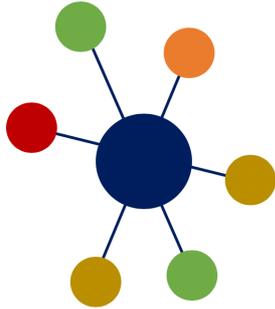




UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION



QUALITY & STANDARDS AND THEIR ROLE IN RESPONDING TO COVID-19



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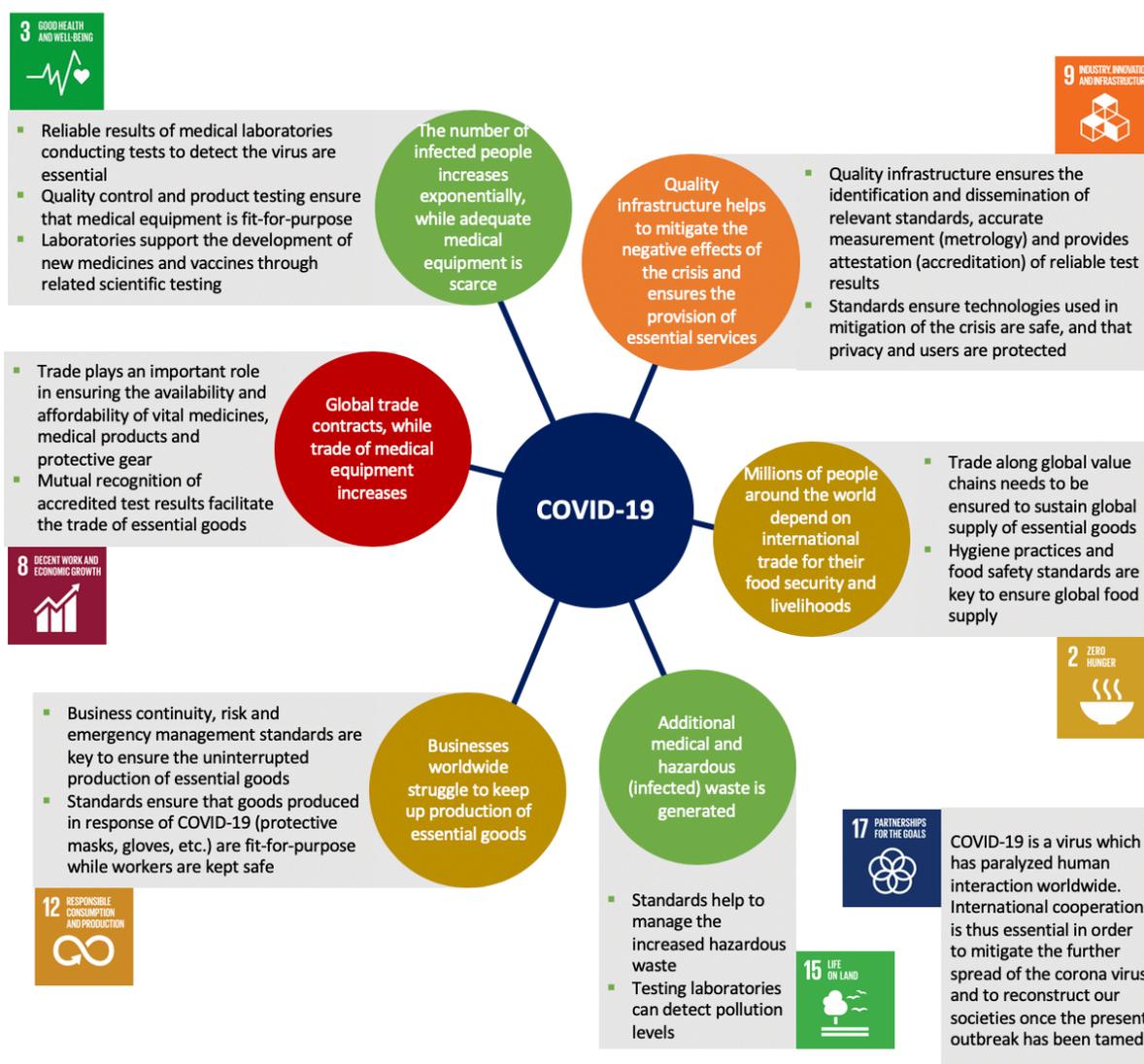
This document has been published without formal United Nations editing. The document focuses on implications, challenges and potential responses related to the application of quality and standards, thereby not claiming to be exhaustive. For more detailed information on the overall UNIDO response to COVID-19, please refer to the UNIDO website: <https://www.unido.org/unidos-comprehensive-response-covid-19>

INTRODUCTION

This document contains a first analysis conducted by the United Nations Industrial Development Organization (UNIDO) in April 2020 as a consequence of the global outbreak of COVID-19, also referred to as the corona virus. This document shall serve to better assess the implications and potential responses related to the application of quality and standards in mitigating the negative effects of the global crisis as a result of the COVID-19 pandemic. The document aims at addressing two elements:

- **PART 1:** Elaborate on the overall implications of COVID-19, specifically focusing on trade and quality infrastructure, thereby outlining the link between the main elements/actors of quality infrastructure and COVID-19.
- **PART 2:** Present an initial analysis of the emerging challenges due to the COVID-19 outbreak in achieving the Sustainable Development Goals and provide a first problem analysis related to quality and standards with regard to achieving the Global Development Agenda 2030.

The graph below summarizes the link between the challenges faced due to the global outbreak of COVID-19, the potential role of quality and standards in mitigating its negative effects in the context of the UN Sustainable Development Goals.



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Figure 1: Quality and Standards in the fight against COVID-19, UNIDO 2020

PART 1: COVID-19 Implications and the Role of Quality and Standards

1. Global Context

The ongoing “coronavirus disease 2019” or “COVID-19” caused by the SARS-CoV-2 virus (Severe Acute Respiratory Syndrome-Corona Virus 2) pandemic is primarily a health crisis, but it also has far-reaching economic consequences. Worldwide, it is disrupting millions of people’s livelihoods, with disproportionate impact on the poor. As a global crisis it is posing challenges to humanity that have never been experienced before: almost all communal activity globally (education, work life, sports, theatre, cinema, music concerts etc.) has ground to a halt. No country has been left untouched by the outbreak, and as such governments worldwide have been scrambling to adapt to and to mitigate the spread of the virus. The facts and figures (thus) far surrounding the ongoing pandemic are heartbreaking and are likely to worsen in the coming weeks and months. In early April around 1,3 million positive cases have been diagnosed globally, while more than 70,000 people have died¹.

Beyond the immediate stress and pain of possible illness or death, COVID-19 has also robbed millions of people of their security and livelihoods. Sectors such as manufacturing, tourism, agriculture and agro-processing, aviation and hospitality have been hit hard by the global lockdown, precipitating lay-offs, pay cuts, uncertainty in trade and investment and many being forced to fall back on welfare payments.

Those who live in poverty will find it more difficult to find work at the moment, due to the present uncertainty and a fallback in global trade, local supply chains and investment flows. The United Nations Conference on Trade and Development recently estimated that global trade investments may decline by 30-40 per cent in 2020 as a result of COVID-19. The World Bank estimates that 24 million people globally live in poverty and this could rise due to the economic pressures afoot.

In this context, women are disproportionately at risk of negative outcomes arising from the pandemic. They are disproportionately employed in low salaried or insecure posts relative to men, and are thus at greater risk of a financial shortfalls and insufficient health coverage. In terms of social maladies, women and girls also suffer an asymmetrical threat; several countries have reported a spike in incidences of domestic violence and abuse since the beginning of the COVID-19 outbreak.

Implementing effective sanitation is one of the most important public policy objectives to combat COVID-19. But the sheer scale of global inequality makes this a giant challenge: more than 3 billion people are estimated to lack even basic handwashing facilities in their homes. This presents a risk not just of contracting Covid-19 but also other deadly conditions such as cholera, typhoid inter alia.

COVID-19 is a virus which has paralysed human interaction worldwide; it does not respect borders and has proliferated in every country despite efforts by many governments to pull up their ramparts. International cooperation is thus essential in order to mitigate the further spread of the corona virus and to reconstruct our societies once the present outbreak has been tamed.

The coronavirus pandemic presents an opportunity for the human family to act in solidarity and turn this crisis into an impetus to achieve the Sustainable Development Goals². The current crisis touches upon many of the UN Sustainable Development Goals, most importantly goal 3: Good Health and Wellbeing.

UNIDO has an important role to play in the human dimension of these efforts. Its mandate of promoting inclusive and sustainable industrial development places a strong emphasis on expanding productive capacity of medical essentials, protecting labor health and safety, creating shared prosperity, mitigating risks of supply chain disruption, maintaining business continuity, accelerating post-crisis rehabilitation, creating greater opportunities for women and girls, training and skills development for young people, inter alia.

¹ Source: <https://www.worldometers.info/coronavirus/> (6 April 2020)

² For a more detailed analysis on the emerging issues from COVID-19 related to the SDGs please refer to annex I

2. COVID-19 and World Trade

The COVID-19 pandemic represents an unprecedented disruption to the global economy and world trade, as production and consumption are scaled back across the globe. The World Trade Organization (WTO) recently noted that the COVID-19 crisis had caused dramatic supply and demand shocks in the world economy, and that these shocks are inevitably causing major disruptions to trade.

Governments need to recognize that it is of mutual interest to ensure that trade lines remain open, including via air and sea freight, to facilitate the flow of goods including essential supplies. It is essential to refrain from the imposition of export controls or tariffs and non-tariff barriers and of removing any existing trade restrictive measures on essential goods, especially medical supplies, at this time.

Food supply chains

In light of the increasing number of nationwide lockdowns and border restrictions today, governments are called upon to ensure production of food continues as before trade takes place across border. A failure to do so will have serious negative consequences for the global economy and viability of food supply chains. Meanwhile, the outbreak has also created opportunities in the food and beverage industry. As reported by the seafood industry, demand for prepared and ready to eat seafood in retail sector has increased. Demand for canned tuna in oil is booming. To address such challenges and opportunities, there is a need for public and private consultation for any decision around the supply of food and for a coordinated response and industry-wide strategy to cope with the impact of COVID-19 and to guarantee supply of healthy food for the world population.

Developing countries already face significant food security challenges and current measures in containing COVID-19 that directly and indirectly impact the agri-food supply chain, which will only place further stress on food value chains. This is especially critical as the food supply chain is a complex web that involves producers, agricultural inputs, transportation, other logistics, availability of workers and so much more. Constraints in any one area will have significant knock-on effects throughout country and regional supply chains.

The key role that governments need to play to ensure a stable food supply is ensuring that the manufacturing of food and beverage products, ingredients and other raw materials, as well as distribution by the retail sector, can continue uninterrupted. They also need to ensure that travel restrictions, including border management controls, do not result in the disruption of food supply chains.

Access to medical supplies

Trade plays an important role in ensuring the availability and affordability of vital medicines, medical products and health care services, particularly among its most vulnerable members. International trade is crucial to ensuring access to medicines and other medical products - no country is entirely self-reliant for the products and equipment it needs for its public health systems.

Trade in medical products which have now been described as critical and in severe shortage during the COVID-19 crisis totaled about US\$ 597 billion in 2019, accounting for 1.7% of total world merchandise trade according to the report. The ten largest supplying economies accounted for almost three-quarters of total world exports of the products while the ten largest buyers accounted for roughly two-thirds of world imports.

As part of a collective response to combat COVID-19, governments should be committed to maintaining open and connected supply chains. They should work closely to identify and address trade disruptions with ramifications on the flow of necessities.

Trade restrictions

That said, each WTO member is free to determine what is necessary to protect its citizens and take the measures it deems appropriate. In general, WTO rules provide broad space for members to adopt trade measures deemed necessary to protect public health and public welfare (including import and export bans, quantitative restrictions on imports and exports, and non-automatic import licensing). These measures should be applied in a manner that does not discriminate between WTO members and should not constitute a disguised restriction on international trade.

In addition, two WTO agreements address measures adopted by members to protect public health or public safety – the Agreement on the Application of Sanitary and Phytosanitary Measures (SPS Agreement) and the Agreement on Technical Barriers to Trade (TBT Agreement).

The SPS Agreement establishes that members have the right to restrict trade by taking SPS measures necessary for the protection of human, animal or plant life or health. These measures should only be applied to the extent necessary to achieve their objectives, be based on scientific principles and be supported by scientific evidence. In situations where relevant scientific evidence is insufficient, members may provisionally adopt SPS measures on the basis of available pertinent information.

The TBT Agreement aims to ensure that technical regulations, standards and conformity assessment procedures are non-discriminatory and do not create unnecessary obstacles to trade. At the same time, it recognises WTO members' right to implement measures to achieve legitimate policy objectives, such as the protection of human health and safety.

Both the SPS and TBT agreements require WTO members to notify others of any new or changed requirements which affect trade, and to respond to requests for information on new or existing measures.

3. Quality Infrastructure in the Context of COVID-19

QUALITY INFRASTRUCTURE

The system comprising the organizations (public and private) together with the policies, relevant legal and regulatory framework, and practices needed to support and enhance the quality, safety and environmental soundness of goods, services and processes. It relies on metrology, standardization, accreditation, conformity assessment and market surveillance.

Against the backdrop of promoting inclusive and sustainable industrial development, quality infrastructure plays a particularly important role in the fight against the global pandemic. In fact, quality infrastructure preparedness to face highly contagious viral outbreaks, such as that sustained by SARS-CoV-2, become imperative for preventing the health system from being strained and laboratory quality services from collapsing. Quality infrastructures and standards are important in ensuring the availability of key medical devices, diagnostic tests and personal protective equipment. It is now very evident that laboratory services by ensuring the quality and accuracy of laboratory-developed tests will increasingly provide an essential contribution to the diagnostic reasoning, managed care and therapeutic monitoring of the vast majority of human diseases, including the highly infectious COVID-19, which has now been defined as global health emergency by the WHO. Interestingly, Taiwan's containment of COVID-19 outbreak demonstrates importance of rapid response, including fast access to laboratory QI and tests.

UNIDO's approach to quality infrastructure development is systemic and holistic, from building awareness to helping initiate, develop and strengthen a fit-for-purpose QI that runs efficiently and is cost-effective. UNIDO promotes good practice, capacity building and training, and fosters global cooperation in the development of standards- setting, measurement and compliance along value chains. It works with partners from the public and private sectors, academia, national and international organizations engaged in standards development, and global metrology, standards and conformity assessment practice.

Following the UNIDO approach to quality infrastructure development, the following areas have been identified to have a direct impact on the mitigation of negative effects due to the current health crisis, COVID-19, and to better protect patients and healthcare providers alike. Further, QI services are an essential industry by itself and cannot stop operating even during crisis times.

| Policy | Standards | Accreditation | Metrology | Conformity Assessment | Enterprises |
|-------------------------------------|--|--|---|--|---|
| Quality Policy Laboratory Policy | Medical equipment / protective gear (Medical) laboratory standards Business continuity / emergency management Quality control techniques Health, safety & hygiene Sanitation and waste management | Attestation of technical competence International /mutual recognition | Accurate measurement for reliable testing Quality and accuracy of laboratory tests | Health care facilities and testing laboratories Quality control of medical supplies Medical testing for COVID-19 Development of new medication / vaccines Market surveillance and inspection | Shift to produce medical equipment / protective gear Business continuity Enhanced sanity protocols Avoid disruption of essential inputs to global value chains |

Policy

All countries have taken extensive and unprecedented policy measures in the fight against COVID-19. The following does relate only to the role of quality and laboratory policy within the context of the COVID-19 outbreak, not to overall policy responses to the pandemic.

A **Quality Policy** serves to clearly identify and define roles and responsibilities of all actors of the Quality Infrastructure, including the National Standards Body, the National Metrology Institute and the National Accreditation Body but also the role of private and public conformity assessment service providers. The clear definition of roles and responsibilities is particularly important in times of uncertainty, when emergency management needs to act quickly and synchronize efforts around a particular priority like consumer protection, trade or now COVID. Clearly, Quality Policy contributes to effective emergency management.

Laboratories, particularly (medical) testing laboratories, or laboratories for the conformity assessment of medical protective gears or products (masks, clothing, sanitation products) play a particularly important role in the fight against the COVID-19. Governments make policy decision based on reliable data. The consequences of having false positives and/or false negatives of infected people in a sanitary outbreak can be disastrous. Having a **laboratory policy** which clearly maps and defines roles and responsibilities of testing laboratories, may it relate to testing of medical equipment or medial testing to detect the virus, certainly increases the capability to identify the right actors.

Standards

Standardization distils and makes available international expertise and knowledge regarding usability, quality, safety, performance or any other characteristics required by users, buyers and producers. Standards contain technical specifications for products or product components (e.g. dimensions, sizes, formats, tolerances, performances and interfaces). They are also repositories of knowledge for product testing; for requirements for services, processes and systems; for guidance on how to conduct activities; for descriptions of best practices applied by experienced professionals in a given field, and for other specific information.

Today, more than ever, the use of standards is very important to ensure that products and services meet the requirements. Standards can help in mitigating the negative effects of the global pandemic in multiple ways, as outlined below:

Medical equipment

- Product standards for **medical equipment** (respiratory protective devices) and **protective equipment** (medical gloves, medical face masks, personal eye protection, etc.) are particularly important to ensure that the equipment meets the requirements and is reliable and that safety and medical personnel is sufficiently protected.
- **Acceptance** of equivalence of standards among trade partners important to mobilize medical resources globally and meet the soaring demands for medical equipment within a short time period.
- **Harmonization** of standards for medical equipment at regional or global level could increase accessibility to essential medical products and therefore improve capacity of health authorities to respond rapidly to public health crisis like COVID-19 pandemic.

(Medical) laboratory standards

- **Medical laboratory standards** (e.g. ISO 15189, ISO 22367, ISO 14971, ISO 20395) are important to evaluate the safety and efficacy of diagnostic tests and to ensure that medical tests to detect SARS-COV-2 provide accurate and reliable results.
- **Testing laboratory standards** (e.g. ISO 17025) ensure that product test for medical equipment are performed accordingly and provide reliable results. Providing quality, high-volume testing capabilities should allow us to respond effectively to the COVID-19 pandemic.

Business continuity and emergency management

- Standards for security and resilience, including **business continuity management** (e.g. ISO 22301, ISO 22395) and **emergency management** (e.g. ISO 22320, ISO 22316) have become evidently important throughout the past weeks. The further dissemination and application of such standards will be particularly important in the short-term but remain a priority in the medium- and long-term.
- Standards for **risk management** (e.g. ISO 31000), intends to serve as a guide for the design, implementation and maintenance of risk management.
- **Management standards** (e.g. ISO 9001, ISO 13485) help to prepare for managing crisis situations better. Enterprises that have quality management systems in place are therefore better prepared to cope with the negative effects of the crisis.

Health and safety

- **Safety standards**, such as ISO 45001, a standard for management systems of occupational health and safety which aims at improving employee safety, reducing workplace risks and creating better, safer working conditions are particularly important to prevent the spread of COVID-19 within organizations.
- **Food safety and hygiene management** (e.g. ISO 22000, HACCP) is important, particularly as the emergence of SARS-COV-2 is said to be caused by a lack thereof.

Environmental and waste management

- **Environmental and waste management** standards (e.g. ISO 14000 series) will become important in managing the increased waste caused by the increase use of single-use protective equipment (protective clothes, single-use gloves, medical masks, etc.). It is particularly important for health facilities to adhere to guidelines on bio-medical waste generated from quarantine health facilities to stop spread of infection.

Access to standards, Standard Operating Procedures (SOP), Good Manufacturing Practices (GMP), etc. are sometimes restricted by the need to costly purchase them. In the case of a pandemic like COVID-19, access to such standards and practices needs to be immediate to ensure widest and fastest adoption of such practices. Many standards organizations (ISO, CEN/CENELEC, ASTM, SNV, BSI, etc.) have made relevant standards available free of charge to support the fight against COVID-19.

Accreditation

Accreditation supports the correct functioning of conformity assessment systems. Accreditation bodies are responsible for providing a formal attestation of the integrity of conformity assessment bodies and their competence to perform specific conformity assessment activities.

In the context of the global health crisis, accreditation of conformity assessment services and their global recognition are particularly important as medical equipment and supplies for personal protection and testing kits are shipped in large amounts across borders. Lacking recognition of foreign testing laboratories has already caused delays in trade flows. The benefits of international/mutual recognition of accreditation becomes even more relevant in the context of the global health crisis:

- Accreditation provides a “credential” that designates the laboratory and its test results as qualified and competent to provide services in the field or fields in which it is accredited, including product and medical testing and detection of infectious diseases.
- International recognition of the accredited laboratory’s competence, if the accreditation body is a signatory to the mutual recognition arrangement of the International Laboratory Accreditation Cooperation (ILAC), facilitates cross-border movement of medical goods and reduces the time and need to perform additional conformity assessment.

Besides laboratories, there are three groups that benefit from accreditation, perhaps more so than laboratories themselves. These three groups are users of laboratory services, specifiers (private and public bodies that need accurate test data to make decent decisions), and the general public. This effect is multiplied in crisis, where the need to rely on fast and accurate testing results is higher than usual.

In addition, Accreditation Bodies are introducing alternative arrangements to continue business and conduct assessments. This may involve remote assessment following the requirements on how to use information and communication technologies to support and maintain the integrity of the audit/assessment process in IAF MD 4 (Mandatory Document for the Use of Information and Communication Technology (ICT) for Auditing/Assessment Purposes).

Metrology

Metrology provides reliable measurements as a basis for scientific research, technical development and production. Metrology is also needed to ensure that goods, services and processes comply with product quality, environmental, health and safety requirements, as well as meeting consumer's needs and expectations. Common units of measurement, accurate and reliable measurement instruments and techniques are all fundamental components of science and technology and indispensable for a broad variety of human activities.

Metrology is essential in the context of COVID-19 as accurate chemical and biological measurements play a vital role in this crisis. In this particular field, certified reference materials (CRMs) and reference measurement methods provide stated references upon which analytical laboratories can anchor their measurement results. This helps to reduce the potential of having false positives or false negatives test results. In addition, the traceability of measurement results to internationally accepted stated references, together with their stated measurement uncertainties, provide the basis for their comparability and global acceptance.

Governments during the crisis are increasingly in need of accurate day to day measuring instruments as thermometers, sphygmomanometers (blood pressure meter), oxygen flow meters (respirators), liquid (medication) flow meter, etc. these need to be trustworthy and reliable. International suppliers are in great pressure to fulfill the global demand, special attention is required to standards of fabrication materials but also standards of performance (accurate measurements) and the certification of measuring instruments. A failure or mis reading output of this essential products needs to be minimized. In 2019, UNIDO and OIML develop a guidance document for the certification of measuring instruments.

Conformity Assessment

Conformity assessment, particularly testing, provides scientific and technical evidence of whether or not products meet standards or other requirements; are fit and safe for humans, animals, and the environment; and whether or not processes are organized and managed in conformity with accepted good practices.

Conformity assessment and quality control, particularly testing, certification and inspection are evidently important in the context of the global health crisis. Never before have reliability and accuracy been so important for medical laboratories. Robust risk management processes are the best defense against errors and false results.

- **Medical testing** to conduct diagnostic testing for infectious diseases, is key in detecting the virus and mitigating its spread. In this context, the WHO provides reference for confirmatory testing for Covid-19 virus (countries that have no testing capacity for Covid-19 are encouraged to send the first 5 positives and first 10 negative samples to WHO reference laboratories for confirmatory testing). The reliability of laboratory results in medical settings is essential for correct diagnoses and positive clinical outcomes, so implementing measures to reduce the risk of errors is an essential part of business (e.g. ISO 22367, ISO 1497).
- **Quality control and product testing, certification and inspection** of medical equipment and supplies for personal protection has to be performed within a short period of time and at the highest accuracy to ensure that much needed equipment meets the requirements.
- **Development of new medicines and vaccines, and related scientific testing** has become more important in the fight against the virus, to make sure that newly developed medicine is effective, safe for use and does not have severe side effects and prevent the use of counterfeited pharmaceuticals and faulty test kits to the deadly virus to spread globally.

Mutual recognition of testing results could allow foreign suppliers to rely on local conformity assessment service providers in their quality assurance and compliance and therefore, respond to demands in emergent situation through quickly expanding their productive capacity.

Enterprises

The private sector is directly affected by the measures taken to control the outbreak of the virus, challenged to ensure business continuity. At the same time, business plays an important role in mitigating the negative effects of the pandemic, e.g. through the production of required medical equipment and protective gear, while ensuring the health and safety of their workers. The elements outlined below relate to the role of enterprises in the context of quality infrastructure, they are selective and do not claim to be exhaustive.

- **Production:** Businesses worldwide have adjusted their manufacturing capabilities and production lines and are now producing products required in the fight against COVID-19, e.g. sanitizers, masks, protective gear and clothing, respiratory devices. The application of quality and standards is in this context particularly important to ensure that the products meet the requirements and are fit-for-purpose.
- **Business continuity:** Many businesses, particularly SMEs in developing and developed countries alike, are struggling to continue their operations. The application of business continuity plans and measures has been initiated, many of them relying on international standards and best practices. This is particularly important in the context of global supply chains, which must ensure the continuous supply of essential goods, including food products.
- **Health and safety:** Enterprises must protect their employees and prevent the spread of the disease at production facilities and offices. It is therefore inevitable that enterprises pay special attention with regard to hygiene practices and occupational health and safety. Related standards and good practices become evidently important in the context of the current health crisis.

PART 2: COVID-19 and the Sustainable Development Goals

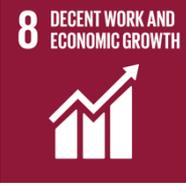
Quality and Standards, COVID-19 and the SDGs

This is an initial assessment of the emerging challenges due to the COVID-19 outbreak in achieving the Sustainable Development Goals, from a perspective of trade, quality and standards. The table below provides a first problem analysis with regard to achieving the Global Development Agenda 2030.

| SDGs | FACTS | EMERGING ISSUES |
|---|--|---|
|  <p>1 NO POVERTY</p> | <ul style="list-style-type: none"> ▪ Up to 24 million more people will remain in poverty this year because of the coronavirus pandemic ▪ Many of the wealthy are already recovering, but experts warn that the virus could kill scores of the poorest people, who must work every day to feed their families, live in unsanitary conditions and lack proper medical care | <ul style="list-style-type: none"> ▪ Potential for explosive Unemployment (social unrests) ▪ Most low-income jobs cannot be done remotely ▪ Poor people have limited access to sanitation, medicine, etc... Many depend on overburdened public health systems as they cannot afford private medical insurance. ▪ Poor people often cannot afford quarantine ▪ Many disadvantaged persons are more likely to depend on insecure working arrangements such as zero hours' contracts, informal jobs, part-time work, self-employment etc. which in many cases do not qualify them for full unemployment benefits. |
|  <p>2 ZERO HUNGER</p> | <ul style="list-style-type: none"> ▪ Malnutrition weakens peoples' immune systems ▪ Millions of people around the world depend on international trade for their food security and livelihoods ▪ Restrictions imposed by some European Union countries at their borders with other member states in response to the pandemic are disrupting food supplies | <ul style="list-style-type: none"> ▪ Food Export Restraints <ul style="list-style-type: none"> ○ Restriction of movement of agriculture workers leading to food loss ○ Border delays for food containers resulting in food waste ○ Food Supply Chains distorted from border closures and trade restriction measures ▪ Problematic hygiene practices ▪ Food Safety Issues <ul style="list-style-type: none"> ○ Lack of Certifications ○ Food decaying in markets ▪ Lockdowns are a barrier to nutrition for the poor ▪ Protectionists movement <ul style="list-style-type: none"> ○ Developing Countries hoarding food |

| SDGs | FACTS | EMERGING ISSUES |
|--|--|---|
| | | <ul style="list-style-type: none"> ○ Increase of prices harming affordability ○ Unforeseen hoarding of food in developed countries limits nutritional choices. ○ Some ethnic food stores/restaurants have been disproportionately affected by coronavirus-linked sudden business downturns, forcing furloughs or closures. |
|  <p>3 GOOD HEALTH AND WELL-BEING</p> | <ul style="list-style-type: none"> ▪ More than 1,3 million cases of COVID-19 have now been reported to WHO from almost every country in the world ▪ Many health systems worldwide are reaching their limits ▪ Adequate medical equipment is scarce, even in developed countries | <ul style="list-style-type: none"> ▪ Procurement Problems <ul style="list-style-type: none"> ○ Lack of respiratory protective devices ○ Lack of protective clothing ○ Lack of Testing kits ○ Lack of bio-pharmaceuticals and chemicals needed for production of oxygen, disinfectants ○ Rise of fake products in e-commerce ▪ Production Support Issues <ul style="list-style-type: none"> ○ Lack of quality control and minimum standards manuals ○ Limited production capabilities in developing countries (PPE, medical devices and essential medicines) ○ Strict licensing requirements on health equipment ▪ Overloaded healthcare systems <ul style="list-style-type: none"> ○ Limited virus detection capacity ○ Lack of sufficient PPE, medical devices and essential medicines to protect medical personnel and conduct patient treatment ○ Lack of CA capacity to assure quality testing kits, PPE products, medical devices and essential |

| SDGs | FACTS | EMERGING ISSUES |
|---|---|---|
| | | <ul style="list-style-type: none"> medicines from domestic and foreign origins <ul style="list-style-type: none"> ○ Lack of Intensive Care Unit (ICU) beds ○ Long delays in being able to identify positive cases following testing ▪ Lack of traceability of quarantined people at home |
|  | <ul style="list-style-type: none"> ▪ Schools and universities worldwide have been closed | <ul style="list-style-type: none"> ▪ Weak connectivity hinders ongoing education ▪ Access / Availability of e-platforms insufficient (non-existent in LDCs) ▪ Lack of awareness of available digital mediums ▪ In some countries educational specialists/support staff, such as |
|  | <ul style="list-style-type: none"> ▪ Women disproportionately hold jobs in industries with poor labour protections ▪ Many of the industries in the formal economy directly affected by quarantines and lockdowns (travel, tourism, restaurants, food production) have a very high female labour force participation ▪ Women also constitute a large percentage of the informal economy in informal markets and agriculture around the world ▪ On average women did three times as much unpaid care work as men at home even before COVID-19 | <ul style="list-style-type: none"> ▪ Woman hit harder by economic impacts working in insecure jobs ▪ Women's dominance in the service fields, healthcare and their tendency to be family caregivers could expose them to the disease at higher rates ▪ A surge in domestic violence against women and girls in the home has been reported in many countries since the outbreak began ▪ Essential sectors have high share of jobs staffed primarily by women ▪ Women often lack health insurance and have no social safety net to fall back on ▪ Closures of educational institutions place women at an elevated risk of non-completion of their studies, particularly in LDCs |
|  | <ul style="list-style-type: none"> ▪ Globally, 2,2 billion people lack safe drinking water ▪ 4,2 billion people are without access to adequate sanitation | <ul style="list-style-type: none"> ▪ Lack of access to clean water affects vulnerability to disease and ill health ▪ Lack of sanitation facilities and standards ▪ Measures such as quarantining, self-isolation etc. place higher burdens on public water networks, which may already be under stress |

| SDGs | FACTS | EMERGING ISSUES |
|---|---|---|
|  <p>7 AFFORDABLE AND CLEAN ENERGY</p> | <ul style="list-style-type: none"> ▪ More than 1,3 billion people lack access to modern energy services | <ul style="list-style-type: none"> ▪ Fall in fossil fuel prices making its usage more attractive ▪ Business continuity plans not in place everywhere to ensure continuous energy supply (energy infrastructure, grid strength) ▪ Affordability shortcomings ▪ Availability of energy limited in many developing countries |
|  <p>8 DECENT WORK AND ECONOMIC GROWTH</p> | <ul style="list-style-type: none"> ▪ Almost 25 million people could lose their jobs due to a coronavirus-induced economic and labour crisis, the International Labour Organization (ILO) has projected ▪ Some countries (in Europe and the US) immediately stopped export of medical supplies | <ul style="list-style-type: none"> ▪ Global Trade Volume Contracts <ul style="list-style-type: none"> ○ Medical Goods: countries using protectionist measures ○ Value Chains disrupted by restrictions ○ SMEs: production on hold ○ Contracts and orders not fulfilled ▪ Fall in tourism and hospitality due to shutdowns ▪ Business disruption due to quarantines and widespread restrictions on labour mobility ▪ MSMEs may not have the capital to continue post-pandemic, without public assistance ▪ Investors' Confidence Lost and reduced FDI streams <ul style="list-style-type: none"> ○ Domestic Investments rise ○ Focus on health sector |
|  <p>9 INDUSTRY, INNOVATION AND INFRASTRUCTURE</p> | <ul style="list-style-type: none"> ▪ According to ITU data, 93 per cent of the global population within reach of mobile broadband (3G network or higher), and yet 3.6 billion people remain offline ▪ At the present rate of progress, universal access to the Internet may only be achieved by 2050 or later ▪ Researchers, businesses, and innovators around the world are putting technology to work to alleviate the effects of the global health crisis | <ul style="list-style-type: none"> ▪ Supply Chain Issues <ul style="list-style-type: none"> ○ Factory close downs ○ Delayed / reduced orders ○ Increased trend to localization ▪ Public Health Infrastructures shortcomings <ul style="list-style-type: none"> ○ Not enough healthcare facilities ○ Inefficient reporting and monitoring ○ Undefined Safety Measures for personnel ▪ ICT Infrastructures <ul style="list-style-type: none"> ○ Weak internet connections ○ Grids overloaded ○ Weak cybersecurity protections |

| SDGs | FACTS | EMERGING ISSUES |
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| | | <ul style="list-style-type: none"> ▪ Trade barriers from TBT&SPS measures which have significant impact on int. trade and movement of people ▪ SMEs <ul style="list-style-type: none"> ○ Don't have adequate digitalisation to operate efficiently ○ Lack awareness of innovative technologies that can be used ▪ Manufacturing sector shifting production focus to essential goods (i.e. ventilators and masks), quality certification, re-orienting supply chains and specialized parts may prove difficult ▪ DCs cannot support / compensate SMEs losing jobs / profits ▪ Innovative measures by start-ups are being implemented to combat the crisis |
|  <p>10 REDUCED INEQUALITIES</p> | <ul style="list-style-type: none"> ▪ In crises, the most vulnerable, including women and children, people with disabilities, the marginalized and the displaced, often pay the highest price | <ul style="list-style-type: none"> ▪ Digital divide increasing inequality to the detriment of: <ul style="list-style-type: none"> ○ SMEs ○ Developing Countries ▪ Lack of affordability and availability in poorer countries is increasing inequality ▪ Outcomes of the economic crash from COVID-19 will further harm equality ▪ COVID-19 pandemic disproportionately affects some groups such as the elderly, the poor and the sick. |
|  <p>11 SUSTAINABLE CITIES AND COMMUNITIES</p> | <ul style="list-style-type: none"> ▪ Air pollution has decreased in urban areas across Europe during lockdowns, as well as in other affected countries such as India and China. ▪ The COVID-19 pandemic will hit the world's most vulnerable people the hardest including the one billion people living in informal settlements and slums worldwide. | <ul style="list-style-type: none"> ▪ Social innovation, new business models based on community still under-developed ▪ Recommended measures to prevent COVID-19 transmission such as hand washing, physical distancing, self-quarantine, self-isolation or community-wide lockdowns are often impossible in informal settlements ▪ Many slum residents work outside the formal sector with unstable incomes and minimal savings, they will lose their livelihoods as cities shut down with no chance of any social benefits and will be unable to afford water, soap, food or medical treatment |

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| | | <ul style="list-style-type: none"> ▪ Loss of income from lockdowns and stay-at-home orders threatens the ability of residents in informal settlements to pay for rental housing ▪ Many essential public infrastructure projects may be mothballed or cancelled due to the financial costs of the pandemic |
|  <p>12 RESPONSIBLE CONSUMPTION AND PRODUCTION</p> | <ul style="list-style-type: none"> ▪ Consumption spending is estimated to account for 60 per cent of global GDP ▪ In 1990 some 8.1 tonnes of natural resources were used to satisfy a person's need, while in 2015, almost 12 tonnes of resources were extracted per person ▪ Global food waste is estimated at 1.3 billion tonnes per year | <ul style="list-style-type: none"> ▪ Consumption <ul style="list-style-type: none"> ○ Panic buying of essential goods leading to shortages and increased prices ○ No buying of non-essential goods due to lack of availability ▪ Production <ul style="list-style-type: none"> ○ Production of non-essential goods halted, firms shut down, staff laid off ○ Shift of production from traditional to emergency goods (masks, etc.) ▪ Glocalization: increased tendency to produce locally rather than source globally, e.g. European countries announced their intention to produce masks domestically in the future ▪ Effects of globalization now evident, leading to some big suppliers dominating the world market |
|  <p>13 CLIMATE ACTION</p> | <ul style="list-style-type: none"> ▪ The lockdown of Hubei province contributed to a reduction in pollution that, according to a Stanford University researcher, may prevent 50,000 to 75,000 people from dying prematurely, similar tendencies have been observed in other countries too | <ul style="list-style-type: none"> ▪ Countries are prioritising economic growth over climate actions ▪ Potential loss of focus on climate goals in the long-term |

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|  <p>14 LIFE BELOW WATER</p> | <ul style="list-style-type: none"> The test being used to diagnose the novel coronavirus (and other pandemics like AIDS and SARS) was developed with the help of an enzyme isolated from a microbe found in marine hydrothermal vents as well as freshwater hot springs | <ul style="list-style-type: none"> Countries are prioritising economic growth over climate actions Small island developing states and territories are vulnerable to the pandemic due to their geographical remoteness |
|  <p>15 LIFE ON LAND</p> | <ul style="list-style-type: none"> Many types of additional medical and hazardous waste are generated, including infected masks, gloves and other protective equipment, together with a higher volume of non-infected items of the same nature | <ul style="list-style-type: none"> Countries are prioritising economic growth over climate actions Unsound management of medical waste causes unforeseen “knock-on” effects on human health and the environment |
|  <p>16 PEACE, JUSTICE AND STRONG INSTITUTIONS</p> | <ul style="list-style-type: none"> Lockdown becomes a social and financial challenge - and social unrest emerges Europol reports that while physical crime has declined since the pandemic began, cybercrime has increased | <ul style="list-style-type: none"> Rise in social unrest Institutions are unprepared and lacking business continuity plans The justice system may see a backlog due to the current lockdown. Emergency powers legislated for in some countries could become permanent and be used to crack down on minorities, political opposition etc. The lockdown has seen an increase of cybercrimes, fraud, theft and forgery cases There has been an upturn in fraud cases involving fake medicines and remedies Increased use of social media has seen new types of crime and anti-social behaviour, e.g. uploading footage of |
|  <p>17 PARTNERSHIPS FOR THE GOALS</p> | <ul style="list-style-type: none"> The Coronavirus has strained relations within the European Union The United States-China relationship is further strained by COVID outbreak accusations Unilateral actions have strained longstanding relationships | <ul style="list-style-type: none"> Increased tension between countries Increased protectionism and individualism Possible falls in funding for development due to emergency spending Travel bans have been put in place between countries and regions Manufacturing in developing countries is at risk from a decline in consumer |