STRATEGIC BUSINESS PLAN

ISO/TC 285
Clean cookstoves and clean cooking solutions

August 2021

EXECUTIVE SUMMARY

ISO/TC 285 is responsible for standardization in the field of cookstoves and clean cooking solutions for people who use traditional cooking methods.

Nearly 3 billion people cook over open fires or rudimentary stoves using traditional cooking methods including wood, dung, coal, and crop residues. Burning solid fuel releases particulate matter, carbon monoxide, and other toxic pollutants, leading to indoor air pollution levels that can be 20 to 100 times greater than the World Heath Organization's (WHO) air quality guidelines. An estimated 4 million premature deaths annually are attributed to exposure to smoke from cooking over open fires and traditional cookstoves. This issue also impacts the environment and climate change—open fires and all cookstoves release greenhouse gases and black carbon, and put pressure on local resources (e.g. forests, habitat). Households can spend up to 5 hours per day gathering fuel or up to 40% of their household income on fuel. Thus, this issue impacts not only health and the environment, but also the livelihoods of billions of people who rely on traditional cooking methods.

Cleaner and more efficient cooking technologies and fuels can improve health, environment, and livelihood impacts, including through production and distribution of stoves and fuels. These cooking technologies include a wide range of biomass stoves, solar cookers, liquid and gas fuels and stoves, electric stoves, and heat retention devices. Rigorous standards are helpful to evaluate these options and communicate their performance and potential impacts to expand the market of high performing, high quality, and safe options for consumers. Because affordability, accessibility, use, and the behavior aspects related to clean cooking solutions are also critical goals, work of ISO/TC 285 will be in conjunction with ongoing global efforts in these areas. Addressing these challenges is an opportunity to contribute to 10 of the 17 United Nations' Sustainable Development Goals (No Poverty, Zero Hunger, Good Health and Well-Being, Quality Education, Gender Equality, Affordable and Clean Energy, Decent Work and Economic Growth, Sustainable Cities and Communities, Climate Action, and Life on Land).

The ISO International Workshop Agreement 11:2012 demonstrated how a unified international framework can increase investment and growth in the clean cooking sector, while also providing flexibility for different organizations' and governments' priorities. ISO/TC 285 was launched to have an ongoing program of work to continually develop and improve the framework to evaluate cookstoves and clean cooking solutions, with the input of and with relevance to the global community of experts in this sector. Across ISO/TC 285's Working Groups, the common objective is to develop standards related to health- and climate-relevant emissions, efficiency, safety, durability, laboratory and field testing methods, and social impacts.

ISO/TC 285 is focused on clean cooking solutions for people who have relied on traditional cooking methods. This broad scope enables the committee to work on priority standards needed across a range of cookstove types, fuel types, and geographies. Importantly, this scope does not mean that ISO/TC 285 will develop standards for all cookstove and fuel types, characteristics, and impacts. ISO/TC 285 will continue to focus on priority areas identified by members, as outlined in this strategic business plan, and liaise with other technical committees working on related standards.

To date, four documents have been published under the direct responsibility of ISO/TC 285:

- Harmonized laboratory test protocols – Part 1: Standard test sequence for emissions performance, safety, and durability (ISO 19867-1:2018)
- Harmonized laboratory test protocols – Part 3: Voluntary performance targets for cookstoves based on laboratory testing (ISO/TR 19867-3:2018)
- Vocabulary (ISO TR/ 21276:2018)
- Field Testing Methods for Cookstoves (ISO 19869:2019)

Three documents are under development currently. Published documents are translated into additional languages, continually evaluated, disseminated through workshops, and the lessons will be incorporated into future standards review and the development of new projects. The impacts of the COVID-19 global pandemic

will impact the standard process and the stove industry in ways that the committee experts do not fully understand yet. The Strategic Business Plan was developed prior to the pandemic and will need to be adapted as the pandemic evolves and its impacts are better understood.

1. INTRODUCTION

1.1 ISO technical committees and business planning

The extension of formal business planning to ISO Technical Committees (ISO/TCs) is an important measure which forms part of a major review of business. The aim is to align the ISO work programme with expressed business environment needs and trends and to allow ISO/TCs to prioritize among different projects, to identify the benefits expected from the availability of International Standards, and to ensure adequate resources for projects throughout their development.

1.2 International standardization and the role of ISO

The foremost aim of international standardization is to facilitate the exchange of goods and services through the elimination of technical barriers to trade.

Three bodies are responsible for the planning, development and adoption of International Standards: ISO (International Organization for Standardization) is responsible for all sectors excluding Electrotechnical, which is the responsibility of IEC (International Electrotechnical Committee), and most of the Telecommunications Technologies, which are largely the responsibility of ITU (International Telecommunication Union).

ISO is a legal association, the members of which are the National Standards Bodies (NSBs) of some 164 countries (organizations representing social and economic interests at the international level), supported by a Central Secretariat based in Geneva, Switzerland.

The principal deliverable of ISO is the International Standard.

An International Standard embodies the essential principles of global openness and transparency, consensus and technical coherence. These are safeguarded through its development in an ISO Technical Committee (ISO/TC), representative of all interested parties, supported by a public comment phase (the ISO Technical Enquiry). ISO and its Technical Committees are also able to offer the ISO Technical Specification (ISO/TS), the ISO Public Available Specification (ISO/PAS) and the ISO Technical Report (ISO/TR) as solutions to market needs. These ISO products represent lower levels of consensus and have therefore not the same status as an International Standard.

ISO offers also the International Workshop Agreement (IWA) as a deliverable which aims to bridge the gap between the activities of consortia and the formal process of standardization represented by ISO and its national members. An important distinction is that the IWA is developed by ISO workshops and fora, comprising only participants with direct interest, and so it is not accorded the status of an International Standard.

2. BUSINESS ENVIRONMENT OF THE ISO/TC

2.1 Description of the Business Environment

The following political, economic, technical, regulatory, legal and social dynamics describe the business environment of the industry sector, products, materials, disciplines or practices related to the scope of this ISO/TC, and they may significantly influence how the relevant standards development processes are conducted and the content of the resulting standards.

2.1.1 Health, environmental, social, and cultural issues related to the sector

Nearly 3 billion people cook food over open fires or rudimentary, often unvented stoves using traditional cooking methods including wood, dung, coal, and crop residues. Cooking is done in very different settings – from fully enclosed rooms to open air. This is a major influence for the kitchen concentration and the exposure related to cooking. Indoor burning of traditional cooking methods releases dangerous particulate matter, carbon monoxide, and other toxic pollutants, leading to indoor air pollution levels that may be20 to 100 times greater than the World Heath Organization's (WHO) air quality guidelines. An estimated 4 million premature deaths annually are caused by exposure to smoke from open fires and traditional cookstoves. Open fires and traditional cookstoves also release greenhouse gases and black carbon, and put pressure on local environmental resources (e.g. forests, habitat). Thus, this issue has impacts on the environment at the regional and global levels. Households, primarily women and children, can spend up to 5 hours per day gathering fuel or spend up to 40% of their household income. Thus, this issue impacts not only health and the environment, but also the livelihoods of the billions of people who rely on traditional cooking methods.

Motivating people to make behavioral changes in how they cook is one of the sector's major challenges. The decision to adopt a clean cookstove or switch to the use of a cleaner fuel is complicated by social and cultural practices related to cooking, the needs of the households, where the decision-making power resides, as well as other market-related factors like availability and affordability of the products. Therefore, evaluation of technology and fuel performance cannot be isolated from consideration of behavioral and cultural issues, and consideration of stoves and fuels as part of a complete cooking system in a household.

2.1.2 Summary of technologies and fuels that are available and recent innovations

Traditional cooking methods include rudimentary open or three-stone fires or basic stoves constructed from locally available materials such as stones, ceramics, clay, bricks, and metal sheets. The variety of available alternative cooking technologies also reflects diverse economic, sociocultural, fuel and energy availability and requirements. Many stoves types — for example, top lit updraft (TLUD)/gasifier, fan/forced air, rocket/side-feed — are designed to improve fuel combustion, increase efficiency, and reduce emissions of harmful pollutants. Stoves can be made with and without chimneys, portable or built-in-place, and can be made with mud, cement, metal or ceramic. Accessory components including fans, thermoelectric generators, and USB ports can improve performance as well as add functionality to meet consumer preferences. The stoves are also designed to reflect local cooking styles, with one or multiple burners/pot-holes to accommodate large or small pots, or with an incorporated griddle for cooking foods such as tortillas or flat-breads. Stoves are typically optimized for a single fuel type, although hybrid technologies are also emerging that utilize multiple types of fuels in the same device. The cookstove sector is continuously innovating to improve performance, durability, affordability, usability and safety, incorporating testing and user acceptance into every step of the design process.

Traditional cooking methods include wood, charcoal, agricultural residues, dung and coal. Solid biomass can be processed into smaller and more uniform pieces to produce pellets or briquettes (carbonized or uncarbonized). Solid biomass can also be converted into biogas or liquids such as alcohol. Other fuels include kerosene and liquified petroleum gas (LPG) and electric cooking. Processed biomass fuels, gas and liquid fuels typically burn much more cleanly than traditional cooking methods in a variety of technology options.

2.1.3 Categories and concerns of relevant stakeholders

Private sector stakeholders include for-profit or social enterprise organizations involved in the design, manufacture, distribution, marketing, and sale of clean cookstoves or fuels. This group includes local, regional and international stove manufacturers and distributors, fuel suppliers, and retailers. Many non-governmental organizations also focus on these same areas of work (from design to distribution) operating as non-profit or humanitarian organizations. The term "enterprise" is often used to include both for-profit and non-profit organizations involved in the clean cooking value chain. Standards will help determine how these enterprises' products will be evaluated, which could be a means to differentiate their products in the marketplace, regulate their products, and to communicate product information to consumers.

The private sector also includes investors that support the growth of enterprises as the clean cooking sector matures as an industry. Investors look for clarity and confidence for which business and products to invest in, to maximize the return on investment and impacts (for impact investors). Investors are often a non-technical audience and require information that is accessible to a layperson and relevant for their priorities.

Philantrophic foundations and bilateral and multilateral donors provide grant and loans to support enterprises and programs in order to achieve specific energy access, health, environment, or economic development goals. While foundations and donors do not necessarily require a financial return on investment, they are similar to investors in needing clarity and confidence in prospective grantees for potential to benefit communities. Thus, this stakeholder group also benefits from information that is accessible to a layperson and provides comparable technology evaluations that are relevant for the potential benefits that can be achieved.

International standards in the clean cooking sector will need to be relevant for individual country governments, to help protect citizens, measure progress towards clean cookstove and fuel adoption, and measure progress towards broader renewable energy and health goals. These goals are also similar to many multilateral organizations. Developing international standards is an opportunity to leverage international collaboration to resolve challenging technical issues, facilitating incorporation at the local level. At the same time, standards will also need to be relevant for or adaptable to an individual country's cooking practices, stove types, institutional capacity, policies and government development and trade priorities.

The research community innovates on new technologies for clean cooking, investigates linkages between technology performance, social adoption and the potential health, environment, or livelihood risks and benefits. They also develop new methods as part of their ongoing research. These contributions from the research community support the development of standards that are evidence-based and that utilize state-of-the-art methodologies.

There are many independent consultants who work in a technical capacity with many different types of organizations in many different countries. These technical experts bring important expertise to the standards development progress, to integrate with other stakeholder views on how standards will impact the sector.

Consumers are the most critical stakeholder group, even though they may not directly interact with the published standards themselves. Consumers look for affordable cookstoves and fuels that are easy to use and meet their needs. They often use multiple devices and fuels, and they are often looking for a range of stoves with different features. Consumers' interests include, in no particular order, saving money, saving time, cooking and cuisine preferences, health, cleanliness, durability safety, as well as wanting an aspirational product that delivers convenience, beauty, confidence and status, cooking and cuisine preferences.

2.2 Quantitative Indicators of the Business Environment

The following list of quantitative indicators describes the business environment to support the actions of the ISO/TC:

- Financing for cookstove and fuel businesses (debt, equity, grant).
- Number of companies involved in financing transactions.
- Enabling policies (duties, Value Added Tax, fuel production regulations, national standards implemented).
- Distribution and/or adoption of clean cooking solutions, by stove and fuel type, performanc tier.

2.2.1 Sector Activity

The 2019 Clean Cooking Industry Snapshot () and 2017 Progress Report () from the Clean Cooking Alliance (formerly known as the Global Alliance for Clean Cookstoves) shows recent activities and trends in the cookstove and fuel sector. Figure 1shows the level of activity for stove and fuel distribution. Compared to earlier Results Reports, the level of sector activity is growing each year. This data shows that standards from TC 285 have the potential to impact the manufacturing and production of millions of stoves and fuels each

year, and to impact the 3 billion people who are bearing the health, economic, and environmental burdens of cooking with traditional cooking methods.

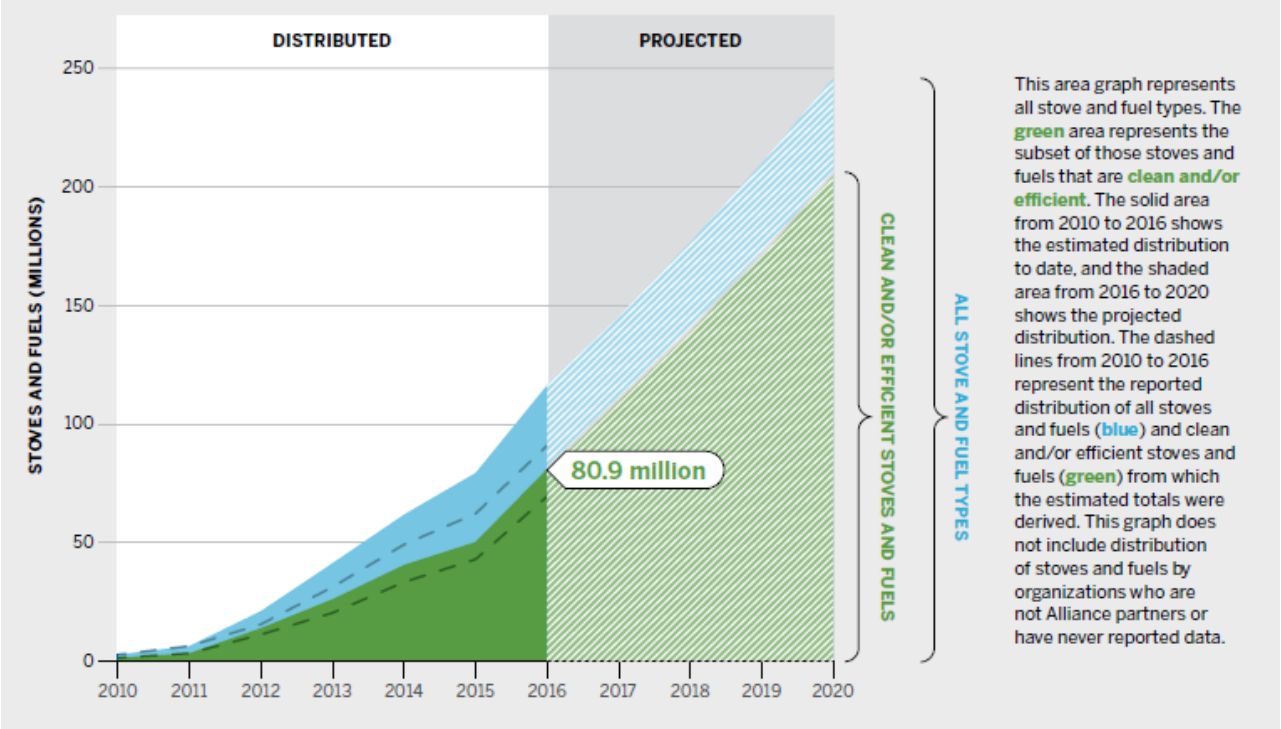

Figure 1. Clean cooking sector activity reported by Clean Cooking Alliance partners in 2017.

2.2.2 Products

The Clean Cooking Catalog (**http://catalog.cleancookstoves.org**) is an online database of stoves, specifications, and testing results. This database was designed to continue to increase the transparent reporting of stove and testing information, including that are compatible with previous, current and future standards from TC 285. In July 2020, the Clean Cooking Catalog database included:

Number of products:	489 stoves, 18 fuel products, 3 production and delivery technologies
Number of manufacturing enterprises:	89
Percent of stoves with at least one test result:	43% (212 stoves)
***Percent of stoves with partial ISO IWA reporting:**	16% (77 stoves)

*The Clean Cooking Catalog is being updated to accept and display test results reflecting the standards document published since 2018 from ISO/TC 285.

2.2.3 Imports and exports by major geographical regions

Products are manufactured in this sector in Asia, Africa, Latin America, and North America, with significant global trade and regional distribution. This pattern of the sale and distribution of goods supports the need for international standards that can facilitate local production and distribution as well as regional and international trade.

2.2.4 Organizations implementing ISO/TC 285 Standards

As the work of ISO TC/285 is still in the early stages, there are not strong examples of governments or organizations requiring compliance with this committee's standards. Some countries have shown an interest in clean cookstoves national standards (China, Ghana, Guatemala, India, Mexico, Nepal, Peru, Uganda) and adopting international standards that were published through ISO/TC 285.

3. BENEFITS EXPECTED FROM THE WORK OF THE ISO/TC

The work of ISO/TC 285 will complement national, regional and international work for clean cookstoves and clean cooking solutions. As the sector for clean cooking solutions matures, standards can support continual evaluation and improvement of technologies and fuels which in turn leads to achieving health, social, environmental and climate benefits.

Historically, different countries and testing experts have used unharmonized methodologies and reported results using different metrics. This inconsistency has led to confusion in the sector, especially among consumers, donors, investors, and policymakers. For these non-technical audiences, it is difficult to compare stove performance or interpret testing results with different methodologies and metrics. ISO/TC 285's work to develop common standards will provide a set of methods and indicators against which to rigorously measure the performance and impact of cooking technologies and fuels, while also providing data that is relevant for specific stove and fuel types and cooking practices.

Benefits for Consumers — Expert, independent evaluation of cookstove and fuel performance is used to inform, protect, and empower consumers. With a reliable source of information, buyers can distinguish hype from fact and choose cooking technologies with performance that best suits their needs.

Benefits for Manufacturers — Standards will allow manufacturers to differentiate their products in the marketplace. They can be used as independent verification of a stove's quality and performance. Standards also encourage product innovation, especially in early stage market, because a differentiated rating system provides a roadmap for product excellence.

Benefits for Donors and Impact Investors — Both grant and investment funding are critical to the growth of the clean cooking sector, for early high-risk activities and scaling up proven ideas. These donors and investors are interested in impacts on environment, health, and livelihoods. Thus, guidelines give clear, comparable information on the potential for different enterprises and their technologies and products, and their potential impact on the environment and health.

Benefits for Private Investors — As the sector matures, an increasing number of enterprises will have the opportunity to access investment resources. As standards are fomalized in the clean cooking sector, private investors will also be able to distinguish products and services and identify investments with the greatest potential for financial returns and other benefits.

Benefits for Governments and Regulators — Standards will support policies that inform consumers, protect citizens and help measure progress towards clean cookstove and fuel adoption, as well as broader renewable energy or clean cooking targets.

4. REPRESENTATION AND PARTICIPATION IN THE ISO/TC

4.1 Membership

A complete list of Participating (P) and Observering (O) members of ISO/TC 285 is maintained on the relevant ISO website.

4.2 Analysis of the participation

ISO/TC 285

PARTICIPATION

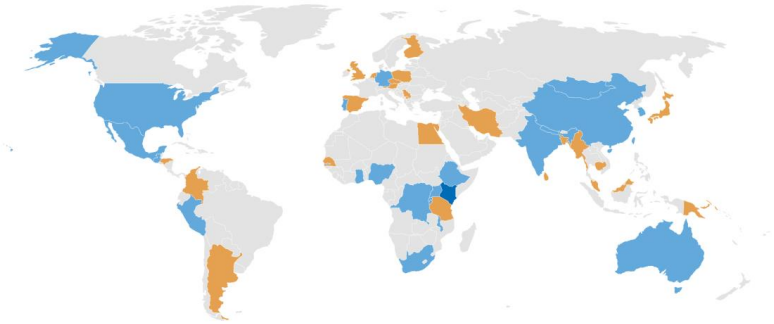

Figure 2. Map of ISO/TC 285 participation, including Participating (Blue) and Observing (Orange) Countries, and the Secretariat (Dark Blue, Kenya Bureau of Standards)

The membership of ISO/TC 285 consists of participants from both industrialized and developing countries, as this is a global sector. ISO/TC 285 deals with a product that is used in mostly developing countries, so the participation of these counties in the cookstoves standards development is essential. As of November 2019, 29 out of 45 P- and O-members are from developing countries (64%). This participation level makes ISO/TC 285 one of the technical committees with the highest percentage of developing country participation.

ISO/TC 285 benefited from the new member rights ISO granted to correspondent and subscriber members of ISO starting in 2013, allowing them to join as a P-members in a maximum of five ISO technical committees.

ISO/TC 285 Category A liasions are organizations critical to the growth of the clean cooking sector all over the world. The eight liaison organizations include the Clean Cooking Alliance, Groupe Energies Renouvelables, Environnement et Solidarités, Gold Standard Foundation, International Cryosphere Climate Initiative, World Bank Group, United Nations Children's Fund, World Health Organization, and World LP Gas Association. The liaisons include experts in health impacts and guidelines, environmental and climate impacts, energy, carbon finance. In addition, liaisons have experience in global clean cooking programs and have global convening power representing over 1000 organizations, which all strengthen the work of ISO/TC 285.

In an effort to ensure that the work of ISO/TC 285 is recognized both in and out of the ISO system, TC 285 has established Task Group 2 on Communications. This Task Group will work closely with ISO and current liaisons to develop publications and other information that can be used to increase both National Body and liaison participation in the committee.

5. OBJECTIVES OF THE ISO/TC AND STRATEGIES FOR THEIR ACHIEVEMENT

5.1 Defined objectives of the ISO/TC

ISO/TC 285 is responsible for standardization in the field of cookstoves and clean cooking solutions for people who use traditional cooking methods.

At the first Plenary meeting (February 2014), the title and scope of the committee were discussed. ISO/TC 285 members agreed that the original scope of the committee was designed to not to limit any possible work, but agree that the scope may be revisited in the future. ISO/TC 285 discussed that this broader scope does not require the committee to cover all issues within the scope, only the topics that are identified as priorities by the committee.

At the fourth Plenary Meeting (November 2019), the committee identified new or continued areas of work to focus on, since the initial set of four document were published:

- Test Protocol for Institutional Stoves (new)

- Test Protocol for Stoves for Both Cooking and Space Heating (new)
- Guidelines for Social Impacts (continued)
- Conceptual Framework (continued)
- The TC, recognising the importance of the work on Contextual Test Sequence, will start the activity when capacity is available

The committee also prioritized the establishment of Task Groups on:

- Standards Adoption and Implementation of Laboratory Testing Method — Piloting, usability/use, workshops, capacity building, collect comments on protocols, develop a process for feedback loops, monitoring, verification and reporting.
- Standards Adoption and Implementation of Field Testing Methods - Piloting, usability/use, workshops, capacity building, collect comments on protocols, develop a process for feedback loops, monitoring, verification and reporting.
- Safety of Liquid and Gas Stoves

5.2 Identified strategies to achieve the ISO/TC's defined objectives

ISO/TC 285's work will integrate the best ideas and practices from the wealth of existing work including documents available at **https://www.cleancookingalliance.org/technology-and-fuels/standards/index.html** and **https://www.cleancookingalliance.org/technology-and-fuels/testing/protocols.html**.

The international reach of the membership requires work to be conducted mostly by teleconference. However, beause face-to-face discussions is also critical, plenary and/or working group meetings are planned at least once per year. There will be an aim to leverage other events that experts may be participating in. Committee experts include multi-lingual experts, who can provide translation and interpretation and ensure conversations and documents are accessible to all committee members.

ISO/TC 285 is utilizing the different types of Twinning opportunities available to ISO Committees.

The committee will aim for International Standards whenever possible, and publish Technical Specifications, Technical Reports as appropriate. Our goal is to maximize review and engagement from entities that will be responsible for implementing standards whenever possible. ISO/TC 285 decided not to have Sub-Committees, because in the early stages of work, the aim is to avoid too much division among activities. Therefore, the Working Groups currently report to the main committee of TC 285.

6. FACTORS AFFECTING COMPLETION AND IMPLEMENTATION OF THE ISO/TC WORK PROGRAMME

Standards participation from developing countries can present unique challenges. Thus, ISO/TC 285 is focusing increased attention on capacity building and providing customized guidance and resources to enhance participation. Internet connectivity is also challenging in some countries, therefore secretaries, chairperson, and convenors will have to take extra care to provide multiple channels for sharing information and discussion.

Many organizations in the sector are not-for-profit and/or small organizations, so in most cases, they do not have dedicated funding to support their experts' participation in the international standards process. The ISO Committee on Developing Country Matters (DEVCO) and the Clean Cooking Alliance have been valuable partners to support ISO/TC 285 experts' travel. The travel support is provided in a fair and transparent way, to ensure equal support for all countries and to have a mix of different types of stakeholders. The Clean Cooking Alliance has also identified resources to support technical writing and targeted research studies to facilitate drafting and address unresolved issues.

Not unlike other sectors, there have been diverse opinions on how cookstove and fuel testing should be accomplished. Some technical issues that will need to be resolved, with areas of commonality identified.

Other distinct opinions are related to the inherent trade-offs in achieving internationally comparable results and relevance for specific stove, food, and cuisine types. ISO/TC 285 experts will continue to rely on the ISO processes to build a strong international consensus, while continuing to educate the community that unanimity is not required and that standards progress and implementation can proceed without unanimity.

Because the testing discussions have been very technical, most participation so far has been from technical scientists and engineers. However, given the health, environment, and socioeconomic impacts from this issue, expanded participation to include more health, environment, and social science experts will be important. In addition, expanding participation from the investor and donor communities will help to provide guidance on the information needed to support investment decisions as well as how to communicate the technical information in an easy-to-understand way. Most importantly, ISO/TC 285 will look to increase participation from organizations who represent the perspectives of low-income consumers in developing countries who rely on traditional cooking methods.

Numerous TC285 Partners are working together and with ISO, to disseminate the published documents and have held two (Nepal in 2018 and in Uganda in 2019) action-plan development workshops to encourage adoption or adaptation of the standards. Workshops planned for West Africa (June 2020) in French for Francophone Countries and in Spanish in Latin America (October 2020) have been put on hold and will be rescheduled when in-person workshops are again safe to be held. The Harmonized Laboratory Test Protocols and the Voluntary Performance Targets documents have been translated into French and are available in the ISO library, and partners are in the process of translating these documents into Spanish as well to promote widespread dissemination and to encourage implementation.

7. STRUCTURE, CURRENT PROJECTS AND PUBLICATIONS OF THE ISO/TC

7.1 ISO/TC 285 Structure

- ISO TC 285/WG 1 – Conceptual Framework

  Relevant stakeholders: Investors, donors, policymakers, consumers, testing experts, health and environment experts, social scientists, stove and fuel enterprises

- ISO TC 285/WG 2 – Laboratory Testing

  Relevant stakeholders: Investors, donors, policymakers, consumers, testing experts, health and environment experts, stove and fuel enterprises, technology developers, implementing partners

- ISO TC 285/WG 3 – Field Testing
  Currently disbanded by may be reactivated after approval of future New Work Item Proposals.

- ISO/TC 285/WG 4 – Social Impacts

  Relevant stakeholders: Social scientists, impact experts, stove and fuel enterprises

TC 285 may update the Working and Task Groups. The most updated list of Groups can be found online: https://www.iso.org/committee/4857971.html.

7.2 ISO TC 285 Program of Work

The most up-to-date Program of Work is available online:
https://www.iso.org/committee/4857971/x/catalogue/p/0/u/1/w/0/d/0.

Information on ISO online

The link below is to the TC's page on ISO's website:
ISO TC 285

Click on the tabs and links on this page to find the following information:

- About (Secretariat, Secretary, Chair, Date of creation, Scope, etc.)
- Contact details
- Structure (Subcommittees and working groups)
- Liaisons
- Meetings
- Tools
- Work programme (published standards and standards under development)

Reference information

Glossary of terms and abbreviations used in ISO/TC Business Plans

General information on the principles of ISO's technical work