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GLOBAL QUALITY
AND STANDARDS PROGRAMME



FOSTERING CLIMATE RESILIENCE THROUGH QUALITY AND STANDARDS

The contribution of the Global Quality and Standards
Programme (GQSP)



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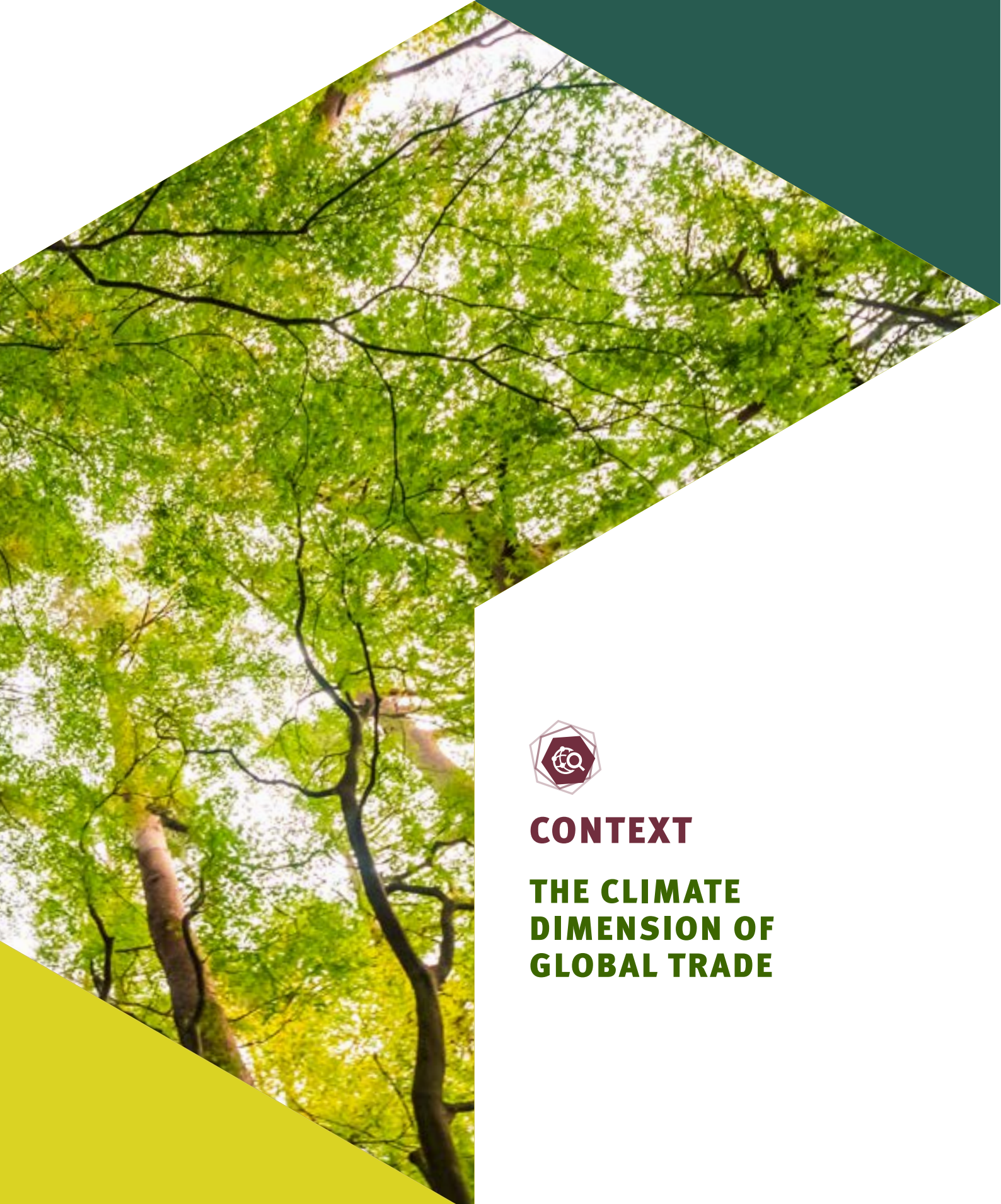
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CONTEXT

**THE CLIMATE
DIMENSION OF
GLOBAL TRADE**



URGENCY OF CLIMATE ACTION

Climate change is one of the most pressing challenges of our time. Nearly half the world's population is highly vulnerable to climate impacts, from unpredictable weather patterns to melting ice sheets, rising sea levels, floods and droughts. Thirty percent of the population is exposed to deadly heat stress, which is projected to rise to 50–70 percent by the year 2100.

Under the 2015 Paris Agreement, countries pledged to pursue efforts to limit global temperature rises to 1.5°C. The figure serves as an indicator of how much the Earth has warmed (or how little it has cooled) compared to the long-term global average. In 2018 scientists revised a decades' old estimated temperature threshold of dangerous impact, stressing that exceeding 1.5°C would be calamitous for the world.

The Paris Agreement is a legally binding international treaty on climate change that was adopted by 196 Parties at the United Nations Climate Change Conference of Parties (COP21) in Paris, France, on 12 December 2015. It entered into force on 4 November 2016.

Its overarching goal is to hold “the increase in the global average temperature to well below 2°C above pre-industrial levels” and pursue efforts “to limit the temperature increase to 1.5°C above pre-industrial levels”. Scientists use average temperature data from the years 1850–1900 as an approximation of pre-industrial temperatures, i.e. how hot the world was before the shift to fossil fuel—coal, oil and natural gas—reliance.

However, in recent years, world leaders have stressed the need to limit global warming to 1.5°C by the end of this century. This is as a result of the UN's Intergovernmental Panel on Climate Change indicating that crossing the 1.5°C threshold risks unleashing far more severe climate change impacts.

The Paris Agreement is a landmark in the multilateral climate change process because, for the first time, a binding agreement brings all nations together to combat climate change and adapt to its effects.

Implementation of the Paris Agreement requires economic and social transformation based on the best available science. The Paris Agreement works on a five-year cycle of increasingly ambitious climate action carried out by countries. Since 2020, countries have been submitting their national climate action plans, known as nationally determined contributions (NDCs). Each successive NDC is meant to reflect an increasingly higher degree of ambition compared to the previous version.

Recognizing that accelerated action is required to limit global warming to 1.5°C, the COP27 cover decision (in Sharm El Sheikh, 2022) requests Parties to revisit and strengthen the 2030 targets in their NDCs to align with the Paris Agreement temperature goal by the end of 2023, taking into account different national circumstances.

With the effects of climate change rapidly intensifying, international organizations, national governments, non-governmental organizations and local communities are tasked with collaborating to find innovative adaptation and mitigation solutions.



THE IMPORTANCE OF A SOUND GLOBAL TRADING SYSTEM FOR THE GREEN TRANSITION

Despite the looming potential for catastrophic climate impacts, there is a unique opportunity for countries to avert them arising from the interconnectedness of climate change, international trade and the policies governing the two. To successfully compete in export markets, countries must also adhere to increasingly stringent market requirements on product quality, safety, health and environmental considerations. These include compliance with trade standards, testing methods and metrological practices, all of which are prerequisites for international trade participation.

The 2022 edition of the World Trade Organization's (WTO's) World Trade Report posits that, although trade can generate greenhouse gas emissions that cause climate change, it can also serve as a force multiplier to stimulate climate action. The benefits of open trade include accelerating investment, scaling up technological solutions and incentivizing innovation needed to drive progress towards a just, low-carbon future and green jobs.

The remarkable reduction in price and improvement in the performance of low-carbon technologies over the past decade has made renewable sources of energy—that is energy derived from natural resources that are replenished at a higher rate than they are consumed—a more affordable option than fossil fuel. A few common sources of renewable energy include solar, wind, geothermal, hydropower, ocean and bioenergy. According to a 2022 Intergovernmental Panel on Climate Change report, there have been sustained decreases of up to 85 percent in the costs of solar and wind energy, as well as batteries, since 2010. Lowering tariff and regulatory barriers to trade in environmental goods and services can help to further drive down costs and accelerate their deployment. The WTO estimates that eliminating tariffs and non-tariff measures on a set of environmental goods can increase global exports of these products by 5 percent, corresponding to USD 109 billion, and can reduce net carbon emissions by 0.6 percent by 2030.

Although climate change adaptation is guaranteed to be costly and disruptive, trade and trade policies can contribute to climate change adaptation strategies. International trade can help prepare for climate-related shocks more effectively by supporting the development and access to climate-resilient technologies, such as new drought-resistant crops. Trade in services, such as weather forecasting, insurance, telecommunications and logistics, can also be essential to identify, prevent and reduce climate risks and vulnerabilities and to minimize unavoidable losses and damages caused by climate change.

Once climate-related shocks hit, international trade provides access to critical goods and services, such as food, medical supplies and electricity generators. Trade can also contribute to food security by allowing those regions previously relying on domestic agricultural production to import food from less affected regions.

While trade agreements are increasingly explicitly addressing climate change, even greater trade cooperation is crucial for decarbonizing supply chains, making them more resilient to climate shocks and promoting secure and sustainable food systems. Together with binding regulations, standards can help facilitate trade cooperation, aiming to establish clear accountability for upholding human rights, well-being, and sustainability within international value chains. Moreover, voluntary sustainability standards specify various sustainability requirements for producers, traders, manufacturers, retailers, and service providers, contributing to improved social and environmental outcomes in supply chains and supporting the transition to greener trade.

The United Nations Industrial Development Organization (UNIDO) prioritizes implementing fair trade, strong standards and enhancing sustainability across its technical cooperation, policy assistance, convening and normative dimensions as a means of alleviating poverty, improving human well-being and achieving climate justice.

The United Nations Industrial Development Organization (UNIDO) is the specialized United Nations agency supporting developing countries to facilitate industrial development for poverty eradication, globalization of trade and environmental sustainability. UNIDO contributes to the achievement of the Sustainable Development Goals (SDGs) through its mandate to support its Member States in achieving inclusive and sustainable industrial development (ISID), which is also reflected in SDG 9 “to build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation”.

In pursuit of these goals, UNIDO works with national, regional and global actors to improve social and environmental sustainability. This work is well illustrated through its Global Quality and Standards Programme (GQSP).

With the understanding that quality and standards can significantly contribute to mitigating the negative effects of climate change, as well as obstacles stemming from digital transformation and due diligence laws, the **Global Quality and Standards Programme (GQSP)** aims at developing comprehensive solutions for common quality and standards related challenges. It achieves this through knowledge dissemination at the global level and focuses on specific value chains at the country level to provide targeted technical support that not only helps to overcome compliance challenges and facilitate market access for specific products—with demonstrable results over a project lifespan—but also has a “knock-on” effect in terms of more generic quality infrastructure development.

Funded by the Government of Switzerland through its State Secretariat for Economic Affairs (SECO), and implemented by UNIDO, the GQSP contributes to a number of key conditions and transformational goals, resulting in greater international competitiveness, increased exports and sustainable trade. The success of the GQSP’s first phase prompted UNIDO and SECO to extend their constructive efforts for a second five-year programme phase, commencing in December 2022. The second phase has an expanded scope, with increased focus on sustainability and digitalization.

Find out more about the impact of the GQSP in the publication [Improving Trade, Changing Lives.](#)





THE ROLE OF INDUSTRY IN SCALING UP CLIMATE ACTION

The role of industry in the climate change context is threefold: industry is one of the largest emitters of greenhouse gases; it is itself adversely affected by the changing climate and resource depletion; and it has the potential to become a leading provider of technological solutions, business models and green jobs, while influencing consumer behavior and lifestyles across the globe.

Requiring significant investment and innovation, the transition to climate-resilient development will shift government and private sector decision-making. Support to countries for addressing climate change will require development cooperation providers to better engage with the private sector to mobilize resources, knowledge and innovation.

The OECD's Development Assistance Committee members are increasingly engaging the private sector to mobilize green investment, promote green private sector development, and harness skills and knowledge for addressing climate change in developing countries. Such efforts include developing clean infrastructure, reducing energy and water use, improving the climate resilience of cities and communities, and supporting natural capital and ecosystems.

The importance of tackling climate change and other environmental issues is now well recognized by different parts of the private sector. The financial sector has acknowledged that addressing global environmental challenges, such as climate change, is key to managing business risks and ensuring long-term returns on investment (Carney, 2015). Optimizing resource use and improving environmental performance also help companies reduce costs, streamline operations and increase efficiency. In addition, the need for innovative solutions in the areas of climate change mitigation and adaptation is an opportunity for companies to develop new products and services and serve new markets. Multinational companies are also paying increasing attention to corporate social responsibility and responsible business conduct—addressing environmental risks and impacts is central to their efforts.

QOSP GHANA – ADOPTION OF RSPO AMONG PALM OIL PRODUCERS

With support from the QOSP Ghana, a group of Ghanaian farmers have become the very first Independent Smallholder Group to achieve RSPO certification in Ghana, and the second one in the Africa region. This milestone was achieved by the Golden Star Oil Palm Farmers Association (GSOPFA), under the management of Golden Star Oil Palm Plantations Ltd. (GSOPP). As part of the preparation to achieve RSPO certification, the QOSP Ghana held a training-of-trainers programme for the leaders of the GSOPFA, enabling them to understand the requirements of the RSPO Independent Smallholder Standard.

Since employing sustainable agriculture practices that contributed to RSPO certification, the group has enjoyed increased yields of over 18 tonnes per hectare, which is three times above the national average yield for smallholders. Apart from these increased yields, employing sustainable agriculture practices has contributed to socioeconomic development by creating over 500 direct employment jobs in the communities surrounding the smallholder plantations. Introducing sustainable agricultural practices has ultimately uplifted smallholder livelihoods.

RSPO is a global certification system for certified sustainable palm oil. RSPO certification assures individuals that RSPO members who produce or physically handle RSPO Certified Sustainable Palm Oil (CSPO) have obtained RSPO certification. It includes the assurance that the member has committed to and complied with sustainability requirements, and can make a claim on their certification status and communicate this throughout the supply chain.



CLIMATE BENEFITS OF TRADE

ECONOMIC DIVERSIFICATION FOR CLIMATE RESILIENCE

The concept of economic diversification has traditionally been a strategy to encourage positive economic growth and development. The UNFCCC secretariat (UN Climate Change) defines economic diversification as the process of shifting an economy away from a single income source toward multiple sources from a growing range of sectors and markets. It is the world's poorest countries—frequently characterized as small, geographically remote, landlocked and heavily reliant on primary agriculture or minerals—that tend to have the most concentrated economic structures. Insufficient economic diversification is often associated with heightened vulnerability to external shocks that can undermine prospects for sustained economic growth.

Regional sourcing encourages the development of local and regional industries, which in turn, can lead to economic diversification as various sectors expand to meet the demand for locally sourced goods and services. On the flip side of international trade affording access to critical goods and services in the face of climate-related shocks, shorter supply chains are often more resilient to climate-induced disruptions as businesses that source regionally are less prone to supply delays from long-distance transportation. They also typically have a reduced carbon footprint. Further, local and regional businesses may be more adaptable in response to climate-related challenges because they can develop strategies that are tailored to the specific needs of their region, contributing to climate resilience and fostering innovation.



TRANSITION TO A MORE CIRCULAR ECONOMY

A promising solution to address the triple planetary crisis of climate change, biodiversity loss and pollution, the circular economy provides an alternative to the traditional linear economic model of take, make, consume and throw away of raw materials that has little concern for the ecological consequences. Resources are kept in use for as long as possible in this alternative model, maximum value is extracted from them, and waste is relocated from the end of the supply chain to the beginning, giving the used materials a new life.

In terms of industry, a circular economy reduces resource dependency and resource use, including energy, thereby reining in production costs, narrowing market exposure and limiting costs stemming from resource extraction and generation. It additionally leads to the introduction of economically viable methods of reducing pollution, and separating harmful from reusable waste material. This allows companies to optimize their production.

Beyond individual enterprises, these benefits further extend to entire industrial sectors, or even national economies. The circular economy encourages inter-company exchanges and synergy-building, leading to better economic, social and environmental performance. This in turn helps raise the overall performance of national economies and opens up new markets and jobs.

GQSP COLOMBIA – CIRCULAR ECONOMY TRANSFORMING COLOMBIA'S CHEMICAL SECTOR AND ECOSYSTEM RESILIENCE

Linear economics and unsound chemicals management can decrease the resilience of productive ecosystems to the effects of climate change. With technical assistance from the GQSP Colombia, 21 companies in the chemical sector—mainly micro, small and medium-sized enterprises (MSMEs)—were able to adequately characterize and communicate the health and environmental hazards of their products by applying the GHS (Globally Harmonized System of classification and labeling of chemicals). The programme's systemic approach also led to the development of guidelines for communicating these hazards, courses for industry personnel and national regulations applied to workplaces. At the same time, guidelines and tools were created for eco-design and the use of waste for reintroduction into value chains, and advisory services were provided to another group of MSMEs with innovative circular economy models for the standardization of their products, thus facilitating the transition from the linear economy in the chemical sector to more sustainable production models.

One of the circular models supported by the GQSP Colombia in the area of technical assistance for the standardization of products considers the use of coffee mucilage for cosmetic applications based on natural ingredients, this being an applicable solution for 17 coffee processing plants in Colombia. The use of this coffee processing residue eliminates more than 214 metric tons of methane emissions per year.

In addition to working with the value chain, the GQSP Colombia worked in depth with the National

Environmental Licensing Authority to transfer knowledge from experts and peer authorities. This transfer focused on the proper management of disaster risk and climate change and the preparation of guidelines for the management and prevention of accidents involving hazardous substances that can deplete the ozone layer. Competencies were also strengthened in the management of the environmental impacts of the production and use of pesticides, including the effects of aerial spraying and the potential effects on pollinators.

More specifically, the GQSP Colombia and the Plastics and Rubber Research and Training Institute (ICIPC by its Spanish acronym) developed the Polyguess application which allows for the identification of different plastic materials used in the chemical industry, specifically in the cosmetics, toiletry, oils, paints and agrochemicals sectors.

The recovery and reuse of plastic packaging are a main challenge for the industry. The correct identification of the polymer families and their classification are the first step towards an adequate valorization of these residues and their reintegration in the productive processes. The application is intended for personnel involved in the recycling business, helping to guide the user in the proper identification of different polymers through quick and easy tests. This solution contributes to the reduction of costs associated with the identification of materials in the site and the strengthening of the chain to obtain materials suitable for reincorporation, thereby improving production patterns.

On the international level, the circular economy facilitates the exchange of goods across borders by introducing standards to secondary raw materials that were previously considered waste. Improved product characteristics such as extended lifetime, recyclability and serviceability further help ensure that products can be used and sold on the global market. By helping overcome international trade barriers in this way, the circular economy offers new possibilities by which countries can prosper.

Standards play an important role in resource efficiency as well as energy, waste and environmental management, and as such, UNIDO participates in the elaboration of international standards on circular economy in a dedicated Technical Committee of the International Organization for Standardization (ISO). This work includes, inter alia, setting a framework and principles for the implementation of a circular economy, producing guidelines on business models and measuring circularity frameworks.





PROMOTING RESPONSIBLE CONSUMPTION AND PRODUCTION PATTERNS

Sustainable Development Goal (SDG) 12 addresses unsustainable consumption and production patterns, which are the root cause of climate change, biodiversity loss and pollution. From 2000 to 2019, total domestic material consumption rose by more than 65 percent globally, amounting to 95.1 billion metric tons.

Improving the environmental performance of existing industrial facilities is often the most cost-effective measure to help supply-constrained economies in meeting higher levels of production without intensifying their impact on the environment. From this perspective, the drive for innovation and process optimization—reducing resource waste and thus increasing economic competitiveness—is an important means to develop the necessary solutions to realize cleaner production, efficient resource management, and a reduction of waste and pollution. Energy efficiency in industry plays a particularly vital role, as energy inputs represent an important cost of production in all industries.

GQSP PERU – ECO-FRIENDLY INITIATIVES FOR SAN MARTIN COFFEE AND COCOA COOPERATIVES

The GQSP Peru supported coffee and cocoa cooperatives in the San Martin region in enhancing their post-harvest infrastructure. This included constructing eco-friendly coffee washing tanks designed to reduce water consumption and wastewater (known as “aguas mieles” or honey water).

Additionally, the GQSP Peru assisted in constructing drying and fermenting modules for cocoa cooperatives. These structures are equipped with drainage systems and connections to biodigesters to minimize environmental impact.

The GQSP Peru also conducted awareness building activities and training sessions on the application of Peruvian Technical Standards (NTPs) for Best Harvest and Post-harvest Practices for cocoa and coffee. Participants were informed about updated organic regulations from the European Union (EU) and the United States of America, along with the EU’s zero-deforestation regulation.

Cocoa and coffee producer organizations supported by the GQSP Peru are proud to have organic and fair-trade certifications and actively promote reforestation efforts.



UNIDO’S CLIMATE ACTION APPROACH TO TRADE

Hunger and poverty, environmental degradation and climate change are some of the key challenges we face today. UNIDO recognizes inclusive and sustainable industrialization as a central element in addressing these challenges, and particularly as an effective climate change strategy. To this end, UNIDO’s three major priorities for action set by its Director General are:

1. Supporting sustainable supply chains so that developing country producers get a fair deal and scarce resources are preserved.
2. Limiting climate breakdown by using renewable energy and energy efficiency to reduce industrial greenhouse gas emissions.
3. Ending hunger by cutting post-harvest losses and developing agribusiness value chains.

The guiding principle of UNIDO’s activities is low-emission, climate-resilient development. This means promoting policies, technologies and practices that empower countries to take climate action and, in doing so, create millions of new, decent jobs.

To address the challenges posed by climate breakdown, UNIDO’s strategy revolves around leveraging synergies with other priority areas such as energy, agribusiness development and food security, circular economy and biodiversity. Furthermore, it supports the development and deployment of new technologies and encourages the application of new ways of thinking. It also serves as a platform for innovation, knowledge and technology transfer, business sector cooperation and investment promotion.

UNIDO sees innovation as key to mitigating and adapting to climate change, and as such, it recognizes that harnessing technological solutions is essential to reducing and avoiding greenhouse gas emissions. Accordingly, UNIDO is committed to further advancing and exploring these technological options to address the global challenge of climate change effectively.





THE IMPORTANCE OF QI FOR CLIMATE ACTION

Quality infrastructure (QI) is all about providing confidence to markets, citizens and consumers that their needs and expectations are understood, clearly defined and will be (or are being) met. A basic prerequisite for implementing the Paris Climate Agreement and for tracking progress, therefore, is to establish an appropriate QI system that can assist a nation not only in meeting its trade and economy-related goals, but also to seize the many opportunities available through appropriate implementation of the SDGs. A QI typically covers essential elements that are needed to provide confidence such as: a national quality policy (NQP) to define the roles and responsibilities of all the various actors; QI-related institutions (including the value-adding use of metrology, international standards, and internationally recognized accreditation); conformity assessment service procedures and providers; and the appropriate market surveillance.

It supports other governmental policy objectives in areas including: industrial development; trade competitiveness in global markets; the efficient use of natural and human resources (including Occupational Health and Safety); food safety; health; the environment; and climate change. Under the collaborative framework and direction provided by the NQP, all component parts of the QI system act synergistically with each other and have traditionally provided a valuable tool for defining, developing and verifying requirements for products and services, as defined in, for example, (voluntary) standards, (mandatory) technical regulations and contractual obligations. The system components also provide invaluable contributions when requirements relate not to product and services, but to other important societal issues such as climate change, biodiversity, sustainability, energy efficiency, gender equality and inclusivity. These are all covered to a greater or lesser extent by international standards and (increasingly) by legislation, and the QI can provide confidence to all interested parties that their requirements are understood and the extent to which they are being met. This includes not only the traditional conformity assessment activities of inspection, testing and certification, but also the verification and validation of claims made relating to sustainability issues including, for example, carbon and water footprints; ESG (Environmental, Social and Governance) reports; specific SDG commitments; and many more.



QUALITY INFRASTRUCTURE IN BRIEF

Setting up a QI system is one of the most pragmatic steps that a developing nation can take on its path towards cultivating a thriving economy as a basis for prosperity, health and well-being. Quality infrastructure is a system contributing to governmental policy objectives in areas including industrial development, trade competitiveness in global markets, efficient use of natural and human resources, food safety, health, the environment and climate change.

While the achievement of the SDGs requires a fundamental shift in economic activities, social practices and human behavior, this transformation can be supported by QI systems. This is especially the case when all QI building blocks are in place—standardization, metrology, accreditation and conformity assessment (in particular, testing, certification and inspection services). Quality infrastructure can help consumers make informed choices, encourage innovation, lead businesses and industries to take up appropriate new technologies and organizational methods improving current practices, and support public authorities in designing and implementing public policies aligned with the SDGs.

Robust QI systems better position developing economies to achieve sustainable development, through increasing prosperity, meeting the needs of people, and protecting the planet. In turn, a well-functioning, internationally harmonized and recognized QI system is essential for climate protection as QI provides confidence not only for the assessment of the impact of services and products on our climate, but also for monitoring national and international commitments such as those of the Paris Agreement as well as for other SDGs.





AT THE POLICY LEVEL

A QI system has traditionally been seen as a catalyst for improving the quality of products and services on a national scale. In turn, it helps to stimulate demand for these products and services, invigorating individual businesses and the economy as a whole. By helping national industry to meet the requirements of export markets, a QI system increases the competitiveness of the nation's economy and its ability to participate in global trade and in value chains.

In recent years, however, it has become clear that a well-implemented QI system contributes to governmental policy objectives in areas other than trade of products and services, including industrial development, efficient use of natural and human resources, food safety, health, the environment, climate change, and other topics that are included in the United Nation's 2030 Agenda for Sustainable Development. Furthermore, a quality and standards-based approach can be a powerful tool to proactively address climate change and make a positive contribution to climate action.



GQSP INDONESIA – IMPROVING SUSTAINABILITY PRACTICES, LIVELIHOOD AND RESILIENCE TO CLIMATE CHANGE OF COASTAL COMMUNITIES

The GQSP Indonesia aligns with the Indonesian government's priority to support blue agenda and blue economy development. It focuses on improving productivity, competitiveness and market access for actors in selected aquaculture value chains (shrimp, seaweed, milkfish, catfish and pangasius) at both national and regional levels. In collaboration with other UN agencies and development partners, the GQSP Indonesia actively participates in the National Blue Agenda Partnership (NBAAP) led by the Coordinating Ministry of Maritime Affairs and Investment and the Blue Economy Road development led by BAPPENAS. The NBAAP, launched in Bali in November 2022 during the G20 Summit, aims to support the Indonesian Government to promote sustainable and inclusive fisheries and marine resource development, as regulated in national development frameworks.

The National Blue Agenda has four pillars namely: Blue Health, Blue Food, Blue Innovation and Blue Finance. UNIDO, through GQSP Indonesia and SECO, is a member of the Blue Innovation Pillar and co-chairs the Blue Food Pillar, which focuses on activities related to production, consumption, aquaculture, market access, supply chain, food security system, small-scale producers,

sustainability, competitiveness, certification and investment. The programme contributes written inputs and participates in public consultations for the development of Blue Economy Road Map led by BAPPENAS, particularly regarding aquaculture and market access. The Blue Economy Roadmap was unveiled during the ASEAN Blue Economy Conference in Belitung in July 2023.

On a global scale, the GQSP Indonesia actively participates in the development of Seafood MAP, initiated by GSSI and supported by UNIDO, FAO and more than 90 stakeholders worldwide since its inception in 2019. The Seafood MAP platform is a public-private partnership designed to empower seafood producers of all sizes to share their sustainability achievements, regardless of size or destination. It is a novel approach to map and accelerate fisheries and aquaculture pathways to sustainability, fostering fisheries and aquaculture sustainability through storytelling and measuring progress against the SDGs. This platform provides global producers, including those in Indonesia, with opportunities to learn, connect to markets, access technology solutions, and explore investment prospects.



STANDARDIZATION

Standardization is a central pillar of QI, providing clarity and comparability for government, business, consumers and citizens. Standards offer great support for many sustainability-related initiatives that include, for example, environmental stewardship which helps companies to measure and improve their carbon footprint, reduce greenhouse gas emissions, make more efficient use of resources such as energy, and move towards “Net Zero” capabilities.

With this in mind, the International Organization for Standardization (ISO) has developed a number of standards that play an essential role in climate action, helping to monitor climate change, quantify greenhouse gas emissions and promote good practice in environmental stewardship.

One of the earliest and most important standards for environmental management is ISO 14001, which defines requirements for an environmental management system. Such a system can help an organization to define and achieve concrete environmental goals and (if needed) to be able to provide confidence to relevant interested parties via accredited certification. ISO has also issued standards on greenhouse gas accounting, thus allowing companies to verify their corporate carbon footprint according to the ISO 14064-1 standard. It is also possible to establish the carbon footprint of products or services according to ISO 14067, determining all greenhouse gas emissions caused by a product throughout its entire life cycle.

Energy management systems (EnMS) can also significantly contribute to the reduction of greenhouse gas emissions, as specified in the internationally established ISO 50001 standard. Many organizations introduce EnMS to reduce their energy consumption and increase energy efficiency.

But it is important to recognize that climate change adaptation and mitigation is not limited to organizations that have implemented environmental management system standards such as ISO 14001. ISO’s commitment to furthering the Climate Agenda came during its 2021 General Assembly, when all ISO Member Bodies approved what has become known as the “London Declaration”.¹ This reads as follows:

“International Standards play a crucial role in underpinning the global economy, creating trust on all aspects of international trade. ISO has a number of standards that are essential in supporting the climate agenda; they help adapt to climate change, quantify greenhouse gas emissions and promote the dissemination of good practices in environmental management. The science is clear: the need for urgent measures to reduce emissions and help adapt to climate change is overwhelming.

Without up-to-date International Standards, industry and other stakeholders will be unable to achieve what is necessary. ISO hereby commits to work with its members, stakeholders and partners to ensure that International Standards and publications accelerate the successful achievement of the Paris Agreement, the United Nations Sustainable Development Goals and the United Nations Call for Action on Adaptation and Resilience.”

This has resulted in a comprehensive Action Plan that is currently being implemented by ISO’s Technical Management Board (TMB), and a recent (September 2023) instruction to all ISO Technical Committees whose portfolio includes one or more management system standards (such as ISO 9001, 22000, 45001 and others) to include climate change adaptation and mitigation considerations as part of the “Context” clause of their standards, with immediate effect.

Furthermore, the [Climate action toolkit for ISO members](#) recognizes the power of collaborating, promoting the sharing of best practice and success stories on the role of international standards for climate action with policymakers and regulatory bodies to support them to move faster, with higher levels of ambition.

¹<https://www.iso.org/ClimateAction/LondonDeclaration.html>



METROLOGY

Metrology ensures reliable and globally comparable measurements, for example, for important climate variables such as air and water quality.

As a critical pillar of QI, metrology minimizes measurement inaccuracies and enables globally comparable measurement results. Metrological testing and calibrations of sensors are essential prerequisites for data collection on climate change. Reliable measurements help to understand climate change better and improve trust in necessary measures to reach climate targets.

Bureau International des Poids et Mesures (BIPM) and the World Meteorological Organization (WMO) provide greater insight into metrology's vital contribution to climate action:

“Measurements provide a key resource in addressing climate change by: identifying and understanding the processes by which the Earth is changing; quantifying the long-term changes that are occurring; and mitigating for and adapting to the observed changes. The last of these requires society’s decision makers to have an evidence-based foundation in how the Earth is changing and providing predictions of how it may change in the future under different emissions and land-use scenarios. Such evidence relies fundamentally on accurate, stable, and long-term observations of climate variables, their integration into modelling, and the use of observations in developing climate science. Measurement science can also support effective climate change mitigation through measurement-based monitoring to locate, quantify and thereby manage greenhouse gas emissions and removals, and with advanced analysis tools target effective mitigation opportunities and track the efficacy of emission reduction initiatives.”

International agreements set clear targets such as the rate at which industrialized countries should reduce their greenhouse gas emissions. Compliance with these targets can only be verified with precise and globally comparable measurement results.





CONFORMITY ASSESSMENT

Conformity assessment bodies test, inspect, certify, verify and validate in fields including energy efficiency, reduction of greenhouse gas emissions and renewable energies. Improving energy efficiency requires, for example, measuring the energy consumption of a device, system or process. This is achieved through data collection and analysis as well as by testing and verification. A well-defined set of criteria and metrics is indispensable for achieving meaningful and comparable results, and the ability to identify whether climate targets are being met relies on the authenticity of the data collected. For example, verified reports serve as the basis for the European Union Emissions Trading System (EU

ETS)—an important instrument for the efficient reduction of greenhouse gas emissions.

Companies in certain industries must record their greenhouse gas emissions, submit an annual emissions report and purchase CO₂ emission certificates. Inspection bodies verify and assess the conformity of these emission reports. This is possible because such inspection bodies have proven their technical competence to a regionally or internationally-recognized accreditation body. This system of accreditation and conformity assessment operationalizes European emissions trading.

GQSP UKRAINE – STRENGTHENING TESTING CAPABILITIES WITHIN UKRAINE’S GREEN RECONSTRUCTION EFFORTS

Within the context of Ukraine’s green reconstruction, the country has already begun boosting its energy efficiency for a sustainable future through its production of wooden windows. Wood is a natural insulator and wooden windows can be one of the most energy-efficient window types when manufactured to the appropriate standards. About 100 producers of windows and structures operate in the Ukrainian market, which is further served by up to 10,000 small companies. However, the lack of capacities among local window manufacturers to meet quality and sustainability requirements could hamper their opportunities to participate in reconstruction activities and to generate much-needed income that would allow them to stay in business.

In support of this sector the GQSP, in close cooperation with the Swiss University of Bern, has put at the disposal of wooden window producers a new testing scope that will equip them to measure the thermal performance of their products, optimize their design and make them more energy efficient. The new testing capabilities will become an integral part of Ukrainian laboratories’ offer of services and is the first step of a wider strategy aimed at building digital capacities among labs to improve their future resilience.

Even prior to the outbreak of the armed conflict in 2022, Ukraine was facing challenges related

to outdated infrastructure, energy inefficiency and environmental degradation. The country has now put forward a Recovery Vision that aims to capitalize on the reconstruction efforts and ensure that these are guided by and serve as a springboard for sustainability. The so-called “green reconstruction” presents an opportunity to transition towards sustainable and inclusive growth in the post-conflict era. To achieve this, the adoption and effective implementation of appropriate standards is crucial.

In view of this, UNIDO joined forces with the Ministry of Economy of Ukraine, the National Standards Body (UAS) and international partners, including CEN and CENELEC, to conceptualize and develop a National Guiding Framework to lay the foundation for green reconstruction. As part of these efforts, a series of workshops was organized for experts from relevant international, European and national partner organizations and for stakeholders from the public and private sectors to explore how standards and conformity assessment can support the reconstruction of essential infrastructure, facilities, services and their management, through green lenses, particularly applying the principles of circular economy, climate neutrality and decarbonization. Furthermore, the workshops address the importance of integrating sustainability issues into Ukrainian public policies (including technical regulations) prior to the post-conflict reconstruction process.



ACCREDITATION

Accreditation provides confidence that conformity assessment bodies possess the necessary expertise and impartiality to carry out their activities. Accredited conformity assessments play a vital role in supporting climate action in various ways. Given the role of conformity assessment bodies to test, certify, verify and inspect, for example, as a means to identify whether climate goals are being achieved, the authenticity and comparability of the collected data is paramount.

In many areas of the energy sector, plants, processes and systems must function both safely and effectively irrespective of their location or of the operators and users. Consequently, accreditation is an important instrument in the realms of energy and climate because, as proof of competence, accreditation provides confidence that those responsible for verifying products, services, systems, processes or personnel comply with the necessary requirements.

The Global Quality and Standards Programme's contribution to climate action

Promoting quality and standards enhances the achievement of all SDGs. The Global Quality and Standards Programme (GQSP) plays a pivotal role in this by actively contributing to:

- » Good health and well-being (SDG 3)
- » Clean water and sanitation (SDG 6)
- » Decent work and economic growth (SDG 8)

- » Industry, innovation and infrastructure (SDG 9)
- » Sustainable cities and communities (SDG 11)
- » Responsible consumption and production (SDG 12)
- » Climate action (SDG 13)

Within its commitment to promote ISID to harness the full potential of industry's contribution to the achievement of sustainable development, and lasting prosperity for all, UNIDO is dedicated to supporting environmentally sound and sustainable development in the full range of its project activities.

Against this backdrop, UNIDO has adopted a set of Environmental and Social Safeguard Policies and Procedures (ESSPP) to strengthen its accountability to the countries and communities it aims to support; stakeholders in the development processes; and the broader development cooperation and donor community. UNIDO makes an effort to ensure ESSPP at an early stage of all of its projects, including the GQSP.



THE GLOBAL QUALITY AND STANDARDS PROGRAMME'S CONTRIBUTION TO CLIMATE ACTION

ADVOCATING FOR THE SUSTAINABLE USE OF BIODIVERSITY

UNIDO supports its Member States to steer their industries on a path to sustainability, to restore ecosystems and to ensure conservation and sustainable use of biodiversity. Conservation and sustainable use of biodiversity are embedded in the UNIDO mandate to promote ISID.

Chaired by China and hosted in Canada, the 15th Conference of the Parties to the Convention on Biological Diversity (COP 15), held in December 2022, resulted in the adoption of the Kunming-Montreal Global Biodiversity Framework after intensive negotiations involving 188 Parties to the Convention on Biological Diversity. The Framework provides a strategic vision and a roadmap for the conservation, sustainable use and restoration of biodiversity for the next decade.

The Framework consists of four overarching global goals

and 23 targets for 2030 aimed at protecting nature. Targets of particular relevance to UNIDO include reducing pollution risks, sustainable management of areas under agriculture, aquaculture, fisheries and forestry, encouraging and enabling people to make sustainable consumption choices, integrating biodiversity into policies and regulations, ensuring capacity-building and development, access to and transfer of technology, promoting development effective and gender-responsive representation and participation in decision-making, among others.

Biodiversity protection is intertwined with climate action and UNIDO's portfolio incorporates numerous nature-positive components, including eco-industrial park solutions, circular agri-businesses interventions, nature-based infrastructure and valuation of ecosystem services.

GQSP SOUTH AFRICA – CONSERVING RICH BIODIVERSITY

The GQSP South Africa focuses on indigenous, essential and vegetable oils value chain development and supports various environmental, social and economic sustainability dimensions of the Nagoya Protocol to conserve South Africa's rich biodiversity and support indigenous communities with livelihood development. Given the biotrade focus of the project, farmers are trained to select the relevant genetics of the species so as to prevent economic and environmental losses, especially for indigenous peoples, and to conserve natural resources. Moreover, the project considers the Department of Environmental Affairs (DFFE) list of indigenous species for economic development and the South African list of endangered species. The 2nd South African essential and vegetable oils (hybrid) conference held in July 2022 with the theme of "New horizons and innovations for the essential and vegetable seed oil industry" attracted numerous in-person and remote delegates. The interactive sessions focused on climate change and environmental policies, diversity and ecological state of aromatic plants, resource-effective practices such as regenerative agriculture/organic farming and

community involvement. Moreover, in the course of the project, some of the farmers have successfully transitioned to renewable energy by running farms that are fully solar-powered, thereby contributing to an overall reduction in carbon footprint.

In its second phase, the project continues to promote the role of QI and other support organizations for sustainable industrial development, while also taking into account environmental concerns, particularly climate change and energy supply. In addition to continuing to strengthen SMEs' awareness of market requirements, the second phase of the project also focuses on SMEs' responsiveness to the effects of rising natural disasters (such as flooding) and increasing energy shortages. The impact of climate change on the industry is to be assessed during the inception phase, and the awareness of climate change-responsive smart-farming technologies could further enhance the sustainability and competitiveness of the SMEs. The project continues to build innovative partnerships through the BioTrade Stakeholder Forum and hopes to address various climate dimensions affecting the industry.



PROMOTING CLIMATE ACTION AS PART OF THE QUALITY INFRASTRUCTURE SYSTEM

Protecting and nurturing the environment is vital for human well-being and survival. To achieve this, we have to adopt a new approach to economic development that prioritizes environmental sustainability. Quality infrastructure institutions and services have a crucial role to play in this, particularly in the implementation of policies and actions for sustainable resource use and ecosystem protection. This is in terms of measurement capabilities, sharing best practices, supporting management, and monitoring, reporting and verifying compliance.

Quality infrastructure institutions and services are also essential for promoting sustainable consumption and production. They provide accurate data on materials, energy, water, land usage, emissions and waste. Collaborative efforts are key in this endeavor, as exchanging these data points contribute to shaping and implementing sustainability policies and fostering eco-friendly behavior among stakeholders.



GQSP COSTA RICA – COLLABORATIVE CLIMATE ACTION FOR SUSTAINABLE LIVESTOCK FARMING

The GQSP Costa Rica has been actively collaborating with various United Nations agencies on addressing the environmental impact of livestock farming in the country. Livestock farming is a significant source of methane emissions, one of the greenhouse gases most harmful to the ozone layer.

To combat this issue, projects from each UN agency that focus on livestock have been identified and respective project activities have been aligned along the beef value chain. This coordinated effort ensures that the entire UN System in Costa Rica promotes unified actions for environmental sustainability within the livestock sector.

Additionally, GQSP Costa Rica has worked closely with NAMA Livestock and Climate Action, a division of the Ministry of Agriculture and Livestock (MAG),

to plan pilot initiatives in various regions of the country. Capacity-building activities have also been conducted to analyze pesticide residues in meat, honey and fruits. These efforts have resulted in reduced environmental impacts and enhanced public health measures.

The GQSP Costa Rica has also conducted regional training sessions for producers to prepare them for compliance with the European Green Deal. This training equips them to adapt their farms and business models to meet the requirements of the Green Deal.

More on this topic can be found in the UNIDO publication [Rebooting Quality Infrastructure for a Sustainable Future](#).



ADVANCING CLIMATE ACTION AT THE ENTERPRISE LEVEL

Traditionally, the public sector has led climate change adaptation efforts, but now businesses are playing an increasingly crucial role in advancing the climate agenda. Enterprises are more aware of the climate emergency and are not only urged to address their environmental impact, but also to recognize adaptation as vital for their business.

Meaningful climate action is gaining importance in corporate strategies. International and national requirements (e.g. Paris Agreement) and environmental reporting mandates (e.g. the European Union's Corporate Sustainability Reporting Directive) are increasing. Stakeholder expectations, including customers, investors, non-governmental organizations and consumers, are rising as well. In turn, companies need to anticipate and respond to regulatory developments, stakeholder expectations and the evolving concept of corporate responsibility for greenhouse gas reduction.

Businesses have multiple incentives for climate

adaptation. Climate change negatively affects financial performance, but it also presents opportunities for many industries. Businesses will need to provide products and services for an effective climate response. Furthermore, the way in which governments, regions and cities adapt to climate change will impact business operating environments (World Economic Forum).

Effective and comprehensive management of climate risks and opportunities is essential for improving climate performance and addressing these challenges. This includes supporting sustainable value chains, promoting sustainability and circular economy practices and engaging employees in sustainability initiatives by raising awareness, providing training, and involving them in decision-making processes related to climate action. At the enterprise level, climate action requires a long-term, strategic approach that considers emissions as well as climate-related effects on businesses, which the GQSP supports within its target countries.


GQSP VIETNAM – FRUIT PRODUCERS AND PROCESSORS ADAPTING TO A CHANGING CLIMATE

Vietnam, particularly its Mekong River Delta region with a mean elevation of 0-3 meters, faces severe climate change impacts, including rising sea levels, salinization, land subsidence, flooding, coastal erosion, erratic rainfall, and rising temperatures. These challenges will significantly affect the economy and society over the coming decades, necessitating changes in farming practices. To effectively adapt in agriculture and to enhance mitigation and adaptation strategies, it is crucial to understand farmers' perceptions of climate change, their ability to adapt, and the effectiveness of adaptation measures. The sources and quality of information necessary for farmers to effectively adapt are of particular importance. Accessible and useful local services, including irrigation, agricultural extension, credit, and healthcare, are essential for successful mitigation and adaptation in the Mekong Delta.

The tropical fruits industry in Vietnam will also be affected by climate change, which is likely to lead to reduced productivity, shifts in logistics and transportation practices, changes in agronomic

methods, and higher environmental standards needing to be met. The GQSP Vietnam focuses on building adaptive export systems that accommodate greater varieties, using more eco-friendly sea freight instead of air freight, and reducing inefficiencies in the current export process to decrease waste, including postharvest losses, while improving energy efficiency. Importantly the project is investigating climate change impacts on the export system, the conditions required for change and barriers to change.

The GQSP Vietnam supports existing tropical fruits producers and processors by enhancing agriculture and processing practices to boost productivity and quality, and to reduce waste and food loss along the value chain. It also aims to improve processing practices to extend product shelf life and to decrease diseases and other quality loss causes. The project will also develop guidelines to improve practices for chemical usage, ensuring compliance with national regulations and export market requirements.



CREATING A QUALITY CULTURE IN SUPPORT OF CLIMATE ACTION

International trade is a forceful tool for boosting economic growth and reducing poverty. Standards are important in this process. Research indicates that ensuring both the quality and sustainability of production methods are key for developing countries to unlock new markets.

In many developing nations, the concept of quality is pursued without clear articulation of objectives and roles in achieving it. To enhance quality, it is essential to comprehend its meaning, significance, and the benefits it offers to all stakeholders in a value chain. This creates a “culture for quality”, where all parties expect a certain level of quality in their products or services, forming a virtuous circle.

The GQSP supports 12 project countries in strengthening their quality systems, fostering a culture for quality that aligns with sustainability and climate action. Equipping organizations in a value chain with tools is crucial for emphasizing the importance of quality culture, the impacts of climate change, and their role in mitigation.

To enhance competitiveness through quality and standards, the GQSP has developed five flagship tools, one of which is the Culture for Quality (C4Q) tool. The C4Q tool aims to identify and comprehensively assess beliefs, values, and behaviors to promote quality management in a value chain ecosystem. Implementing this tool offers benefits like improved quality culture in selected value chains, shifts towards circular production models, higher quality for local consumption, easier access to global markets, and enhanced trade performance. These improvements lead to enhanced skills and better job opportunities, resulting in shared prosperity, and thus contribute to achieving several of the SDGs and promoting ISID.



CLIMATE MAINSTREAMING THROUGH GLOBAL TOOLS

UNIDO helps QI stakeholders integrate environmental and green economy factors into vital QI efforts.



QUALITY INFRASTRUCTURE FOR SUSTAINABLE DEVELOPMENT INDEX

Developed under the umbrella of the QSP, in collaboration with partners from the International Network on Quality Infrastructure (INetQI), the [Quality Infrastructure for Sustainable Development \(QI4SD\) Index](#) is another one of the five flagship tools for strengthening competitiveness through the application of quality and standards. It provides a framework of indicators that summarizes the overall state of development of a country's and/or region's QI readiness to support the SDGs. The multidimensional concept of QI—composed of metrology, standardization, conformity assessment, accreditation and policy—is captured in the QI4SD Index with its 36 indicators. As such, each country has a score representing the state of QI in the people, planet and prosperity pillars, using data relating to social, environmental and economic issues respectively.



QUALITY AND STANDARDS FOR SUSTAINABILITY

Assuming the role of thought leader in the field of QI in this new digital era, UNIDO has consistently advocated for the important role of quality and standards for sustainability, digital transformation and improved livelihoods. This is reflected in some of the UNIDO's global public goods:

- » [“Smart Quality Infrastructure: Shaping a Sustainable Future”](#) explores the impact of digital transformation on QI and the evolution of QI in view of anticipating and meeting future needs, including how “Smart QI” specifically can contribute to shaping a sustainable future.
- » [“Rebooting Quality Infrastructure for a Sustainable Future”](#) conveys a call for action for rethinking and adapting QIs to achieve the SDGs (for planet, people and prosperity) and to the impacts of the “Fourth Industrial Revolution (Industry 4.0)”, including artificial intelligence, smart manufacturing, smart energy, smart agriculture and the circular economy.
- » [“Standards for Sustainability”](#) highlights UNIDO's contribution to voluntary sustainability standards through its membership to the United Nations Forum on Sustainability Standards (UNFSS) and through its knowledge sharing, awareness raising, partnerships and technical cooperation activities.



CONCLUSION

UNIDO sees innovation as key to mitigating and adapting to climate change. Keeping in mind that technological options for avoiding and mitigating greenhouse gas emissions must be further developed, UNIDO provides a platform for technology transfer, investment mobilization and climate partnership to accelerate this process.

As a cross-cutting value-added, promoting quality and standards contributes to all SDGs, most notably towards good health and well-being (SDG 3); clean water and sanitation (SDG 6); decent work and economic growth (SDG 8); industry, innovation and infrastructure (SDG 9); sustainable cities and communities (SDG 11); responsible consumption and production (SDG 12); and climate action (SDG 13).

To this end, UNIDO's work in partnership with SECO in the important area of quality and standards will ultimately help developing countries and countries in transition on their paths towards achieving the 2030 Agenda for Sustainable Development. Robust QI systems better position developing economies to achieve sustainable development, through increasing prosperity, meeting the needs of people, and protecting the planet. In turn, a well-functioning, internationally harmonized QI system is essential for climate protection as QI allows for the assessment of the impact of services and products on our climate. The GQSP will continue its work in this important area.







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