Innovative Big Data Approaches for Capturing and Analyzing Data to Monitor and Achieve the SDGs

UNITED NATIONS
ESCAP
Economic and Social Commission for Asia and the Pacific
East and North-East Asia Office

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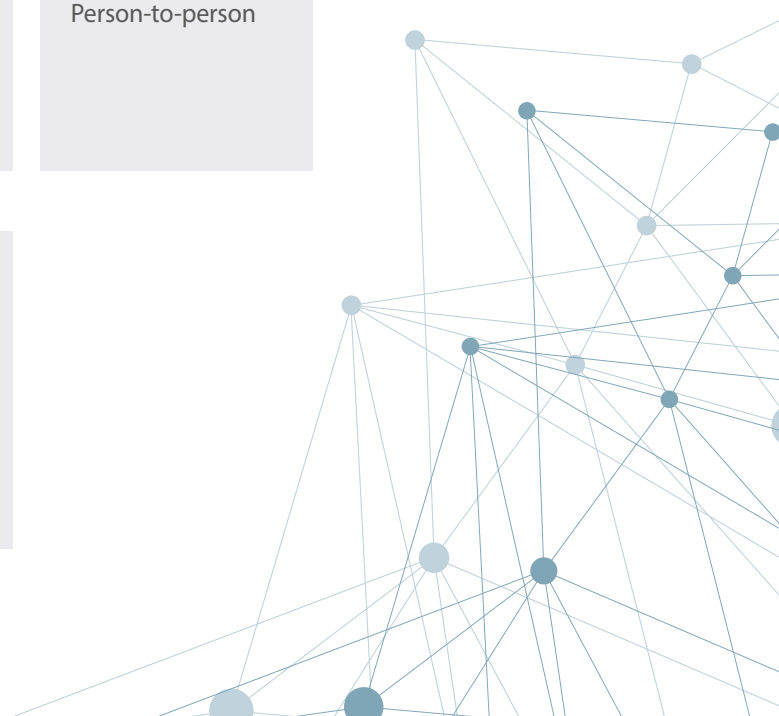
List of Abbreviations

AI	Artificial intelligence
CDR	Call detail record
CSR	Corporate social responsibility
ENEA	East and North East Asia
ESCAP	Economic and Social Commission for Asia and the Pacific
IAEG	Inter-Agency and Expert Group
IoT	Internet of things
MDG	Millennium Development Goal
M2M	Machine-to-machine
M2P	Machine-to-person
P2P	Person-to-person
SDG	Sustainable Development Goal
UAV	Unmanned aerial vehicle



Executive summary

This report showcases around 140 big data approaches to potentially assist traditional statistics methods in capturing and analysing data to support the calculation of SDG indicators and the achievement of SDG targets. The presented approaches also aim to replace costly occasional surveys of traditional statistics with cheaper real-time information. The structure of the report is as follows: First, the SDGs are introduced with a focus on current challenges regarding lacking data as well as methodologies. Then an overview of big data, IoT and AI is given with a focus on categorization, opportunities and challenges. The main section is dedicated to describing, classifying and linking the aforementioned approaches to suitable SDG indicators and targets. Benefits, risks and potential recommendations for pilot projects are discussed per big data category. This is followed by a summary of the key findings, an analysis and the conclusion.

The 2030 Agenda for Sustainable Development for the time period from 2016 until 2030 comprises 17 Sustainable Development Goals (SDGs), subdivided into 169 targets and 232 indicators. In comparison, there were only 8 Millennium Development Goals (MDGs) with 21 targets and 60 indicators for the previous period from 2000 until 2015. Not only do the SDGs cover a much broader range of issues, the SDG indicators are also very different from and more complex than the MDG indicators, thus in many instances challenging for traditional statistics. Therefore, innovative approaches are required. The technological environment has continued to advance in recent years to a stage where it now appears promising to harness big data for both the achievement of SDG targets as well as the calculation of SDG indicators. Many of the new big data are passively emitted and collected as by-products of people's interactions with and uses of digital devices. Data coming from various sources provide unique insights about human behaviour and beliefs, which could be harnessed to increase the quality of life of these people, thereby contributing ultimately to the achievements of the SDGs.

In contrast to MDG data, which were mostly collected and owned by Governments, critical SDG data are produced passively by people, collected by machines and owned by corporations. Under the umbrella of corporate social responsibility, data philanthropy is a win-win opportunity for corporations to cost-efficiently improve their reputation while the UN or other organizations are receiving the data in order to use them. The concept of open data calls for Governments to provide free of charge, up to date, openly licensed and machine readable online data to enable data analysis by NGOs or other stakeholders.

Consequently, bigger quantities of data have come with low-costs and real-time availability, enabling the collection

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