the International Code Council (ICC) and the Ghana Standards Authority (GSA), performed an initial 3rd party review of Ghana's newly established Ghana Building Code (GBC) in January 2020. This assessment was conducted in follow-up to GSA's request to provide support for the development of essential guidance documents for curriculum inclusion at architect and engineering training institutions, development of checklists and user guides for all technical requirements and an awareness-building event for all users of the new building code including inspectors, contractors, architects, etc.

The partial 3rd party review came at the request of ICC and aimed to find areas where the GBC deviated from the International Building Code (IBC) to make recommendations for training activities that would support national understanding and implementation of the GBC. The initial assessment of the GBC uncovered several inconsistencies and determined that the GBC was divergent enough from the IBC that it would not be cost-effective for ICC to develop training materials for GSA. According to the ICC, the most cost-effective approach was for GSA and Standards Alliance to work with the consultants at the IFC World Bank, who helped GSA make updates to the building code. Base on feedback from a representative at IFC, GSA worked with other consultants on the ground to develop parts of the code. IFC said it suggested several cost-effective ways to market the GBC but did not receive any feedback. IFC also got a consultant to help develop a training guide for the green building chapter of the code but GSA was not interested in being a part of that process.

In Q2 2020, ANSI reached out to GSA to scope out other options for improving the GBC based on the review and offered to request a full assessment of the GBC, to highlight areas in the code that may pose safety or implementation challenges in the future. However, no additional input was provided to facilitate further collaboration towards this effort. GSA's unwillingness to engage and make any suggested updates to its building code made the development and execution of this activity untenable for the Standards Alliance and ICC, as it imposed critical liability and safety concerns.

In addition to delivering progress on projected outputs for the seventh year of the initiative, the Standards Alliance recognized several key milestones and accomplishments that are indicative of cumulative and future programmatic success. This section includes examples of these accomplishments, most of which build on past efforts.

Comprehensive approaches that profoundly enhance trade and investment opportunities

1. Institutional Reform: Supporting Transparency and Resilience in Zambia

In Year 7, the Standards Alliance took great strides to continue its efforts in supporting capacity-building activities to inform the regulatory development and decision-making process in Zambia. Building on Year 6 successes, the Standards Alliance hosted a series of workshops in coordination with, the Business Regulatory Review Agency (BRRA) aimed at institutionalizing Regulatory Impact Analysis (RIA) across statutory bodies and regulatory agencies in Zambia. Together, these awareness-building activities bolstered political will and urgency at the top level of government towards tangibly institutionalizing and implementing the regulatory review process in Zambia. More profound institutionalization of RIA will reinforce resilient government infrastructure that promotes increased regulatory transparency, enhanced clarity and scientific backing for regulations, reduced barriers to trade, and broadened opportunities for private sector involvement in the regulatory development process.

Participants at the Evidence-Based Regulatory Decision-Making: Regulatory Impact Analysis (RIA) 'Training of Trainers' Workshop, Lusaka, Zambia, May 13-17, 2019.

In May 2019, the Standards Alliance in coordination with BRRA and the Zambian Ministry of Commerce, Trade, and Industry (MCTI), co-hosted an intensive five-day training workshop on regulatory impact analysis. This is the third workshop series the Standards Alliance has hosted in Zambia on the topic of RIA. However, unlike past events this workshop aimed at providing a systematic training to government regulators and trainers on the essential requirements for performing RIA. The workshop highlighted training strategies and methods for participants to effectively train their colleagues. The training also helped to ensure that at least one or two government representatives at each agency was familiar with RIA concepts, capable of defining a regulatory problem and establishing baseline criteria for which regulations should be subject to RIA in Zambia. Approximately 70 participants from various Zambian ministries and U.S. and international organizations attended the event, including expert speakers from

U.S. Office of Management and Budget-Office of Internal Regulatory Affairs (OMB-OIRA) and WorkCred, an ANSI affiliate that specializes in improving credentialing systems and competency based programs.

Shortly after the May workshop, BRRA indicated that it was working to update its e-registry platform to include an online notice and comment page for pending regulations and was interested in hearing more about El Salvador's platform and implementation experience. The Standard Alliance facilitated a meeting between BRRA and El Salvador's Institute for Access to Public Information (IAIP), including a walkthrough of El Salvador's platform to share information on the strengthens and weaknesses of their platform. BRRA's appeal with El Salvador's page was that stakeholders could review a regulation in track changes based on public notice and comment after a regulation was updated. IAIP offered to share their online platform's code with Zambia and any other countries that were interested in developing a similar webpage. In July 2020, Zambia launched their own e-registry notice and comment system. BRRA's commitment to a deeper institutionalization of RIA represents an opportunity for Zambia to position itself as leader in effective RIA mechanisms on the continent, and provides new ways for Zambia to engage with trade and investment partners, and enhance transparency across its government.

In September 2019, the Standards Alliance conducted another series of high-level awareness building workshops with parliamentarians, the CEOs, Permanent Secretaries and Legal teams of Zambia's regulatory bodies. Over the course of one-week, the Standards Alliance, BRRA and 2 RIA experts addressed over a dozen Permanent Secretaries, at the Zambian National Assembly, trained more than 30 regulatory CEOs, and met with the legal teams of regulatory agencies in Lusaka, Zambia. These high-profile engagements highlighted the growing importance of the Standards Alliance activities and were clear demonstrations of the political will necessary to spur the institutionalization and enforcement of the RIA process.

Zambia's Member of Parliament pose for a picture with representatives from ANSI, WorkCred and BRRA following a RIA sensitization workshop at the Zambian National Assembly on September 29, 2019.

At the core of BRRA's plan to deepen the institutionalization of RIA is the commitment to see that all regulatory officials at regulatory agencies in Zambia are familiar with the concept of RIA and are able to make better regulatory decisions. This institutional shift will facilitate trade and investment in Zambia by fostering transparency and predictability in the Zambian markets. Furthermore, sensitization of all regulatory officials will deeply establish an institutional culture of transparency and regulatory review that will ensure that new and existing regulations contribute to a conducive business environment.

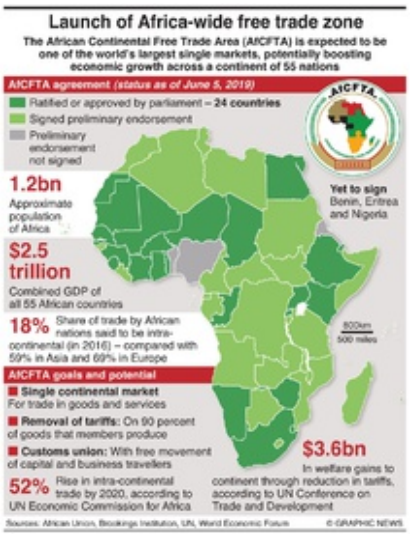
As such, ANSI and BRRA are currently in the process of planning another awareness-building exercise, which will target 92 government officials including key officials charged with performing RIA procedures

and submitting RIA reports to BRRA for review. Due to the travel restrictions and social distancing guidelines, the training session will be broken into four parts and hosted virtually over a 2-week period in early September, 2020. The training will include a combination of pre-recorded videos, and live working sessions for interactive portions of the event. The strong partnerships and effective communication channels the Standards Alliance has established with BRRA and its RIA facilitators have enabled seamless adaptation to push forward BRRA's mandate. This flexibility highlights the resilience of the Standards Alliance and emphasizes that partners and stakeholders continue to view program activities as critical and timely work, spurring new models of collaboration.

BRRA's commitment to this project has been steadfast despite the suspension of in-person meetings and international travel. Their flexibility and urgency to move the training sessions forward highlights their desire to deepen RIA mechanisms, and the positive impact these initial trainings have already had on the Zambia's regulatory landscape and international relationships. This whole of government approach has already proven to be fruitful for Zambia, and will only continue to enhance trade and investment opportunities for the country. The strategic opportunity to position Zambia as a leader in RIA implementation on the African continent strengthen Zambia's position as a desirable business partner on the continental and international levels. Zambia's efforts will further provide a strong example of successful RIA processes as Africa looks to harmonize trade practices through the establishment of the AfCFTA.

Building enduring solutions across regions and continents

2. Supporting U.S. – Friendly Policy in Collaboration with the African Union



Year 7 was a year of transformative change and development for the Standards Alliance. Perhaps the most notable among its achievements was the appointment of a Technical Barriers to Trade (TBT) advisor to the African Union (AU) to support the implementation of Annex 6 (TBT) of the African Continental Free Trade Area (AfCFTA). Working in collaboration with the AU, USAID and the Alliance for a Green Revolution in Africa (AGRA), ANSI successfully recruited and on-boarded Mr. George Opiyo as a Senior TBT Advisor.

he successful embedding of the technical advisor marked the beginning of new opportunities for U.S. – Africa trade relations, and U.S. business in Africa. As the first initiative of its kind, the presence of a U.S. advisor at the AU provides an unprecedented strategic opportunity to counterbalance European and Chinese influence on the continent. In this role, Mr. Opiyo will facilitate key conversations surrounding TBT-related issues, and counter the often EU – dominated dialogue with new thinking on standards engagements and opportunities for deepened U.S. private sector engagement.

Mr. Opiyo is a leading expert on TBT issues on the African continent and is uniquely suited to succeed in this role due to his experience working alongside U.S. trade experts at international organizations like the WTO. Mr. Opiyo is well-versed on U.S. perspectives and deftly capable of representing U.S. interests in the TBT space. Most notably, he led Uganda's efforts to become one of the most prolific "notifiers" of technical regulations in the world (see chart A, Pg.7). His extensive experience and leadership working on TBT issues has made him a well-known entity among TBT experts at the regional and international level. Mr. Opiyo's accolades have made him a recognized leader in the field with tremendous influence and notoriety in Africa.

Above all, the creation of this role introduces new ways of considering Standards Alliance engagement. Beyond traditional technical assistance, the Standards Alliance has now established itself as a key partner in developing strategic openings for U.S. trade and investment with Africa. Not only does this demonstrate the prominence and validity of the Standards Alliance, but also directly contributes to sustainable and enduring policy that will enhance U.S – Africa relations and trade in the long-term. This new chapter in program engagement marks a turning point for the Standards Alliance, whose continued work over the past seven years has led to transformative, positive outcomes for U.S. trade and investment opportunities.

Broad, reaching efforts to support resilience and long-term objectives

3. A Framework for Resilience: Sustainable Urban Development in Côte d'Ivoire

This year, the Standards Alliance continued building a shift from one-off trainings and workshops, to more project-style activities with long-term goals and increasingly larger objectives and outcomes. This is showcased by a pilot project in Côte d'Ivoire to scale-up decentralized, sustainable city planning and development, starting at the community level. The seeds for this pilot program were planted during a Standards Alliance awareness building activity and have culminated into a program with long-term goals of increased resilience and transparency that will provide benefits to market predictability and trade infrastructure. Once completed, this pilot program is designed to become a blueprint for communities across Côte d'Ivoire and to have major implications for improving resilience across the nation.

Beginning in August 2019, the Standards Alliance held a successful awareness building activity on the ISO 37101 standard – a management system standard for sustainable development in communities. The event was attended by more than 60 participants from both public and private sector in Côte d'Ivoire and was facilitated by two U.S. experts. Following this activity, ANSI received a proposal from the Côte d'Ivoire Director-General of Decentralization and Local Development (DGDDL), requesting capacity-building assistance to establish a formal framework to support the implementation of ISO 37101: 2016 in local communities.

Following this request, ANSI and USAID worked with ISO 37101 experts and DGDDL to develop a scope of work for a pilot project in Côte d'Ivoire, which focuses on establishing a community-lead system of sustainable development in two Ivorian communities. Following the signing of the official scope of work, the global health pandemic forced all partners to work together to devise contingency plans to maintain

project progress. While in-person meetings were no longer possible, the program was adapted to remote work throughout Q1 and Q2.

Ongoing efforts propelled the project forward to ensure the project can recognize its lofty and long-term goals. This effort has resulted in a successful start to the project, which was inaugurated by an official virtual meeting and kick-off session for the pilot project on June 23, 2020. DGDDL and the Standards Alliance will continue to work closely to refine the terms and the timeline; nevertheless, the success of the kick-off call during the global situation, as well as buy-in from all stakeholders emphasizes the strong relationships ANSI has built with partners and the resilience and critical work of the Standards Alliance.

In addition, this process and close collaboration with DGDDL led to parallel discussions that resulted in the signing of a Memorandum of Understanding (MoU) between ANSI and DGDDL. The MoU pledges to facilitate ANSI-DGDDL cooperation in recognizing the desirability of international standards and facilitating international trade and working to ensure Côte d'Ivoire's national standards address protection of environment, health, safety, and support consumer confidence.

Innovative and adaptive solutions that continue to transform sectors

4. Transforming the Energy Sector in Senegal: Trainings to Support Rural Electrification and Increase Opportunities for Female Technicians

While the current global pandemic has brought a variety of challenges, it has also forced adaption and fostered innovative solutions. As COVID-19 began forcing cancellation of travel, the Standards Alliance quickly looked for new ways to deliver and drive outcomes, working closely with partners to come up with new solutions. This is demonstrated by a Standards Alliance pilot program, which aims to transform the energy sector in Senegal by supporting rural electrification through technical and gender-based trainings. Halfway through Year 7, ANSI signed a cooperative agreement with Outback Power, a U.S. based company, and its partner organizations Enersys and Remote Energy, to execute an initiative to train solar photovoltaic (PV) technicians in Senegal. This initiative includes a strong gender focus to empower female technicians and was developed in collaboration with local government agencies such as the Senegalese Rural Electrification Authority (ASER) and technical universities, including Dakar American University of Science and Technology (DAUST).

Despite significant obstacles stemming from the pandemic and related delays and shutdowns, the project made progress by developing the initial coursework and began shipping training equipment to Senegal for hands-on training activities. In close coordination with the Standards Alliance, Outback Power and its partners have developed a thorough contingency plan to support an innovative path forward for the remainder of the project.

After an initial delay, the curriculum has been completed and aligned with the Job Task Analysis for the project. Stakeholders (ANSI, DAUST, Remote Energy, Outback Power Technologies) have agreed to implement the training in an online format to maximize safety and timeliness. This update adjusted the training program to a virtual format, leveraging innovative solutions and technology to implement an effective program without increasing the current budget or risking participant health and safety.

In parallel, Outback is currently shipping manufactured equipment to Senegal for the hands-on portion of the coursework, which remains built-in using a combination of remote/online training coupled with on-site instruction from instructors who will also be trained as part of the program. Virtual instruction will further expand access and allow for more participation, and since the majority of the course plans to be asynchronous- where students can complete the courses on their own time- this will allow participants to maintain jobs while completing the training after hours and on weekends. The development of this curriculum has sought to keep instructors and students safe, while utilizing valuable hands-on instruction. The virtual sessions will safely engage students, train teachers, and utilize the equipment when safe and appropriate.

Finally, the program seeks to improve opportunities for female technicians in the energy sector. This will be achieved through the development of breakout sessions during the training, some exclusively for women, to break down barriers and disassemble stereotypes that undermine female involvement in the energy sector. The proposed virtual revision maintains that creating a more equitable gender balance in the development of solar technical standards represents a core mission of this program.

This example highlights that by leveraging innovative solutions, not only can the work of Standards Alliance continue, but can also be enhanced and expanded. This is due to strong partnerships as well as a strong willingness to see programs and projects through to completion. This willingness emphasizes that stakeholders outside of ANSI and USAID see the work done by Standards Alliance as critical, timely, and important to U.S. objectives related to standards and international trade and development.

EVALUATION OF PROJECT ACTIVITIES

During year 7 of the Standards Alliance, ANSI tracked the major performance metrics that demonstrate progress towards the project objectives. According to the Year One Plan and project "Mission Statement", the following measures of success are applied:

1. Understanding of the WTO TBT measured through a comparison of knowledge assessments conducted before and after training sessions, communication frequency between inquiry points, and/or number of comments raised during bilateral or multilateral interaction.
2. Implementation of the Code of Good Practice (Annex 3 of the TBT Agreement) by central government and other standardizing bodies.
3. Transparency measured by the number and/or percentage of proposed technical regulations that are notified to the WTO Secretariat, and through comparison with baseline rates.
4. Increased engagement in international standardization measured by participation levels in organizations such as the International Organization for Standardization (ISO), International Electrotechnical Commission (IEC), and others.
5. Increased consultation with the private sector through workshops, stakeholder comments opportunities, responses to stakeholder questions, etc.
6. Progress in areas of trade concerns between the U.S. and partner governments, potentially including reduced compliance costs and/or greater market access for U.S. and domestic firms.

63%
DECREASE
IN TBT SPECIFIC TRADE CONCERNS

13
COUNTRIES
INCREASED TBT NOTIFICATION

343
PARTICIPANTS TRAINED
IN YEAR 7 STANDARDS ALLIANCE EVENTS

The table below summarizes outcomes witnessed for these metrics in 2019-2020.

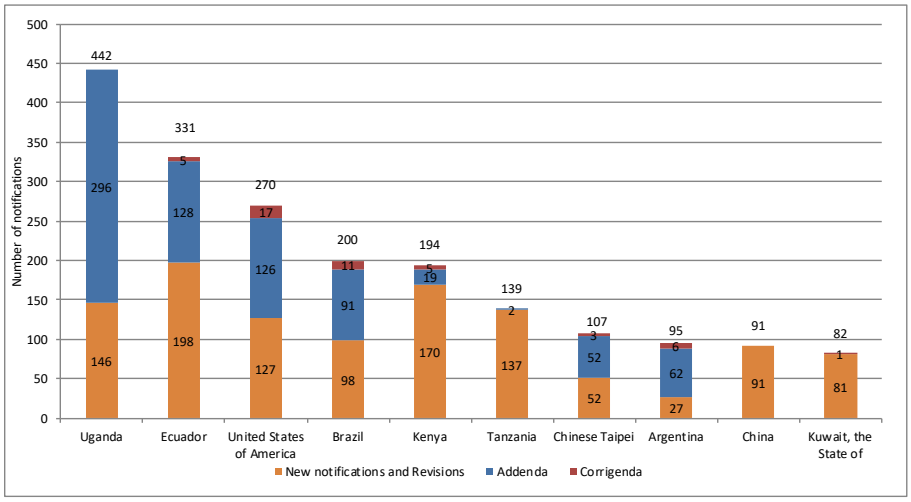
Indicator	Relates to Measure	Definition	Unit of Measurement	Result
1	2, 4, 5	Participants trained on elements of the TBT Agreement (including the Code of Good Practice)	Number of Workshop Attendees	343[2]
2	1, 3	WTO TBT notifications submitted by partner countries	Percentage decrease	10%[3]
3	1, 3	Partner countries showing an increase in WTO TBT notifications	Number of Countries	13[4]
4	4	ISO TCs/SCs in which partner countries participate	Percentage decrease	1.7%[5]
5	5	Workshops held or other opportunities for partner country governments to engage with local private sector	Number of Workshops	9[6]
6	5	Public-private participation at Standards Alliance events	Total Number of Participants	343[7]
7	1, 4, 6	WTO TBT Committee participation by Standards Alliance members since 2012	Percentage Increase	132%[8]
8	1, 4, 6	TBT specific trade concerns raised against Standards Alliance members since 2012	Percentage Decrease	63%[9]
9	2,4	MoU's or informal arrangements established between partner country standards bodies and U.S. based SDO's	Number of Agreements signed	1[10]

2 See complete list of activities on p. 6.
3 Percentage increase in WTO TBT notifications since year 6 (2019-2020)
4 Burundi, Côte d'Ivoire, Ghana, Guatemala, Honduras, Indonesia, Kenya, Morocco, Nicaragua, Panama, Peru, Tanzania, Vietnam all demonstrated increased annual notifications from 2018-2019 to 2019-2020. (Source: http://tbtims.wto.org/)
5 Total TC/SC participation was measured across the 27 countries included in the Standards Alliance who are also ISO members. Source: ISO.
6 See complete list of activities on p.6. This does not include the 4 long-term programs that began in Q2 2020, including Training for Solar PV Technicians, the AU TBT Advisor, NQI Diagnostic and Ghana Green Building Diagnostic, DGDDL ISO 37001 Pilot Project
7 Includes participants in all of the above workshops
8 Decreased WTO TBT Committee participation was measured across 27 Standards Alliance countries based on comments made during WTO TBT Committee meetings. This percentage was calculated by summing the number of STCs raised by member countries during the three TBT Committee meetings in 2012 compared with STCs raised during the three TBT Committee meetings in 2019. This information can be found on the WTO TBT web page, http://tbtims.wto.org/
9 The decrease in STCs was measured across 27 Standards Alliance nations based on comments made at WTO TBT Committee Meetings. This percentage encompasses the total number of STCs raised against Standards Alliance countries during the three WTO TBT Committee meetings in 2012 compared with STCs raised against member countries during TBT Committee meetings in 2017. Minutes from WTO TBT Committee Meetings are available in the searchable WTO document database: docs.wto.org.
10 ANSI- DGDDL (Côte d'Ivoire) MoU signed in 2020

espite a slight decrease in the total number of notifications compared with the previous year, this decline in notification can mainly be attributed to a lower amount of total regulations drafted in Uganda whose notifications decreased from 519 in Year 6 to 333 in Year 7. Perhaps more telling is the fact that 13 of the 27 Standards Alliance partner countries whose TBT notifications have been tracked since 2012 increased their notifications in Year 7. Another notable development is that Côte d'Ivoire notified the WTO for the first time, submitting 17 notifications in Year 7. This change can be attributed to Côte d'Ivoire's participation at the June 2019, WTO TBT Committee's Thematic Session on Transparency, which was facilitated by the Standards Alliance. In July 2019, the Director of Côte d'Ivoire's national standards body, CODINORM, followed up with ANSI and the Standards Alliance for its efforts in facilitating CODINORM's participation at the WTO-initiated training on Technical Barriers to Trade in Geneva. According to CODINORM, the opportunity for Côte d'Ivoire to realize its low level of involvement in the notification system, as well as the need to reinvigorate the work of local committees, was important and pivotal. CODINORM also pointed out that there is a need for the Enquiry Point to be restructured so that it could effectively carry out its notification activities.

According to the WTO's Twenty-fourth Annual Review report, which was released in February 2020, African Members submitted just over a third of all new notifications in 2019, far more than any other regional group. Furthermore, Uganda submitted the most notifications of any Member in 2019 for the third year in row, and Kenya and Tanzania were amongst the top ten notifying Members.

Chart A: Ten Members that submitted most notifications during 2019



CONCLUSION

The Standards Alliance continued to make substantial progress in 2019-2020, accomplishing a significant portion of its stated objectives and completing work plan deliverables, while maintaining open lines of communications with stakeholders and country partners. In addition to these successes, trainings focused on both foundational principles and sectoral priorities, maximizing program impact and potential for robust future work streams. Year 7 emphasized aspects of transparency, National Quality Infrastructure development and resilience building. By weaving in these three foundational principles into existing

relationships, and building on past successes with a renewed focus on these pillars, the Standards Alliance was able to carry out major projects and find creative solutions to the novel challenges presented by the outbreak of the COVID-19 pandemic.

Through the ongoing pursuit of robust capacity-building assistance related to the implementation of the WTO TBT Agreement, the Standards Alliance continued to support positive, long-term standards-related changes in developing countries. In year 7, the Standards Alliance built the capacity for institutions in Côte d'Ivoire, Zambia, and Mozambique to increase transparency, develop their national quality infrastructure, and ultimately foster resilience via greater institutional capacity and good governance. These capacity-building activities are the foundation, which in the long-term enable greater U.S. market access, by decreasing barriers to trade and creating markets that are more attractive for U.S. companies. Countries that embrace and effectively implement Good Regulatory Practice (GRP) principles thus begin their journey to self-reliance by demonstrating their "capacity to plan, finance and implement solutions to local development challenges, as well as the commitment to see these aspects through effectively, inclusively, and with accountability."[11] This budding autonomy was further highlighted by the commitment by multiple partners, such as the BRRA in Zambia, to find innovative ways to pursue GRP principles despite the suspension of in-person meetings and international travel.

Beyond country partners, the Standards Alliance's implementation of a TBT Advisor to the African Union (AU) highlighted the project's growth trajectory as its scope leapt from small-scale, one-time workshops in earlier years, to sustainability-focused, long-term activities with impact at the continental scale. This placement of the U.S. perspective at a key institution such as the AU will serve to strengthen the connection between the U.S. and the African Union, and the U.S. and African continent. Moreover, by providing a much needed counter-balance to the omnipresent European perspective within African NQI institutions, both at the regional and continental level, the TBT Advisor's presence paves the way for future U.S. company access and success in Africa.

In the final year of the first phase of the project, the Standards Alliance will further emphasize the use of transparency mechanisms by partner nations to strengthen their confidence and international legitimacy while ensuring a more clear and predictable business environment for U.S. stakeholders. Beyond its continued technical support for the five African partner countries, ANSI will continue to engage with and build on the relationships formed in the previous and next phase of the Standards Alliance Program.

Future success of the Standards Alliance will rely on continued engagement and support from a diverse stakeholder group in the U.S., including private and public sector experts. ANSI recognizes the contributions of all of the agencies and organizations that participated in the Standards Alliance this year, including first and foremost USAID, as well as USTR, the Department of Commerce, OMB-OIRA, and other regulatory agencies, and ANSI members from the private sector that participated. We look forward to continuing to leverage the expertise of the U.S. public-private partnership for standards, conformity assessment and technical regulations in implementing the final year of Phase 1 of the Standards Alliance.

[11] USAID Policy Framework: Ending the Need for Foreign Assistance Summary; Definition of self-reliance, 2019

Country Needs Assessments:

Facilitating International Standards Development and Participation

SUMMARY

At the beginning of the expansion of the Standards Alliance concluded in 2016, the program performed needs assessments with each of the five new participating nations (Ghana, Côte d'Ivoire, Senegal, Mozambique, Zambia). These assessments included in-country meetings with key stakeholders from the local government and private sector as well as important US government contacts. In this annex to the Year 7 Annual Report ANSI reviews progress made since these initial needs assessments and updates the baseline measurements.

In the initial needs assessment, ANSI recorded data regarding trade-related engagement, priorities and challenges for each country. This included their trade relationship with the U.S. (imports and exports), top exports by category, trade-related agreements with the U.S., and recent specific TBT-related concerns from the U.S. The initial needs assessment also provided a high-level view of each country's trade relationship with the European Union, and relevant regional and international participation. This included participation in trade agreements, the WTO notification processes, and ISO committees. Lastly, the needs assessment also detailed existing technical assistance programs in each country, and the outcomes of the Standards Alliance's scoping meetings.

Through these metrics, the Standards Alliance was able to piece together a complete picture of each country's needs, collect data, and measure progress achieved between 2012 and 2020. The below is a summary of the progress and achievements of each Standards Alliance country in respect to these metrics.

OVERALL

Overall, all partner countries of the Standards Alliance have increased their participation in international standards development in some capacity, and have maintained strong bilateral U.S.-trade relationships, along with stable and positive political and economic relations. Program activities have addressed explicit needs identified during the needs assessments, and otherwise contributed to the progress described by country below.

Looking ahead to the final year of the Standards Alliance, there is a desire to provide partner countries with the tools to continue building on the progress made towards self-reliance. In this realm, the Standards Alliance is in the process of developing a Handbook to create awareness and highlight the importance of standards, metrology and conformity assessment (national quality infrastructure) as they relate to trade facilitation, export competitiveness and market access. The Standards Alliance NQI Handbook will be suitable for use in all countries, with modifiable sections describing and assessing a particular country's NQI system.

The creation of the handbook will result in a critical repository of information, knowledge, and resources fundamental to technical assistance. The Handbook will also offer an important foundation for building

and maintaining an effective and efficient NQI system that is based on international best practices. By delivering this to each partner country, the Standards Alliance will offer a capstone compilation of the principles and assistance provided.

Ghana:

In the initial needs assessment, Ghana was already a strong U.S. trade partner, with U.S. exports totaling $1.1 billion. At the time, Ghana was in the process of Bilateral Investment Treaty (BIT) discussions and had already signed a TIFA with the U.S. in 2008. Despite having joined the WTO in 1995, Ghana had only recorded 3 WTO notifications in the initial needs assessment. Ghana was also an active Full Member of the ISO, participating in 33 Technical Committees and 3 Policy Committees. The country was not a member of the IEC at this time. Since the initial needs assessment, Ghana has solidified its presence as an economic driver for West Africa, and continues to be a strong potential West African partner and hub for American businesses.

Ghana remains a key and important trading partner of the U.S., with $1.4 billion in two-way during 2018, up 27% from 2014, and a U.S. trade surplus of $211 million in 2018, a 93% increase ($102 million) from just the year prior in 2017.

In addition to the Standards Alliance, the U.S. and Ghana have signed a bilateral investment treaty (BIT), and Ghana is an AGOA, Feed the Future, Power Africa, Trade Africa, Partnership for Growth country, and a key member of the regional organization ECOWAS as well as continental organizations the African Organization for Standardization (ARSO) and the African Electrotechnical Standardization Commission (AFSEC). Over the course of the Standards Alliance, Ghana and the U.S. have maintained strong cooperation in the facilitation of capacity building, technical assistance, and knowledge exchange. Since 2016, Ghana has increased its ISO technical committee participation by over 23% and has joined the IEC as an associate member. Ghana remains active by regularly submitting notifications as a WTO member, having submitted 10 since 2012. To see ISO TC participation, WTO notifications, and international/regional participation by country, see Annex A-1.

Côte d'Ivoire:

At the time of the initial needs assessment, Côte d'Ivoire was the 129th largest export market for U.S., with U.S. exports totaling $239 million. In 2014, Côte d'Ivoire did not have any bilateral trade agreements with the U.S. and had never submitted a TBT notification to the WTO. Nonetheless, at the time, Côte d'Ivoire was already a Full Member of the ISO, participating in 54 Technical Committees and 2 Policy Committees. The country was not a member of the IEC at this time. Then and now, Côte d'Ivoire has been an essential trading partner to the U.S. in the region and maintained a close, symbiotic relationship with the U.S.
Currently, Côte d'Ivoire is one of the largest trading partners in the region, with $1.6 billion in two-way trade during 2018, and U.S. goods trade exports were $309 million, with a trade deficit of $937 million in 2018.
In 2017, Cote d'Ivoire's agricultural export-based economy was the second fastest growing in Sub-Saharan Africa, and has considerable potential politically and economically. U.S.-Ivorian relations continue to be friendly and close; thus, Côte d'Ivoire can aid in maintaining U.S. efforts to promote regional stability and democratic institutions. U.S. assistance to Côte d'Ivoire focuses on four priority areas: strengthening democracy and governance, expanding economic opportunities, advancing security sector reform, and

improving health care systems and outcomes. The Standards Alliance program's objectives and outcomes have closely aligned with these objectives.

In addition to the Standards Alliance, Côte d'Ivoire is AGOA-eligible and participates in Power Africa, Trade Africa, and Millennium Challenge Corporation (MCC) programming. The country is also a key member of regional and continental bodies including ECOWAS, ARSO and AFSEC. In 2017, the U.S. and Côte d'Ivoire signed a 5-year MCC Compact to facilitate trade and stability. Côte d'Ivoire submitted its first TBT notification to the WTO in 2019 following a transparency training provided by the WTO. The Standards Alliance facilitated Ivorian participation in this training, which led to the submission of 17 notifications to the WTO between July and December of 2019. Côte d'Ivoire has also become an active member in ISO technical committees, increasing over 100% from 31 in 2013 to 64 in 2020. To see ISO TC participation, WTO notifications, and international/regional participation by country, see Annex A-1.

Senegal:

In 2013, U.S. exports to Senegal totaled $81 million. The United States and Senegal signed a Bilateral Investment Treaty (BIT) in 1983 which entered into force in 1990. Senegal does not have a TIFA with the U.S. In 2014, Senegal submitted 8 WTO notifications, despite having joined the WTO in 1995. Senegal was a Full Member of the ISO, participating in 7 Technical Committees and 3 Policy Committees at the time of the initital needs assessment**.** The country was not a member of the IEC at this time**.** Since, Senegal remains a key partner for the U.S. in promoting peace and security in Africa, sharing many fundamental values and international goals with the U.S.

Today, Senegal and the U.S. remain important trading partners with $416 million in total two-way trade in 2018, with a surplus of $162 million in 2018, a 19.5% increase since 2017.

In addition to the Standards Alliance, the U.S. and Senegal have signed a BIT, and Senegal is both AGOA-eligible and a member of strategic regional and continental organizations including ECOWAS, ARSO, and AFSEC. Overall, the U.S. maintains and benefits from a positive public diplomacy environment in Senegal. Over the course of the Standards Alliance program, Senegal has increased its participation in ISO technical committees by 180% since 2016, and has become an IEC Affiliate country. To see ISO TC participation, WTO notifications, and international/regional participation by country, see Annex.

Mozambique:

In 2013, Mozambique was the 122nd largest export market for U.S. goods. U.S. exports to Mozambique totaled $306 million. At the time of the initial needs assesment, Mozambique was a Correspondent Member of the ISO, participating in 8 Technical Committees and 3 Policy Committees. The country was not a member of the IEC. In 2014, Mozambique had issued 9 WTO Notifications total.
Mozambique and the U.S. signed a Bilateral Investment Treaty (BIT), which went into effect in March 2005. The two countries also signed a Trade and Investment Framework Agreement (TIFA) in 2005. Mozambique is currently eligible for preferential trade benefits under the African Growth and Opportunity Act (AGOA). Mozambique was the United States' 143rd largest goods trading partner ($297 million) in 2018.

Since the establishment of the Standards Alliance in 2012, Mozambique has reached multiple important milestones. Over the past seven years, Mozambique has become a member of the International

Electrotechnical Commission. Although Mozambique participates in the Southern Africa Development Community (SADC), it is not a member of any of the continental standardization organizations. Additionally, although Mozambique has been a member of the World Trade Organization (WTO) since 1995, the country only began actively making use of the Technical Barrier to Trade (TBT) Notification System following Standards Alliance engagement. Since then, Mozambique has submitted 15 notifications.

Overall, since 2012, Mozambique has displayed increased participation with international standards bodies, as highlighted by accession to the IEC and growing use of the TBT WTO notification system since 2012. Moreover, Mozambique has steadily increased participation in ISO committees, with participation increasing from zero to nine TCs, and zero to three PDCs over seven years. The PDCs include ISO/CASCO on Conformity Assessment, ISO/COPOLCO on consumer policy, and ISO/DEVCO to support developing countries. To see ISO TC participation, WTO notifications, and international/regional participation by country, see Annex A-1.

Zambia:

At the time of the initial needs assessment, Zambia was the 146th largest export for U.S. goods, with total exports valued at $141 million. Zambia not a member of the IEC in 2013. Zambia joined the WTO in 1995, and had issued 48 notifications to the WTO. As a Correspondent Member of the ISO, Zambia participated in 16 Technical Committees and 2 Policy Committees. Over the course of the Standards Alliance, Zambia has progressed both as a trading partner to the U.S, and as a participant within international trade and standardization bodies.

The U.S. and Zambia signed a Trade and Investment Framework Agreement (TIFA) in 2001. Additionally, the U.S. and the Common Market for Eastern and Southern Africa (COMESA) signed a Trade and Investment Framework Agreement (TIFA) in 2001. The latest TIFA Council meeting was held in Lusaka, Zambia in November 2009. At the regional level, Zambia is a member of the Southern Africa Development Community (SADC), the African Organization for Standardization (ARSO) and the African Electrotechnical Standardization Commission (AFSEC). Zambia is eligible for preferential trade benefits under the African Growth and Opportunity Act (AGOA). In 2018, Zambia was the United States' 132nd largest good trading partner ($385 million).

Since the establishment of the Standards Alliance in 2012, Zambia has made great progress in its engagement with international standards bodies. Over the course of the Standards Alliance project, Zambia has doubled its WTO TBT notifications. Prior to 2012, Zambia had submitted forty-four TBT notifications and today, in 2020, this number has reach eighty-eight. Forty of these TBT notifications were submitted between April 2016 and May 2017. Additionally, Zambia joined the IEC as an Accredited Member over the course of the past seven years.

Zambia is currently a Corresponding Member of the (ISO) and as of 2012 has doubled its participation in Technical Committees, participating in twenty-four Technical Committees (TC) in 2020, and is an Observing Member of three Policy Development Committees (PDC). The PDCs include ISO/CASCO on Conformity Assessment, ISO/COPOLCO on consumer policy, and ISO/DEVCO to support developing countries. To see ISO TC participation, WTO notifications, and international/regional participation by country, see Annex A-1.

Over the course of the Standards Alliance, Zambia has proven to be an active and engaged partner country. Doubling both its TBT WTO notification submissions and the number of ISO TCs in which participates, Zambia has proven its commitment to growth in standardization and trade facilitation practices. This zeal has been evident through the activities of the Standards Alliance in Zambia, which have helped Zambia develop its National Quality Infrastructure via Regulatory Impact Assessment trainings.

Notably, the Standards Alliance and the government of Zambia have worked closely to support the increased development and institutionalization of the regulatory review process in Zambia. This is a key outcome as multiple Zambian officials noted this deliverable during the initial needs assessment process.

Annex A-1: Standards Alliance Countries in 2020

Tables 1: Overview of regional/international participation

1. Overview of Countries Regional and International Participation

Overview of regional/international participation						
Region	International/Continental				Regional	
West Africa	ISO	IEC	ARSO	AfCTFA (ratified)	ECOWAS	WAEMU
Ghana	✓	☑	✓	☑	✓	
Senegal	✓	☑	✓	☑	✓	✓
Cote D'Ivoire	✓	☑	✓	☑	✓	✓
South Africa					SADC	COMESA
Mozambique	✓	☑			✓	
Zambia	✓	☑	✓		✓	✓

✓ Participant prior to 2016 ☑ new participant since 2016

Table 2: WTO TBT Notification History

2. Standards Alliance Countries WTO TBT Notification History

Country & Year Joined WTO	**Number of WTO Notifications***									
	pre 2012	2013	2014	2015	2016	2017	2018	2019	2020	Total since 2012
Ghana (1995)	9	0	2	1	0	0	0	1	6	10
Senegal (1995)	8	0	0	0	0	1	1	0	0	2
Cote d'Ivoire (1995)	0	0	0	0	0	0	0	0	17	17
Mozambique (1995)	0	5	4	0	0	2	2	1	1	15
Zambia (1995)	44	0	0	0	4	40	0	0	0	44

*Data taken from WTO Notifications

Tables 3: ISO participation breakdown (2012/2016/2020)

3. Standards Alliance Countries ISO Participation: 2012 - 2020

Country	ISO membership type	ISO participation breakdown
MOZAMBIQUE	2016: Correspondent member, participating in 8 TCs, 3 PDC (Policy Development Committee) 2020: Correspondent Member, participating in 9 TCs, 3 PDC	**Technical Committees:** **2012**: N/A **2016: 8 TCs** • ISO/TC 34 - Food products (*O-Member*) • ISO/TC 34/SC 3 - Fruits and vegetables and their derived products (*P-Member*) • ISO/TC 34/SC 6 - Meat, poultry, fish, eggs and their products (P-Member) • ISO/TC 68 - Financial services (O-Member) • ISO/TC 147 - Water quality (O-Member) • ISO/TC 147/SC 2 - Physical, chemical and biochemical methods (P-Member) – *(no longer listed as of 2020)* • ISO/TC 147/SC 4 - Microbiological methods (*P-Member*) • ISO/TC 228 - Tourism and related services (*P-Member)* **2020: (9 total TCs.)** • ISO/TC 59/ SC 5 – Framework for the description of housing performance (P- Member) • ISO/TC 107/SC 9 – Physical vapor deposition coatings (O-member) **PDC: Observing Member** - ISO/CASCO - ISO/COPOLCO - ISO/DEVCO
ZAMBIA	2016: Correspondent member, participating in 16 TCs, 2 PDC	**Technical Committees:** **2012: 12 TCs** **2016: (21 total TCs)**

	2020: Correspondent member, participating in 24 TCs, 3 PDC	1. ISO/IEC JTC 1/SC 38 - Cloud Computing and Distributed Platforms (O-Member) 2. ISO/TC 34 - Food products (O-Member) 3. ISO/TC 34/SC 6 - Meat, poultry, fish, eggs and their products (O-Member) 4. ISO/TC 34/SC 17 - Management systems for food safety (P-Member) 5. ISO/TC 68 - Financial services (O-Member) 6. ISO/TC 82 - Mining (P-Member) 7. ISO/TC 82/SC 7 - Mine closure and reclamation management (O-Member) 8. ISO/TC 86 - Refrigeration and air-conditioning (O-Member) 9. ISO/TC 86/SC 6 - Testing and rating of air-conditioners and heat pumps (O-Member) 10. ISO/TC 126 - Tobacco and tobacco products (O-Member) 11. ISO/TC 147 - Water quality (O-Member) 12. ISO/TC 174 - Jewellery (O-Member) 13. ISO/TC 218 - Timber (O-Member) 14. ISO/TC 224 - Service activities relating to drinking water supply systems and wastewater systems - Quality criteria of the service and performance indicators (P-Member) 15. ISO/TC 242 - Energy Management (P-Member) 16. ISO/PC 278 - Anti-bribery management systems (P-Member) – Not in ISO website **As of 2020: (24 Total TCs)** • ISO/ TC 301 – Energy management and energy savings (P – Member) • ISO/TC 28 - Petroleum and related products, fuels and lubricants from natural or synthetic sources (O – Member) • ISO/TC 35 – paints and varnishes (O-Member) • ISO/TC 134 - Fertilizers, soil conditioners and beneficial substances (O-Member)

		• ISO/TC 176 – Quality management and quality assurance (O-Member) • ISO/TC 229 – Nanotechnologies (O-Member) • ISO/TC 264 – Fireworks (O-Member) • ISO/TC 300 – Solid Recovered Fuels (O-Member) • ISO/TC 306 – Foundry Machinery (O-Member) • ISO/PC 318 - Community scale resource oriented sanitation treatment systems (O-Member**)** **PDC: Observing Member** - ISO/CASCO - ISO/COPOLCO - ISO/DEVCO
GHANA	2020: Full member, participating in 42 TCs and 3 PDC	**2012: N/A** **2016: (33 TCs)** • ISO/IEC JTC 1 - Information technology (*O-Member*) • ISO/IEC JTC 1/SC 2 - Coded character sets (*O-Member*) • ISO/IEC JTC 1/SC 6 - Telecommunications and information exchange between systems (*O-Member*) • ISO/IEC JTC 1/SC 7 - Software and systems engineering (*O-Member*) • ISO/IEC JTC 1/SC 17 - Cards and personal identification (*O-Member*) • ISO/IEC JTC 1/SC 22 - Programming languages, their environments and system software interfaces (*O-Member*) • ISO/IEC JTC 1/SC 23 - Digitally Recorded Media for Information Interchange and Storage (*O-Member*) • ISO/IEC JTC 1/SC 24 - Computer graphics, image processing and environmental data representation (*O-Member*) • ISO/IEC JTC 1/SC 25 - Interconnection of information technology equipment (*O-Member*) • ISO/IEC JTC 1/SC 27 - IT Security techniques (*O-Member*) • ISO/IEC JTC 1/SC 28 - Office equipment (*O-Member*) • ISO/IEC JTC 1/SC 31 - Automatic identification and data capture techniques (*O-Member*) • ISO/IEC JTC 1/SC 32 - Data management and interchange (*O-Member*) • ISO/IEC JTC 1/SC 35 - User interfaces (*O-Member*) • ISO/IEC JTC 1/SC 36 - Information technology for learning, education and training (*O-Member*)

		• ISO/IEC JTC 1/SC 37 - Biometrics (*O-Member*) • ISO/TC 34 - Food products (*P-Member*) • ISO/TC 34/SC 17 - Management systems for food safety (*P-Member*) • ISO/TC 34/SC 18 - Cocoa (*Secretariat*) • ISO/TC 157 - Non-systemic contraceptives and STI barrier prophylactics (*O-Member*) • ISO/TC 207 - Environmental management (*P-Member*) • ISO/TC 207/SC 1 - Environmental management systems (*P-Member*) • ISO/TC 207/SC 2 - Environmental auditing and related environmental investigations (*P-Member*) • ISO/TC 207/SC 3 - Environmental labelling (*P-Member*) • ISO/TC 217 - Cosmetics (*P-Member*) • ISO/TC 218 - Timber (*P-Member*) • ISO/PC 245 - Cross-border trade of second-hand goods (*P-Member*) • ISO/TC 249 - Traditional chinese medicine (*P-Member*) • ISO/TC 260 - Human resource management (*O-Member*) • ISO/PC 283 - Occupational health and safety management systems (*P-Member*) • ISO/TC 285 - Clean cookstoves and clean cooking solutions (*P-Member*) • ISO/TC 291 - Domestic gas cooking appliances (*O-Member*) • ISO/TC 296 - Bamboo and rattan (*O-Member*) **2020: (42 TCs)** *(O-Members)* • ISO/IEC JTC 1- Information technology • ISO/IEC JTC 1/SC 2-Coded character sets • ISO/IEC JTC 1/SC 6 Telecommunications and information exchange between systems • ISO/IEC JTC 1/SC 7 Software and systems engineering • ISO/IEC JTC 1/SC 17-Cards and security devices for personal identification • ISO/IEC JTC 1/SC 22 Programming languages, their environments and system software interfaces • ISO/IEC JTC 1/SC 23 Digitally Recorded Media for Information Interchange and Storage • ISO/IEC JTC 1/SC 24 Computer graphics, image processing and environmental data representation • ISO/IEC JTC 1/SC 27 Information security, cybersecurity and privacy protection

		• ISO/IEC JTC 1/SC 28 Office equipment • ISO/IEC JTC 1/SC 31 Automatic identification and data capture techniques • ISO/IEC JTC 1/SC 32 Data management and interchange • ISO/IEC JTC 1/SC 35 User interfaces • ISO/IEC JTC 1/SC 36 Information technology for learning, education and training • ISO/IEC JTC 1/SC 37 Biometrics • ISO/TC 30 Measurement of fluid flow in closed conduits • ISO/TC 38/SC 2 Cleansing, finishing and water resistance tests • ISO/TC 106/SC 7 Oral care products • ISO/TC 157 Non-systemic contraceptives and STI barrier prophylactics • ISO/TC 165 Timber structures • ISO/TC 260 Human resource management • ISO/TC 291 Domestic gas cooking appliances • ISO/PC 318 Community scale resource oriented sanitation treatment systems *(P-Members)* • ISO/TC 30/SC 5 Velocity and mass methods • ISO/TC 34 Food products • ISO/TC 34/SC 17 Management systems for food safety • ISO/TC 34/SC 18 Cocoa • ISO/TC 34/SC 19 Bee products • ISO/TC 135 Non-destructive testing • ISO/TC 135/SC 5 Radiographic testing • ISO/TC 135/SC 6 Leak testing • ISO/TC 207 Environmental management • ISO/TC 207/SC 1 Environmental management systems • ISO/TC 207/SC 2 Environmental auditing and related environmental investigations • ISO/TC 207/SC 3 Environmental labelling • ISO/TC 217 Cosmetics • ISO/TC 218 Timber • ISO/TC 249 Traditional Chinese medicine • ISO/TC 283 Occupational health and safety management • ISO/TC 285 Clean cookstoves and clean cooking solutions • ISO/TC 296 Bamboo and rattan • ISO/TC 323 Circular economy

SENEGAL	2020: Full member, participating in 28 TCs and 3PDC	**2012: N/A** **2016: (7 TCs)** • ISO/TC 34 - Food products (*O-Member*) • ISO/TC 176 - Quality management and quality assurance (*O-Member*) • ISO/TC 207 - Environmental management (*O-Member*) • ISO/TC 234 - Fisheries and aquaculture (*P-Member*) • ISO/TC 260 - Human resource management (*O-Member*) • ISO/TC 268 - Sustainable development in communities (*O-Member*) • ISO/TC 285 - Clean cookstoves and clean cooking solutions (*P-Member*) **2020: (28 TCs)** *(O-Members)* • ISO/IEC JTC 1/SC 27 Information security, cybersecurity and privacy protection • ISO/IEC JTC 1/SC 40 IT Service Management and IT Governance • ISO/TC 34 Food products • ISO/TC 59/SC 17 Sustainability in buildings and civil engineering works • ISO/TC 68 Financial services • ISO/TC 68/SC 2 Financial Services, security • ISO/TC 68/SC 8 Reference data for financial services • ISO/TC 68/SC 9 Information exchange for financial services • ISO/TC 82 Mining • ISO/TC 176 Quality management and quality assurance • ISO/TC 207 Environmental management • ISO/TC 234 Fisheries and aquaculture • ISO/TC 260 Human resource management • ISO/TC 268 Sustainable cities and communities • ISO/TC 268/SC 1 Smart community infrastructures • ISO/TC 283 Occupational health and safety management • ISO/TC 285 Clean cookstoves and clean cooking solutions • ISO/TC 304 Healthcare organization management • ISO/TC 314 Ageing societies • ISO/PC 315 Indirect, temperature-controlled refrigerated delivery services – land transport of parcels with intermediate transfer • ISO/PC 317 Consumer protection: privacy by design for consumer goods and services

		(P-Members) • ISO/TC 34/SC 18 Cocoa • ISO/TC 34/SC 19 Bee products • ISO/TC 82/SC 7 Mine closure and reclamation management • ISO/TC 224 Service activities relating to drinking water supply, wastewater and stormwater systems • ISO/PC 318 Community scale resource oriented sanitation treatment systems • ISO/TC 321 Transaction assurance in E-commerce • ISO/TC 323 Circular economy
COTE D'IVOIRE	2020: Full member, participating in 64 TCs and 3 PDC	**2012: 31 TCs** **2016: (38 TCs)** • ISO/IEC JTC 1 - Information technology (*P-Member*) • ISO/IEC JTC 1/SC 27 - IT Security techniques (*P-Member*) • ISO/IEC JTC 1/SC 32 - Data management and interchange (*P-Member*) • ISO/IEC JTC 1/SC 34 - Document description and processing languages (*O-Member*) • ISO/IEC JTC 1/SC 40 - IT Service Management and IT Governance (*P-Member*) • ISO/TC 28 - Petroleum products and related products of synthetic or biological origin (*O-Member*) • ISO/TC 34 - Food products (*P-Member*) • ISO/TC 34/SC 2 - Oleaginous seeds and fruits and oilseed meals (*O-Member*) • ISO/TC 34/SC 3 - Fruits and vegetables and their derived products (*O-Member*) • ISO/TC 34/SC 4 - Cereals and pulses (*O-Member*) • ISO/TC 34/SC 5 - Milk and milk products (*O-Member*) • ISO/TC 34/SC 11 - Animal and vegetable fats and oils (*O-Member*) • ISO/TC 34/SC 15 - Coffee (*P-Member*) • ISO/TC 34/SC 17 - Management systems for food safety (*P-Member*) • ISO/TC 34/SC 18 - Cocoa (*P-Member*) • ISO/TC 35 - Paints and varnishes (*O-Member*) • ISO/TC 38 - Textiles (*O-Member*) • ISO/TC 47 - Chemistry (*O-Member*) • ISO/TC 54 - Essential oils (*O-Member*) • ISO/TC 59 - Buildings and civil engineering works (*O-Member*) • ISO/TC 68 - Financial services (*O-Member*)

		• ISO/TC 71 - Concrete, reinforced concrete and pre-stressed concrete (*O-Member*) • ISO/TC 74 - Cement and lime (*O-Member*) • ISO/TC 89 - Wood-based panels (*O-Member*) • ISO/TC 93 - Starch (including derivatives and by-products) (*O-Member*) • ISO/TC 104 - Freight containers (*O-Member*) • ISO/TC 122 - Packaging (*O-Member*) • ISO/TC 126 - Tobacco and tobacco products (*O-Member*) • ISO/TC 146 - Air quality (*O-Member*) • ISO/TC 147 - Water quality (*P-Member*) • ISO/TC 147/SC 1 - Terminology (*P-Member*) • ISO/TC 147/SC 2 - Physical, chemical and biochemical methods (*O-Member*) • ISO/TC 147/SC 4 - Microbiological methods (*P-Member*) • ISO/TC 147/SC 5 - Biological methods (*O-Member*) • ISO/TC 147/SC 6 - Sampling (general methods) (*O-Member*) • ISO/TC 165 - Timber structures (*O-Member*) • ISO/TC 176 - Quality management and quality assurance (*P-Member*) • ISO/TC 176/SC 1 - Concepts and terminology (*P-Member*) • ISO/TC 176/SC 2 - Quality systems (*P-Member*) • ISO/TC 176/SC 3 - Supporting technologies (*P-Member*) • ISO/TC 190 - Soil quality (*O-Member*) • ISO/TC 193 - Natural gas (*O-Member*) • ISO/TC 207 - Environmental management (P-*Member*) • ISO/TC 207/SC 1 - Environmental management systems (*O-Member*) • ISO/TC 207/SC 2 - Environmental auditing and related environmental investigations (*P-Member*) • ISO/TC 207/SC 3 - Environmental labelling (*P-Member*) • ISO/TC 207/SC 4 - Environmental performance evaluation (*P-Member*) • ISO/TC 207/SC 5 - Life cycle assessment (*P-Member*) • ISO/TC 207/SC 7 - Greenhouse gas management and related activities (*P-Member*) • ISO/TC 217 - Cosmetics (*O-Member*) • ISO/PC 277 - Sustainable procurement (*P-Member*) • ISO/PC 278 - Anti-bribery management systems (*P-Member*)

		• ISO/PC 283 - Occupational health and safety management systems (*P-Member*) 2020: (**64 TCs)** *(O-Members)* • ISO/IEC JTC 1/SC 27 Information security, cybersecurity and privacy protection • ISO/IEC JTC 1/SC 32 Data management and interchange • ISO/IEC JTC 1/SC 34 Document description and processing languages • ISO/TC 28 Petroleum and related products, fuels and lubricants from natural or synthetic sources • ISO/TC 34/SC 2 Oleaginous seeds and fruits and oilseed meals • ISO/TC 34/SC 3 Fruits and vegetables and their derived products • ISO/TC 34/SC 4 Cereals and pulses • ISO/TC 34/SC 5 Milk and milk products • ISO/TC 34/SC 11 Animal and vegetable fats and oils • ISO/TC 38 Textiles • ISO/TC 47 Chemistry • ISO/TC 54 Essential oils • ISO/TC 68 Financial services • ISO/TC 71 Concrete, reinforced concrete and pre-stressed concrete • ISO/TC 74 Cement and lime • ISO/TC 89 Wood-based panels • ISO/TC 93 Starch (including derivatives and by-products) • ISO/TC 104 Freight containers • ISO/TC 122 Packaging • ISO/TC 126 Tobacco and tobacco products • ISO/TC 146 Air quality • ISO/TC 147/SC 2 Physical, chemical and biochemical methods • ISO/TC 147/SC 4 Microbiological methods • ISO/TC 147/SC 5 Biological methods • ISO/TC 147/SC 6 Sampling (general methods) • ISO/TC 165 Timber structures • ISO/TC 190 Soil quality • ISO/TC 193 Natural gas • ISO/TC 207/SC 1 Environmental management systems • ISO/TC 217 Cosmetics • ISO/TC 218 Timber *(P-Members)* • ISO/IEC JTC 1 Information technology

		• ISO/IEC JTC 1/SC 40 IT Service Management and IT Governance • ISO/TC 34 Food products • ISO/TC 34/SC 15 Coffee • ISO/TC 34/SC 17 Management systems for food safety • ISO/TC 34/SC 18 Cocoa • ISO/TC 34/SC 19 Bee products • ISO/TC 35 Paints and varnishes • ISO/TC 59 Buildings and civil engineering works • ISO/TC 82/SC 7 Mine closure and reclamation management • ISO/TC 147 Water quality • ISO/TC 147/SC 1 Terminology • ISO/TC 176 Quality management and quality assurance • ISO/TC 176/SC 1 Concepts and terminology • ISO/TC 176/SC 2 Quality systems • ISO/TC 176/SC 3 Supporting technologies • ISO/TC 207 Environmental management • ISO/TC 207/SC 2 Environmental auditing and related environmental investigations • ISO/TC 207/SC 3 Environmental labelling • ISO/TC 207/SC 4 Environmental performance evaluation • ISO/TC 207/SC 5 Life cycle assessment • ISO/TC 207/SC 7 Greenhouse gas management and related activities • ISO/TC 232 Education and learning services • ISO/TC 268 Sustainable cities and communities • ISO/TC 279 Innovation management • ISO/TC 283 Occupational health and safety management • ISO/TC 292 Security and resilience • ISO/TC 309 Governance of organizations • ISO/PC 318 Community scale resource oriented sanitation treatment systems • ISO/TC 321 Transaction assurance in E-commerce • ISO/TC 323 Circular economy • ISO/TC 330 Surfaces with biocidal and antimicrobial properties • ISO/TC 331 Biodiversity