Leveraging Data and Digital Technologies and Building Effective Institutions for a Resilient Future in SIDS

Background Note for the Interactive Dialogue 4, 4th International Conference on Small Island Developing States “Charting the Course Toward Resilient Prosperity”

1. Introduction

Nineteen United Nations agencies and entities, co-led by ITU, UN DESA, and UNESCO\(^1\), developed this Background Note to inform the discussions at the Fourth Interactive Dialogue of the 4\(^{th}\) International Conference on Small Island Developing States (SIDS4). The Note sheds light on the challenges, opportunities, and pathways for action in implementing the Antigua and Barbuda Agenda. It also provides policy recommendations on promoting sound policymaking\(^2\) and a resilient future in SIDS by examining how to strengthen institutional capacities and leverage data, information, and digital technologies. Governments and partners can benefit from these recommendations to accelerate sustainable development in SIDS.

2. Key Challenges

A SIDS face multifaceted challenges hindering their ability to promote sound and evidence-based policymaking, ranging from weak governance and institutional coordination to limited adoption of digital technologies, lack of quality data, and infrastructure vulnerabilities. Addressing these challenges is essential to accelerating progress on the Sustainable Development Goals (SDGs) and tackling SIDS’ unique social, economic, and environmental vulnerabilities.

Governance and Institutional Coordination

---

\(^1\) ECLAC, ESCAP, IAEA, IFAD, ITC, OHRLLS, MCO Fiji, MCO Micronesia, RCO Papua New Guinea, UNDP, UNDRR, UNFAO, UNFPA, UNITAR, WHO and WMO, in addition to the Co-Leads ITU, UN DESA and UNESCO.

\(^2\) Sound policymaking is one of the [11 principles of effective governance for sustainable development](https://un.org/development/desa/dgh/pp/gov/policy/principles.html) which were drafted by the United Nations Committee of Experts on Public Administration and adopted by the United Nations Economic and Social Council in 2018. The strategies to implement sound policymaking include strategic planning and foresight, regulatory policy impact, promotion of coherent policymaking, strengthening national statistical systems, monitoring and evaluation systems, science-policy interface, risk management frameworks, and data sharing.
Coherent national development plans and policies are critical for the holistic implementation of the 2030 Agenda for Sustainable Development, the SAMOA Pathway, the Sendai Framework, the Addis Ababa Action Agenda, and the Paris Agreement. The SAMOA Pathway recognizes the importance of building effective and inclusive institutions to ensure ownership and participation of people, including the most vulnerable, in policy making. Indeed, Goal 16 is foundational to the achievement of the 2030 Agenda. However, weak governance and inadequate institutional coordination in SIDS diminish their capacity to promote policy coherence and achieve the SDGs. This results in failing to address negative impacts across policies and capitalize on synergies across economic, social, and environmental policy areas. Institutional arrangements for coordination are essential to overcome policy siloes involving fragmentation, compartmentalization, and sometimes competition between government institutions. Such coordination still needs to be promoted. For example, in only 14% of SIDS, the Ministry of Information Communication and Technology (ICT) and the government agency in charge of digital transformation collaborate. Similarly, in only about a third of SIDS, the Ministry of ICT collaborates with the Ministries of Economy, Education, and the Environment.

The disconnect between policy development and budgetary considerations in many SIDS further exacerbates governments' inability to promote effective policies. This disconnect can result in financial decisions not aligning with a long-term vision, particularly given constraints like reduced fiscal space, the necessity for recurrent disaster recovery efforts, high debts, limited access to Official Development Assistance and concessional grants, and a growing informal economy.

Human Resources Capacities and Public Participation

A lack of public sector capacities in systems thinking, strategic foresight, and innovation also hampers coherent, evidence-based policymaking and resilience in SIDS. The previous Programmes of Action for SIDS have recognized that the challenges with public sector human resources include brain drain, skill shortages, and the lack of sustained investment in capacity-building programmes. In an uncertain global economy and rapidly changing technology environment, the lack of such capacities puts SIDS at a disadvantage and prevents them from effectively addressing their unique socio-economic and environmental challenges.

Moreover, weak public participation in many SIDS hinders inclusive policymaking. Policies lacking inclusivity and responsiveness, especially to the needs of people living in vulnerable situations, perpetuate structural disparities in various areas, such as health outcomes, socio-economic advancement, and quality employment opportunities for the local population.

---

5 Ibid
6 Crystal Drakes et al., Global to small island; a cross-scale foresight scenario exercise, Journal on Foresight, 2020.
Infrastructure and Connectivity

Structural and infrastructure vulnerabilities, particularly in energy and digital connectivity, hinder SIDS’ integration into the rapidly developing global digital economy and undermine policymaking. Persistent divides across social, urban, rural, and gender dimensions exacerbate disparities in accessing and benefiting from digital technologies, services, and the Internet.

Universal and meaningful connectivity— the possibility for everyone to enjoy a safe, satisfying, enriching, productive and online experience at an affordable cost— is the new policy imperative to harness connectivity’s potential and enable digital transformation.

According to ITU, Internet use in SIDS has grown faster than the global growth rate since the Third International Conference on SIDS (SIDS3) held in 2014; between 2014 and 2023, the annual growth rate in SIDS was 8.4 percent compared to 6.7 percent. In 2023, 67% of the population in SIDS used the Internet; however, entry-level fixed broadband prices exceeded global averages by 25%, although significant disparities exist among SIDS.

A stark contrast exists between urban and rural connectivity in SIDS. Virtually every person in urban areas enjoyed broadband coverage (3G or greater), compared with only 62% among rural populations, a gap of 37 percentage points. The share of the population covered by a 4G signal has reached 88 % in urban areas, more than twice the penetration in rural areas (43%). This disparity reveals a critical need for infrastructure development and investment in these underserved areas. Digital connectivity is a critical enabler of the transformation of national economies. Digital services such as e-commerce can drive progress toward developing digital economies and achieving the SDGs. SIDS are, however, a minor player in ICT goods trade, accounting for less than 1 per cent of global trade (excluding Singapore). The value of ICT goods exports from SIDS amounted to 374 million USD. SIDS continue to rely on ICT goods imports and such dependency call for SIDS to consider policies to ensure that devices and telecommunications are affordable, to help them achieve universal and meaningful connectivity.

Data and information infrastructure, skills, and practices

The limited adoption of digital technologies and digital skills in SIDS impacts the availability of quality, timely, and current data and information and the interoperability among government agencies and systems. SIDS face, therefore, significant challenges navigating the digital transformation landscape to support coherent, evidence-based, and risk-informed policymaking and enhance their digital readiness.

---


11 Ibid

12 The present analysis is based on the premise that data goes beyond statistics and numeric data. It includes quantitative and qualitative information, statistics, and research findings.

Suboptimal data and information management practices across sectors further impede evidence-based policymaking influenced by challenges such as geographical dispersion, small populations, ongoing migration of skilled individuals, limited infrastructure resources, weak institutional capacity, and lack of economies of scale. These factors contribute to inadequate data and information collection, storage, and analysis, and poor monitoring, dissemination, management, and data utilization across the data lifecycle.

Moreover, data and information systems are often fragmented, not sufficiently localized, digitized, and standardized, while unclear definitions and methodologies constrain quality, reliability, and comparability across SIDS and regions. As data originates from diverse stakeholders, challenges arise with data consistency, coherence, ownership, and intellectual property. Addressing such challenges requires robust data governance that adheres to international standards and ethical principles to ensure interoperability, transparency, traceability, and accountability.

In addition, many national statistical systems inadequately cover private sector data and knowledge contributions. Therefore, more inclusive statistical processes for policy-relevant indicators are needed. The World Bank Statistical Performance Indicators framework highlights that SIDS perform below the world average, especially in data infrastructure, underscoring the urgent need for investment in data infrastructure and statistical capabilities as part of their development strategies. High broadband costs (often nearly five times higher than in developed countries) exacerbate data accessibility issues.

The absence of traceable, holistic, disaggregated data in the different sectors hinders the policymaking process by impeding targeted interventions for populations living in vulnerable situations. For example, the UN E-Government Survey reveals that only 12 percent of SIDS have gender-disaggregated data. SIDS also often lack longitudinal or trend data, limiting their ability to progress towards addressing vulnerabilities (as within the context of the Multidimensional Vulnerability Index, MVI) or tracking SDG progress.

The SAMOA Pathway and the 2030 Agenda highlighted the imperative of enhancing data availability and accessibility, including creating geospatial data platforms and tapping into diverse data sources, such as civil society, the private sector, and people in vulnerable situations. Despite progress, many SIDS still need more essential data and information to monitor progress on key international development frameworks. The latter hinders governments’ capacity to engage in loss and damage exercises, as highlighted in the MVI initiative.

Inclusive Digital Transformation Policies

Both telecommunication and digital policies are pivotal to the digital transformation of economies and societies. SIDS need to make decisive progress in all key areas across legal frameworks, national policies, and strategies. In 2023, SIDS scored higher for enabling policy and regulatory environment for the telecommunication/ICT sector than for specific instruments for digital markets,

---

although as a group SIDS remain consistently below world averages\textsuperscript{17}. In addition, SIDS are characterized by the highest variance in E-Government Development Index (EGDI) values. The eight Least Developed Countries (LDCs) SIDS have a lower average EGDI value (0.3498) than the other SIDS (0.5814).

In many SIDS, disjointed legal, ethical, regulatory, policy, and governance frameworks, especially regarding emerging technologies, create uncertainty, hamper digital markets, and impede the responsible development of new technologies and the meaningful digital inclusion of all stakeholders, including populations in vulnerable situations. While more than half of SIDS have a national digital strategy and over 60 percent a cybersecurity law, data protection laws are in force only in one in four SIDS, and national digital identity systems have been implemented in one in five countries in this group. Only four SIDS have adopted innovation policies, and only two have AI policies\textsuperscript{18}.

3. Opportunities and Solutions

A Promoting sound policymaking in SIDS for a resilient and prosperous future requires an integrated approach that addresses strengthening governance capacities and institutions, data and information systems, and promoting digital transformation.

The UN entities who developed the present Note identified five enablers to promote the design and implementation of sound and evidence-based policymaking for a resilient future in SIDS. SIDS can explore this framework to foster the whole-of-government and whole-of-society transformation needed to implement the SDGs.

\textit{Enabler 1: Bolstering institutional capacities for whole-of-government and whole-society approaches}

Enhancing institutional coordination at all levels of government, including by establishing inter-ministerial committees at the highest level of government, is needed to foster coherent and evidence-based policymaking and promote resilience in SIDS. Integrating key sector and multi-sector policies, such as on trade, technology, innovation, and entrepreneurship, into national development plans is crucial for achieving the SDGs. Governments must also align these plans with internationally agreed-upon objectives like the SAMOA Pathway, the Sendai Framework, the Addis Ababa Agenda for Action, and the international decades for SIDS. The latter requires internal policy reform, process improvement, and new or strengthened institutional coordination arrangements at all levels of government to align annual planning and resource allocation with national development plans and the SDGs. This approach can ensure that budgets are not solely reliant on historical forecasts but also resilient to unforeseen future disruptions.

Enhancing institutional and human resources capacities in systems thinking and strategic foresight can strengthen inter-ministerial collaboration and sound policymaking. Strategic planning and

\textsuperscript{17} According to ICT Regulatory Tracker and G5 Benchmark, see ITU, \textit{Measuring digital development, Facts and Figures: Focus on Small Island Developing States}, 2024 edition

foresight can also support anticipatory governance and help design and implement long-term policies to combat climate change and manage future risks and crises.

Moreover, strengthening institutional capacities for participation in SIDS is critical to promoting inclusive policymaking. Raising awareness about proposed policies and education campaigns, engaging local communities through face-to-face and online forums, and enhancing feedback mechanisms, can increase public trust, inform policies, and improve policy outcomes. Such approaches can ensure that policies and services target the needs of all citizens, including under-represented groups and people living in vulnerable situations.

**Enabler 2: Fit-for-future mindsets**

Promoting agile public institutions can allow a faster response to evolving digital and development challenges, fostering a culture of experimentation and learning. Strong political commitment is vital for a dynamic and resilient public sector to lead the transformation of national, regional, and global economies and societies. Moreover, empowering government officials with the skills to navigate agile planning and budgeting is crucial in shaping future development opportunities. Successful institutional reforms also require effective change management, recognizing the political nature of such reforms, and establishing strategies to adopt anticipatory governance approaches in policy and decision-making and promote a mindset shift toward strategic planning and foresight.

**Enabler 3: Promoting effective data and information management systems for evidence-based and risk-informed policymaking at all levels of government**

Evidence-based and risk-informed policymaking is also dependent upon bolstering national data and information management systems, which are vital for inclusive and effective development efforts. This requires adopting comprehensive national programmes of action alongside monitoring frameworks and standardized systems. Strengthening national research and statistical capacities is also vital. Mutually reinforcing, such actions provide renewed opportunities for SIDS to enhance data and information production, dissemination, and use, aligned with ethical data usage principles, including on human-centered Artificial Intelligence (AI).

Promoting collaborative cross-sectoral governance approaches facilitated by digital means and tools can enable effective coordination among ministries and stakeholders, including the private sector and civil society. Digital transformation of the public sector requires comprehensive legal, policy, and governmental frameworks aligned with modernizing data and information management systems.

Leveraging digital technology, statistics capacities, and sciences for data and information collection and analysis from novel sources such as big data and AI improves accuracy, reduces time-consuming tasks, and provides real-time access to data, overcoming human and institutional capacity constraints.

**Enabler 4: Leveraging digital transformation for resilient economies and inclusive societies**
To promote multidimensional resilience and lay the foundation for diversified local economies, SIDS must double on investment in universal and meaningful digital connectivity, considering innovative solutions that combine fiber, mobile cellular, and new satellite technologies to overcome geographical challenges. Digital connectivity also underpins climate change adaptation strategies and early warning systems for anticipating climate and other emergencies.

Reinforcing institutional arrangements for digital government transformation is also essential. The latter involves reshaping internal and public governance mechanisms. Sound policymaking is essential for promoting integrated e-government services and implementing digital identity management systems. Developing legal and regulatory frameworks for data privacy and cybersecurity is critical. Establishing robust legal, regulatory, and policy frameworks on data governance and digital services ensures effective digital transformation while upholding privacy, security, and human rights.

SIDS can nurture local technology development by prioritizing Science, Technology, and Innovation (STI) policies as building inclusive digital innovation ecosystems can foster entrepreneurship and empower local talent. Developing digital public goods and collaborating on open-source platforms can ensure widespread access to essential technologies and turn them into social and economic opportunities.

Investing in digital skills programs for government officials and strengthening data and information systems is critical to leveraging digital technologies and enabling evidence-based policymaking. Such programs can empower public servants and stakeholders with strategic foresight, data analysis, digital literacy, cybersecurity, and innovation management, skills needed to design catalytic development initiatives.

**Enabler 5: Leveraging existing channels and forging new partnerships**

Strengthening and expanding existing opportunities will be paramount in accelerating development in SIDS in the next decade. Importantly, SIDS needs to foster South-South and Triangular Cooperation (SSTC) as well as SIDS-SIDS exchanges, promoting knowledge sharing and collaboration.

In addition, collaboration between governments and all stakeholders is pivotal for advancing the sustainable development agenda in SIDS. Multi-stakeholder initiatives, including regional collaborations within SIDS, can be leveraged to pool resources and expertise. Public-Private Partnerships (PPPs) and blended finance models can attract diverse funding sources. Further exploring diversified financing mechanisms for innovative partnerships, such as green or blue and social impact bonds, is crucial to securing funding for institutional capacity building and digital initiatives.

Enhancing partnerships among universities and training education institutions to advance scientific research, data, and information management capacities (human and institutional), international cooperation, and peer-to-peer learning is critical for evidence-based policymaking and designing impactful ecosystem initiatives. PPPs for capacity development and digital transformation can accelerate the achievement of policy goals.

The UN has many ongoing initiatives in data and information management support that range from undertaking demographic surveys, developing global geospatial frameworks, and establishing data
and information systems and platforms, standards, and norms. It spearheads programmes, funds, networks, hubs, databases, portals, and platforms, leveraging a mix of technologies. The UN also generates and disseminates a large quantity of quality data and expertise globally. Tapping into repositories of data and information across the social, economic, environmental, and legislative domains can accelerate data and information availability while reducing costs. At the regional or global levels, the SIDS Global Data Hub\textsuperscript{19} is expected to tap into the rich capacity of the UN, building synergies with existing programmes, reducing duplication, and tackling existing gaps.

4. Recommendations

Broad Governments, the private sector, civil society, ecosystem stakeholders, and the international community need to take decisive and collaborative action to accelerate SIDS progress on the six transitions\textsuperscript{20}. The following recommendations provide a roadmap for strengthening national capabilities for effective and inclusive public institutions, data and information, digital technologies, and innovation to support coherent and evidence-based policymaking to amplify the impact of policy and ecosystem initiatives towards achieving the SDGs in SIDS.

*Enabler 1: Bolster institutional capacities for whole-of-government and whole-of-society approaches by promoting:*

1. **Stronger Institutional Coordination and Engagement:** Strengthen institutional arrangements for coordination, adopt agile and anticipatory governance approaches, and enhance engagement with non-state actors through whole-of-government and whole-of-society approaches to ensure coordination, innovation, and engagement in policymaking and implementation to advance SDG progress.

2. **Future-Oriented Policymaking:** Adopt strategic foresight, evidence-based and risk-informed policymaking to enhance institutional capacities to identify emerging policy issues, weigh policy options. Integrate systems thinking into strategic planning, program design, and budgeting. Mainstream foresight in policy and decision-making to balancing short-term policy agendas with long-term development perspectives and enhance the management of public finances.

*Enabler 2: Promote fit-for-future mindsets by encouraging:*

3. **Innovative and Foresight Mindsets:** Promote mindset changes and foster a culture of innovation, learning and strategic foresight in the public and private sectors to gain a new perspective on pathways to achieving SDGs.

\textsuperscript{19} The establishment of a SIDS Centre of Excellence in Antigua and Barbuda will be launched at the SIDS4, which is included in the draft Antigua and Barbuda Agenda 2024-2034.

\textsuperscript{20} *Six Transitions: Investment Pathways to Deliver the SDGs,* https://unsdg.un.org/resources/six-transitions-investment-pathways-deliver-sdgs
Enabler 3: Promote effective data and information management systems for evidence-based and risk-informed policymaking at all levels of government by promoting:

4. **Effective Data and Information Governance**: Ensure sound data and information governance and strengthen management systems across the data lifecycle to improve data quality and their use for policy formulation, programme planning, and budget allocation.

5. **Data-driven Decision-making**: Mainstream big data, citizen science, internal organizational research, content management, business intelligence systems, and geographical information systems for evidence-based decision-making at all levels of government.

6. **Sound National Data Frameworks**: Ensure the development of data frameworks for key national indicators aligned with national plans and budget cycles, regional and global SDG monitoring frameworks, and the UN Fundamental Principles of Official Statistics. Adopt sound approaches for the generation of high-quality longitudinal and disaggregated data that is readily accessible to stakeholders.

Enabler 4: Leverage digital transformation for resilient economies and inclusive societies through:

7. **Human-centered Policy and Regulatory Environment for Digital Transformation**: Strengthen national legal, policy, and governance frameworks across sectors to create a human-centered enabling policy and regulatory environment for digital and emerging technologies, responsible innovation, and entrepreneurship. Adopt sustainable, inclusive, rights-based, ethically sound approaches to digital transformation through sound policies for ICT accessibility, cybersecurity, data governance, and privacy. Develop frameworks for transparency and the ethical use of data and emerging technologies (e.g., AI, deep learning, big data) and engage businesses in incorporating user protections and accessibility in all digital products and initiatives.

8. **Universal and Meaningful Connectivity**: Scale up joint investment and innovative financing mechanisms for resilient energy and digital infrastructure through PPPs and innovative financing instruments, such as green and social impact bonds and blended finance models for data and digital infrastructure build-out and operation. Ensure that connectivity policies and programmes effectively target vulnerable groups. Integrate interoperable digital elements in sectoral policies, such as education, health, trade, and tourism. Implement overarching digital transformation strategies leveraging a mix of technologies.

9. **Effective Digital Government Transformation**: Prioritize strategic investments in secure and scalable digital government capabilities, including safe and reliable information management systems, data networks, cloud computing capabilities. Create frameworks for digital public goods to amplify the positive impact of digital technologies and the Internet on development through open-source software, open data models, and standards. Facilitate technology transfer on mutually agreed-upon terms to enhance national data and digital capabilities.

Enabler 5: Leveraging existing channels and forging new partnerships through:

10. **Effective Capacity Development Support and Collaboration**:
i. **One UN:** Enhance coordination among UN agencies supporting SIDS in all development paths.

ii. **Institutional capacity building:** Strengthen ‘train the trainer’ initiatives to promote institutional and human resources capacities in all parts of government, including through partnerships with universities and public administration training institutes.

iii. **Science, Technology and Innovation (STI):** Fast-track STI investment and capacity building, as well as establish innovation hubs and acceleration centers to support local entrepreneurship to support the development of local innovation ecosystems, e.g., through ecosystem initiatives, sandboxes for emerging technologies, climate-sensing technologies, e-commerce, digital financial inclusion, digital health, and education.

iv. **Education:** Step up capacity development initiatives to transform education systems leveraging digital technologies and solutions. Enhance STEM+ programmes\(^{21}\) and develop new learning paths to prepare youth for the jobs of the digital economy. Create locally relevant digital content and content in local languages. Implement digital skills initiatives targeting diverse demographics, including youth, women, persons with disabilities, older persons, indigenous peoples, and rural populations.

v. **Cooperation and knowledge sharing:** Enhance SIDS participation in regional and global cooperation mechanisms and foster SSTC and SIDS-SIDS cooperation. Revitalize partnerships with academia, particularly the University Consortium for SIDS, to integrate data, digital, and emerging technologies into research and development agendas and boost scientific outcomes in SIDS. Ensure that the proposed SIDS Global Data HUB builds upon existing platforms, networks, and hubs to use resources effectively, leverage diverse data sources and technologies, and reduce duplication\(^{22}\).

5. **Questions**

1. In your experience, which of the challenges highlighted in the Background Note have been the most difficult to overcome?

2. Building on your insights into the challenges SIDS face in promoting coherent and evidence-based policymaking, which opportunities and enablers outlined here can drive positive change in SIDS? Which of these opportunities are you committed to explore further in the short and long-term run?

3. Within the specific context of your country, how do you plan to advance the recommendations formulated by 19 UN bodies in this Background Note?

---

\(^{21}\) STEM+ stands for Science, Technology, Engineering, and Mathematics. The term is used widely to refer to science and technology education and workforce preparedness.

\(^{22}\) A mapping of relevant UN resources is available here to support further efforts.
4. What are the most critical and promising areas in which SIDS expect the UN system’s support related to harnessing data, digital transformation, and effective institutions for sound policymaking?