

Strengthening Data Ecosystems for Effective Policymaking and Sustainable Development Goals Delivery

High Level Political Forum on Sustainable Development 2026
Side Event on Digitisation, Statistics, and Artificial Intelligence: A Path Towards Well-Informed Decision-Making
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Introduction

The world faces a combination of challenges that are complex, interconnected and rapidly evolving. Key issues such as energy transitions, climate action, ageing population and economic uncertainty require governments to make timely, coordinated and evidence-based decisions.

At the same time, expectations of the Government have increased. At the micro level of service delivery, citizens expect public services to be responsive, targeted and effective. At the macro level of national planning and governance, policymakers need better information to understand what is happening and evaluate whether policies are effective.

The 2030 Agenda for Sustainable Development, the Pact of the Future, and the Global Digital Compact all recognise the importance of data, digital technologies and international partnerships in addressing global challenges.

This piece discusses three issues:

1

The data challenges facing the monitoring and delivery of Sustainable Development Goals (SDG)

2

The opportunities presented by digitalisation, administrative data, big data and Artificial Intelligence (AI)

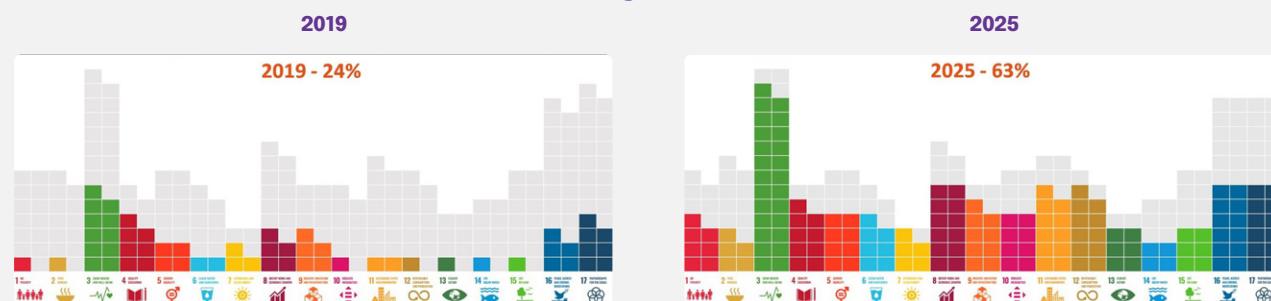
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The transformation of diverse data sources to official statistics, and policy insights for SDG monitoring and decision-making

1. The SDG Data Challenge

The SDGs are ambitious and comprehensive. While countries have made substantial progress in strengthening their statistical systems since the SDGs were conceived in the early 2010s, significant data gaps remain. When Singapore began monitoring the SDGs in 2019, significant data gaps existed. Since then, steady progress has been made in closing these gaps and achieving coverage across more SDG Targets (Chart 1).

Chart 1: SDG Progress in 2019 and 2025



Several challenges are common across countries.

1. Timeliness

Traditional surveys and censuses are essential, but they can be costly and time-consuming. Policymakers often need information faster and more regularly than traditional data collection cycles allow.

2. Granularity

National averages can hide important differences between regions, socio-economic and population groups. In line with the SDG commitment of leaving no one behind, finely disaggregated data are needed to help identify vulnerable groups.

3. Data Fragmentation

Useful data available across government agencies and the private sector often remain undiscovered, disconnected and underutilised.

4. Resource Constraints

National Statistics Offices (NSOs) face increasing demand and expectations while expertise and budgets do not keep pace. Access to technology, AI, and infrastructure require investments that many countries find difficult to support.

2. New Opportunities from Digitalisation, Administrative Data and AI

As 2030 draws near, there is limited time for countries to close the gaps. Fortunately, the rise of big data, digital technologies, and AI presents an unprecedented opportunity.

NSOs today have access to more data than before. In addition to surveys and censuses, there are growing volumes of:



Administrative records



Geospatial and satellite data



Mobile and internet data



Digital and online transaction data

The challenge lies in understanding, acquiring, integrating, and developing the capability to govern and use these data effectively.

Administrative data is one of the most valuable yet underutilised resources available to governments. Such examples include:

1 Education records

2 Health records

3 Business registers

4 Tax data

5 Utility databases

6 Social security systems

Governments need to enable the integration and interoperability of these datasets to develop more timely and detailed indicators, while reducing reporting burdens and costs.

In Singapore, the Public Sector (Governance) Act (PSGA) was introduced in 2018 to harness the wealth of administrative data in government agencies, so that citizens can benefit from the Tell-Us-Once approach. Under the PSGA, the Singapore Department of Statistics (DOS) took on the role of a Trusted Data Intermediary, and was designated as the Trusted Centre for Individual and Business Data (DOS TC) to integrate, use and share administrative data. DOS is well-positioned with the wealth of experience and knowledge in data management built up over the decades. This expanded DOS's role and relevance, positioning itself as the trusted first stop for users to obtain data and data services quickly and securely.

AI presents unprecedented opportunities. With the right approach and resourcing, AI can help NSOs throughout the data production chain. For example, web scraping applications have evolved to capture both structured and unstructured data for statistical production. In 2022, a Digital Transformation Unit was established in DOS to explore the potential of AI and Machine Learning (ML) in statistical processes within controlled sandboxes. As the value of this work became evident, embedding these capabilities across the entire data value chain becomes essential. This led to the formation of the Data Products and Innovation Division in 2026, with a mandate to develop and scale digital and AI capabilities.

AI can now extract information from images and text, process large volumes of structured and unstructured data, help in coding, improve data quality checks, perform outlier detection, analyse trends and write reports, and overall accelerate the production of statistical outputs — functioning like junior statisticians.

At the same time, these technologies must be approached responsibly. Risks include data privacy and confidentiality concerns, misinformation and hallucination, cybersecurity vulnerabilities, and the loss of professional knowledge through over-reliance on AI systems.

As producers of official statistics, NSOs need to set the standards and methods, understand the processes and concepts, and ensure the quality of their outputs. Trust remains the foundation of any data ecosystem. Without it, data cannot effectively support policymaking or public confidence.

3. Building Strong National Data Ecosystems: Transforming Diverse Data Sources into Official Statistics

Use Case on Supporting SDG 3 – Good Health and Well-Being



Diverse new data sources can help close the data gap.

In Singapore, the SDG Indicator 3.2.1 (Under-5 mortality rate) is computed from the life tables derived using official death registrations. This provides a more complete and accurate measure of mortality than survey reporting.

Similarly, other NSOs and government agencies can combine vital registration data that universally captures key life events such as births, deaths, marriages and divorces, with hospital records, census data, and administrative population and dwelling registers. This integration proved valuable during the COVID-19 pandemic.

Where data gaps exist, AI and ML models are increasingly capable of integrating and creating network graphs with diverse data sources, incorporating socio-economic and geographical characteristics of the population to enable a more holistic picture of the healthcare landscape. As countries place greater emphasis on delivering quality healthcare, harnessing these capabilities allows governments to:

Better identify emerging healthcare challenges particularly in poorer neighbourhoods

Assess the effectiveness of healthcare policies and resource allocation

Deliver more targeted and personalised healthcare interventions for individuals and communities

New data sources and technology are enabling more robust and expanded monitoring of the SDGs. Mobile data can capture travel patterns, satellite imaging can identify land use patterns, and utilities data can help to determine population and dwelling coverage. The future of SDG monitoring will be dependent on the robustness and interoperability of national data ecosystems instead of a single dataset or institution. Four key elements are important:



Governance

Clear legal frameworks, data stewardship arrangements and responsible data-sharing mechanisms are essential.

NSOs are well positioned to take on a larger data stewardship role, given their experience as primary users of data for statistical production and in large database management.



Interoperability

Data must be able to move securely across systems through unique identifiers, common standards, consistent metadata and streamlined IT architectures.

NSOs need to partner their technology counterparts to modernise both the statistical agency and administrative data agencies to harness the full potential of these data.



Investments in Capabilities

Governments need to invest in statistical skills, data science expertise, digital literacy and AI capabilities.

NSOs may increasingly need to cultivate a new breed of data-stats engineers – professionals who can bridge the worlds of statistical rigour and modern data engineering.



Trust

Citizens must have confidence that their data are protected and responsibly used. NSOs need to be transparent in their methodology and in how data are used.

Additionally, NSOs must ensure that the data are produced in a timely manner, of good quality, and responsive to the needs of users to remain as a trusted source of data.

Conclusion

The potential benefits of a strong data ecosystem are within reach. By combining traditional data sources with administrative data, big data, geospatial information, digital technologies and responsible AI, NSOs can significantly improve the data available for policymaking and SDG monitoring and delivery.

To realise this potential, governments should invest in the right capabilities and ensure that innovation is accompanied by strong governance, robust safeguards and public trust. Concurrently, NSOs need to be innovative in their use of AI and digital tools, transparent in their methods and concepts, and comprehensive in the use of data.

Harnessing the wealth of existing data, transforming them to fit-for-purpose data and indicators, and ensuring their reusability requires a Whole-of-Government approach. This approach will result in better decisions, stronger institutions, and better outcomes for people.