Briefing Note

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Economic and Social Commission for Asia and the Pacific

An Overview of ICTs and Sustainable Development

Key Topics

- **The Big Picture**
- **The ICT Scenario**
- **Application of ICTs for Sustainable Development**
- **ICTs, Sustainable Development and National Development Policy and Planning**
- **Key Issues in the Use of ICTs for Development**

This Briefing Note examines the linkage between ICTs and sustainable development, and the practice of ICT for development (ICTD), which focuses on the meaningful application of ICTs—particularly computer, web-based, mobile and other digital technologies—to achieve the sustainable development goals of countries in Asia and the Pacific.

The Big Picture

The human development approach has changed the way that the world currently looks at development. In the current global scenario, it is hard to find a national constitution that does not guarantee equal rights for all its citizens regardless of ethnicity, sex, gender, colour, religious beliefs, political leanings, and social and economic status.

This approach, which focuses on development within a human rights framework, is the current globally accepted concept of development, and have led to significant progress in social, economic and environmental development in their efforts to achieve the Sustainable Development Goals (SDGs). The SDGs were the results of an extensive efforts that culminated with the development of the SDGs by the Open Working Group, with representation from all five regions of the world. The final version of the document the group developed, *Transforming Our World: The 2030 Agenda for Sustainable Development,* was submitted to the United Nations General Assembly and was adopted by the global community during the United Nations General Assembly in September 2015.

The SDGs build upon the concepts of inclusiveness, resilience and sustainability and have been accepted by the global community of nations as the development agenda for the next fifteen years, until 2030. ICTs play an important role as they serve as enablers and can be used to facilitate complex planning and implementation processes, integrated approaches and cost-effective scalable solutions in key sectors of sustainable development.

The ICT Scenario

There have been dramatic changes in technology within the last five years. Devices have become cheaper, faster, more versatile, robust and reliable. Mobile phones have overtaken all others as the technology of choice in both developed and developing countries. ICT growth in the Asia-Pacific region is high, but is driven by a few countries—namely, China, Japan, Republic of Korea and Singapore—leading to a skewing of teledensity in the region.

Not explicitly visible to the users, cloud computing, the Internet of Things, 3D printing, artificial intelligence, technology stacks, blockchain technology, big data and bots are changing the way information is stored, processed and delivered. SMAC or Social, Mobile, Analytics and Cloud technologies are the new ways through which both the market and government are trying to reach out to the end users. At the same time, big data is being analysed in order to customize and personalize relevant and timely information.

For governments, these new trends are a boon. For example, governments can use big data and analytics as part of a more effective governance. On the other hand, these new technology trends also raise serious sociopolitical and legal concerns in the areas of personal data privacy and security, cyberwarfare, rising unemployment as technology displaces human intervention, and a widening digital divide between the "haves" and the "have-nots".

Application of ICTs for Sustainable Development from Asia and the Pacific

When using ICTs for sustainable development, it is important to explore how these versatile technologies can be used simultaneously in a synergistic manner, incorporating in a balanced way all three dimensions of sustainable

All three pillars of sustainable development—economic, social and environmental—need ICTs to serve as enablers, catalysts, and as critical facilitators in the process of meeting the 2030 Agenda for Sustainable Development.

development (economic, social and environmental). ICTs must also be rooted within the context of development goals and included throughout the entire process of a programme or project life cycle. In his synthesis report to the General Assembly, the United Nations Secretary-General identified six key elements of the SDGs. In each of this element, effective deployment of ICTs can bring significant impact.

1. Dignity: End Poverty and Fight Inequalities

ICTs can help significantly reduce inequalities and serve as enablers in ending poverty.

Access to timely information enabled by mobile devices, especially in agriculture, can make a big difference for many of the rural poor who are engaged in agriculture. Timely information regarding water and power availability, market prices, and other extension services help lead to increased incomes—the first step in poverty reduction.

2. People: Ensure Healthy Lives, Knowledge and the Inclusion of Women and Children

Health
ICTs have improved access to health care in rural and remote communities by facilitating exchanges with doctors in urban areas and by enhancing the effectiveness of health management and monitoring systems, providing access to the latest findings from medical research, and enabling continuing education for health care professionals.

Telemedicine is the most common application of ICTs in the health care sector and has been used extensively in many countries of the Asia-Pacific. Global surveillance systems are another successful example as they have enabled countries to contain the threat of cross-border diseases such as SARS, MERS and the avian flu.

Education
ICTs' impact on education is second only to their impact on business practices. In conditions where access to educational opportunities is limited due to the lack of human, learning and financial resources, ICT tools can help to address these hurdles.

Open schools, school networks, and open and distance learning institutions are using ICTs extensively to reach underserved and marginalized population groups, whether in the high population countries such as Bangladesh, or in the remote small island states in the Pacific.

OERs and MOOCs make high-quality content available anywhere and anytime for both learners and teachers. Collaborative content development has also been undertaken as institutions come together to pool resources.

Skills and knowledge upgradation for teachers, access to academic resources for improved research and the provision of non-formal learning to those left out of the educational system are some of the others uses of ICTs for education.

Gender
The barriers that women face when accessing education and ICTs are similar—poverty, illiteracy, lack of time and lack of relevant content. However, when technology is placed in their hands, women are able to improve their economic, social and political status in the community.

Women use technology not just to learn and to generate an income, but also to create women-friendly spaces on the Internet for building up networks to voice and share their concerns, and to lobby for gender equality. There are emerging opportunities for women's employment in the ICT sector, provided policies and plans are in place for training, career promotion and mentoring.

Youth and Persons with Disabilities
Both the youth and the disabled are increasing in number in the Asia-Pacific region. To address issues relevant to these groups, the SDGs refer to youth and persons with disabilities in several of the goals.

There are some initiatives that use ICTs to address disability issues, but these are few and far apart. Unless proactive initiatives are taken, this vulnerable group is likely to fall further behind.

Indigenous Peoples, Displaced Persons and Migrants
Evidences have shown that three groups of people – indigenous peoples, displaced persons and migrants – need special attention to insure their inclusion. While the SDGs specifically mention these groups, there are very few initiatives to address their needs.

Many indigenous people, displaced persons and migrants continue to suffer from marginalization and discrimination, extreme poverty, lack of political representation and participation, lack of access to social services, and other human rights violation. ICTs could help address their needs, particularly to communicate with family and friends, seek assistance during emergencies, and send and receive cash.

3. Planet: Protect our Ecosystems for All Societies and Our Children

ICTs have a major role to play in addressing environmental issues, disaster risks and climate change.

ICTs can enhance the monitoring and management of data and information, and improve the efficiency of systems, including early warning systems. ICTs can facilitate multi-sector and multi-stakeholder engagements, including vulnerable and marginalized communities. Moreover, the use of mobiles phones, social media and big data analytics are increasingly being used to tackle complex challenges.

4. Prosperity: Grow a Strong, Inclusive and Transformative Economy

The key to prosperity lies in economic security, which enables access to other social services such as education, health, equality and participation. Economic security is dependent upon access to economic resources. The poor often feel that lack of access to basic income and lack of access to credit

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and financial services are the main reasons for their present conditions—hence, the importance of inclusive finance and microfinance. Financial inclusion has three stages—access, the transaction and post-transaction—in all of which ICTs play an important facilitating role.

- ICTs have enabled access to and delivery of financial services, with the rapid growth in mobile phone uptake resulting in its innovative use to deliver financial services.
- Financial transactions that often entail going to a bank or financial institution to withdraw or deposit money, make payments or apply for loans can be simplified using digital solutions, such as e-wallets, mobile money platforms and payment gateways.
- Digital finance brings more people into the formal economy, improving efficiency, increasing accountability and transparency, reducing tax evasion by enterprises and individuals, and providing vast amounts of financial data on which to base economic decisions, enabling governments to use the information gathered to build an effective database for policymaking.

Financial literacy and education comprise four elements:

- **Financial literacy** – Skills and knowledge to make informed financial decisions;
- **Financial education** – The process of building knowledge, skills and attitudes to become financially literate.
- **Financial capability** – The ability and opportunity to use the knowledge and skills implied in financial literacy; and
- **Digital literacy** – The ability to use ICTs to access and use financial services safely, with awareness of the possible risks and ways to avoid them.

5. *Justice: Promote Safe and Peaceful Societies and Strong Institutions*

Government and Governance
Government consists of a formal superstructure while governance is concerned with outcomes of government functioning.

The purpose of ICT interventions in government is to optimize efficiency while providing citizen-friendly services that encourage greater citizen participation in governance and public affairs. For example, social media has enabled and increased governments' engagement and interaction with citizens.

ICT interventions in government significantly reduce the levels of corruption by making procedures transparent and minimizing opportunities for irregularities in transactions with government personnel (e.g., bribery).

Preservation of Cultural Diversity and Resources
The Tokyo Declaration and the WSIS Agenda for Action were important in the recognition that attention must be given to the preservation of heritage and cultural legacies. Two ways in which

ICTs can be used to preserve and promote cultural heritage and diversity include digitization and distribution.

There are many areas in which ICTs, if effectively utilized, can contribute to the preservation and promotion of cultural identity. These include promotion of rural tourism through ICTs as a way to promote local cultures and improve economic opportunities for local communities.

Moreover, there are a wide variety of available software options that countries can choose from to digitize and distribute their culture products. Web 2.0 applications are examples of such available options.

Peace
ICTs have been used in conflict prevention and management, peace operations, humanitarian relief and disaster assistance, and post-conflict peace-building and reconstruction.

To promote peace, ICTs can be used to help people communicate, view information, make decisions and understand each other better. Multilateral agencies such as the United Nations, private sector institutions such as Reuters, and NGOs such as Youth Action for Change are using ICTs to promote peace.

6. *Partnership: Catalyze Global Solidarity for Sustainable Development*

The SDGs emphasize that partnerships need to focus on mobilizing and sharing knowledge, expertise, technology and financial resources.

Recent initiatives that are seeking to improve the effectiveness of multi-stakeholder partnerships for achieving the SDGs include the following:

- The Partnership Data for SDGs is a United Nations initiative that brings together a range of stakeholders committed to improving the transparency and accountability of multi-stakeholder partnerships and voluntary initiatives in their support to the SDGs. This includes the sharing of good practices and lessons learned on establishing and sustaining multi-stakeholder partnerships, and the review and monitoring of these partnerships
- The Pacific SDGs Roadmap, undertaken by the Pacific Islands Forum Secretariat, aims to provide a more strategic and integrated approach to the implementation of the SDGs at the national and regional levels, including the fostering of south-south cooperation and creation of an enabling environment for establishing partnerships in the region.

Key Issues in the Use of ICTs for Development

Given the complexity of the SDGs, there is a need to explore new models of governance and planning, in which one has to determine exactly where ICTs fit. The following sections discuss the main factors that

determine the success or failure of ICTD programmes and projects

ICTD Policy

ICTD policy requires new systems of planning, management and project implementation characterized by the engagement and active participation of different sectors of the economy and the community. Maximizing the use of ICTs requires an understanding of both its potentials and limitations.

Convergence means more than just technology coming together. It means a merger of many disciplines, in particular the engineering sciences and the social and behavioural sciences. Convergence also means a multi-stakeholder partnership where government can implement favourable policy, regulation, funding and capacity building; the private sector can build infrastructure and invest in services; civil society can work with communities; and communities can own and drive initiatives.

Planning ICTD Interventions

While planning ICTD programmes and projects, a decision must be made as to whether it will be ICT-driven or ICT-supported. The ICT-driven approach is based on the assumption that access to timely and relevant information through ICTs will promote economic growth as it provides opportunities to generate income. The ICT-supported approach first clarifies the development goal that the project seeks to address, works out the information and communication needs, then looks at cost-effective ways of using ICTs to address the goals and needs.

Moreover, ICTD initiatives should be explicit about their development goals and expected outcomes, with clear links to the SDGs. ICTD initiatives should also be demand-driven rather than supply-driven, and the demand should come from the community itself. This implies the need to build partnerships with the community and to foster a sense of ownership by the community.

ICTD initiatives should be sensitive to local conditions and limitations, including those related to infrastructure, access, relevance and language, and they should be designed to last and be sustainable. A strong political commitment to ICTD from the government is required. Such a commitment must be backed by a budgetary allocation that is adequate both in quantity and in the nature of its distribution. Where resources are limited, multi-stakeholder partnerships can lessen the burden of everyone involved.

Technology Issues and Challenges

The following factors should be considered:

- **Reach vs. access** – The reach of any technology is not the same as its access. More than half of the world's mobile phones are in the Asia-Pacific region. But when multiple connections for the same individual are factored in, the penetration rate of mobile phones in South Asia alone is only around 36 per cent.
- **Ownership and control** – Access is determined by patterns of ownership and control. If there is one phone in the family, the question is who can access it? When the beneficiaries of an ICTD project are women, it is important to know if they own and control the chosen technology, and in what ways they have access to it.
- **Technology driven vs. people driven** – Choosing a technology because it is the latest available in the world is often the wrong choice. "New" can either be seen with reference to the "newness of technology" or in the context of "what's new for the given target audience or society", with the latter option being more important.
- **Cost** – This includes the cost of technology development, deployment, delivery and receipt by the beneficiary. Different technologies have different development and deployment costs. In any ICTD project, it is important to examine the relative costs of the technology, because it is often necessary to deliver messages through multiple channels for maximum success.

Content Issues and Challenges

In developing content, key considerations include the following:
- Understanding the target audience.
- Involving the community in creating content to improve relevance, as well as sustainability of the content development effort.
- Involving the target audience in designing and testing the content structure to ensure that it is user-friendly and accessible.
- Encouraging, promoting and facilitating interactivity and feedback and ensure that a mechanism is in place to correct and modify content.
- Putting in place a mechanism for the regular review and update of content.
- Developing a support system for content creation

ICTD Project Evaluation

The factors that spell the difference between success and failure of an ICTD project include clarity of objectives, target audiences, intermediaries, policy and institutional arrangements, capacity building efforts, technology choices and funding models. Specifically, a people-centric rather than ICT-centric approach is critical for ICTD programmes and projects to succeed.

In addition, a successful small-scale initiative requires more than just replication in a different context to succeed. Scaling up an ICTD effort requires wholesale institutional reform and change management. Finally, evaluation is an ongoing process and a very important part of all development projects, including those that have ICTs as part of the project.

ICTs, Sustainable Development and National Development Policy and Planning

Effective use of ICTs to address the SDGs needs action at both the national and subnational levels. Since the goals are complex and require a merging of economic, social and environmental aspects while also ensuring inclusivity and equity, the following is necessary:

- A multistage approach so that the benefits cascade down to the last mile.
- The harmonization of national policies and plans, and engagement with multiple stakeholders.
- The Chief Information Officer (CIO) of the government plays a greater and more proactive role in ICTD policymaking and implementation.
- The CIO's role shifts from merely being a technology officer to being one who is involved in all aspects of national development policy, planning and implementation.