Viwang E-Newsletter

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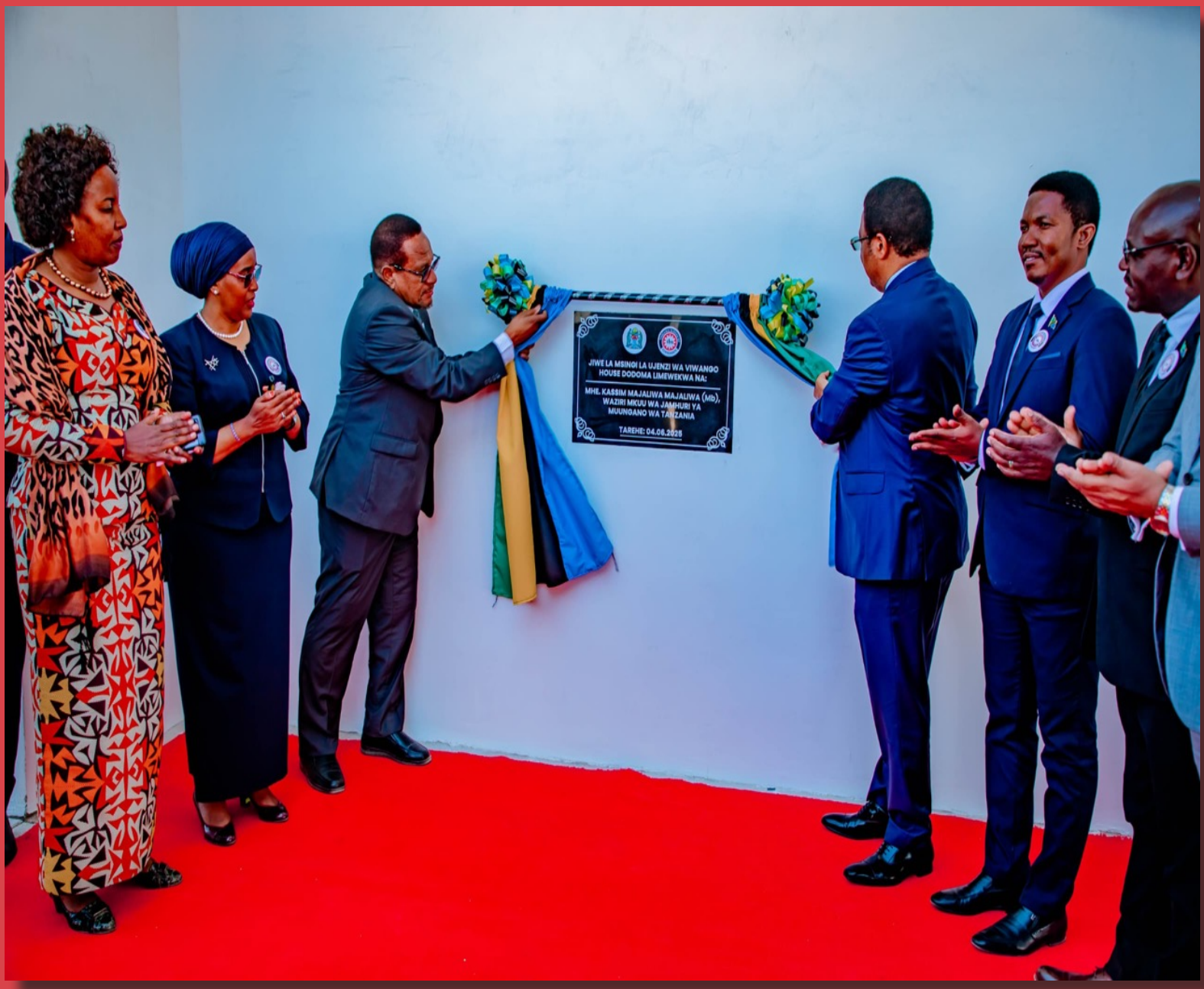
TBS, The Home of Standards



Prime Minister Hon. Kassim Majaliwa lays the foundation stone of the TBS Viwango House in Dodoma

PM tells TBS to ensure low-quality products do not reach consumers

Prime Minister Hon. Kassim Majaliwa addresses participants during the foundation laying ceremony for the TBS Viwango House in Dodoma.

By Neema Mtemvu

Prime Minister Kassim Majaliwa has directed Tanzania Bureau of Standards (TBS) to take firm action to prevent substandard goods and products from reaching the public by destroying them before reaching the market.

Speaking in Dodoma recently during the foundation-laying ceremony for the new TBS Viwango House, PM urged local manufacturers to strictly adhere to the Bureau's guidelines. He called on manufacturers and importers to ensures that all goods brought into the country conform to standards and urged other regulatory authorities to work closely with TBS in enforcing quality and upholding safety across all sectors.

Hon. Majaliwa further encouraged the private sector and other stakeholders to actively cooperate with Bureau. He advise them to engage TBS in inspecting goods and products throughout the supply chain.

He said ending the circulation of poor-quality goods is a shared responsibility requiring vigilance and collaboration at all levels.

The PM applauded the management of TBS for what he described as commendable performance, saying the institution has delivered on its mandate as expected.

Commenting on the new Viwango House, he noted that the construction is part of the Government's broader efforts to strengthen quality assurance infrastructure and promote production and distribution of high-quality goods in the country.

He added that TBS plans to construct similar TBS buildings in other zones across the country as party of ongoing efforts to decentralize operations and enhance the Bureau's reach and efficiency in enforcing standards nationwide.

"Through this effort, the Government aims to bring services close to the people, improving accessibility and responsiveness," he said.

Earlier, The Minister for Industry and Trade, Dr. Selemani Jafo, praised the new TBS building as being of high quality and added that the Bureau has made the Government proud through its work.

"Recently, the Bureau received recognition as one of the best institution in Africa, a clear sign of the good work it continues to deliver," he said.

TBS Board Chairperson, Prof. Othman Chande, called on members of the public to cooperate with the institution, stressing that ensuring high standards requires joint efforts from all stakeholders.

"We cannot achieve our mission without public cooperation," he noted.

TBS Director General Dr. Ashura Katunzi noted that as of May 2025, construction of the Viwango House was set to cost 24.3 bn upon completion, the building has reached 76 per cent progress.

"When you buy a product always look for the TBS mark which assures you of quality, reliability and safety"

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TBS destroys substandard goods worth 303 m, including used underwear

By Dennis Mzamilu

The Tanzania Bureau of Standards (TBS) has destroyed 43 tons of substandard goods, including second-hand underwear, which are illegal to import and sell in Tanzania.

The destruction exercise took place recently in Kisarawe District, Coast Region. The seized items, valued at 303 million Tanzania Shillings were confiscated between July 2024 and February 2025 across the Eastern Zone, which includes Dar es Salaam, Coast, and Morogoro regions.

TBS Acting Director General and Director of Enforcement and Compliance, Dr. Candida Shirima, said the operation was part of ongoing efforts to eliminate poor-quality products from the market to protect public health and promote national economic growth.

“TBS is mandated under the Standards Act No. 2 of 2009 to remove substandard goods from the market and either destroy or return them at the importer’s expense,” she stated.

Dr. Shirima urged manufacturers and traders to ensure that all goods — whether locally produced or imported—meet national quality standards to avoid financial losses from confiscation or destruction.

She added that TBS inspectors regularly monitor products at factories and retail outlets. Any substandard goods found during inspections are immediately withdrawn from the market.

Among the destroyed items were cosmetics and used undergarments, which were banned due to associated health risks.

“TBS is calling on all traders to prioritise quality by selling only registered cosmetics and food products that are safe for consumers and within their expiration dates,” she emphasised.

On the issue of used underwear, Dr. Shirima reiterated the Government’s ban, noting that such garments are hazardous to health since they have already been worn in foreign markets.

EDITORIAL

National Food Safety Emergency Response Plan (NFSERP): A bold leap toward a safer, healthier Tanzania

In a significant milestone for public health and consumer protection, the Tanzania Bureau of Standards (TBS), in collaboration with key national institutions and ministries, has officially launched the National Food Safety Emergency Response Plan (NFSERP). This pivotal plan marks a new era in how Tanzania will prepare for, respond to, and recover from food safety emergencies, with a structured, science-driven, and multi-agency approach.

Developed with broad stakeholder engagement, including ministries responsible for health, agriculture, livestock, fisheries, trade, industry, and local government, the NFSERP aligns with both domestic food safety legislation and international frameworks such as the International Health Regulations (2005). It provides clear operational guidance for managing food-related emergencies by setting up a National Food Safety Alert and Response System and establishing Rapid Response Teams at national, regional, and district levels. These teams will lead in real-time crisis intervention, ensuring threats to public health are swiftly and effectively addressed.

The launch of the NFSERP reaffirms an important truth: food safety is not a one-sector issue; it is a multidisciplinary discipline. It intersects with microbiology, chemistry, agriculture, environmental science, public health, food engineering, and even data science. From farm to table, food safety is upheld through

collaborative efforts across various fields.

At the production level, microbiology and chemistry are vital in managing both beneficial and harmful microorganisms and ensuring safe use of additives and pesticides. Environmental science plays a role in clean soil, water quality, and safe processing environments. In agriculture, practices must guard against residues and contamination, while public health and nutrition sciences help identify and respond to foodborne illnesses and ensure nutritional integrity is preserved in processing.

Technological advancements such as real-time temperature monitoring, cold-chain logistics, and traceability systems driven by data science and block chain are increasingly central in protecting the consumer. Meanwhile, education and communication are key to informing the public and industry stakeholders about risks and safe practices.

Regulatory bodies, with support from laboratory scientists, apply quality control, toxicological testing, and biotechnology, such as PCR (Polymerase Chain Reaction) and Enzyme-Linked Immunosorbent Assays (ELISA), to detect contaminants and prevent outbreaks. The role of law and regulation is to integrate all these elements under a legal framework that ensures accountability and promotes a safe food environment.

The NFSERP is more than a document; it is a national commitment. It ensures that when emergencies strike, Tanzania is not caught off guard. Instead, the country will respond with speed, coordination, and clarity. It aligns sectoral plans into one unified national strategy anchored in science and guided by law.

In a world of increasing food trade, climate change, and emerging health threats, food safety is a national security issue. The NFSERP will serve as Tanzania's blueprint for protecting its people and reinforcing its food systems' resilience.

Together, through science, collaboration, and preparedness, we can ensure that every plate in Tanzania is not only full—but safe.

We congratulate all stakeholders involved in this groundbreaking effort and encourage continued engagement in food safety awareness and action.

"Quality is everyone's responsibility"

TBS urges certification to protect consumer health

TBS Quality Assurance Officer Mr. Abdul Ngozoma educates one of the entrepreneurs and citizens who visited the TBS pavilion during the TCCIA Exhibition in Tanga

By Maryam Abdulaziz

The Tanzania Bureau of Standards (TBS) has called on local entrepreneurs to certify their products as a critical step towards boosting the competitiveness of domestically produced goods.

With certification, entrepreneurs not only ensure their products meet standards but also protect consumer health, building trust and loyalty in the market.

The call was issued by TBS Quality Assurance Officer, Mr. Abdul Ngozoma during the 12th Trade and Tourism Exhibition held in Tanga Region, recently.

"In a market increasingly aware of the risks posed by substandard products, certification ensures that goods meet stringent health and safety standards, protecting consumers from harmful or unsafe items," he said.

By adhering to these regulations, entrepreneurs contribute directly to the well-being of the public, fostering a healthier

community and reinforcing consumer confidence in locally produced goods.

TBS emphasizes that in an era where consumers are more discerning than ever, certification offers a clear path for Tanzanian businesses to strengthen their market position, expand their reach and ensure their products are safe and reliable.

Mr. Ngozoma encouraged entrepreneurs to actively pursue product certification through TBS, highlighting that this initiative aligns with the Government's ongoing efforts to support small-scale entrepreneurs by offering product certification free of charge.

"Many people are hesitant, and in several places visited, there is a common belief that product certification is expensive. Our participation in this exhibition aims to dispel that misconception and encourage entrepreneurs to visit our offices for more information about the affordable services we offer," said Mr. Ngozoma.

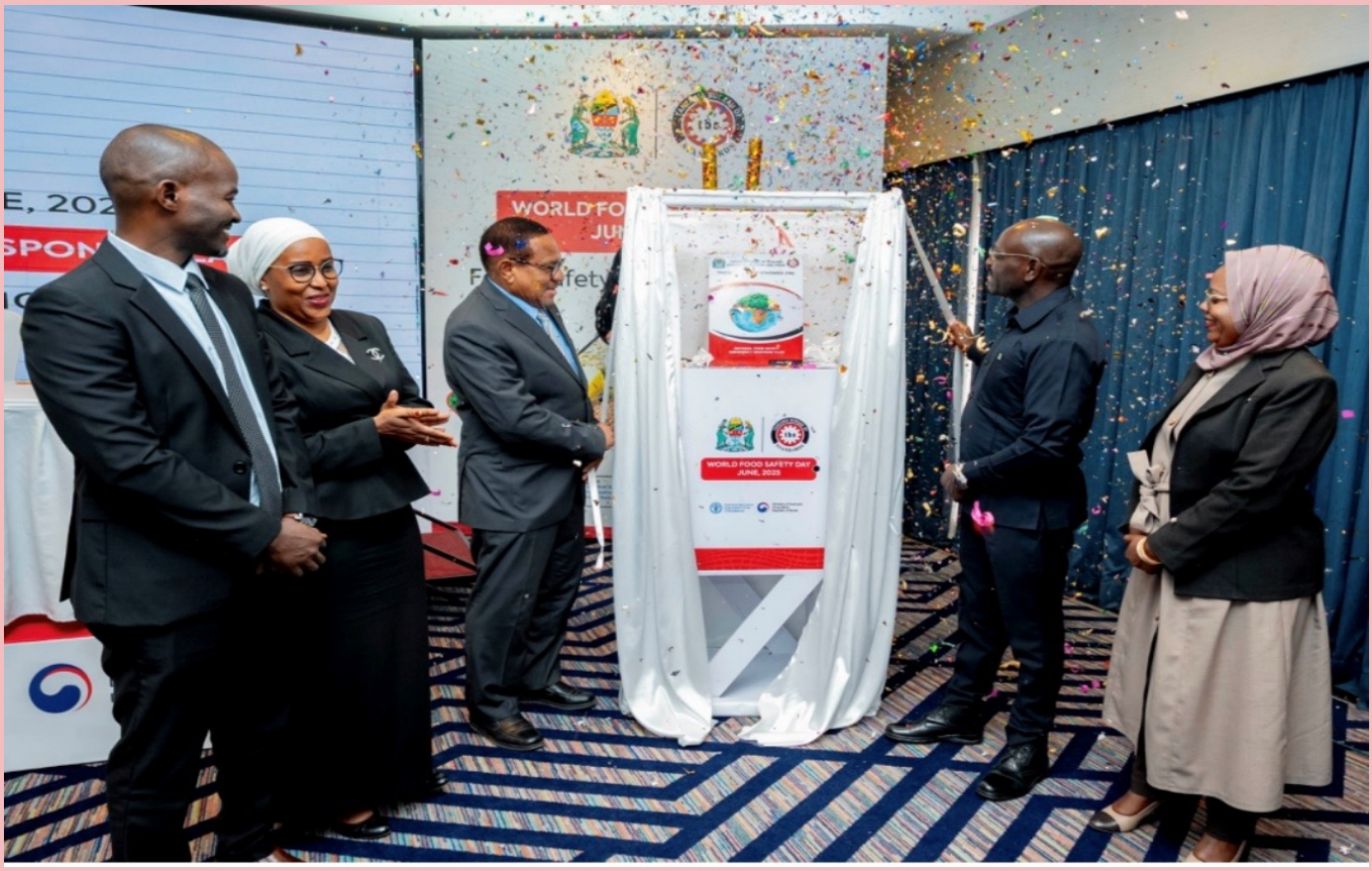
He explained that TBS's participation in the exhibition was aimed at educating both business people and the public about the organization's roles and services.

"We're using this platform to inform small-scale entrepreneurs that, with an introduction letter from SIDO, they can have their products certified free of charge, with Government support, for up to three years," said Mr. Ngozoma.

"Three years is a crucial period for a small business to establish itself. By that time, many entrepreneurs will have their footing. We urge the public to set aside their fears and come to TBS for product certification" he said.

Quality begins on the inside... and then works its way out

TBS unveils National Emergency Response Food Safety Plan



Deputy Minister for Industry and Trade, Hon. Exaud Kigahe (MP) (second right), officially launches the National Emergency Response Plan for Unsafe Food during the World Food Safety Day celebrations in Dar es Salaam.

By Neema Mtemvu

TBS has launched the National Emergency Response Plan for unsafe food in a move aimed at protecting public health, ensuring quick response to food related threats and promoting higher food safety standards across the country.

Deputy Minister of Industry and Trade, Exaud Kigahe, said recently that the move is aimed at ensuring food produced and sold in the country is safe for consumers' health.

"Through this plan, our goal is to improve citizens' health. Our biggest challenge is not food availability, but ensuring that the available food is safe for human consumption," said Kigahe.

Mr. Kigahe was speaking during the celebration of World Food Safety Day, emphasizing that the Tanzania Bureau of Standards (TBS) developed the National Plan to protect

public health and strengthen the country's food systems.

He stated that legal action will be taken against anyone found in violation of food safety regulations.

He added that the first step in ensuring food safety is achieving sufficient food production something the Government has largely accomplished and the current focus is on making sure that food is safe for consumption.

Mr. Kigahe further said the Ministry of Industry and Trade, through TBS, is responsible for overseeing the quality of all products and marked the day by providing public education on everyone's role in ensuring access to safe food.

"TBS has established a strong plan to support producers in adhering to standards, to ensure that citizens receive quality and safe food," said Kigahe.

Additionally, the Deputy Minister directed all local Government authorities across the country to collaborate with institutions from various sectors to educate the public on the importance of food safety.

He urged citizens to be vigilant by reading product packaging information, checking food quality, and maintaining hygiene during food preparation and sales.

Meanwhile, TBS Chairman, Prof. Othman Chande, said that TBS will continue working closely with citizens to ensure that all food sold in the market is safe for human consumption. He emphasized that food safety is the foundation of national health and economic development, noting that the Bureau has taken strong measures to ensure every citizen accesses food that meets acceptable safety standards.

On top of that, TBS Director General, Dr. Ashura Katunzi, stated that the effects of unsafe food include a weakened national workforce due to illnesses caused by consuming unsafe food.

She said that TBS, in collaboration with various stakeholders, has developed the National Emergency Response Plan to hazardous food, which will help take quick and preventive actions in the event of a food safety issue.

"We call on the public to apply scientific principles at every stage of food preparation because the consequences of unsafe food can lead to illnesses and even death," said Dr. Katunzi.

On her part, Director of Member Services at the Confederation of Tanzania Industries (CTI), Ms Neema Mhondo, said that industries play a critical role in ensuring the production and distribution of safe and quality food that meets required standards.

"In partnership with TBS and other international stakeholders, we are continuously building capacity to achieve global food safety standards. We thank TBS for their close cooperation in advancing this important agenda," said Mhondo.

This year's World Food Safety Day themed: "Food Safety: Science in Action.

"It is quality rather than quantity that matters"

EU hands over laboratory equipment worth 1.7 million Euro to TBS

The Director of Trade Development in the Ministry of Industry and Trade Mr. Sempeho Nyari (centre), holding a list of received laboratory equipment after official handing over ceremony

By Deborah Haule

The European Union (EU) has handed over advanced laboratory equipment to the Tanzania Bureau of Standards (TBS) worth 1.7 million Euro. The event that took place at the national standards body headquarters in Dar es Salaam marked a key milestone in the implementation of the QUALITAN Project, which had a total budget of 7 million Euro. The project is a component of a wider EU-funded project called "BEGIN" (EURO 23 M) which focused on improving the Tanzanian business environment, growth and innovation.

Implemented by the United Nations Industrial Development Organization (UNIDO), the QUALITAN project aims to strengthen the national quality infrastructure by improving laboratories, building institutional capacity, promoting digital innovation, and supporting small and medium enterprises (SMEs).

Out of the total budget, 1.7 milion Euro was specifically allocated for the procurement of advanced laboratory equipment, which has now been delivered and formally handed over to TBS.

Speaking on behalf of the Minister of Industry and Trade, Director of Trade Development, Sempeho Nyari described the ceremony as a powerful demonstration of the Government's resolutions to promote quality, safety, and industrial growth.

"What we are witnessing today is not just the delivery of equipment it is a symbol of transformation," Nyari said.

"The QUALITAN Project aligns with our national vision to build an industrial economy that is globally competitive, environmentally responsible, and rooted in product safety and compliance" he said

During the ceremony, the Director General of TBS, Dr. Ashura Katunzi, highlighted several key achievements under the QUALITAN Project.

She said through the project the Bureau has managed to install 38 state-of-the-art equipment in Food Chemistry, Microbiology, Chemistry, Electrical, and Metrology laboratories.

She said trainings have been conducted for over 300 TBS technical staff in international standards, capacity building for 988 MSMEs across 10 regions in Good Manufacturing Practices, certification, and market readiness.

She said the project benefits included digital innovation such as development of a Laboratory Information Management System (LIMS), an online standards webstore, and a QR-code traceability app.

She said the Viwango Academy which is a training centre has been strengthened, through training equipment, methodology and international exposure through benchmarking visits to South Africa, Egypt and Namibia.

Speaking in the event, the EU ambassador to the United Republic of Tanzania, Christine Grau, said the EU is proud to support Tanzania in strengthening its national quality infrastructure by providing state of the art equipment to TBS.

She said that the EU is complementing efforts of the Tanzanian Government in enhancing the quality and competitiveness of goods manufactured in Tanzania, which enables them to gain better access to global markets including the EU.

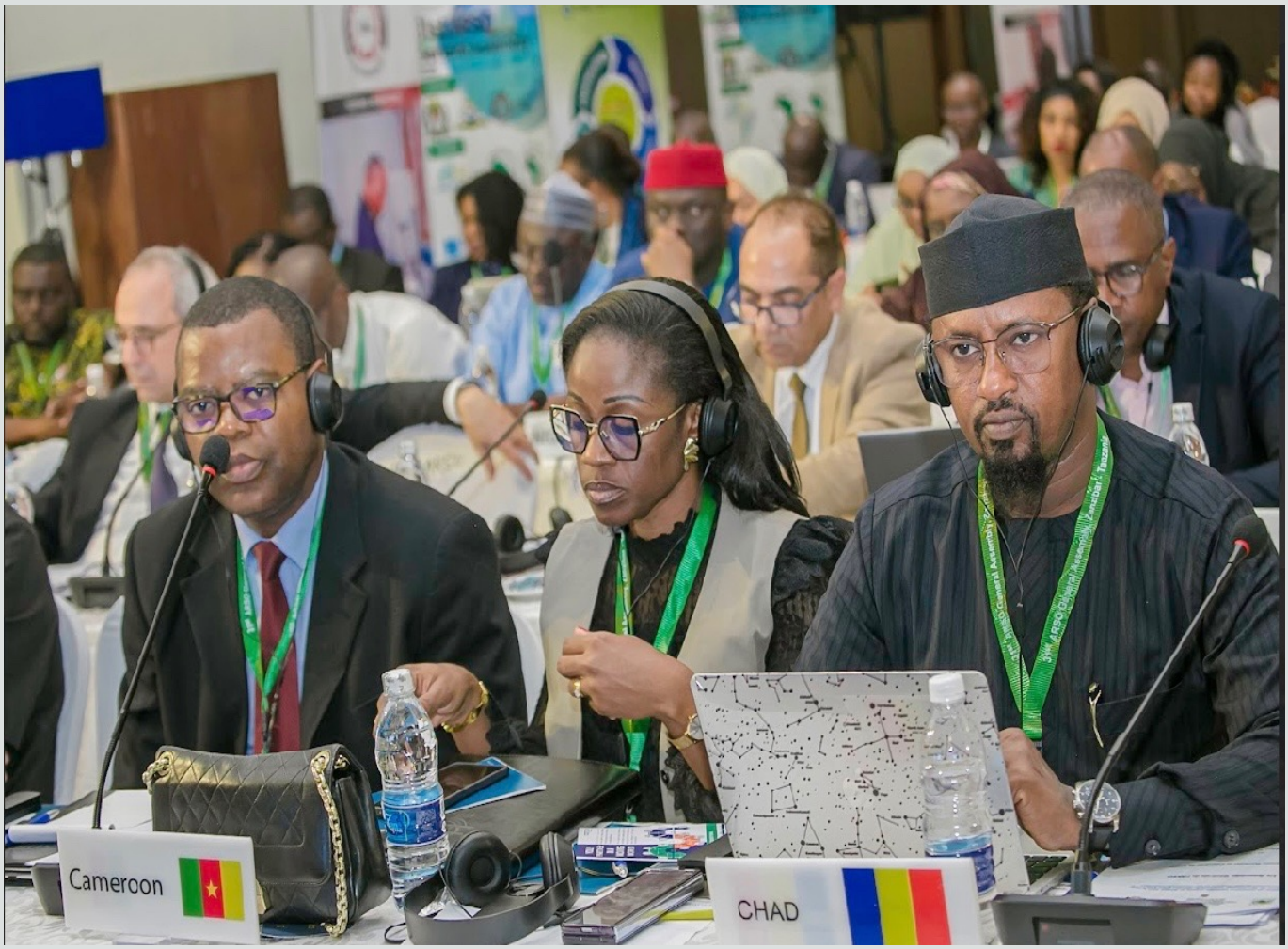
The UNIDO representative, Lorence Ansermet, praised the strong cooperation between all parties and emphasized UNIDO's role in aligning technical assistance with national development priorities.

Baraka Aligaesha from President Office (Planning and Investment) said the equipment handed over will significantly strengthen TBS's capacity to meet international obligations such as accreditation, certification, and testing while also enhancing consumer protection.

He said the equipment will also help boost exports and improving Tanzania's position in the global trade system, where women and youth are active participants.

He also thanked the European Union for their generous support and UNIDO for their continued technical assistance and collaboration.

Vice President calls for adoption of common standards



Delegates follow the proceedings of the 31st ARSO General Assembly held in Zanzibar

By Neema Mtemvu

Zanzibar Second Vice President, Hemed Suleiman Abdulla, has urged African Standardization institutions to ensure that they adopt common standards that protect African products.

Opening the 31st General Assembly of the African Organization for Standardization (ARSO) at the Golden Tulip Hotel in Zanzibar, the second Vice President said harmonizing standards is a vital strategy for promoting trade and accessing international markets, adding the move would eliminate trade barriers.

The Vice President who represented the President of Zanzibar and Chairman of the Revolutionary Council, Dr. Hussein Ally Mwinyi, commended Tanzania Bureau of Standards (TBS), Zanzibar Bureau of Standards (ZBS) and ARSO, for holding the meeting in Zanzibar.

He added the meeting has offered an opportunity to showcase the country's capacity in quality assurance and foster learning among stakeholders of standardization.

Meanwhile, the ARSO General Secretary Dr. Hermogene Nsengimana said standardization has emerged as an essential tool for facilitating trade and driving economic growth across Africa and the world at large.

Dr. Nsengimana added that standardization has helped establish a common framework for measuring the quality of product and service from ancient times and to the present, enabling trade to move across borders without technical barriers.

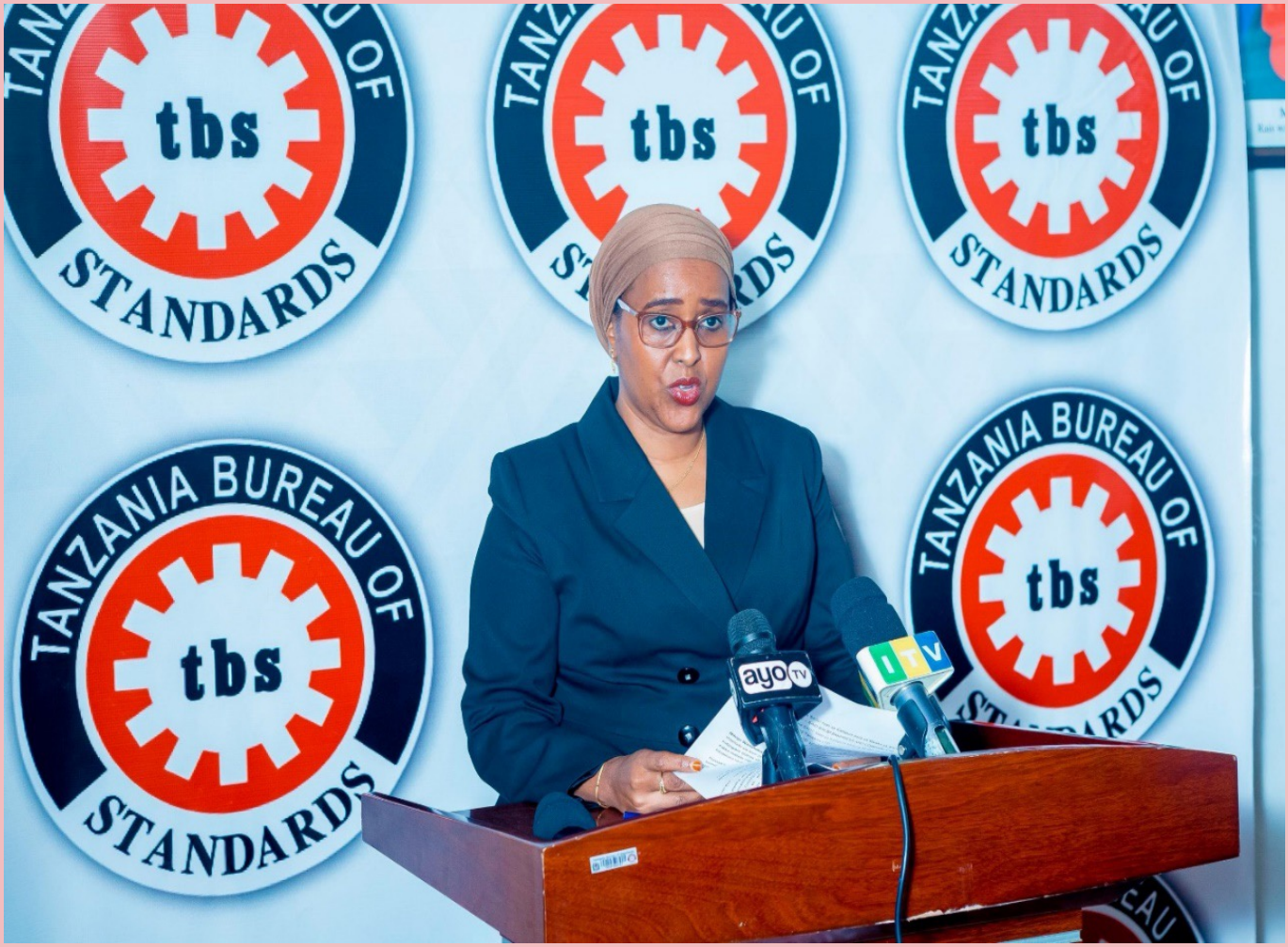
TBS Director General Dr. Ashura Katunzi emphasized on how standards provide a common language that allows Africa to benefit fully from the African Continental Free Trade Area by increasing product competitiveness and reducing the cost of doing business.

She added that standards are integral to sustainable development both in Africa and worldwide.

The 31st ARSO General Assembly was held in Zanzibar in June 2025 being the second time to be held in Tanzania, the first time being in 2016 in Arusha. The meeting was successful as it is a forum that strengthens cooperation with regional and international bodies makes it easier to coordinate standards, even as countries face challenges related to limited resources and inadequate infrastructure.

"For safety and higher efficiency, always buy TBS-marked/ certified electrical appliances"

TBS unveils National Quality Awards to scale up innovation and excellence



TBS Director General, Dr. Ashura Katunzi addresses journalists (not in picture) during the launch of the National Quality Awards 2025

By Deborah Haule

The Tanzania Bureau of Standards (TBS) has officially launched the 6th phase of its highly anticipated National Quality Awards.

The annual initiative aims to significantly boost innovation and elevate the standards of products and services offered across the country, fostering a culture of excellence within Tanzania's industries.

Speaking to reporters recently, Dr. Ashura Katunzi the Director General of TBS, underscored the multifaceted objectives behind the establishment of these prestigious awards.

"Our primary goal is to recognize and commend individuals who have made significant

contributions to improve our quality infrastructure," Dr. Katunzi stated, adding: "Equally, we aim to celebrate institutions that demonstrate exceptional performance in upholding quality standards throughout their production or service delivery activities."

She further elaborated that another key objective is to actively encourage innovation and continuous improvement in a diverse range of products and services available in Tanzania. This encouragement is channeled through established procedures under the national quality infrastructure, ensuring than advancements are systematic and sustainable.

A notable incentive for winners Dr. Katunzi added, is the unique opportunity to represent Tanzania in regional competitions organized by the East African Community (EAC) and the Southern African Development Community (SADC), providing a platform for national champions to gain international recognition.

For the 2025 cycle, the 6th season of the quality awards will feature competition across an expanded seven distinct categories. These include: The Best Company of the Year, Best Product of the Year, Best Service Provider of the Year (Private Company), Best Exporter of Agricultural Products, Best Exporter of Mixed Products, Best Service Provider of the Year (Public Institution) and A special recognition for and individual who has demonstrated outstanding performance in quality issues.

Guidelines on how to participate in the award are readily available on the official website of TBS and Zanzibar Bureau of Standards (ZBS). Among the key criteria used to determine winners, she highlighted, is assessing the specific efforts an institution or individual undertakes to enhance the quality of products or services, alongside their efficiency in production or overall performance.

Dr. Katunzi proudly recounted the successful track record of the competition, which has been consistently held over five previous phases: 2019/2020, 2020/2021, 2021/2022, 2023/2024 and 2024/2025, each phase achieving significant success.

She further emphasized that the National Quality Awards winner from the 2024/2025 cycle proudly represented Tanzania in the regional competitions, including the EAC Quality Awards and the SADC Quality Awards, demonstrating Tanzania's growing regional influence in quality standards.

Highlighting Tanzania's exceptional performance on the regional stage, Dr. Katunzi revealed impressive wins at the EAC level Tanzania secured the prestigious titles of the East African Community Large Company of the year, East African Community Product of the Year (Large Company), and East African Community Service of the Year (Entrepreneur).

Furthermore, Dr. Katunzi announced that Tanzania also achieved significant recognition at the SADC level, clinching three distinct awards. These include the first place for an individual who made an outstanding contribution to improving the quality infrastructure of SADC, which was awarded to Prof. Bendatunguka Tiisekwa of Sokoine University of Agriculture. Additionally, Tanzania secured second place for the SADC Company of the year (Entrepreneurs), showcasing the nation's robust industrial and entrepreneurial strength.

She concluded by noting that the SADC award participants, during their presence in Zimbabwe, capitalized on the invaluable opportunity to promote their products and services to exhibitors hailing from various African countries. This exposure led to tangible outcomes, with some participants successfully signing trade agreements with traders from other SADC member states, further boosting Tanzania's commercial footprint in the region.

TBS emphasizes safety in clean cooking

TBS officers (right and second right) educate visitors at the TBS pavilion during the East Africa Clean Cooking Energy Conference in Arusha

By Deborah Haule

The Tanzania Bureau of Standards (TBS) has emphasized that efficiency and safety of clean cooking products are fundamental as the country strives towards achieving 80 per cent adoption of clean cooking energy.

TBS Standards Officer, Eng. Mohamed Kaila, said at the three day East African clean cooking energy conference in Arusha recently that, safety is a key factor in protecting users' health from potential hazards, such as smoke produced by substandard fuels.

"We urge local manufacturers of clean cooking energy solutions and importers to prioritize users health and safety by adhering to standards," he said.

He stated that TBS has sufficient experts, laboratories and equipment for testing clean cooking energy products and its role is to ensure that all imported and locally manufactured products meet clean energy standards.

Furthermore, he noted that TBS certifies clean cooking energy products made by local manufacturers.

“Once certified, a producer is granted a license to use TBS Standards Mark of Quality, allowing them to sell their products both locally and internationally without issues,” he stated.

According to Mr Kaila, another factor TBS evaluates is durability, as the aim is to prevent consumers from buying stoves that break down after only few months.

He explained that one of the key elements of standards is that manufacturers must truthfully disclose the efficiency of their products.

For example, a manufacturer might claim 90 per cent efficiency, but if TBS does not verify and determine if it is actually 90 per cent, it would be easy for the public to be misled.

“That’s why we, at TBS, step in to ensure that if a manufacturer claims 90 per cent efficiency, it is indeed 90 per cent,” he said.

“Quality is remembered long after the price is forgotten. Always use TBS-certified products”

TBS calls on consumers to check packaging information for safety

TBS Quality Assurance Officer (left) educates an entrepreneur on product certification procedure during the Milk Week Exhibition in Morogoro

By Rhoda mayugu

Consumers in Tanzania have been urged to read the information provided on product packaging before making purchases, particularly regarding expiry dates. This advice was issued by the Quality Assurance Officer from the Tanzania Bureau of Standards (TBS), Ms. Sarah Maro, while speaking to visitors who visited the Dairy Week Celebrations Exhibition held at Zimamoto grounds in Morogoro Municipality recently.

She stated that consumers

should carefully read the information on packaging to avoid purchasing expired products.

"It is important for people to develop the habit of reading this information to ensure the products meet standards requirements and to avoid potential costs or losses resulting from using substandard products," Maro said.

She added that when consumers read product details before buying, they are more confident in their purchases and can avoid losses caused by purchasing products that do not meet their needs, making them safer both economically and health-wise.

In addition, Ms. Maro emphasized the importance of reporting any substandard or expired products to help prevent them from being used.

Ms. Maro also called upon small and medium-scale entrepreneurs whose products are not yet certified to come forward and obtain the quality mark free of charge.

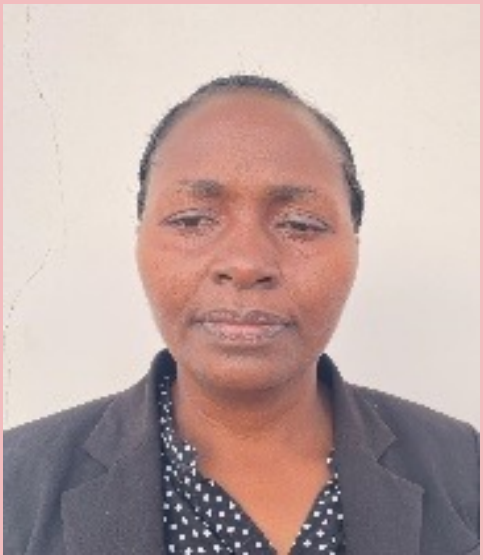
She explained that the government, through TBS, offers free product certification services, provided the entrepreneur has an introductory letter from SIDO (Small Industries Development Organization), which enables them to access this service.

"Once they come to TBS with an introductory letter from SIDO, the certification process begins immediately and they will not incur any costs for a period of three years," she explained.

She noted that the government has taken this step recognizing the vital role entrepreneurs play in economic growth and encouraged them to take advantage of the opportunity.

"When you buy a product always look for the TBS mark which assures you of quality, reliability and safety"

Food Safety: A Multidisciplinary field



Imakulata Tarimo

Introduction

Food safety is not merely a concern for kitchens, consumers, and food inspectors; rather, it is a complex and vital field that spans multiple disciplines, integrating science, technology, public health, law, agriculture, and education. It encompasses key disciplines from microbiology, chemistry, public health and epidemiology, nutrition, thermodynamics and material science, agriculture (crop and animal science), food technology and engineering, environmental science, education, communication, data science, to law and regulatory affairs. This multidisciplinary approach is crucial to ensuring that the food we consume is safe, nutritious, and free from harmful contaminants.

Application of micro-biology and chemistry

Application of the multi disciplines starts right from when food is produced in farms, through harvesting, processing, transportation, storage, preparation, to consumption. Such disciplines as microbiological science are applied in food processing, making use of the beneficial microorganisms in food production, while the non-beneficial ones (pathogenic and/or spoilage) are delt with to avoid food contamination, which threatens food safety and security. Likewise, chemistry is applied throughout the food chain. When farmers make use of fertilizers, pest and weed control in the farms, treatment to herds and flocks, animal feed, processing aids, food additives (preservatives, flavors, colors, thickeners, emulsifiers, anti-caking agents), and ingredients, including their interactions, all make use of chemistry.

Environmental science and food safety

Food production and processing environment, including elements in the soil, food contact surfaces and materials, lubricants and cleaning detergents used in food processing machines, tools and utensils in processing, water quality, pollution, and personnel can each have effect on the safety of food. Knowledge of environmental science has a positive contribution to ensure adherence to safe practices across the food supply chain as well as proper waste management, and eco-friendly food packaging.

Agriculture, the backbone

Most of food products are produced from farms, making use of agriculture and animal husbandry. To produce a safe food, the agriculture and animal sciences focuses on safe farming and livestock keeping practices to avoid residues of farm inputs and preventing contamination

at the source. This includes selection of safe farming environment, safe use of fertilizers, veterinary drugs, and feed, among others.

The public health and nutrition

Knowledge in public health and epidemiology helps in tracking outbreaks and investigation on sources of foodborne illness. This is important in designing of public health policies and intervention strategies, including promotion of hygiene and food safety practices in the community. Also, nutritional science is applied in assuring preservation of nutrients in food during processing. A food is considered safe when it provides the intended nutritional value.

Food technology, powered by science, driven by taste

Safe food processing, packaging and packaging materials, shelf-life extension while maintaining food safety, and storage techniques are a result of designing which make use of food technology and engineering disciplines. Among the keys to safe food is keeping food at right temperature. This requires management of cold and hot chain for specific foods. Maintaining the correct temperature during holding, storage and transport (the "cold/hot chain") is essential for preventing bacterial growth in perishable foods like dairy, meat, and seafood. Thermodynamics and material science are applied in the design of facilities for control and maintaining consistently the desired temperature, such as ovens, refrigerators, freezers, and transport vehicles. Furthermore, advances in science make use of sensor technology to allow real-time temperature monitoring during food holding/ transportation to ensure safety.

Education and communication

Public education and awareness are also key to food safety. By educating and communicating to all relevant stakeholders and actors along the food chain, including consumers, food handlers, and food industry on safe practices, and the risks associated with unsafe food, will effectively help to protect the public health.

Data Science, what is the reality

Food traceability systems allow producers and regulatory authorities to track food from farm to table, helping to prevent and respond to outbreaks of food-borne illnesses. Food safety requires application of data science, in which traceability systems are put in place to track food products from farm to table. Traceability helps to identify contamination sources to ensure that only safe products reach consumers. Advanced data science, Radio Frequency Identification (RFID), and block chain technology allow food products to be tracked in real-time. Traceability systems can pinpoint the source of the problem hence, can be contained quickly, in case of contamination event.

Laws and Regulations

Regulatory affairs are featured in provision of food safety guides and frameworks to align with, so as to protect the public health and, trade facilitation. This involves, but not limited to development of codes of practice, standards setting for food products, packaging and labeling, and provision of laws and regulations.

Laboratory science and food safety

Food safety involves quality control, which employs application of science in monitoring and testing, comprising of sensory analysis, microbial testing, and chemical analysis to assess food quality and safety. Laboratory science makes use of microbial, chemical, toxicology, and technology in analyzing food products for contaminants, residues to ascertain food safety. Biotechnology science is applied in food to enable the development of rapid diagnostic tests to detect foodborne pathogens. Techniques such

as PCR (Polymerase Chain Reaction) or enzyme-linked immunosorbent assays (ELISA) are used to quickly identify specific DNA sequences or proteins from harmful bacteria, enabling fast response times in detecting contamination.

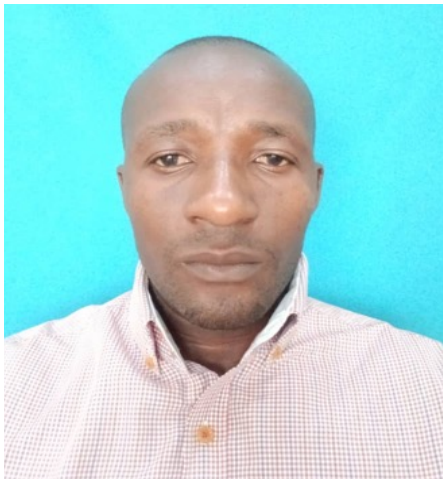
Conclusion

Food safety and science is a multidisciplinary field that ensures food is safe, nutritious, and free from harmful substances. Scientists, public health professionals, and regulators work together to prevent contamination, illness, and ensure that consumers have access to high-quality food.

*** Ms. Imakulata Tarimo is the Acting Manager of the Food Risk Assessment Section**

"For safety and higher efficiency, always buy TBS-marked/ certified electrical appliances"

The role of drinking water quality standards in protecting public health in Tanzania



Miraji Kambangwa

A glass of drinking water. Photo by Canada Water.

Drinking water quality standards in Tanzania play a crucial role in safeguarding public health by ensuring that water resources are safe for various uses, including drinking, cooking, agriculture, recreation, and other domestic uses.

The term “water” refers to an inorganic compound composed of hydrogen and oxygen, with the chemical formula H2O. It is a transparent, tasteless, odorless, and nearly colorless substance. It is the main constituent of Earth’s hydrosphere and the fluids of all known living organisms (in which it acts as a universal solvent [1] since it dissolves many solutes). It is vital for all known forms of life.

A standard is a document that provides requirements, specifications, guidelines, or characteristics that can be used consistently to ensure that materials, products, processes, and services are fit for their intended purpose. Standards always ensure product quality and safety for the producer, the consumer, and the environment.

Drinking water quality standards are essential regulatory tools designed to protect the public from chemical, physical, and microbiological hazards associated with contaminated water. The standards are divided into two categories: Compulsory Standards, which are incorporated into regulations and have the force of law, and Voluntary Standards, which serve as guidelines but are not legally binding.

The drinking water standards fall under

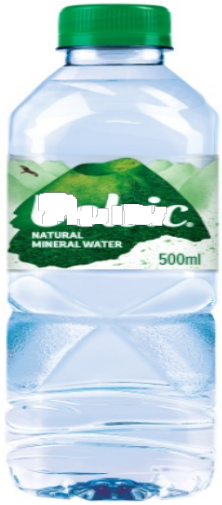
Compulsory Standards, meaning they are legally binding. They set allowable limits for physical, chemical, and biological contaminants in water. In some cases, additional advisory limits may also guide water quality management.

Drinking water standards are governed by regulations aimed at ensuring the health, safety, and quality of water for consumption. The drinking water quality standards in Tanzania are as follows:

TZS 573:2019-EAS 13:2018, Mineral water — Specification

This drinking water standard specifies the quality and safety requirements for packaged mineral water for human consumption. This water differs from ordinary drinking water due to its content of specific mineral salts, their relative proportions, and the presence of trace elements or other constituents. It is packaged close to the source under strict hygienic conditions and is not subjected to any treatment involving chemical disinfectants (e.g., chlorination). Allowed treatments include ozonation, UV sterilization, decantation, filtration, and the selective removal of fluoride.

This drinking water quality standard applies to bottled waters labeled as natural mineral water, mineral water, natural spring water (any natural mineral water genuinely discharging from the ground), and carbonated mineral water (mineral water with added carbon dioxide).



Bottled mineral water. Photo by Wikipedia

TZS 574:2019-EAS 153:2018, Packaged drinking water — Specification

This drinking water standard specifies the quality and safety requirements for packaged drinking water for direct human consumption. It ensures that bottled or packaged drinking water is free from harmful contaminants and meets acceptable standards requirements for health, safety, and consumer satisfaction.

This drinking water quality standard applies to bottled drinking water labelled as drinking water, carbonated drinking/ sparkling drinking water, and alkaline drinking water.

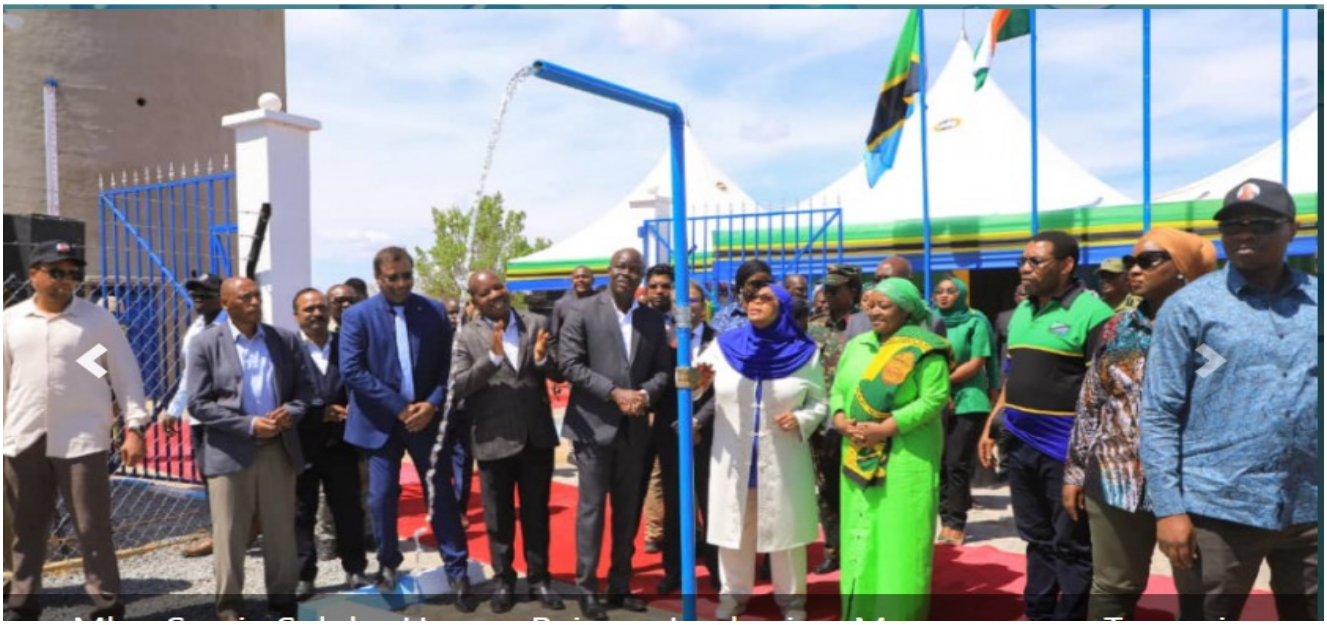
This water must undergo proper treatment processes like filtration and disinfection to meet safety requirements. These are ordinary bottled drinking waters commonly found in Tanzanian markets

Packaged/bottled drinking water. Photo by Indian Yellow Pages.

TZS 789:2019-EAS 132:2018, Potable water — Specification

This drinking water standard specifies the quality and safety requirements of potable water intended for direct human consumption, domestic, and industrial use. Potable water is water either in its original state or after treatment, intended for human drinking, cooking, food preparation, or other domestic purposes, food production, regardless of its origin, whether it is supplied from a distribution network (pipes) by water utilities or individuals, from a tanker, or in bottles (drums).

Potable water can be treated or natural (untreated) potable water. For the treated potable water, it must undergo proper treatment processes like filtration and disinfection to meet safety requirements.



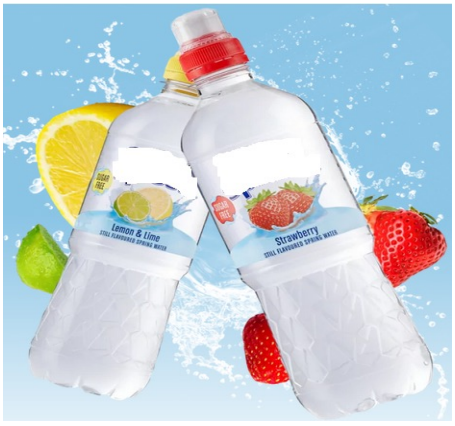
Her Excellency Dr. Samia Suluhu Hassan, President of the United Republic of Tanzania, officiates the launch of the Tinde–Shelui Potable Water Project. (Photo: Ministry of Water)

TZS 2064:2023-EAS 941:2020, Flavoured drinking water — Specification

This drinking water standard specifies the quality and safety requirements for flavoured drinking water, covering both sweetened and unsweetened, and sparkled or still variants infused with fruit, herb, or plant-origin extracts consistent with Codex Stan 192 (General Standard for Contaminants and Toxins in Food and Feed) intended for sale as a ready-to-drink for human consumption.

The standard covers requirements for the sweetened flavoured drinking water, unsweetened flavoured drinking water, sparkled sweetened flavoured drinking water, and sparkled unsweetened flavoured drinking water meant for drinking.

This type of drinking water can be distinguished from others since it has flavours, while other types of bottled water have no flavours.



Flavoured drinking water bottles. Photo by Radnorhills.

Key aspects of drinking water quality standards

The drinking water quality standards were developed based on scientific research, health risk assessments, and international guidelines, such as those from the World Health Organization (WHO). They define permissible limits for various contaminants, including microorganisms, chemicals, and physical properties, while also addressing aesthetic and radiological parameters. Below are the key aspects of drinking water quality standards.

Microbial quality

The microbiological aspect of drinking water standards focuses on eliminating harmful microorganisms that cause waterborne diseases such as cholera, typhoid, dysentery, and hepatitis. Pathogens like bacteria (E. coli), viruses, and protozoa can enter water supplies through human or animal waste contamination. Standards typically require zero tolerance for fecal coliforms and E. coli, as these are indicators of recent contamination. Continuous monitoring and disinfection methods, such as chlorination or UV treatment, are implemented to meet microbiological safety standards.

Chemical quality

Chemical contaminants in water can originate from natural sources, agricultural activities, industrial discharge, or poorly managed waste. Drinking water standards set strict limits for toxic elements such as lead, arsenic, mercury, cadmium, and nitrates. Long-term exposure to these chemicals can lead to severe health issues, including cancer, neurological damage, and organ failure. In addition, pesticides and other synthetic compounds are regulated under chemical quality standards to ensure safe levels that pose no health risks over a lifetime of consumption.

Radiological quality

Radioactive elements such as uranium, radon, and radium can naturally occur in groundwater sources, posing long-term health risks such as cancer. Drinking water quality standards establish safe limits for radiological substances to protect public health. Regular monitoring is crucial in areas where natural radioactivity in rocks and soil may leach into water supplies.

Physical quality

Physical parameters of drinking water, such as colour, taste, odour, and turbidity, play an essential role in consumer acceptance. While these properties may not always indicate harmful contaminants, they can be

a sign of underlying pollution or inadequate treatment. For example, high turbidity can shield microorganisms from disinfection processes, while unusual odours or tastes may point to chemical contamination. Drinking water standards define acceptable levels of these physical properties to ensure both safety and aesthetic appeal.

Treatment and Disinfection requirements

Drinking water standards define necessary treatment processes to ensure water safety. Common methods include coagulation, sedimentation, filtration, and disinfection using chlorine or other agents. Standards also specify the minimum residual disinfectant levels (such as free chlorine) required in distribution systems to maintain ongoing protection against microbial contamination.

Public health importance of drinking water quality standards

Ensuring safe drinking water is a fundamental public health measure and a human right. The drinking water quality standards play multiple roles in disease prevention and public health promotion as follows:

Prevention of Waterborne Diseases

This is a fundamental public health measure and a human right. Diseases such as cholera, typhoid, dysentery, and hepatitis A are commonly transmitted through contaminated water. By regulating microbial contamination, standards eliminate pathogens at the source or during treatment, thus reducing disease incidence.

Protection from chemical contaminants Excessive fluoride, nitrates, arsenic, and heavy metals can cause serious long-term health effects, including fluorosis, cancer, and developmental disorders. Standards help monitor and control these substances in water supplies.

Promoting consistency and safety in water services

Water quality standards provide benchmarks for utilities, enabling consistent treatment, testing, and safe delivery of drinking water. They also serve as reference points for public health institutions during outbreak investigations.

The Tanzania Bureau of Standards (TBS) is responsible for developing, revising, certifying, and regulating drinking water quality standards, including bottled and packaged water products. The development of these standards is carried out in collaboration with key stakeholders and agencies involved in water quality. These include the Ministry of Water (MoW), which coordinates national drinking water programs and water quality surveillance; the Energy and Water Utilities Regulatory Authority (EWURA), which oversees service delivery, enforces compliance with potable water quality standards, and licenses utilities; and Local Government Authorities (LGAs), which implement and monitor water quality at the community level and support public health inspections.

All of the drinking water quality stakeholders work together to ensure that water quality standards are applied from the source to the consumer's tap.

Conclusion and recommendations

As highlighted earlier, water quality standards serve as a critical line of defense against waterborne diseases and chemical contaminants that pose risks to public health in Tanzania. In fulfillment of its mandate, the Tanzania Bureau of Standards (TBS) develops these standards to ensure the safety and quality of drinking water nationwide. By setting clear benchmarks for water quality, these standards play an essential role in protecting the health and well-being of the population.

These standards provide the legal and technical foundation for ensuring safe drinking

water across the country. However, to fully realize their protective potential, stronger enforcement mechanisms, improved infrastructure, and increased public engagement are essential. The Bureau continues to play a vital role in addressing public awareness and education gaps among consumers, distributors, and sellers; many of whom often lack adequate information on water safety, proper storage practices, and how to interpret certification labels on bottled water. With coordinated action and sustained investment, water quality standards can significantly contribute to Tanzania's progress toward achieving universal access to safe and clean water, in line with Sustainable Development Goal 6 (SDG 6).

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9. Tanzania Standards, TZS 574:2019 EAS 153 2018 Packaged drinking water — Specification

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11. Tanzania Standards, TZS 2064:2023 EAS 941: 2020 Flavoured drinking water — Specification

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