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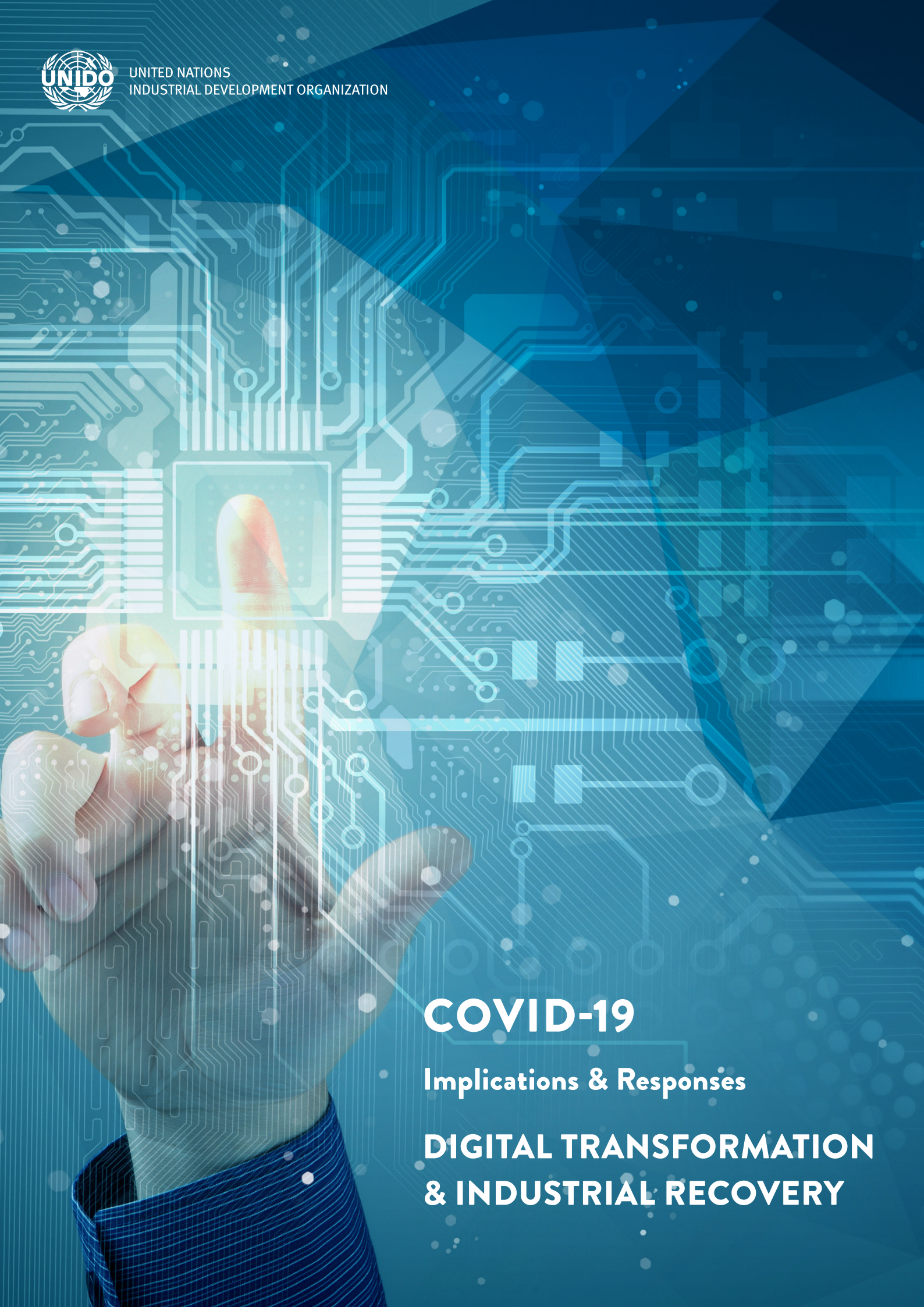

# COVID-19

## Implications & Responses

# DIGITAL TRANSFORMATION & INDUSTRIAL RECOVERY

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**June 2020**

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# Foreword

The COVID-19 pandemic has impacted hugely upon our society, not alone in terms of its threat to human health and wellbeing, but also the disruption of global economic activity, jeopardizing livelihoods and straining public finances worldwide. No less than any other sector, manufacturing has been affected, with many essential global value chains either being halted or severely interrupted.

Official statistics by UNIDO show that manufacturing output growth declined by 6.0 per cent in the first quarter of 2020, a sharp decrease triggered by the pandemic, as well as existing trade restrictions. The UNIDO Industrial Production Index dataset also shows that in March 2020, the majority of the countries suffered negative growth rates compared with pre-crisis periods, with the average contraction being 4.8 per cent against December 2019 and 4.6 per cent compared with March 2019.

Meanwhile, Foreign Direct Investment (FDI) is expected to decline significantly. This is likely to affect developing countries disproportionately, owing to their reliance on investment within global value chains. In comparison with High Income Countries, they are less endowed with resources to be able to put macroeconomic contingency measures in place.

Nonetheless, industrialization will continue to play a vital role in long-term growth and development strategies, as well as meeting immediate needs in healthcare. The manufacturing sector is crucial to rebuild society, and during this crisis, in the immediate term, through the production of essential medical goods, personal protective equipment and testing kits inter alia.

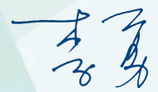
The UNIDO strategy for combatting Covid-19 hinges on the phrase “prepare and contain, respond and adapt, recover and transform”, assisting the manufacturing sector to keep essential production chains in operation through a tailored portfolio of services for inclusive and sustainable industrial development, including technical cooperation, programmatic assistance, normative services, and convening (in a virtual setting).

The disruption caused by the outbreak presents us with an opportunity to “build back better” by sharing and enhancing knowledge, building competitiveness and resilience and improving quality infrastructure, so that we can address unforeseen events with confidence in the future.

The digitalization of industry has been at the forefront of industrial transition in recent years, simultaneously promising immense potential for increasing value added, productivity and efficiency but also posing challenges to social inclusion and for accessibility in developing countries. The outbreak is accelerating digitalization of industry (or “Fourth Industrial Revolution”) through encouraging more localized production and customization, thus shortening value chains and reducing supply chain risks for businesses.

It is also a sine qua non for the implementation of the 2030 Agenda for Sustainable Development, as outlined in the annex to this document. The challenges of digital recovery are truly of a global nature, given that COVID-19 does not respect national boundaries. Restoring the global economy, safeguarding human health and wellbeing and successfully managing the digitalization of manufacturing can only be ensured through strong international cooperation with multi-stakeholder partnerships at the core.

The future of manufacturing should be underpinned by strong quality infrastructure and innovation ecosystems and it must be aspirational for all people in all countries. UNIDO will create partnerships with a broad range of stakeholders to ensure the highest quality standards, the upscaling of technological capacities and inclusivity in an era of digital transformation.



Li Yong

UNIDO Director General

# Managing Disruption

The ongoing Covid-19 pandemic has been the most disruptive in a century, putting an immense strain on societies and economies around the globe. In the face of such an outbreak, the immediate priority for policymakers worldwide is to upscale capacities in the medical sector rapidly in order to effectively manage the sudden surge in critical patients. In particular, the pandemic has placed considerable stress on healthcare services, especially on supplies of essential medical goods, most notably personal protective equipment (PPE) for medical professionals, as well as prompting some unforeseen issues, such as an increase in hazardous emissions due to larger volumes of medical waste.

In addition to the immediate strains placed on national health services at this time, the Covid-19 pandemic has impacted significantly upon the livelihoods of millions of people and the macro-economies of the world. Middle Income Countries and Least Developed Countries are especially affected in terms of being able to implement their national industrialization strategies, further weakening an already fragile macroeconomic situation for many. The containment measures enacted to avoid further contagion have resulted in decreased manufacturing production, trade volumes and investment flows.

Similarly, the lockdowns enforced in many developed countries have drained many developing countries of remittance payments from migrants. Some backsliding has also been detected in terms of indicators of gender equality and women's empowerment, with girls and women disproportionately prone to abuse and violence, feminization of poverty and negative economic outcomes during lockdown measures.

On a brighter note, the slowdown measures implemented to tackle the public health crisis have had some positive effects on the environment, with several countries noting a reduction in emissions of harmful substances such as $CO_2$, $NO_2$, and particulates, with some megacities seeing a return of blue skies as a result. However, it remains to be seen whether these gains can be sustained in the longer-term.

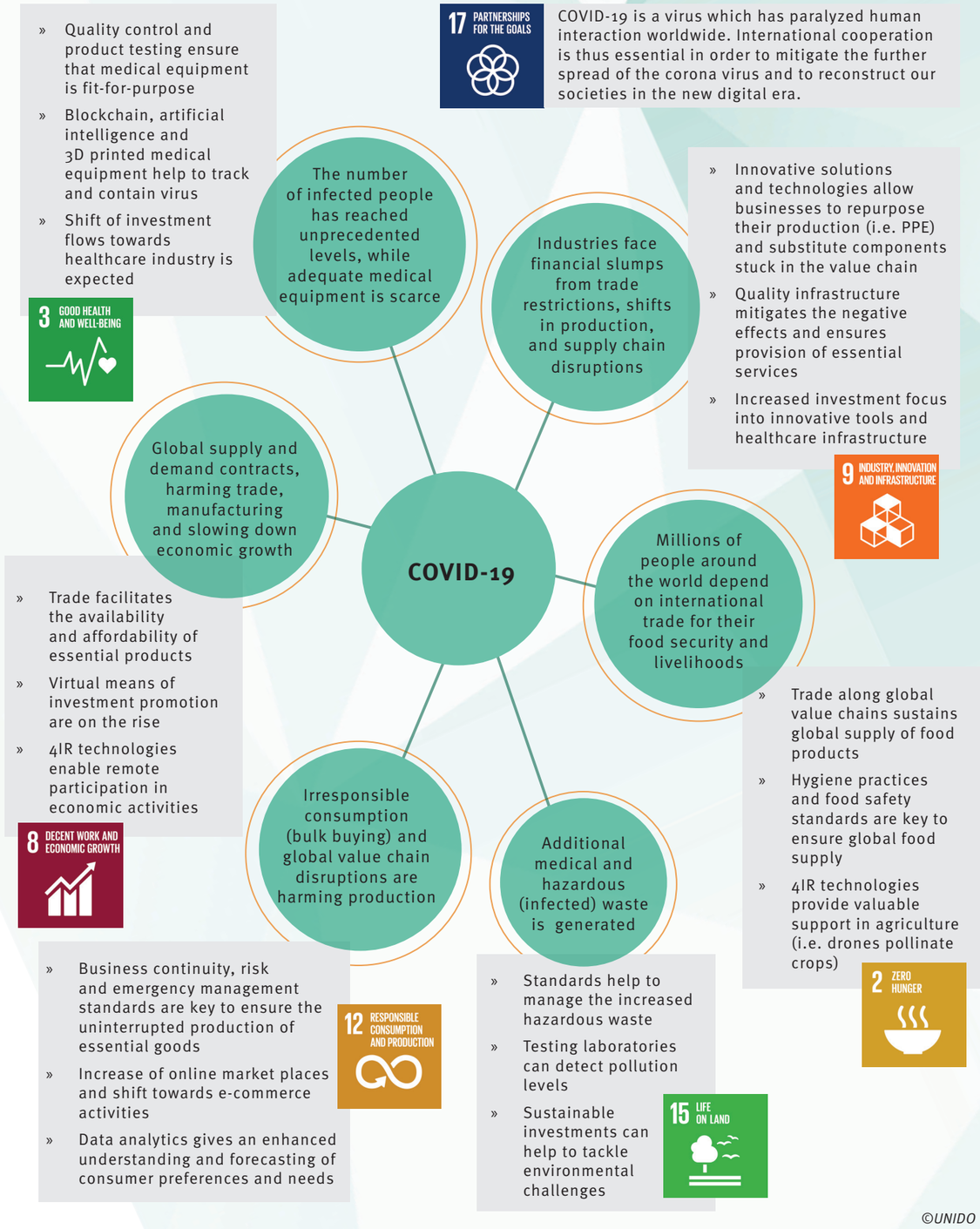
# Implications for **Sustainable Development**

The Covid-19 pandemic may have considerable negative implications for the implementation of the 2030 Agenda for Sustainable Development, as adopted by the United Nations General Assembly in September 2015. The 2030 Agenda addresses the economic, environmental and social dimensions of development, as represented by its 17 Goals.

Given the immediate threat posed to public health by the pandemic, priorities and funding at the national level earmarked for international development may be diverted to address immediate humanitarian concerns. This understandable prioritization of competing demands may cause shortfalls in other policy areas, potentially leading to unforeseen consequences for people, planet and prosperity further down the line.



## IMPLICATIONS FOR SUSTAINABLE DEVELOPMENT



## Implications for **People**

In terms of future challenges for people, the outbreak poses a variety of issues and disruptions to human wellbeing on a broad scale, most notably for the eradication of poverty, which may be seen as the overarching objective of the 2030 Agenda. However, this has already been impacted strongly by the pandemic and may lead to further retrenchment the longer that the pandemic lasts, especially due to disruption to economic activity. Similarly, there are some fears that food restrictions could exacerbate global hunger, which already affected some 820 million people before the crisis.[1] This has negative implications for the achievement of Goal 2 concerning zero hunger. Goal 3 concerning health has also been severely affected, with many countries lacking adequate PPE for medical professionals, reliable testing kits and quality controls.

Educational services have also been disrupted due to the necessity of social distancing and quarantining, thus impacting on Goal 4. Women and girls have also been disproportionately affected as they are much more likely to work in precarious and low-paid employment, to be employed in exposed professions such as caregiving or nursing, or to be the victims of domestic abuse or violence than males. Gender equality (Goal 5) has thus been imperilled by the Covid-19 pandemic.

Water and sanitation services (Goal 6) are also likely to be challenged by the outbreak, which may exacerbate existing water scarcity in some countries/regions, with shortfalls of up to 40 per cent of existing water supplies forecast prior to the pandemic.

## Implications for **Prosperity**

The potential implications for prosperity are also multifaceted. The drastic reduction in the use of both personal and public transport vehicles has coincided with a temporary fall in the cost of fossil fuels, which is making renewable sources less attractive. This could make it considerably more difficult to achieve Goal 7 regarding sustainable energy, for instance. In terms of trade and investment, the pandemic has significantly reduced global demand, manufacturing production and trade volumes, leading to a possible Global Depression and unprecedented lack of security in the labour market.

Concerning manufacturing, the global drop-off in demand has caused for shortages of intermediate parts, factory closures and reduced orders, impacting on the achievement of Goal 9. For instance, in China, a key actor in many global value chains, industrial production fell 13.5 per cent in January and February 2020, as compared with the same period in 2019.[2] And while some companies have shifted the operations to meet the surging demand in medical goods and supplies, some barriers to entry in those sectors exist, given the need to meet stringent standards, certifications and accreditation in production.

It may also be that Goal 10 concerning inequality may also be adversely affected, as many developing countries' already lack the public health infrastructure to combat a crisis of this magnitude. FDI flows are also likely to be affected due to the slowdown in economic activity worldwide. And Least Developing Countries in particular would be affected if the pandemic accelerates the digitization of manufacturing immediately, as a vastly lesser proportion of the populations there have access to basic digital services. For instance, in Africa, the percentage of people using the Internet stood at less than 25 per cent in 2018, compared with almost 80 per cent in Europe. [3]

## Implications for **Planet**

The planet too is being impacted by the "new normal" associated with Covid-19. For example, the social distancing and quarantining measures designed to tackle the spread of the virus are often impossible in informal settlements, impacting negatively on Goal 12 regarding sustainable cities. The priority given to addressing the health implications of the outbreak are also likely to detract from the focus on achieving climate action (Goal 13) and sustainability of the oceans, seas and marine (Goal 14). And although the Covid-19 pandemic has provided the planet with some respite from carbon emissions, some new environmental hazards have arisen, such as increased waste in the medical sector.

There are some social risks to people associated with the outbreak also, as the restrictions imposed by governments have been met with protests and unrest in some countries (Goal 16), while the crisis has also added fuel to some geopolitical tensions and protectionism in terms of medical goods in particular, endangering the goodwill necessary to tackle international challenges cooperatively, as per Goal 17 on global partnership. There is also a strong probability that the unexpected nature of the crisis will force many countries to borrow from international money markets to address immediate healthcare needs, adding to national debt and reducing the scope for future interventions elsewhere.

For more details on the implications of Covid-19 for the SDGs, please see Annex.

[1] Ibid.

[2] https://www.weforum.org/agenda/2020/04/covid-19-pandemic-disrupts-global-value-chains/

[3] https://news.itu.int/itu-statistics-leaving-no-one-offline/

# Covid-19 as a Catalyst for **Digital Transformation**

However, it is also evident that the Covid-19 pandemic affords the international community an opportunity to accelerate progress towards collaborative solutions to these international development issues, most notably with through advanced manufacturing technologies and digitalization. Even prior to the crisis, global manufacturing was in the midst of an unprecedented and rapid change, due to the convergence of the digital and traditional manufacturing sectors: the Fourth Industrial Revolution (4IR). Disruptive technologies, such as artificial intelligence, advanced robotics, 3D printing, wearable and the Internet of Things inter alia are revolutionizing the manufacturing landscape, presenting huge opportunities to upscale productivity but simultaneously challenging social inclusion objectives.

The accelerated pace of change of 4IR is unique in comparison to previous Industrial Revolutions, which took decades or even centuries to come fully into effect, and it will touch aspects of life far beyond the workshop or factory, impacting upon the way we live, interact and travel.

The far-reaching repercussions of the current pandemic have forced the world to consider the urgency of structural shift towards the 4IR, with 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.

The crisis exhibits a unique opportunity to leverage the 4IR to future-proof productive sectors, foster long-term resilience and build a better future. In some ways, we can already observe that the outbreak and associated lockdowns and quarantining measures implemented in most countries have spurred on the mainstreaming of 4IR. For instance, migration to cyberspace and remote participation in social, educational and economic activities is allowing us to reduce the psychosocial impact of social distancing. Big data is increasingly being deployed in terms of crisis management and predictive learning, allowing real-time data-based decision making and a faster and more efficient response. Similarly, the world has witnessed a shift to electronic commerce over physical retail and service provision.

The necessity for crisis response has also undoubtedly spurred on innovation in some contexts. Artificial intelligence and Big Data have been used to assist virus research, vaccines development and data analysis for supporting public policy decisions. Similarly, robotics have played an increasing role in monitoring and assisting patients, while wearables demonstrated to be effective in screening and tracing patients and medical staff.

The 4IR has brought about a wide range of potential solutions to fight against the COVID-19 and its associated social, economic and environmental effects. A small selection of these are depicted in the table on the right.

| | RESPONSES TO THE **HEALTH CRISIS** | RESPONSES TO THE **ECONOMIC CRISIS** |
|---|---|---|
| **Drones** | » Delivery of critical supplies<br>» Disinfection of public spaces<br>» Measurement of body temperatures<br>» Enforcement of quarantine controls | » Increased efficiency on delivery of services<br>» Scan extensive and highly populated areas and broadcast information |
| **Robotics** | » Monitoring and assisting patients<br>» Optimization of medical stock<br>» Delivery of medicine and food | » Remote inspection, repair and maintenance<br>» Semi-autonomous operations |
| **3D Printing** | » Production of medical equipment and essential components | » Counteract component shortages<br>» Design and test prototypes for new products |
| **Blockchain** | » Digital identity, including health status<br>» Medicine safety tracking<br>» Management of healthcare claims | » Resilience of supply chains<br>» Traceability and transparency about the origin and transformation process |
| **Big Data/AI** | » Analyze data and model viral outbreaks<br>» Assist the development of vaccines<br>» Analyze patterns to improve control | » Digital twining of industrial facilities to enable quick switch of production lines<br>» Data and trend analysis to predict demand changes and asses impacts |
| **IoT** | » Public health data collection<br>» Analyze air quality inside buildings<br>» Assist transport of critical goods | » Improve accuracy and response time<br>» Enhance understanding of consumers preferences and needs |

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