



New Technologies for Sustainable Development:

PERSPECTIVES ON INTEGRITY,
TRUST AND ANTI-CORRUPTION



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FOREWORD

In the past decades, technology has revealed its potential for transforming the world and accelerating the pace of sustainable development. During the Fourth Industrial Revolution, the development, adaptation and application of new technologies are bringing benefits to almost every area of the economy, society, culture and institutions. Today, with data growing at an exponential pace, we have more information than at any other point in history, which therefore enables us to better address complex global challenges.

Amid the COVID-19 pandemic, artificial intelligence and data analytics have improved the ways in which healthcare is delivered, by increasing the accuracy of diagnosis and treatment, quality of patients' experience, and access to healthcare services. As the pandemic continues to unravel the unresolved tensions between people and the planet, technology has also enhanced transparency in complying with the Paris Agreement. For example, the Pacific Alliance has piloted a publicly shared digital ledger of carbon credits to boost transparency and accountability in climate action¹.

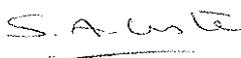
At the same time, however, the adoption and application of new technologies have posed new challenges for policymakers, including issues related to ethics, trust, human rights, data privacy, and data protection. In addition, inequalities in the form of the 'haves' and 'have-nots' in reaping the benefits of digital transformation undermine the central promise of the 2030 Agenda to 'Leave No One Behind' and threaten to widen the digital divide.

UNDP recognizes the huge potential of new technologies for sustainable development, and through its Digital Strategy², focuses on using digital technologies to solve development challenges through innovation in delivery, co-creation, collaboration, and advocacy. As part of our commitment to leave no one behind and ensure that the benefits of technological innovation are shared by all, UNDP is engaging with governments, the private sector, civil society and communities to address challenges from both a programmatic and policy perspective.

New Technologies for Sustainable Development: Perspectives from integrity, trust and anti-corruption explores the immense opportunities new technologies bring in improving the access and quality of service delivery and in mitigating corruption risks and enhancing transparency and accountability. It also highlights new avenues in which technologies could be misused or abused for corrupt, criminal and unethical conduct, including the use of cryptocurrencies for illicit trade and money laundering, or AI-driven decisions that could be used for manipulation or discrimination due to algorithmic bias.

We hope that this study contributes to identifying and developing effective digital governance strategies, to maximize the benefits of new technologies for sustainable development and minimize the risks of abuse and misuse in the application and adoption of new technologies.

I would also like to take this opportunity to thank all who have contributed to this study, which should be considered an initial contribution to a fast-moving field. We also look forward to feedback on this publication.



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¹ Pacific Alliance: Market and non-market approaches for achieving the NDCs, August 2019. <https://www.transparency-partnership.net/news/pacific-alliance-market-and-non-market-approaches-achieving-ndcs>
² UNDP Digital Strategy. <https://digitalstrategy.undp.org/strategy.html>

EXECUTIVE SUMMARY

The **2030 Agenda for Sustainable Development** has embraced the spread of technology and global interconnectedness as having great potential to accelerate human progress, bridge the digital divide and develop knowledge societies. With growing challenges to sustainable development – from poverty and inequality, to conflict, climate change and global health threats such as the COVID-19 pandemic – the 2030 Agenda has brought immense opportunities to leverage scientific and technological innovation to meet many development challenges in the 21st century.

Over the past two decades, the evolution of technology has dramatically transformed economies, societies and cultures. Digitalization can propel us towards achieving the Sustainable Development Goals (SDGs)³. The rapid advancements in technology – from Information and Communication Technology (ICT) to new technologies such as artificial intelligence (AI) – have profoundly changed the ways people interact with one another, with businesses and with governments. This has been evident during the COVID-19 pandemic, when many governments have taken unprecedented measures using new technologies and advanced analytics to respond to and recover from the crisis⁴. Countries that have maintained low per-capita COVID-19 mortality rates have had similar pandemic management strategies, including early surveillance, testing, contact tracing and strict quarantine measures. In particular, in many countries the adoption of technology and its integration into policies and healthcare service delivery has significantly helped in coordination, data management and effective implementation of COVID-19-related national strategies⁵.

“Technology has become one of the greatest allies for preventing and tackling corruption.”

In the area of anti-corruption, technology has become one of the greatest allies for preventing and tackling corruption, defined as ‘the abuse of entrusted power for private gain’⁶ by global development actors. The most common internationally-agreed forms of corruption, as identified in Articles 15 to 25 of the United Nations Convention against Corruption (UNCAC), include, but are not limited to: bribery, illicit financial flows, money laundering, kickbacks, nepotism, patronage, embezzlement, clientelism, abuse of functions and trading in influence.⁷

Around the world, technology is increasingly being harnessed for anti-corruption efforts, focusing not only on tackling specific forms of corruption (such as bribery, illicit financial flows, money laundering, embezzlement, nepotism and others), but also on enhancing transparency, accountability, integrity, openness, participation and inclusion. This is most evident in innovations in corruption reporting, monitoring, advocacy and e-government initiatives, including open contracting and e-procurement.

The opportunities in the use of digital technologies for integrity and anti-corruption are vast, and can be grouped into two main approaches: a **direct approach to prevent and tackle corruption**, such as using digital tools to detect, analyse, investigate, predict, and monitor corruption; and an **indirect approach through promoting effective, accountable and inclusive institutions** and governance processes for efficient and effective service delivery, such as e-government for efficient service delivery; digital

3 United Nations Secretary-General's Task Force on Digital Financing of the Sustainable Development Goals (2020) People's Money: Harnessing Digitalization to Finance a Sustainable Future (Final Report), August 2020. <https://unsdg.un.org/sites/default/files/2020-08/DF-Task-Force-Full-Report-Aug-2020-1.pdf>

4 B.Busetto and A. Timilsina, “The role of technology and anti-corruption measures in fighting COVID-19” (Blog) UNDP, 15 September 2020. <https://www.undp.org/content/undp/en/home/blog/2020/the-role-of-technology-and-anti-corruption-measures-in-fighting-.html>

5 S. Whitelaw et al. “Applications of digital technology in COVID-19 pandemic planning and response”, The Lancet, 29 June 2020. [https://www.thelancet.com/journals/landig/article/PIIS2589-7500\(20\)30142-4/fulltext](https://www.thelancet.com/journals/landig/article/PIIS2589-7500(20)30142-4/fulltext)

6 UNDP, Corruption and Development: A Primer, 2008. <http://www.undp.org/content/undp/en/home/librarypage/democratic-governance/anti-corruption/corruption.html>

7 United Nations Convention against Corruption (UNCAC). <https://www.unodc.org/unodc/en/corruption/uncac.html>

tools to promote advocacy and awareness; and open data for monitoring and access to information. Moreover, over the years, ICTs have played an instrumental role in empowering citizens, by simplifying administrative procedures and enabling governments to move towards a more citizen-centric approach to offering public services. These, in turn, have significant implications for public trust in governance institutions to serve public interests, as well as social cohesion and trust within society, necessary conditions for inclusive and sustainable development.

Based on lessons learned from the use of ICTs over the past two decades, the effectiveness of technology to achieve development goals depends on the following factors:

- A long-term national e-government/digital policy or strategy
- Sustained investments in technological capacity/capabilities and digital infrastructure
- Continuous innovation, adaptation and experimentation over time, including building on best practices around the world
- Implementation of digital governance and ICT strategies, programmes and projects with a clear monitoring and evaluation framework
- Technology education and digital literacy, advocacy efforts and raising public awareness of the use of digital technologies
- Building trust in digital systems, in terms of public confidence, transparency and accountability

These critical elements hold important lessons for new technologies, such as AI, blockchain and big data analytics, whose development, practical applications and regulatory mechanisms are still largely unrealized in the field of anti-corruption in many countries. New technologies are often cited as the 'Next Big Things' and have vast potential for sustainable development, by transforming agriculture, education, energy, health and public services, identifying, reversing and mitigating the effects of climate change, ensuring food security, reducing disaster risks, preventing humanitarian crises, monitoring natural resources and reducing poverty.

However, a clear understanding is needed of how new technologies might shape the global economy, society and politics over the next decade. Given that the development of new technologies and digital solutions adds a new dimension of vulnerability, there is a need to address the risks of misuse and abuse of technology, including corrupt activities that could be facilitated by technology, such as money laundering, fraud and cybercrime; the balance between regulation and innovation; ethical and human rights considerations; trust and integrity; the digital divide among and within countries, especially in access to these technologies; and challenges in governing multinational corporations dominating a largely unregulated space. Thus, the effectiveness and risks surrounding the use of new technologies or digital solutions also depend on several prerequisites for **effective digital governance and digital infrastructure**.

“Given that the development of new technologies and digital solutions adds a new dimension of vulnerability, there is a need to address the risks of misuse and abuse of technology.”

This study, based on desk research, explored the following new technologies in relation to integrity, trust and anti-corruption: AI, machine learning and deep learning tools; blockchain technology; big data analytics; robotic process automation; the Internet of Things; and cloud computing.

This study sought to enhance the understanding of the opportunities offered by new technologies to prevent and tackle corruption, while recognizing the risks and challenges that exist. The study also explored current regulatory mechanisms in the use of the technologies, building on the practices around the world. The study provided policy recommendations to address risks, promote effective digital governance and support partnerships and dialogue among key stakeholders, including governments, technologists and innovators, regulators, development practitioners, anti-corruption actors, the private sector and civil society.

Regardless of whether technologies are traditional or new, their efficiency and effectiveness tend to largely depend on the enabling environment for their use. The discussion in each chapter also addresses the following issues: digital governance, institutional

architecture and an effective set of rules to complement traditional policy, regulation and governance processes; implications and ethical issues surrounding the use of technology; data and privacy issues, including data collection, storage, sharing, protection and security; the applicability, relevance and transferability of technology across contexts; the principle of leaving no one behind; and collaborative platforms to advance the understanding of new technologies.

The key takeaways of this study are summarized as follows:

- **Technology is an important tool to enhance anti-corruption efforts**, not only in promoting increased transparency, accountability, openness, accessibility and citizen participation, but also in its potential to detect, analyse, predict, and therefore deter and prevent corruption. To harness its full potential, the application of technology for anti-corruption efforts should also take into account a major lesson learned: technology alone cannot solve corruption, which is also dependent on the wider political economy context and requires ethics and integrity to be embedded in systems, institutions and society.
- **Effective digital governance is necessary to ensure ethics and integrity in the use of new technologies**, including data-driven digital transformations and data quality management. The outcomes generated by technologies such as AI highly depend on the design and implementation of the algorithms and data used. These will generate outcomes that are inherently biased to some extent, whether systemic or random. In that regard, governments and policymakers need to work together with the technologists and data scientists to produce data and services that ensure ethics and integrity are built in.
- **Along with the need to encourage innovation and the application of new technologies, there is an increasingly clear recognition that regulation is necessary to govern the responsible use of technologies and data.** This includes integrating the principles of transparency, accountability, ethics, non-discrimination, integrity, access, inclusion and human rights. Regulation is crucial to protect users and ensure security, but it should also create an environment that is conducive to continuous innovation. Without appropriate legal and regulatory frameworks in which technologies operate, the usefulness of technology may be limited or susceptible to abuse at the hands of those who design them. Therefore, through digital governance, governments have a crucial role to play in guiding technological change proactively alongside technologists and other stakeholders, a much different approach to traditional decision-making and policymaking processes.
- **While, on the one hand, digital technologies can play a key role in driving transparency, on the other hand, we need to build trust in the technology sector.** From the perspectives of integrity and trust, technology and anti-corruption measures have a mutually reinforcing relationship: technology for integrity and trust; and integrity and trust for technology. The ability of digital technologies to create platforms for data transparency and open information, which are useful for monitoring services, improving products and improving citizen engagement, can help build trust. Yet, privacy and security breaches, with wide-ranging implications for human rights and accountability, have led to declines in trust, not only in technology products but also in the whole technology sector.

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