POLICYBRIEF

Lessons and Recommendations for Implementing Digital Government in Small Island States

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Key Recommendations

Small Island States (SIS) face multiple challenges with respect to technology use in the public sector. This Policy Brief draws on the research and UNU-EGOV's work with governments to outline a set of policy recommendations including:

• Establish governance and collaborative mechanisms.

• Advocate for the benefits of innovation and change by emphasizing efficiency gains, improved service delivery, and cost savings.

• Contentiously review and update the legal and regulatory framework to minimise administrative burdens.

• Pool resources, collaborate with others and use open source and digital public infrastructure.

• Explore alternative funding sources and collaborative procurement arrangements to finance technological solutions.

• Use digital government to accelerate and ensure sustainable development.

• Invest in training and capacity-building programs to develop the skills and expertise of local talent to overcome capacity and skills challenges.

1. Digital government and small islands

Neither the application nor the academic study of technology in Small Island States (SIS) are new but remains comparatively rare. Globally, many SIS are digitizing their governments. However, digital government in countries with limited resources, such as SIS, is challenging. Several United Nations E-Government Readiness Surveys emphasized the importance of not leaving behind countries in special circumstances, such as small island developing states (SIDS), landlocked developing countries (LLDCs), and least developed countries (LDCs) in their effort to build and sustain digital government systems.

Existing SIS studies have largely focused on the availability (i.e. supply), of infrastructure, online content and applications. Less common are studies the actual use and development processes. Often such studies have been general or related to digital transformation in specific regions such as the Caribbean region on corruption, governance*, implementation challenges; the Pacific region with respect to specific issues such as relationships with civil society, legal aspects, or; internet connectivity in Indian Ocean Islands. Situation analyses of e.g. English-speaking Caribbean, or comparisons of e.g. Singapore and Jamaica or Jamaica and Trinidad & Tobago are also found. More often, individual SIS have been in focus including Jamaica, Cabo Verde*, Maldives, Mauritius, São Tomé & Príncipe, but also micro-dependencies

such as the Faroe Islands and Madeira have been studied.[1] Only the bi-annual UNDESA E-Government Readiness Survey have consistently been looking at small island states as a destringed group of countries in a systematic and comparative way, although only in terms of the availability of certain categories and types of online content, such as information, transactional services, and data.

1.1. The small island state context

Economically, SIS suffer from the "concentration phenomenon" and are generally dependent on a narrow range of products (e.g. agricultural and fish products), light manufacturing (e.g. textiles) or services (e.g. tourism, banking, data processing). SIS have no or little influence on the terms of trade, leaving them particularly vulnerable to erratic market fluctuations, external political events, weather or agricultural yields which cannot be predicted or pre-empted.

With limited resources available, compared to other countries, SIS are even more reliant on exports and favourable international trade conditions, not only for the provision of food and consumer goods but also raw materials. Limited human and financial resources mean that SIS must source special know-how and investments from overseas. The risk of becoming overly reliant on a few individuals, firms or international trade relationships is high and the economy can be especially vulnerable to the disruption of one of those few relationships. Financially, many of these states receive considerable largesse from abroad in the form of remittances or aid.

1.2. Defining the small island state

The definition of SIS vary and no globally agreed definition exist but it is generally acknowledge that it is defined by the relative size of its land area and population, often necessitating distinct political and economic arrangements due to its size constraints.[2] Of the 193 UN member states, 37 (19,7%) are classified as SIDS. Their aggregate population is 65 million and they represent less than 1% of the world's population.[3] There is considerably variety in the size, population, wealth, and capacities of SIDS. For instance, Saint Kitts & Nevis have some 55,000 inhabitants while Haiti, Cuba, and the Dominican Republic have populations exceeding 10 million each. Of the 37 SIDS, 14 have a geographical landmass below 1000 km[2] and/or a population of fewer than 100 000 inhabitants and may be classified micro-states, while six have

populations of some 3 million or more. With this in mind, and to be inclusive, this policy brief focus on all small island states and autonomous dependencies, regardless of their size, population or relative level of wealth. The term "micro and small island states" (SIS) is therefore applied, rather than the "small island developing states" (SIDS), used by the UN E-Government Surveys.[4] Where relevant distinction is made between micro and small island states.

1.3. Contribution

Analysing any topic requires detailed and often country and region-specific knowledge to gage the experiences of technology use in the public sector, i.e. digital government in SIS. Like any country, digitizing SIS presents both opportunities and challenges for policy and decision makers within the public sector ecosystem, including politicians, civil servants, IT vendors, end-users such as citizens and businesses – and their representatives. Thus this policy brief details the challenges SIS face and conclude with a set of policy recommendations to enable SIS decision-makers to seize the opportunities and cope with these challenges successfully.

2. Research | Findings

2.1. The key questions

This policy brief uses academic research, reports of international organizations, such as the UN E-Government Surveys, and experience gained from UNU-EGOV consulting projects to answer the following three interrelated questions: What is the potential of digital government in SIS? What factors limit digital government development in SIS? What can the political and administrative decision-makers in SIS do to develop digital government?

2.2. What is the potential public sector technology use in SIS?

Digital government applications can benefit SIS in several ways. Some of these benefits, such as using technology and the digital transformation of the public sector as an economic driver or developing medium/long term plans, are applicable to both emerging economies and developed countries; some others apply only to SIS. A point also emphasised in by the Small Island Digital States: How Digital Can Catalyse SIDS Development report.

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[1] For details, see e.g. Yildiz and Sagsan, 2021.
[2] Merriam-Webster, 2024; Journal of International Affairs (JIA)), 2024.
[3] OECD, 2023.
[4] Note, the use of the term "state" within this publication is intended solely for descriptive purposes and does not reflect the authors' or their organizations' support or non-support for any entity's official statehood as recognized or defined by the United Nations. This publication and its authors remain neutral

regarding the political status and recognition of any territories or entities mentioned herein. Any references to "state" should not be interpreted as an endorsement of any political or legal standing within the international community.

First, increased technology use within the public sector may boost island economies, if combined with administrative burden reduction, innovation, and entrepreneurship. This not only helps diversify the economy but also decrease transaction costs for government, individuals, businesses, investors, tourists etc. For instance, Singapore, a small but wealthy island state, used its first-mover advantage to work towards its vision of being an "intelligent island" as early as the 1990s. Jamaica combines the roll-out of infrastructure with support programmes for micro and small enterprise through various capacity building programmes to help them become more digital and capture opportunities of online commerce. While both Iceland and the Faroe Islands are focusing on ease of being a citizen especially those in remote areas or the some 10-20% of the population studying, working and living abroad. To enable both access to services but also increased efficiency of the public sector developing key enablers like electronic IDs and signature in partnership with the banking sector. By encouraging home-grown IT advisory and technical solutions and the aim has been to facilitate high-skill job creation locally and repatriate skilled labour.

Second, in the medium- and long-term, the infrastructure and institutional ecosystem can be augmented and improved with technology. Technology is an enabler of process, service, product, and organisational innovation, and thus of government modernization and reform initiatives. Cost efficiency and productivity improvements are often the key driver of outcomes, with accessibility, usability, transparency, anti-corruption, and trust being other effectiveness impacts sought. Iceland, the Åland Islands and Faroe Islands are using open source and digital public infrastructure components where possible, for example for cost-efficient, secure interoperable data distribution, the latter in combination with a low-code engine for both a single-one stop portal, online services and certificates (incl. app-based drivers licence). SIS collaborating with other countries or economic communities seemingly progress better. Both Cyprus, Iceland and Malta benefit not only from financial support but also from the collaboration with other EU member states, but have indirect support for the development of the strategic direction, legal and regulatory frameworks though alignment with the EU. In this context, the UN E-Government Surveys refer to digital government as an accelerator and multiplier of sustainable and socio-economic development in SIS.

Third, technology and digital government can be valuable tools when dealing with environmental problems, disasters and pandemics, affecting many SIS – a challenge expected to increase as the effects of global warming become more severe. This can be achieved both by ensuring adequate warning (e.g. storm, tsunami warnings), but also to ensure business continuity and knowledge-based decision-making during and after such events, as well as through the use of IoT and data analytics to identify solutions for alternative urban planning and construction, choice of crops etc.

Fourth, digital government can help decrease the adverse effect of the brain drain challenge faced by many SIS. Increased automation and data analytics help increase the productivity and lower the need for human resources within the public sector. It may also lead to more and better job opportunities for high skilled personnel to be employed by the government and the national IT sector. This helps reduce the temptation to emigrate. The small scale in terms of geographical area and population, makes SIS good candidates to become testbeds as living labs for testing new ideas and technologies as seen in the Seychelles, Madeira, Curaçao or Bonair, and may be explored as a potential competitive advantage.

Fifth, many SIS have large diasporas and expatriate populations. Online service delivery and digital back offices provide convenient solutions for the diaspora living or working abroad as well as expatriate groups when they need to find information or use service during their interactions with the SIS governments. In fact, technology may also help increased democratic participation though online and internet- based voting technologies as e.g. piloted in the Åland Islands, act as an e-participation tool to enhance overall citizen involvement in the decision making in northern Cyprus or a combination of analogue and digital participation and consultation as seen in Iceland and its capital Reykjavik.

2.3. What are the factors that limit development and use of digital government in SIS?

Research on SIS outlines a set of challenges with respect to the development digital government, including those SIS with high levels of technology penetration, open economies and high GDPs per capita. Some of these factors are more specific to some SIS than others. In fact, many challenges

are applicable to almost all SIS, as well as many low-income countries. Other challenges are specific to only a small number, as SIS is not a homogeneous group. Still as the relative population and economic size of an SIS these challenges tend to amplify, and are therefore particularly burdensome for micro-states due to their relative lack of capacities and economics of scale.

The challenges most often identified includes:

• Limited political and administrative willingness to innovate and a high level of resistance to change due to a lack of resources or a fear of shrinking existing job-opportunities in the public sector.

• Inadequate legal and regulatory frameworks, strategy and action plans, as a result of often limited human and financial capacities.

• Limited economics of scale, especially a relatively high cost of developing technological solutions for these very small countries to develop, purchase and operate, such as renewing software licenses, and maintaining and replacing hardware as necessary.

• Data limitations, including non-digitised data, missing or incomplete data, poor data quality, inadequate security, privacy, and exchange infrastructure limiting the opportunities for digitisation, re-use of data for increased efficiency and effectiveness.

• Limited administrative, fiscal, and technical capacities including infrastructure often associated with a lack of general job opportunities for specialised skills and associated brain drain of highly qualified islanders, particularly in micro-states and SIS with single industry dominance.

The often-remote location, or isolated, geographical location of many SIS, amplifies the challenges identified, not least with respect to capacities of various types. These challenges are also often further aggravated by the frequency and severity of natural disasters, thus significantly increasing the vulnerability of SIS ICT infrastructures to damage and disruption. Again the smaller the relative size in terms of territory, population and the economy amplify the impact.

3. Recommendations: Lessons learned

Although SIS face a wide array of challenges, digital government may successfully resolve a number of them.

Decision-makers in SIS can contribute to solving these challenges by applying the following set of policy recommendations, e.g. in partnership with the private sector, technology providers, local and global NGOs, and international organisations. Similarly, SIS governments can be a key driver of digital transformation but in terms of its relative the size and centrality of the public sector in many countries, but define the legislation and policies that shape an enabling environment, and are also crucial partners in digital – a point also emphasised by a 2024 UNDP report. However, SIS should be careful to adapt these solutions to their specific contexts, both in terms of realistic expectation to the value creation but also to establish sustainable funding mechanisms, to maximize the possibility of success in the medium and long-term.

Establish governance and collaborative mechanisms.
First, the relative size of SIS may allow for more efficient and effective stakeholder consultation, faster decision-making processes and interesting partnerships between the public sector and civil society. Second, SIS may capture real transformation by creatively rethinking the way the public sector operates. This should go beyond process optimisation and continues improvement but actively embrace legal and regulatory simplification, process, service and organisational innovation. Resistance to change may be overcome through close consultation and proactive communication of national objectives, the rationale and benefits envisioned. Third, policies to secure progress, commitment and participation of all stakeholders is key. Consultations with relevant stakeholders must aim to secure the commitment of political and administrative stakeholders as well as have the buy-in by the private sector and society at large. This requires establishing more inclusive governance mechanisms that open new feedback channels to all stakeholders. Clear goals and strategies and a well-designed coordinating agency are needed as well. The UN Secretary General's Roadmap for Digital Cooperation can help SIS to develop, implement, and monitor digital government planning and implementation. Here the relative size of SIS may be a facilitating factors as key stakeholders are often know and part of wither professional or personal networks.

Advocate for the benefits of innovation and change
by both emphasizing and demonstrating efficiency gains, improved service delivery, and cost savings. Proofs-of-concept, pilots and examples from other micro- and small states have proven to be impactful, but also in kick-starting the digital transformation and minimising the risk inappropriate technical solutions and failure. Combine this with training and capacity-building programs for government officials to familiarize them with innovative solutions and their benefits. The aim is to foster a culture of innovation

through incentives, recognition programs, and leadership support. This should be underpinned by a cross-governmental governance model fostering collaboration, coordination and engage stakeholders in the decision-making process to build consensus and address concerns. Key is to identify and prioritise holistic policies and initiatives which maximise value creation and which address the public sector and overall socio-economic challenges. Especially critical is to convince leaders to advocate for a digital transformation agenda by showing the full spectrum of political gains and societal benefits. Digital government projects that reverse brain drain, increase economic growth and/or address environmental challenges should be given priority.

Contentiously review and update the legal and regulatory framework to minimise administrative burdens. Regulatory impact assessment should be done to identify gaps and barriers to innovation, but also to make the government digitisation-ready, and does not hinder automation or the application of new technologies or practices. The adoption of legal frameworks and standards from abroad may be beneficial but only if they are simple, effective, and aligned with global and open approaches as this will requires less national adaption and maintenance. Regional cooperation and knowledge exchange will help leverage resources and expertise. Similar technical assistance and support to may be requested from international partners (e.g. EU and donor community).

Pool resources, collaborate with others and use open source and digital public infrastructure where possible. This will help minimise acquisition and maintenance costs, but also increase technical agility over time. Investments in scalable technologies with long-term cost-saving potential should be prioritised. Shared infrastructure is essential e.g. cloud, content management systems, software as a service (SaaS) and low code engines, data as a service (DaaS), data distribution, as well as once-only and single sources of truth principles of data storage and reuse. Thinking creatively of how to get the most value for money by combining open source with tried and test solutions from the private sector is a way to overcome the complexity and cost of bespoke solutions. This nonetheless need to be linked to business cases and benefit realisation models to ensure long-term financing mechanisms to support ongoing maintenance and replacement of technology infrastructure but also to leverage economies of scale in technology procurement, development, and maintenance. Here use of public clouds may be financial attractive, especially in the smallest of SIS

but will likely still require capacities for some tailoring and maintenance or adjusting the legal framework with respect to data sovereignty.

Explore alternative funding sources and collaborative procurement arrangements such as grants, loans, and public-private partnerships to finance technological solutions, especially for identity management, data distribution and payment infrastructure. Partnerships with IT providers to become testbeds for new ideas and technologies may both lower procurement costs but also benefit the local innovation ecosystem. Collaborative procurement arrangements both domestically (e.g. for shared services and products), neighbouring countries or regional organizations will help achieve economies of scale. Seeking funding and technical support from international donors, development banks, and other sources to offset the high costs of technology adoption is encouraged especially in combination with the application of open source and digital public infrastructure from e.g. UNDP or GovStack.

Use digital government to accelerate and ensure sustainable development. The aim should be to establish a whole-of-government approach with a digitisation-ready legal and regulatory framework and a solid service production and delivery ecosystem. An efficient and effective public sector will help release resources for other activities such as education, healthcare, but also support entrepreneurship and the diversification of the economic activities. Technology should also be used to support public engagement and participation processes, lower the risk of mismanagement and corruption, and most notably, against the devastating effects of climate change. In case of the lack of an effective global response, SIS should develop their own capacity to deal with this problem, partly facilitated by technology.

Invest in training and capacity-building programs to develop the skills and expertise of local talent to overcome capacity and skills challenges. Mentorship and knowledge-sharing programs to transfer skills and good practices within the local workforce is key as is re- and upskilling staff as job profiles and requirements change within the public sector. Partnerships with the research community and private sector entities to tap into external expertise and resources may be combined with incentives to attract and retain qualified professionals and prevent brain drain.

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