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**Submissions from entities in the United Nations system, international
organizations and other stakeholders on their efforts in 2020 to
implement the outcomes of the WSIS**

Submission by

United Nations Industrial Development Organization

This submission was prepared as an input to the report of the UN Secretary-General on "Progress made in the implementation of and follow-up to the outcomes of the World Summit on the Information Society at the regional and international levels" (to the 24th session of the CSTD), in response to the request by the Economic and Social Council, in its resolution 2006/46, to the UN Secretary-General to inform the Commission on Science and Technology for Development on the implementation of the outcomes of the WSIS as part of his annual reporting to the Commission.

DISCLAIMER: The views presented here are the contributors' and do not necessarily reflect the views and position of the United Nations or the United Nations Conference on Trade and Development.

WSIS UNIDO Contributions

Part One: An executive summary (half a page) of activities undertaken by all stakeholders, progress made, and any obstacles encountered.

Part Two: A brief (1–2 pages) analytical overview of trends and experiences in implementation at the national, regional and international levels and by all stakeholders, highlighting achievements and obstacles since WSIS and taking into account the follow-up and review of the 2030 Agenda for Sustainable Development. This could include information on the facilitation process of implementation, monitoring and cooperation among stakeholders.

Part Three: A brief description (1–2 pages) of:

(a) Innovative policies, programmes and projects which have been undertaken by all stakeholders to implement the outcomes. Where specific targets or strategies have been set, progress in achieving those targets and strategies should be reported.

(b) Future actions or initiatives to be taken, regionally and/or internationally, and by all stakeholders, to improve the facilitation and ensure full implementation in each of the action lines and themes, especially with regard to overcoming those obstacles identified in Part Two above. You are encouraged to indicate any new commitments made to further implement the outcomes.

Part One:

To support realization of Inclusive and Sustainable Industrial Development (ISID) across countries it is imperative that the manufacturing sector continues to evolve and respond to the changing supply and demand trends. The onset of the COVID-19 pandemic has had a tremendous impact on the global manufacturing sector, especially in developing economies (excluding China), where UNIDO estimates a decline of manufacturing output by 2.3 per cent and 22.0 per cent in the first and second quarters of 2020 respectively.

Furthermore, there have been trends pointing to the reduction in offshoring from developed to developing countries which would impact industrial and supply chain activity. While reshoring has occurred to some extent in labour-intensive sectors (such as in the textile sector, for instance), overall the effect has been limited, with lead firms generally prioritizing product quality and flexibility over unit labour cost concerns. Moreover, there is some evidence to suggest that digitization can lower barriers to entry for global value chains, with e-commerce removing issues related to physical infrastructure and robotization encouraging greater North-South trade (further information [here](#)).

While COVID-19 has undoubtedly had negative impacts on economic and social activity; this pandemic has required countries to explore digital solutions to counter these effects – thereby accelerating the digital transformation across the globe. As part of this movement, there is tremendous scope for countries to leverage the everchanging landscape of ICT technologies to overcome their socio-economic challenges and continue to realize their national development goals.

UNIDO recognizes the importance of ‘digitization’ to catalyze global efforts in realizing the 2030 Sustainable Development Agenda, as was evidenced by the adoption of the [Abu Dhabi Declaration](#) at the eighteenth session of the UNIDO General Conference in 2019. The Organization has initiated several technical projects and assessments in its Member States to support them in identifying how ICT solutions can be applied in their priority and upcoming economic sectors. Key UNIDO initiatives that have been presented in this report are as follows:

- ‘Digitization, Industry 4.0 and E-commerce’ Assessment in Bhutan (as part of country’s 2020 Diagnostic Trade Integration Study’)
- Blockchain Application Assessment in Ghana’s Cocoa Value Chain
- Implementation of Global Innovation Network and Intelligent Manufacturing Technology Projects in China
- Determining the state of innovation in Cabo Verde through UNIDO’s National System of Innovation Approach
- Identification of the relevant digital technologies to be implemented in Malaysia’s Malacca Smart City
- Promotion of sustainable bush-processing value chains in Namibia
- “Smart glasses” for supporting testing laboratories in Ghana

Part Two:

Manufacturing remains a crucial component within a nation's industrialization development agenda. The ongoing global pandemic has revealed and exposed both the significance and the risks associated with current manufacturing systems. Shortages of medical equipment and disruptions of essential commodities have raised awareness of manufacturing's pivotal role in both advanced and developing economies. These shortages and supply disruptions have also exposed the drawbacks of relying primarily on a globalized structure of production with complex supply chains, the division of innovation and manufacturing, and '*just-in-time*' production.¹

According to UNIDO's "World Manufacturing Production Statistics for Quarter II 2020"-economic declines were recorded in the second quarter of this year. Manufacturing production of developing and emerging industrial economies (excluding China) recorded a decline in output of 22.0 per cent and 2.3 per cent for the second and first quarters of 2020, respectively². China is one of the few countries that locked down earlier than other countries and is showing signs of early economic recovery. In the second quarter of 2020, global manufacturing output declined noticeably, namely by 11.2 per cent in a year-over-year comparison due to COVID-19 containment measures, following a drop by 6.0 per cent in the previous quarter. Industrialized economies reported a reduction of production by 16.4 per cent for the second quarter of 2020, after a contraction of 2.4 per cent in the first quarter of the year. COVID-19 hit China, the world's largest manufacturer, hard in the first quarter of 2020, but the country's manufacturing sector has bounced back. According to seasonally adjusted index numbers, China's manufacturing output in the second quarter of 2020 increased by 2.8 per cent in a year-over-year comparison, following an unprecedented decline of 13.9 per cent in the previous quarter.

While many countries have benefitted from globalized production systems for both developed and developing countries, a manufacturing system that relies on a high degree of specialization in the manufacturing process (super-specialization) along supply chains inherently creates divisions within manufacturing between R&D, design activities and assembly. Before the Covid-19 pandemic, many firms offshored major parts of their production, but attempted to retain high value production activities such as design and research. Through the separation of manufacturing from the rest of the value chain, there is a risk losing out on the transfer of important tacit knowledge, thereby damaging any prospects of unexpected and the most radical innovations.³

It is important to recognize that in economies where manufacturing is embedded in local and regional networks, economies have been able to respond faster and adapt to the new realities created by the pandemic, particularly regions with businesses that have been able to transfer skills to the production of different goods. For example, the production of personal protective equipment (PPE) - manufacturers in countries such as Turkey and China have been able to adapt better in comparison to other countries because they developed industrial commons with

¹ <https://www.unido.org/news/why-innovative-manufacturing-and-circularity-are-key-resilient-manufacturing-industry-post-covid-19>

² <https://stat.unido.org/content/publications/world-manufacturing-production>

³ <https://www.unido.org/news/why-innovative-manufacturing-and-circularity-are-key-resilient-manufacturing-industry-post-covid-19>

a combination of manufacturing capacity, access to raw materials and importantly to knowledge, as well as quality assurance and standardization capabilities.⁴

Reinforcing the connection between local, regional and global supply chains also promotes the circular economy and business models oriented towards the preservation of the value of resources, which motivates new investment activities such as reuse, repurposing, remanufacturing and recycling. Closer linkages between production and consumption cycles and their connection with demand-led innovation, driven by locally relevant problems and solutions, and set the foundation for more sustainable consumption and production patterns (especially through SDGs, 8, 9 and 12).⁵

The pandemic has highlighted the enhanced resilience of those economies with a more balanced industry mix and uncovered new opportunities offered by local and regional manufacturing. Manufacturers, grassroots initiatives and fab labs have consolidated their technology and know-how to rapidly adapt & respond to the new reality. This has demonstrated their capacity to innovate, to respond to changes fast and furthermore demonstrate that collaboration is not a zero sum game but a positive one, where interaction across extended networks spurs innovation and adapts technology and resources in new extraordinary ways.⁶

The far-reaching repercussions of the current pandemic has resulted in Covid-19 becoming the unexpected accelerator of the digital transformation. The disruptions caused by the crisis are having a profound impact on the world's mindset, which is now more open to embrace change to curtail the effects of the pandemic and to return to normality. In fact, due to these disruptions the world has arguably experienced greater digital transformation in a few months than we have seen in the last decade. In Part Three below UNIDO will highlight some key projects and activities through which we are helping our Member States take advantage of digital technologies to recovery from COVID-19 and contribute to the realization of their digital dreams.

⁴ <https://www.unido.org/news/why-innovative-manufacturing-and-circularity-are-key-resilient-manufacturing-industry-post-covid-19>

⁵ <https://www.unido.org/news/why-innovative-manufacturing-and-circularity-are-key-resilient-manufacturing-industry-post-covid-19>

⁶ <https://www.unido.org/news/why-innovative-manufacturing-and-circularity-are-key-resilient-manufacturing-industry-post-covid-19>

Part Three:

Listed below are specific and select examples of UNIDO led projects demonstrating the organization's commitment to promoting ICT development and integration within our Member States:

1. Bhutan Diagnostic Trade Integration Study (DTIS)

UNIDO in partnership with UNDP and the Enhanced Integrated Framework (EIF) led the preparation of the "Digitization, Industry 4.0 and E-commerce" Chapter of the Bhutan DTIS. Throughout July and September, UNIDO conducted thorough desk research and liaised with national stakeholders remotely to determine the status of digitization in the country. The initial findings revealed that the Bhutanese community is very eager to digital solutions to support the nation's development agenda and contribute to the gross national happiness. However, UNIDO research has found that the key impediments that are preventing Bhutan from going 'digital' are the lack of awareness on digital technologies and perhaps most importantly the insufficient IT infrastructure. Among the key recommendations, UNIDO has suggested that Bhutan increases collaboration with its regional neighbors India and Bangladesh to improve access to ICT connectivity. The final DTIS report is expected to be published in December 2020.

2. Blockchain Assessment - Ghana

UNIDO's Global Quality and Standards Programme (GQSP) has developed a methodology to assess the readiness of a value chain to adopt blockchain technology.⁷ The objective of the methodology is to both address a general approach to assessing a value chain from a data sharing perspective, and at the same time to go into the specific requirements that come with implementing blockchain technology. UNIDO's methodology is based on three key questions:

- Does this value chain need blockchain?
- Is this value chain ready for it?
- What does it take to implement it?

UNIDO conducts an analysis of the chain and provides conclusions per actor on the benefits they could have by adopting blockchain; their readiness to do it; and offers recommendations for its adoption. This UNIDO methodology has been piloted in the cocoa value chain in Ghana and its planned to be implemented in Peru in the coffee and cocoa value chains.

3. Global Innovation Network (GIN) - China

Under the framework of the Global Innovation Network Project, UNIDO established Shanghai Global Science and Technology Innovation Center (hereinafter referred to as SGTIC) in 2017, as the implementation institute to strengthen the global innovation network. SGTIC has developed a comprehensive innovation platform with five branches, including: expert sharing, global cooperation, industry development, financial support and public service, with the purpose of providing services for the innovative research and the development of small and medium-sized enterprises. Enhancing enterprises' independent innovation capabilities, and creating international

⁷ Blockchain technology is aimed at securely storing and sharing information on transactions across a network of users, and can serve to improve proof of integrity along the value chain, including quality attributes, and environmental and social compliance to standards.

innovation cooperation and exchange platform are the key objectives of the UNIDO ongoing initiative on Global Innovation Network.

As one of the demonstration programs of the Global Innovation Network project, wizarPOS Co., Ltd. and its Smart Pos Platform provided state-of-the-art solutions for payment products and technology. By cooperating with commercial banks, the wizarPOS Smart Pos devices could provide high-security payment and transaction services. In addition to the payment function, the Smart Pos Platform can also collect data for analysis, issue tickets and licenses. For example, Nei Meng Rural and Commercial Bank in China use the Smart Pos terminal in rural areas short of bank branches. With the help of such devices, the bank clients could easily withdraw and deposit cash, issue loans and open accounts. Now the wizarPOS Smart Pos devices has extensive user bases such as BRI from Indonesia, HDFC from India, NIBSS/ITEX/Interswitch from Nigeria, ABA Bank/AMK Bank Cambodia, helping to develop e-payment and related bank services in less developed areas; and hence, contribute to SDGs achievements.

4. Intelligent Manufacturing Technologies (IMT) - China

“UNIDO Project on Intelligent manufacturing technology and its application in small and medium-sized enterprises (SMEs)” is an initiative taken towards implementing WSIS outcomes. SMEs are important driving forces of industrial development in virtually all countries, including China, where SMEs provide around 80% of the total employment. While the introduction of ICT could speak to SMEs’ needs of facing intense competition and specific customer expectations, many obstacles are in the way of Chinese SMEs implementing it. The overall objective of the UNIDO project is to introduce SMEs from China’s manufacturing sector to the concept of intelligent manufacturing (IM) and its attendant ICT needs, to increase awareness of its benefits, and provide capacity building.

Since the start of the project in April 2018, the implementation work has been carried out in three dimensions:

1. Organizing awareness-raising activities through seminars, production of promotional materials and web-based platform;
2. Conducting specific training sessions through a “Training-of-trainers” program, and develop training modules for subsequent coaching and mentoring initiatives beyond the project’s duration;
3. Organizing a UNIDO IMT forum on an annual basis, which serves as a platform to exchange views, policies, new technologies, good practices, and network matchmaking opportunities within the manufacturing industry.

Training modules entitled “Digital Design and simulation in Intelligent Manufacturing” have been developed and a series of training courses are ongoing. The annual IMT forums have been organized on a yearly basis. The total beneficiaries from conferences/ forums/ technical training/ awareness sessions will reach 6000 by the end of 2020.

5. National Systems of Innovation – Cabo Verde

Upon the request of the Government of Cabo Verde (GoCV) - UNIDO will provide assistance on the elaboration and implementation of an action plan for the National

System of Innovation (NSI) development, thus contributing to the Strategic Plan for Sustainable Development (PEDS) vision of establishing a digital platform for technological innovation and transforming Cabo Verde (CV) into a regional ICT Hub.

This work will build on the findings and recommendations of UNIDO's report The Cabo Verde National System of Innovation – Measurement, Analysis and Policy Recommendations. For the benefit of the Government of Cabo Verde (GoCV) and its policymakers, the report surveys and depicts essential and systemic features of the landscape of innovation and innovativeness in Cabo Verde. It underscores the need to strengthen linkages between crucial actors of the CVNSI, particularly for the use and application of research, skills orientation and development. Secondly, the analysis highlights that relationships between actors in the CVNSI are imbalanced, which stymies the flow of knowledge and information crucial to the innovation process. This links to the third finding that the most significant latent factor barrier to innovation for the system is unsophisticated market knowledge, without which there is limited drive to innovate.

The report is a result of UNIDO's project "Cabo Verde National System of Innovation Survey", which was implemented in partnership with the Cabo Verdean Instituto de Apoio e Promoção Empresarial (PROEMPRESA), Instituto Estatística de Cabo Verde (INE), and the Camara Comercio de Sotavento. These will continue to be key counterparts in the implementation of this CP component.

For an effective and sustainable innovative ecosystem in Cabo Verde, it is imperative that knowledge-based institutions (KBI's) such as Higher education and Public & Private research institutes are identified and included as key stakeholders in all strategies and related activities.

The CVNSI report highlights the current truncated relationship between KBIs and Industry in particular. As the key source of skilled human capital for Cabo Verde and thus impacting overall effectiveness and long-term sustainability of activities outlined in the Country Programme, key considerations that must be taken into account when framing and articulating interventions are:

- Promoting better knowledge flow between institutions and utilization of the knowledge-base as a national resource.
- Linking the demand requirements of industry to the supply generated by KBIs.
- Develop relevant curriculum that adapts to technological trends for example the Fourth Industrial Revolution
- Promoting financial investments into R&D activities (including its marketization)

6. Malacca Smart Cities development – Malaysia

The project implemented by UNIDO's Energy Department demonstrates an integrated package of technologies to assist Melaka in carrying out and facilitating investments, which will reduce GHG emissions and enhance the effectiveness, efficiency and safety of their technical and industrial systems and processes as well as transportation modes – with potential scale up to other cities.

Smart grid technologies that are being implemented will enable higher levels of renewables in electricity systems by making the system more flexible, responsive, and intelligent. They will also be used to promote the deployment of Electric Vehicles (EVs) and higher energy efficiency in buildings through a two-way communication using smart meters.

Key barriers to a comprehensive approach of smart grid technology, electrical vehicle usage, renewable energy deployment, and building energy management systems in Malaysia include:

- Non-existence of smart grid policy and regulatory framework;
- Lack of or weak institutional framework for smart grid;
- Limited awareness and technical expertise in integrated smart grid technologies;
- Limited experience with regards to the technical, economic, social and environmental aspects of smart grid;
- Limited experience in incorporating measures and technologies to increase the energy efficiency in new and existing buildings;
- Limited know-how in renewable energy integration as an energy source and its applications in buildings.

The approach to removing such barriers within this project will be through demonstrations of the application and impacts of renewable energy (RE) integrated smart grid technologies for distributed RE systems, electric vehicle and building sectors. The expected outcome of the demonstrations is an enhanced local capacity and improved confidence in the feasibility, performance, energy, environmental and economic benefits of integrated smart grid system, comprising technologies for distributed RE systems, RE-powered EV charging infrastructure, battery as energy storage system as well as Energy Efficiency (EE) and RE applications in buildings.

The project will showcase the technologies of an integrated smart grid system comprising a few key elements which include: smart meter installation, renewable energy application e.g. solar PV for distributed energy generation and solar thermal energy for heating and cooling, EV charging station integrated with battery energy storage system and renewable energy, energy efficiency through BEMS/HEMS applications for smart buildings, time of use (TOU) apps for customer energy management portal and smart grid system linked with power line communication for the information exchange between consumers and utility company.

For further information, please refer to Malacca Sustainability Assessment which is one of the outcomes of UNIDO engagement with the city:

<http://documents1.worldbank.org/curated/en/408101556608980667/pdf/Overview-Report-Pathway-to-Urban-Sustainability.pdf>

7. Promoting Sustainable Bush-processing Value Chains in Namibia

Namibia is known to be one of the driest countries in sub-Saharan Africa. The long-term droughts are accompanied by growing pollution and water shortage. In addition, bush encroachment is a phenomenon that hampers agricultural productivity and therewith disrupts the livelihood of the local population.

Using the technology of satellites and unmanned aerial vehicle (UAV), this project of the Department of Technology and Innovation supports the development and implementation of a mobile application that based on the spectral image recognition systems, allowing identification of invasive species. The process of selective thinning contributes to the sustainable utilization of invasive bushes for the production of final goods with a higher value added.

UNIDO's technical assistance aims to contribute to the inclusive and sustainable development of the Walvis Bay Corridor, while stimulating productive, value-added and employment generating activities related to the bush value chains. The key impacts of this project include:

- Enhanced agricultural activities
- Sustainable use of land
- New employment opportunities
- Renewable fodder
- Enhanced human and institutional capacities through technical trainings

For further information: <https://open.unido.org/projects/NA/projects/170017>

8. “Smart Glasses” in Ghana

Within the context of the current global pandemic, UNIDO is assisting the Republic of Ghana in building resilience by implementing the latest technological solutions to provide remote technical assistance. As part of the Directorate's mandate to mainstream the Fourth Industrial Revolution and encourage the Industry 4.0, the smart glasses provided by UNIDO are serving as virtual assessment tool and remote support to the Government's Food and Drugs Authority (FDA) Cosmetic Laboratory in Ghana. The FDA is the national body responsible for the regulation of, amongst others, food, drugs, food supplements, herbal and homeopathic medicines, veterinary medicines and cosmetics.

This special tool enables a direct exchange of data, audio or even video with helps the Ghanaian FDA to receive immediate instructions and technical assistance from international experts on laboratory analysis. The combination of augmented reality, video recording and internet connection gives new opportunities for technical assistance, verifying products and generating electronic evidence for international certification and accreditation.

For further information: <https://www.unido.org/news/how-smart-glasses-can-support-testing-laboratories>

9. Global Cleantech Innovation Programme (GCIP)

UNIDO and the Global Environment Facility seek to promote affordable and scalable solutions enabling our partner countries to leapfrog to cleaner, more resilient economies. The GCIP promotes an innovation and entrepreneur ecosystem by identifying and nurturing cleantech innovators and entrepreneurs; by building capacity within national institutions and partner organizations for the sustainable implementation of the cleantech ecosystem and accelerator approach; and by supporting and working with national policy makers to strengthen the supportive policy framework for SMEs and entrepreneurs.

Through this cleantech ecosystem and accelerator approach, the GCIP catalyzes investment to support and accelerate startup entrepreneurs towards the development and commercialization of their innovative ideas.

10. Cuban Innovation Cluster for Biopharma, Medical and Nanotechnologies Sectors

Leveraging from the opportunities brought by ICTs, UNIDO is supporting the establishment of a joint innovation center with a focus on the bio-pharmaceutical industry, that will strengthen the collaboration ties, exchange of knowledge and technology transfer between Slovenia and Cuba, two geographically distant partners without the need to developing any additional physical infrastructure. The pilot model of international development cooperation is expected to be replicated or extended to other countries in the Latin American and Caribbean region, as well as in south-eastern Europe.

11. Internet of Things (IoT) for improving energy production in Africa

UNIDO is partnering with the Government of Japan to improve the efficiency of geothermal electricity production in Kenya. The plan is to install IoT sensors in power generators and turbines which will detect temperature and vibrations. The data extracted from the process will be analyzed by computers in order to increase the plants' efficiency. The technology allows companies to remotely monitor and manage the production and distribution of energy in real time. The project also foresees an investment in trainings which will, in the long run, also contribute to the development of the region's renewable energy sector and strengthen the local market

12. UNIDO's Webinar Series "Inclusive and Sustainable Industrial Development (ISID) In the Age of the Fourth Industrial Revolution (4IR)"

These series of awareness-raising webinars explore the potential of digital technologies—blockchain, artificial intelligence, Big Data, additive manufacturing (3D printing), virtual reality (VR), cloud computing, wearables, and Internet of Things (IoT) devices—to highlight their potential gains and discuss their challenges and risks in promoting ISID, with the aim of accelerating the realization of the Decade of Action and delivery for sustainable development, as envisaged by the 2030 Agenda for Sustainable Development. Each of the sessions offers an in-depth examination of their operations, mechanisms and relevance for SMEs in the context of a specific set of industries, i.e. agro-food, automotive, metal-mechanic, textile, leather, fisheries, forestry, mining, natural cosmetics, natural health products, energy and pharma. The series aims to mainstream the 4IR within UNIDO's technical cooperation, strategic, and normative activities.