Digital Agriculture and Fisheries Policies in the Commonwealth

An Analysis

The Commonwealth

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Contents

Figures and Tables

Figures

Tables

Acronyms and Abbreviations

AI	artificial intelligence
CARICOM	Caribbean Community
CCA	Commonwealth Connectivity Agenda
CTA	Technical Centre for Agricultural and Rural Cooperation
FAO	Food and Agriculture Organization (of the UN)
GDP	gross domestic product
ICT	information and communication technology
ICT4Ag	ICT for agriculture
IFAD	International Fund for Agricultural Development
IoT	Internet of Things
IP	intellectual property
ITU	International Telecommunication Union
LDCs	least developed countries
M&E	monitoring and evaluation
MSMEs	micro, small and medium-sized enterprises
SIDS	small island developing states
TONRD	Trade, Oceans and Natural Resources Directorate
UNCTAD	UN Conference on Trade and Development

Acknowledgements

Part 1:
Analysis of Digital Agriculture and Fisheries Policies in the Commonwealth

Chapter 1: Introduction and Context

The Commonwealth is a voluntary association of 54[1] independent and equal sovereign states and home to 2.5 billion people. The Commonwealth Secretariat is an independent organisation working with the member countries and assists them together to promote prosperity, democracy and peace, amplify the voice of small states, and protect the environment.

The Trade, Oceans and Natural Resources (TONR) Directorate is one of the three Directorates of the Commonwealth Secretariat. The Directorate brings together work in Trade Policy, Competitiveness, Hub and Spokes, and Oceans and Natural Resources. TONR is responsible for delivering on two strategic outcomes:

- Effective policy mechanisms for increased trade, increased access to trade, employment and business growth; and

- Sustainable development of marine, other natural resources, including blue economies.

A significant part of the Directorate's work is of a consultancy and advisory nature, delivered through a combination of in-house and external expertise.

At the 2018 Commonwealth Heads of Government Meeting, the Commonwealth adopted the **Declaration on the Commonwealth Connectivity Agenda for Trade and Investment (CCA).** The CCA is a major new member-state led initiative to grow intra-Commonwealth trade and investment to US$2 trillion by 2030 and promote expanded investment to support global growth, create employment, and promote knowledge exchange among Commonwealth members.

The CCA focuses on five clusters of work: **physical connectivity,** reducing physical barriers to trade; **digital connectivity,** enabling all members to take advantage of the opportunities presented by digital trade; **regulatory connectivity,** reducing regulatory barriers to trade; **business-to-business connectivity,** focusing on investment and public-private dialogue; and **supply-side connectivity** encouraging the participation of all members in global value chains. Throughout these areas, inclusive and sustainable trade, addressing

women's economic empowerment, and youth unemployment are being mainstreamed.

Each cluster acts as a platform, bringing together regulators/implementing agencies and users from across Commonwealth member countries, as well as knowledge partners such as other international organisations to collaborate on hard and soft connectivity, as well as undertake capacity building.

1.1 The digital repository[2]

The Commonwealth Secretariat has created an online repository of digital policies and regulations (https://tradecca.thecommonwealth.org/) that covers all Commonwealth countries and contains information on individual policies and regulations in specific countries. The repository is intended to provide a frame of reference for Commonwealth members wanting to devise and implement appropriate policies to support digital transformation, create an enabling environment for digital trade, and harness the benefits of digital transformation. To maximise its value, the platform is accessible to policy-makers and regulators in Commonwealth member countries, as well as other stakeholders and the wider public in the Commonwealth and beyond.

Each entry includes, among others:

- the name of the policy/regulation
- the year it was adopted
- whether or not it is available online
- the way data are defined
- the focus of the document

- target beneficiaries/ sector
- key elements of the policy/regulation
- whether the policy/ regulation mirrors any other and, if so, which countries have similar policies/ regulations

At present, the digital repository contains approximately 212 records of policies and regulations, which are in existence across all 54 member countries. The information has been validated up to 2019/2020, and it is integral to ensure that the **records are up to date and factor in the promulgation of new regulations and amendments as new policies and national strategies that fall within the ambit of the identified categories contained within the digital repository.** However, the current version of the repository lacks the presence of digital policies and regulations relating to the agricultural and fisheries sectors, which is an essential component for expansion.

1.2 Digitalisation within the agricultural and fisheries sectors
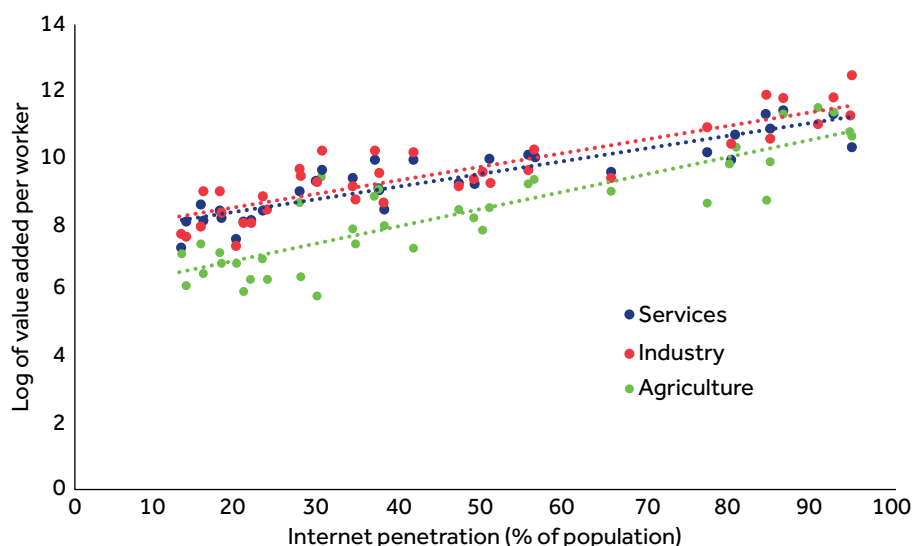
Case: Digital extension in Gujarat, India (Precision Agriculture for Development 2019)

The introduction of a low-cost mobile phone-based agricultural extension system among 1,200 farmers in the state of Gujarat in India increased farmers' marginal net income by US$100 a year per farmer and increased yields by 8.6 per cent for cotton.

Within the agricultural and fisheries sectors, digitalisation is seen as a 'game changer' for transforming the sectors in low- and middle-income countries, including those across the Commonwealth. For example, digitisation is linked to increased productivity for multiple sectors, including agriculture (Commonwealth Secretariat 2021) (see Figure 1.1).

Digitalisation for agriculture and fisheries can be defined to consist of three pillars, namely **digital innovations, data infrastructure and business development services, which develop in the context of a broader enabling environments for digitalisation**. The enabling environment under which this assignment falls consists of the 'rules of the game', including digital and non-digital factors; and agricultural/fisheries and non-agricultural/fisheries factors. This may include infrastructure and access, **policies and strategies,** knowledge and networking, literacy and skills, business ecosystem, etc. Digital agricultural policies, for example, do not just replace analogue technologies used in traditional agricultural policy. Rather, digitalisation offers new options for agricultural policy, including novel designs to address challenges more effectively (Ehlers et al. 2021). Specifically, the focus of the assignment is on **identifying and documenting the digital policies, strategies or regulations within the agricultural and fisheries sectors that are enabling digitalisation within the sectors.**

Figure 1.1. Digitisation and sectoral productivity in the Commonwealth, 2017 (Commonwealth Secretariat 2021, p22)

Digital innovations (technologies and services) for agriculture and fisheries continue to multiply in the absence of sound sector policies and strategies to guide their development and deployment. While the lack of these policies may not necessarily be an obstacle to the current growth, there may still be critical issues relating to investment readiness, long-term sustainability and large-scale adoption of viable solutions, when the rules of the game are lacking. Well-developed national and/or regional digital agricultural/fisheries policies and strategies may outline procedures for the development of digital platforms, data infrastructure, the business ecosystem, approaches to implementation, financing and investment models, operations of private sector service providers, enforceable or advisory guidelines by governments for users and implementers, and a code of conduct for all actors, among others.

The World Summits on the Information Society (WSIS) 2003 and 2005 called for the development of information and communication technology (ICT) strategies for all sectors, referred to as 'e-strategies'. In 2016, the Food and Agriculture Organization (FAO) and International Telecommunication Union (ITU), in collaboration with the Technical Centre for Agricultural and Rural Cooperation (CTA), developed a ***National e-Agriculture Strategy Guide*** (FAO and ITU 2016). The guide argued that the development of a national e-agriculture strategy is only the first step towards realising the transformative potential of ICTs in agriculture. It maintains that the strategy must be implemented and, most importantly, be reviewed periodically to keep up with changing demands, emerging goals and new technologies. Within the agricultural and fisheries sectors, national e-strategies are still lacking or not as comprehensive as they should be.

1.3 Purpose, scope and objectives

This research will seek to understand the current state of the enabling environment for digitalisation in the agriculture and fisheries sectors and identify steps for developing new strategies or updating the existing strategies to support digitalisation across the sectors.

- In this context, this report identifies and documents the digital policies, strategies or regulations within the agricultural and fisheries sectors[3] that are enabling digitalisation within the sectors.

- The research seeks to underpin the evidence-based development of national recommendations for next steps based on the findings for each country.

The report further contributes to the ongoing digital repository of policies, strategies, regulations etc. in support of trade and investment across the Commonwealth.

Notes

1   The number of Commonwealth members has changed from 54 to 56 since the research was carried out with the acceptance of Gabon and Togo into the bloc.

2   See The Commonwealth Connectivity Agenda, Repository of Digital Policies and Regulations, available at: https://tradecca. thecommonwealth.org/

3   Note: This includes national or regional **ICTs for agriculture or ICTs for fisheries** policies, strategies, regulations; or **e-agriculture or e-fisheries** policies, strategies, regulations; or **digital agriculture or digital fisheries** policies, strategies, regulations.

Chapter 2: A Note on Methods

Identification of documents for review

The FAOLEX database was used as a starting point for the identification of polices, strategies and regulations pertaining to digitalisation in the agriculture and fisheries sectors.

FAOLEX is a comprehensive and up-to-date legislative and policy database, one of the world's largest online repositories of national laws, regulations and policies on food, agriculture and natural resources management, comprising 92,898 documents worldwide in more than 30 different languages. FAOLEX provides direct access to the abstracts and indexing information about each text, as well as to the full text of the legislation and policies contained in the database.

Longlisting: The first level of analysis sought to identify any Commonwealth policies, strategies and regulations within the FAOLEX with a particular focus on **digitalisation and data development.** This resulted in the identification of more than 500 documents pertaining to data and/or digitalisation across Commonwealth regions and territories. In addition, a keyword search was performed online for other relevant policies, strategies, laws and regulations using the keywords 'e-agriculture' and 'e-fisheries', 'digital agriculture' and 'digital fisheries', and 'ICT4Ag'. This was undertaken for every country to identify any additional relevant policy documents or legislations.

Shortlisting: The first level of analysis identified a wide range of policy documents, ranging from national visioning documents (for example, national development strategies) to gender and youth policies. Documents in the dataset were

therefore subjected to a rigorous assessment for relevance and kept if they met one of the following criteria:

Documents are included in the existing Commonwealth repository.[1]	✓
Documents contribute to the over-arching ICT framework of a country. This might include, for example, national ICT policies, data protection legislation, electronic transaction legislation, cyber security policies etc.	✓
Documents govern the agriculture and fisheries sectors. This might include, for instance, national agricultural policies, national fisheries policies or national aquaculture policies.	✓

This resulted in a database of 342 documents,[2] including 195 from the existing repository and 147 new documents.

Analysis 1: To understand how countries are addressing digitalisation for the agricultural and fisheries sectors, documents were submitted to a detailed keyword search, with highlighted sections read for context. This level of analysis sought to cross-reference whether and how:

i.   documents for digitalisation/ICTs referenced the agriculture and/or fisheries sectors; and

ii.   sectoral (fisheries/agriculture) documents addressed digitalisation or the application of ICTs.

The results of this analysis are presented in the country Profiles which make up Part 2 of this report. In addition, this analysis allowed for documents to be mapped using keyword searches.

Analysis 2: The database was subsequently analysed using pivot tables in Excel, using various levels of disaggregation, including regional analyses and analysis of small island developing states (SIDS) and least developed countries (LDCs) specifically.

The Commonwealth
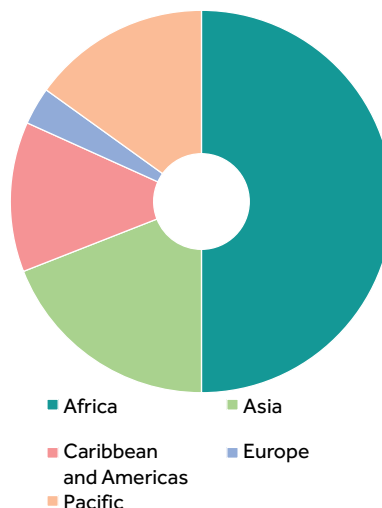
Overview of Findings

This section provides an overview of high-level pan-Commonwealth findings, before describing and analysing findings disaggregated by region, SIDS and LDCs.

2.1 Overview of all documents

This review identified a total of 342 documents covering all 54 Commonwealth member countries. The review includes documents from all countries and all regions of the Commonwealth. The biggest proportion (about 40%) of documents relate to Commonwealth countries in Africa. Most of the documents that exhibited a dual focus on digitalisation and agriculture/fisheries were also from African countries. In part, this may be a result of the disproportionate number of African documents; however, this was true both as a percentage of the total number of documents with a dual focus, and as a percentage of the region's documents (see Table 2.1 and Figure 2.1). The total number of documents per country is presented in Appendix 1.

Most of the documents identified were policies (248 documents, 73% of the total). Of the remainder, 85 documents were regulations, 7

Figure 2.1. Regional breakdown of the total number of documents with a dual focus on digitalisation and agriculture/fisheries

■ Africa ■ Asia
■ Caribbean and Americas ■ Europe
■ Pacific

were strategies and plans, and 2 were agendas or programmes. Of the policies, about half addressed *both* digitalisation *and* agriculture/fisheries. This proportion was lower for regulations, where just 1 per cent of documents addressed both. This finding likely relates to the concise and targeted nature of legislative documents, compared to policies, wherein there may be more scope to address broader contextual issues.

The majority of the documents identified (about 70%) were classified as digitalisation documents.

Table 2.1. Number of documents by Commonwealth region

Region	Total number of documents	Documents with a dual focus on digitalisation and agriculture/fisheries	
		Count	Percentage of the *region's* documents
	134	64	47%
	65	24	37%
	75	16	21%
	16	4	25%
	51	19	38%

Table 2.2. Classification of documents by sector or focus

	Domain	Count	Percentage of all documents identified (N=342)
	Agriculture	52	15%
	Agriculture and fisheries	23	7%
	Fisheries	23	7%
	Data/digitalisation	234	68%
	Data/digitalisation *and* agriculture	6	1%
	Other[3]	4	2%
	Total	**342**	**100%**

About 30 per cent of documents were sectoral, relating to agriculture, fisheries or both (see Table 2.2).

About 30 per cent of digitalisation documents addressed *both* digitalisation *and* agriculture/fisheries. By contrast, about half of agriculture and fisheries sectoral documents addressed both themes. This suggests that the degree to which digitalisation has been mainstreamed into agriculture and fisheries sector frameworks is higher than the degree to which agriculture and fisheries are mainstreamed into digitalisation frameworks. It should be noted that agriculture was better represented than fisheries at all levels of this review. More specifically, there were relatively few fisheries sector-specific documents, and fisheries was referenced less frequently than agriculture in digitalisation documents.

In total, the review identified 128 documents that referred to *both* digitalisation *and* agriculture and/or fisheries. This meant that nearly 40 per cent of the documents identified by this review addressed both. However, the nature of these references varied, with few references addressing both themes in a substantive way. For example, some digitalisation documents did note that agriculture was a priority sector for the country but provided no further elaboration as to how the policy document would address digitalisation in the agricultural sector. Conversely, agriculture sector documents did reference aspects of digitalisation or the use of ICTs but provided little detail as to how these might be developed further. For example, the Tonga Agriculture Sector Plan (TASP) 2016–2020 notes

that relevant agro-meteorological information and communication services will be developed using mobile ICTs, but does not expand as to what these technologies might be or how they might be used to develop the services in question. Overall, the review identifies only six 'standalone' digitalisation or ICT documents for agriculture. This review found none for fisheries.

The sections below provide a more detailed overview and findings of this review. These findings are disaggregated by sector or focus area (i.e., digitalisation or agriculture/fisheries) and by region. In addition, the SIDS and the LDCs have been provided with their own separate analysis.

2.2 Commonwealth digitalisation frameworks

The number of documents pertaining to digitalisation in Commonwealth countries has increased steadily since the 1990s, with 118 documents dated since 2015 (see Figure 2.2).

This review identified 234 digitalisation documents, such as national ICT policies or data regulations. All but one Commonwealth member country had some form of digitalisation policy and/or legal framework in place (see Table 2.3). The average number of digitalisation documents per country was four. The number of digitalisation documents per country ranged from 0 to 13. Mauritius and Singapore had the largest number of digitalisation-specific documents (13 and 10, respectively). By contrast, this review identified no digitalisation documents for Maldives.

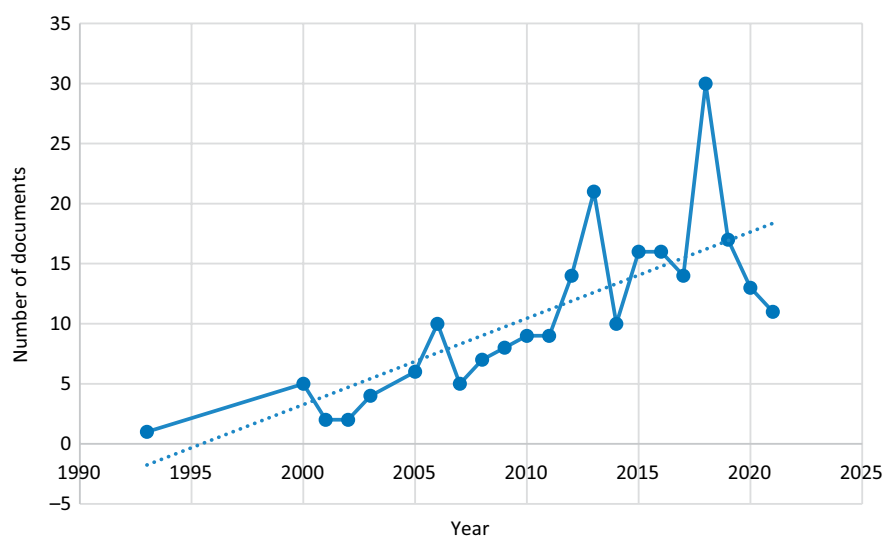## Figure 2.2. Number of digitalisation documents by year

Table 2.3. Number of digitalisation documents per country

Country	Number of documents	Country	Number of documents
Mauritius	13	Nigeria	4
Singapore	10	Pakistan	4
Bangladesh	8	Samoa	4
Malawi	8	Vanuatu	4
India	7	Barbados	3
Jamaica	7	Eswatini	3
South Africa	7	Ghana	3
United Kingdom	7	Grenada	3
Zambia	7	Kenya	3
Australia	6	Lesotho	3
Bahamas, The	6	Malta	3
Botswana	6	Mozambique	3
Brunei Darussalam	6	Rwanda	3
Malaysia	6	Saint Lucia	3
St Vincent and the Grenadines	6	Sri Lanka	3
Antigua and Barbuda	5	Trinidad and Tobago	3
Belize	5	Uganda	3
Canada	5	Dominica	2
Gambia, The	5	Fiji	2
Guyana	5	Nauru	2
Namibia	5	St Kitts and Nevis	2
Papua New Guinea	5	Seychelles	1
United Republic of Tanzania	5	Sierra Leone	1
Cameroon	4	Solomon Islands	1
Cyprus	4	Tonga	1
Kiribati	4	Tuvalu	1
New Zealand	4	Maldives	0

These documents provide the overarching framework for digitalisation in Commonwealth countries. As such, they are relevant to digitalisation in the agricultural and fisheries sectors. However, only 70 documents (29%) referenced the agriculture and/or fisheries sectors. Even in cases where documents did reference agriculture and/or fisheries, the documents generally only had a tangential focus on these sectors. This suggests that **there is substantial scope to strengthen the focus on both agriculture and fisheries in existing digitalisation frameworks.** This recommendation is particularly relevant for the fisheries sector, which is less well represented in these frameworks.

2.3 Commonwealth agriculture and fisheries

A total of 104 documents were found in the agriculture and/or fisheries sectors. These documents covered about 83 per cent of the Commonwealth membership. On average, countries had two documents pertaining to agriculture and/or fisheries, although the number of documents per country ranged from zero to nine. Bangladesh and Kenya had the biggest number of agriculture and/or fisheries-specific documents (nine and eight, respectively).

Table 2.4. Number of agriculture and fisheries sector documents by country

Country	Number of documents	Country	Number of documents
Bangladesh	9	Antigua and Barbuda	1
Kenya	8	Barbados	1
United Republic of Tanzania	5	Cameroon	1
Australia	4	Grenada	1
Ghana	4	Guyana	1
India	4	Malaysia	1
Jamaica	4	Maldives	1
Uganda	4	Malta	1
Rwanda	4	Mauritius	1
Namibia	3	Mozambique	1
South Africa	3	Nauru	1
Tonga	3	New Zealand	1
Papua New Guinea	3	Saint Lucia	1
Belize	2	Seychelles	1
Eswatini	2	Trinidad and Tobago	1
Fiji	2	Tuvalu	1
Gambia, The	2	United Kingdom	1
Kiribati	2	Zambia	1
Malawi	2	Botswana	0
Nigeria	2	Brunei Darussalam	0
Pakistan	2	Canada	0
Bahamas	2	Cyprus	0
St Kitts and Nevis	2	Dominica	0
St Vincent and the Grenadines	2	Lesotho	0
Sierra Leone	2	Samoa	0
Sri Lanka	2	Singapore	0
Vanuatu	2	Solomon Islands	0

These documents provide the governance framework for the primary production sectors, namely agriculture and fisheries. Digitalisation can be mainstreamed into these frameworks in order to promote and enable digitalisation in these sectors. At present, 55 documents reference digitalisation or ICTs. This means that about half of the sectoral documents were identified as referencing *both* digitalisation *and* agriculture/fisheries. This suggests that digitalisation in the agriculture and fisheries sectors has been embedded across several different policy documents. However, there is scope to further mainstream digitalisation into agricultural/fisheries policy frameworks. This is particularly true for the fisheries sector, as only four fisheries documents (17%) reference digitalisation (compared to 72% of agricultural sector documents).

2.4 Standalone digital agriculture frameworks

There were **just six examples of standalone documents** (national ICTs for agriculture/fisheries strategies, or national e-agriculture/fisheries strategies, or national digital agriculture/fisheries strategies). These examples were all found in the agricultural sector.

These policy documents are presented below:

	Digital Agriculture Strategy Victoria 2018 Australia The 2018 Digital Agriculture Strategy Victoria outlines the Victorian Government's plan to help Victorian farmers harness digital technologies to build a more efficient, sustainable and productive agriculture sector in Victoria. The centrepiece is a $27 million commitment to support Victorian farmers to adopt digital technologies, including the $12 million On-farm Internet of Things (IoT) Trial.
	Farm Data Code 2020 Edition 1 Australia Developed by the National Farmers Federation, the Australian Farm Data Code seeks to promote digital adoption in the farm sector, by ensuring farmers have confidence in how their data is collected, used and shared.
	Agritech Industry Transformation Plan 2020 New Zealand The Agritech Industry Transformation Plan 2020 refers to manufacturing, biotech and digital-based technology companies that are creating products, services, Intellectual Property (IP) and value chain solutions for the agriculture, aquaculture and fishing sectors, among others.
	Papua New Guinea E-agriculture Strategy (2017–2023) Papua New Guinea The Papua New Guinea E-Agriculture Strategy seeks to transform the agricultural sector by innovative information and communication technologies.
	eTransforming Agriculture in Rwanda 2016–2020 Rwanda The National ICT4Ag Strategy 2016–2020 recognises the importance of better co-ordination and appropriate solutions regarding the use of ICTs for sustainable agriculture, and provides frameworks to support this.
	Sri Lanka E-agriculture Strategy 2016 Sri Lanka The Sri Lanka E-agriculture Strategy 2016 promotes e-solutions to transform agriculture for national prosperity. It lays down a roadmap by which ICT developments can significantly contribute towards the achievement of the country's agricultural vision and development objectives.

2.5 Digitalisation in the agriculture and fisheries sectors
Pillars of digitalisation[4]

Digitalisation for agriculture and fisheries can be defined to consist of 'three pillars (Table 2.5)', namely **digital innovations, data infrastructure and business development services, which develop in the context of the broader enabling environments for digitalisation**.

Table 2.5. Three pillars of digitalisation of agriculture and fisheries

Digital innovations[5]
Of the 342 documents identified, 127 documents (37%) referenced digital innovations. Such mentions were proportionately more common in digitalisation documents, where 50 per cent of all documents referenced digital innovations. By contrast, just 9 per cent of agriculture and fisheries sectoral documents referenced digital innovations.
The nature of such references varied; some documents mentioned the term 'digital' in the context of innovation, growth or development, but there was no further elaboration on how such digital innovation might be supported. For example, the Bahamian Connect your e-Business Strategy separately mentioned 'digital' and 'innovation' but did not explicate these linkages. By contrast, Papua New Guinea's e-Agriculture Strategy noted the transition to electronic communications as being supported by innovations in infrastructure and networking, software, mobile technology and smart devices, thus allowing improved management systems and instant access (p27).

Data infrastructure[6]
Overall, 174 documents (51% of the total) referred to data infrastructure. Fifty-eight (58) per cent (136 documents) of digitalisation documents referenced data infrastructure. This proportion was lower for the primary production sectors, where 36 per cent (37 documents) of documents governing the agriculture and fisheries sectors addressed data infrastructure.
These references varied in depth. In many cases, the document mentioned data. In some cases, such references were linked to data or intelligence frameworks, networks, infrastructures etc. Papua New Guinea's e-Agriculture Strategy addressed information systems and intelligence networks in some detail. By contrast, the Bahamian Connect your e-Business Strategy mentioned the 'security, interoperability and interconnection of information systems' but did not elaborate what such systems might look like.

Business development services[7]
Of the 342 documents identified, 204 (60%) referenced business development services. This proportion was lower for digitalisation documents (50%) and higher for agriculture/fisheries documents (83%). This difference likely reflects the importance of business development to the primary production sectors. There is scope to strengthen the focus on *digital* business development services in these sectoral documents.
The word 'business' was referenced in most of the documents in this category, but the degree to which the document addressed business development, planning or growth was very variable. The Bahamian Connect your e-Business Strategy was targeted at supporting e-business. By contrast, Papua New Guinea's e-Agriculture Strategy mentioned the need to 'encourage and promote e-commerce to the export business community', including through a 'community data centre', for example, but did not specifically outline how such services would be developed.

Cross-cutting themes

The analysis undertook to assess commonalities across these policy and legislative documents. A number of key themes were identified that were reflected across numerous documents (Table 2.6). These included poverty eradication, environmental sustainability, inclusion efforts and rural development.

Table 2.6. Commonalities across policy and legislative documents

	Poverty eradication[8]
	Digitalisation and digital inclusion has been posited to be an enabler for poverty reduction (Banga et al. 2020). Digitalisation in the agriculture or fisheries sectors can be particularly important for rural poverty reduction.
	Fifty-five (55) documents (16% of all documents) referenced poverty eradication. This proportion was substantially higher for agriculture/fisheries documents, 37 per cent of which referenced poverty eradication. By contrast, just 6 per cent of digitalisation documents referenced poverty eradication.
	Environmental sustainability[9]
	The Langkawi Declaration of 1989 enshrines the Commonwealth commitment to achieving sustainable economic development through collective and national action, while confronting critical environmental problems. Digitalisation is posited to have the potential to reduce environmental impacts, such as by optimising supply chains and reducing energy consumption. However, there is a need for a nuanced and holistic sustainable approach to digitalisation to ensure that benefits are harnessed, and potential negative impacts are minimised (Niehoff 2022; Cioban and Cioban 2022). This further calls for the requisite policy and legislative frameworks to govern sustainable digitalisation. However, just 31 per cent of digitalisation documents addressed aspects of environmental sustainability. This proportion was higher for sectoral (agriculture/fisheries) documents, 65 per cent of which referenced environmental sustainability. Overall, 42 per cent of all the documents identified by this review referenced environmental sustainability.
	Inclusion efforts[10]
	The use of digital technologies to enhance efficiency or production, processing and trade can have many benefits for profitability. However, if digitalisation processes are not inclusive, this can also have unintended consequences, with potentially harmful implications (McCampbell et al. 2021). As such, it is important that policy and legal frameworks governing digitalisation consider patterns of inclusion and exclusion.
	Just 12 per cent of all documents referred to efforts aimed at including women or youth, or the importance of indigenous knowledge and inclusion. This proportion was higher for the sectoral documents, where 17 per cent of documents mentioned this theme. By contrast, just 9 per cent of digitalisation documents were found to reference inclusion efforts, despite the potential impact that digital inclusion can have with regards to empowering women, youth and indigenous peoples.
	Rural development[11]
	It is envisaged that digitalisation and information technologies can drive a smart rural transformation (Lekhanya 2018). As such, there is a need for governance frameworks that seek to leverage and guide these processes to promote positive rural development outcomes.
	Forty (40) per cent of sectoral (agriculture/fisheries) documents referenced rural development. By contrast, just 12 per cent of digitalisation documents referenced rural development. This suggests that there is scope for member countries to consider the potential opportunities that digitalisation and ICTs offer for rural development, including, but not only, in the agriculture and fisheries sectors.

2.6 Commonwealth regional overview

Africa

LITERATURE REVIEW

Digitalisation and agriculture technologies are already having a significant impact in parts of Africa (Krishnan et al. 2019; Madichie and Hinson 2022; Boloh and Cartmell-Thorp 2019). For example, digitalisation for agriculture (D4Ag) has been presented as key to supporting and accelerating agricultural transformation (Tsan et al. 2019) envisioned by the African Union in the 2014 Malabo Declaration on Accelerated Agricultural Growth and Transformation for Shared Prosperity and Improved Livelihoods. The digital agriculture ecosystem in Africa involves hundreds of start-ups and projects that work toward innovative and sustainable solutions. However, government policies have not always kept pace (Tossou et al. 2020). Existing government policies mainly address the areas of infrastructure development, digital finance and access to credit, and data protection. Moreover, countries with a dedicated ICT for agriculture strategy are scarce. Country-specific progress can be found in the 2022 FAO and ITU report on the *Status of digital agriculture in 47 sub-Saharan African countries*. The use of digital technologies also applies to enhancing sustainable use of fisheries and aquaculture. However, there appears to be a dearth of literature assessing the state of digitalisation in the fisheries sector in Commonwealth countries in Africa.

POLICY AND LEGISLATIVE REVIEW

This review assessed a total of 134 documents from Commonwealth member countries in Africa, with African documents constituting about 40 per cent of all documents analysed. Of these 134, about one-third (45 documents) were relevant to agriculture and/or fisheries and two-thirds (86 documents) pertained to digitalisation. This review also assessed three 'other' documents, including two national trade policies (for The Gambia and Kenya), and one 'Coordinated Programme of Economic and Social Development Policies' (for Ghana).

A summary of the documents identified is presented in Table 2.7:

Forty-seven (47) per cent of the 134 documents from African countries mentioned *both* digitalisation *and* agriculture/fisheries. However,

Table 2.7. Summary of policy documents in Africa

	Focus	Document type	Count
	Digitalisation	Policy	**51**
		Regulation	**35**
	Digitalisation *and* agriculture	Strategy	**1**
	Agriculture	Policy	**27**
	Agriculture and fisheries	Policy	**8**
	Fisheries	Policy	**8**
		Regulation	**1**
	Other	Policy	**3**

the nature of such references varied, and there was little elaboration to guide the practical process of digitalisation in these sectors.

PILLARS OF DIGITALISATION IN AFRICA

Table 2.8. Distribution of policy documents in Africa among the 3 pillars

	Digital innovations
	Thirty-two (32) per cent of the 134 documents from African countries referenced digital innovations. This proportion was higher in digitalisation documents (44%). By contrast, just 11 per cent of sectoral (agriculture/fisheries) documents referenced digital innovations.
	Data infrastructure
	About half of the 134 documents from African countries referenced data infrastructure. Thirty (30) per cent of agriculture/fisheries documents referenced data infrastructure, compared to 58 per cent in digitalisation documents.
	Business development services
	Of the documents from Africa, 63 per cent referenced business development services. This proportion was substantively higher for sectoral documents at 85 per cent, compared to just 51 per cent of digitalisation documents.

Asia

The use of ICTs and digital tools has been steadily increasing across much of rural Asia. This trend has accelerated because of the ongoing COVID-19 pandemic. Smartphone ownership and mobile coverage have increased significantly over the past 15 years. As a result, farmers and agribusiness owners can use digital technologies to address issues and increase productivity in parts of Asia. According to recent research conducted by the International Fund for Agricultural Development (IFAD), the impact of smallholder digital technology adoption is highest in India (IFAD 2021). The use of digital technologies also applies to enhancing sustainable use of fisheries and aquaculture. However, there appears to be a dearth of literature assessing the state of digitalisation in the fisheries sector in Commonwealth countries in Asia.

POLICY AND LEGISLATIVE REVIEW

Nineteen (19) per cent of the documents included in this review came from Commonwealth countries in Asia. This means that 65 documents from Asia were assessed. Of these, 20 documents – about one third – were relevant to agriculture and/or fisheries. Forty-five (45) documents (about 70%) related to digitalisation.

A summary of the documents identified is presented in Table 2.9:

Table 2.9. Summary of policy documents in Asia

	Focus	Document Type	Count
	Digitalisation	Policy	**33**
		Regulation	**12**
	Agriculture	Policy	**9**
	Agriculture and fisheries	Policy	**5**
	Fisheries	Policy	**5**
	Digitalisation *and* agriculture	Policy	**1**

Thirty-seven (37) per cent of the 65 documents from Asian countries mentioned *both* digitalisation *and* agriculture/fisheries. However, the nature of such references varied and, with the exception of the **Sri Lanka E-agriculture Strategy 2016,** there was little elaboration to guide the practical process of digitalisation in these sectors.

PILLARS OF DIGITALISATION IN ASIA

Table 2.10. Distribution of policy documents in Asia among the 3 pillars

	Digital innovations
	Thirty-seven (37) per cent of the 65 documents from Asian countries referenced digital innovations, while 53 per cent of digitalisation documents referenced digital innovations. None of the agriculture/fisheries sector documents referenced digital innovations.
	Data infrastructure
	About half of the 65 documents identified from Asia referenced data infrastructure. Forty (40) per cent of agriculture/fisheries documents referenced data infrastructure, compared to 56 per cent in digitalisation documents.
	Business development services
	Sixty-six (66) per cent of the documents from Asia referenced business development services. Ninety (90) per cent of the agriculture/fisheries documents included such references, compared to just 56 per cent of digitalisation documents.

The Caribbean and Americas

LITERATURE REVIEW

The digitalisation of agrifood systems has progressed in this region, but accelerating the digitalisation process remains challenging (CEPAL 2021). Agriculture is a priority sector for the members of the Caribbean Community (CARICOM). The region is committed to transforming its agricultural sector towards a market-oriented, competitive and sustainable system, including through the application of ICTs. This vision is reflected in the **Digital Regional Development Strategy,** which highlights that ICT can provide value in addition to the traditional agricultural sectors. Similarly, Canada is pursuing a digital transformation, as envisioned by the Digital Government Strategy. However, present policy frameworks provide limited guidance for digitalisation in the agriculture and fisheries sectors specifically. Notably, Canada's marine and fisheries monitoring and information systems, including digital solutions, are well developed.

POLICY AND LEGISLATIVE REVIEW

Twenty-two (22) per cent of the documents in this review came from the Caribbean and Americas region. This means that this review assessed a total of 75 documents from Commonwealth countries in the Caribbean and Americas. Of these, 18 documents (24%) were relevant to agriculture and/or fisheries. About three-quarters (56 documents) related to digitalisation. The review also assessed one 'other' document, namely the National Policy Framework for the Development of Micro, Small and Medium-Sized Enterprises in Barbados.

Table 2.11. Summary of policy documents in the Caribbean and Americas

	Focus	Document Type	Count
	Digitalisation	Policy	**28**
		Regulation	**25**
		Agenda, plan or programme	**3**
	Agriculture	Policy	**8**
		Regulation	**1**
	Agriculture and fisheries	Policy	**5**
		Plan	**1**
	Fisheries	Policy	**3**
	Other	Policy	**1**

A summary of the documents identified is presented in Table 2.11:

Twenty-one (21) per cent of the 75 documents from the Caribbean and Americas countries mentioned *both* digitalisation *and* agriculture/fisheries. However, the nature of such references varied, and there was little elaboration to guide the practical process of digitalisation in these sectors.

PILLARS OF DIGITALISATION IN THE CARIBBEAN AND AMERICAS

Table 2.12. Distribution of policy documents in the Caribbean and Americas among the 3 pillars

	Digital innovations
	Thirty-six (36) per cent of the 75 documents from the Caribbean and Americas countries referenced digital innovations, while 46 per cent of the digitalisation documents referenced digital innovations. By contrast, just 6 per cent of sectoral (agriculture/fisheries) documents referenced digital innovation.
	Data infrastructure
	About half of the 75 documents identified for Caribbean and Americas countries referenced data infrastructure. This proportion was markedly lower for agriculture/fisheries documents (28%), compared to 61 per cent of digitalisation documents.
	Business development services
	Just over half (51%) of documents from the Caribbean and Americas region referenced business development services. Seventy-nine (79) per cent of agriculture/fisheries documents referenced business development, compared to just 41 per cent of digitalisation documents.

Europe

LITERATURE REVIEW

Digitalisation of the agricultural policy has progressed apace in European countries (Ehlers et al. 2022). At present, Commonwealth countries in Europe do not appear to have e-agriculture or ICT for agriculture policy documents, although the new Common Agricultural Policy (2023–2027) will leverage and promote existing efforts as part of the digital transition. Similarly, digital solutions, like remote electronic monitoring, are becoming more prominent under the Common Fisheries Policy. Conversely, there may be new opportunities for digitalisation in the agriculture and fisheries sectors as the United Kingdom continues the process of leaving the European Union.

POLICY AND LEGISLATIVE REVIEW

About 5 per cent of the documents included in this review are from Commonwealth countries in Europe (i.e., 16 documents in total) (see Table 2.13). Of these, 2 documents (13%) were relevant to agriculture and/or fisheries. The remainder (14 documents) related to digitalisation.

Table 2.13. Summary of policy documents in Europe

	Focus	Document type	Count
	Digitalisation	Policy	**8**
		Regulation	**5**
		Strategy	**1**
	Agriculture	Policy	**2**

A summary of the documents identified is presented in Table 2.14:

Twenty-five (25) per cent of the 16 documents from European countries mentioned *both* digitalisation *and* agriculture/fisheries. However, the nature of such references varied, and was limited to elaboration to guide the practical process of digitalisation in these sectors.

PILLARS OF DIGITALISATION IN EUROPE

Table 2.14. Distribution of policy documents in Europe among the 3 pillars

	Digital innovations
	Sixty-three (63) per cent of the 16 documents from European countries referenced digital innovations, while 71 per cent of the digitalisation documents referenced digital innovations. By contrast, none of the agriculture/fisheries documents referenced digital innovations.
	Data infrastructure
	Fifty (50) per cent of agriculture/fisheries documents referenced data infrastructure. By contrast, 64 per cent of digitalisation documents referenced data infrastructure.
	Business development services
	Fifty-six (56) per cent of European documents included in this review referenced business development services. All the agricultural and fisheries sectoral documents referenced this theme. By contrast, only half of the digitalisation documents referenced business development services.

The Pacific

LITERATURE REVIEW

Australia and New Zealand recognise the value of digitalisation in the agriculture sector and have developed policy documents specifically addressing ICT in agriculture. However, there is a dearth of literature addressing digitalisation in agriculture in the Pacific small island developing states (SIDS), although evidence from six SIDS in both Commonwealth and non-Commonwealth contexts indicates that the digital divide, resource scarcity (especially 'brain drain') and data quality, among other challenges, constrain wider efforts at e-governance in SIDS (Yildiz and Sağsan 2021).

POLICY AND LEGISLATIVE REVIEW

Fifteen (15) per cent of the documents included in this review are from the Commonwealth Pacific. This equates to a total of 52 documents from the Pacific. Of these, about one-third (19 documents) were relevant to agriculture and/or fisheries, and two-thirds (33 documents) pertained to digitalisation.

A summary of the documents identified is presented in Table 2.15:

Table 2.15. Summary of policy documents in the Pacific

	Focus	Document type	Count
📶	Digitalisation	Policy	**26**
		Regulation	**6**
		Strategy	**1**
🌾	Agriculture	Policy	**5**
🌱	Agriculture and fisheries	Policy	**4**
🐟	Fisheries	Policy	**6**
🌼	Digitalisation *and* agriculture	Policy	**1**
		Plan	**1**
		Strategy	**2**

Thirty-eight (38) per cent of the 51 documents from Pacific countries mentioned *both* digitalisation *and* agriculture/fisheries. While the nature of such references varied, this review identified four documents dedicated to addressing aspects of digitalisation in the agricultural sector.

PILLARS OF DIGITALISATION IN THE PACIFIC

Table 2.16. Distribution of policy documents in the Pacific among the 3 pillars

Digital innovations

Forty-three (43) per cent of the 51 documents from Pacific countries referenced digital innovations. Meanwhile, 57 per cent of the digitalisation documents mentioned digital innovations, compared to just 17 per cent of sectoral (agriculture/fisheries) documents.

Data infrastructure

About half of the 51 documents identified for the Pacific referenced data infrastructure. This proportion was roughly the same for both agriculture/fisheries sectoral documents and digitalisation documents.

Business development services

Fifty-nine (59) per cent of the documents from the Pacific referenced business development services. Seventy-two (72) per cent of the sectoral documents referenced such services, compared to just half of the digitalisation documents.

Small island developing states

Thirty-two (32) of the world's 42 small states are Commonwealth members (Commonwealth Secretariat undated). Small states are particularly vulnerable because of their geographic positioning, strong dependence on trade, limited access to development finance, and disproportionate impact of natural disasters and climate change. Size affects the viability of activities with increasing returns to scale, particularly in the productive sectors. Small states also suffer from high utility and infrastructure costs. A lack of digital readiness in many of the small states is exacerbating digital divides and threatening to marginalise some Commonwealth citizens from meaningful participation in the digital economy (Commonwealth Secretariat 2020). The Commonwealth also includes 25 small island developing states (SIDS), many of which are particularly reliant on the agriculture and fisheries sectors.

A total of 123 documents from Commonwealth SIDS were identified and included in this review. Of these, 34 (28%) were relevant to agriculture and/or fisheries. Of the remainder, 88 documents applied to digitalisation. The documents from the SIDS also included one 'other' document. A summary of the documents identified is presented in Table 2.17.

Table 2.17. Summary of policy documents in SIDS

	Focus	Document type	Count
📶	Digitalisation	Policy	**52**
		Regulation	**33**
		Programme, plan or agenda	**3**
🌾	Agriculture	Policy	**14**
		Regulation	**1**
🌱	Agriculture and fisheries	Policy	**11**
🐟	Fisheries	Policy	**9**
•••	Other	Policy	**1**

Overall, more than one-third of all documents identified related to SIDS. About a third of these 123 documents referred to *both* digitalisation *and* agriculture/fisheries.

Least developed countries

The least developed countries (LDCs) are an internationally defined group of highly vulnerable and structurally constrained economies with extreme levels of poverty. Fourteen (14) Commonwealth member countries are classified as LDCs. The Commonwealth Secretariat recognises that LDCs need assistance to accelerate economic transformation and build production and trading capacity. Moreover, the COVID pandemic has underscored the need to tackle the digital divide.

The agriculture and fisheries sectors are particularly important to Commonwealth LDCs to meet their food security needs, support livelihoods and promote economic development.

A total of 76 documents from LDCs were identified and included in this review. Of these, 26 (34%) were relevant to agriculture and/or fisheries. Of the remainder, 49 documents related to digitalisation. The selection of documents from LDCs also included one 'other' document. A summary of the documents identified is presented in Table 2.18.

Table 2.18. Distribution of policy documents in SIDS among the 3 pillars

	Focus	Document type	Count
📶	Digitalisation	Policy	**35**
		Regulation	**14**
🌾	Agriculture	Policy	**15**
🌱	Agriculture and fisheries	Policy	**3**
🌼	Digitalisation *and* agriculture	Strategy	**1**
🐟	Fisheries	Policy	**7**
•••	Other	Policy	**1**

Of these 76 documents, 39 documents address *both* digitalisation *and* agriculture/fisheries.

Notes

1. Provided these were available online, contributed to the overarching ICT framework of the country, and not superseded by a new document.
2. It should be noted that 22 documents were not accessible online for the full analysis. As such, available details were included in the database, but these documents were only included in the analyses where sufficient data were available. As a result, this assessment might, for example, slightly underestimate the number of documents that address both digitalisation and agriculture/fisheries.
3. This refers to documents of cross-cutting relevance such as national trade policies.
4. The 'pillars of digitalisation' were assessed using automated, composite keyword searches in summaries of the documents.
5. The following keywords were used for digital innovations: 'digital', 'focus on digital', 'technological innovations', 'technological growth', 'technological development', 'digital growth', 'digital development', 'digital modernisation', 'digital modernization'.
6. The following keywords were used for data infrastructure: 'data', 'data framework', 'information infrastructure', 'intelligence infrastructure'.
7. The following keywords were used for business development services: 'growth of businesses', 'development of businesses', 'business development', 'business growth', 'commercial development', 'business planning', 'development'.
8. Documents were assigned a binary score depending on whether they addressed keywords like *poverty reduction, eradication, or food and water security* in both rural and urban regions.
9. Documents were assigned a binary score depending on whether they addressed keywords like the *implementation or use of green technology, sustainable development,* and *environmentally friendly practices.*
10. Documents were assigned a binary score depending on whether they addressed keywords like *women and youth* in the agriculture/fisheries sector, and the *importance of indigenous knowledge and inclusion efforts.*
11. Documents were assigned a binary score according to whether they addressed keywords like *rural development, smallholder farmers, agricultural and fisheries stakeholders.*

Chapter 3: Conclusions and Recommendations

Digital innovations are emerging to boost **green and blue economies, particularly through smart agriculture and smart fisheries.** This includes, for example, blockchain in product traceability, smart phones supporting extension services, e-payment systems for online markets and sales, and connecting to suppliers and markets, and Big Data and the Internet of Things (IoT) for analysis.

The integration of technology in these productive sectors will contribute to the sustainable management of natural resources for Commonwealth members, while maximising return on investment. Nevertheless, existing evidence suggests that there remain challenges in the adoption of agriculture and fisheries digital innovations (McFadden et al. 2022), including:

- lack of capital for adoption (particularly for micro, small and medium-sized enterprises [MSMEs]);

- lack of capacity and know-how for utilisation;

- limited access to energy (electricity), particularly in rural areas;

- limited internet access and broadband connectivity; and

- lack of an enabling policy and legislative environment.

The enabling environment consists of the 'rules of the game', including digital and non-digital factors; and agricultural/fisheries and non-agricultural/

fisheries factors. This review indicates that, in terms of the number of policies or regulations that reference data and/or digitalisation in the agriculture and fisheries sectors, these 'rules of the game' have become clearer since the 1990s.

However, it is noteworthy that most of these documents do not expand or elaborate on digitalisation in agriculture and/or fisheries. Having reviewed a total of 342 documents, **this review identified just six standalone digitalisation/ ICT/e-policy documents.** Moreover, in many cases where digitalisation was mentioned as part of agriculture or fisheries sector document, or where agriculture or fisheries were mentioned in digitalisation documents, such references provided little detail. These findings indicate that most countries are yet to adopt a strategic approach to digitalisation in the agriculture and fisheries sectors. Instead, digitalisation tends to be embedded into various other policy documents in an ad hoc manner. In many cases, references lack detail and structure. This is particularly true for fisheries, as this review identified no fisheries sector-specific digitalisation documents.

The findings of this review highlight several gaps in the existing 'rules of the game'. A number of these high-level gaps have been compiled based on this pan-Commonwealth exercise, and recommendations synthesised to suggest ways that countries might strengthen their frameworks, with the continued support of the Commonwealth Secretariat.[1]

Table 3.1. Summary of findings, analysis and recommendations

	Finding	About 30 per cent of digitalisation documents addressed *both* digitalisation *and* agriculture/fisheries. By contrast, about half of agriculture and fisheries sectoral documents addressed both themes.
	Analysis	This suggests that the degree to which digitalisation has been mainstreamed into agriculture and fisheries sector frameworks is higher than the degree to which agriculture and fisheries are mainstreamed into digitalisation frameworks. It should be noted that agriculture was better represented at all levels of this review. Specifically, there are relatively few fisheries sector-specific documents, and fisheries is referenced less frequently than agriculture in digitalisation documents.
	Recommendation	Ensure that the agriculture and fisheries sectors are adequately addressed within existing digitalisation frameworks. Tailor such references to the national context and ensure that fisheries are addressed where relevant.
	Finding	In total, 128 documents included in this review referred to both digitalisation and agriculture and/or fisheries. This means that nearly 40 per cent reviewed addressed both, but the nature of the reference was, in many cases, minimal.
	Analysis	Countries can choose to mainstream digitalisation and agriculture/fisheries into existing frameworks, rather than develop new documents. This may be the rational choice considering capacity or resource constraints. However, where countries do opt to mainstream digitalisation and agriculture/fisheries into existing policy and legislative frameworks to support digitalisation, there is a need to ensure that these aspects are addressed in a meaningful, structured and practical way to allow practitioners to implement the process.
	Recommendation	Ensure that digitalisation in the agriculture and fisheries sectors is meaningfully referenced in existing policy and legislative frameworks. Use the process of updating existing policies to strengthen these frameworks to guide digitalisation processes in the agriculture and fisheries, as well as other, sectors.
	Finding	There were more policies than regulations that addressed *both* digitalisation and agriculture/fisheries.
	Analysis	This finding may indicate that policy documents provide a more appropriate entry point for the reciprocal mainstreaming of digitalisation and agriculture/fisheries into governing frameworks than legislative documents. In addition, legislative frameworks for digitalisation are likely to apply to the agricultural and fisheries sectors irrespective of whether these are explicitly mentioned. However, this does not mean that there is no need to ensure that digitalisation processes in the agriculture and fisheries sectors are not addressed more explicitly in legislative, as well as policy, frameworks.
	Recommendation	Prioritise policy documents (policies, strategies, plans etc.) for reciprocal mainstreaming.
	Finding	Overall, the review identified only six 'standalone' digitalisation or ICT documents for agriculture.
	Analysis	Most countries are yet to adopt a strategic approach to digitalisation in the agriculture and fisheries sectors. Instead, digitalisation tends to be embedded into various other policy documents in an ad hoc manner. In many cases, references lack detail and structure. This is particularly true for fisheries, as this review identified no fisheries sector-specific digitalisation documents.

	Recommendation	Setting in place a national e-agriculture or fisheries strategy is an important step for any country planning to use ICTs for agriculture and/or fisheries to help reduce poverty, improve food security and nutrition. The FAO's National e-Agriculture Strategy Guide can support the development of such documents, as can the forthcoming Commonwealth guidance on agriculture and fisheries digitalisation.
	Finding	Less than 10 per cent of agriculture and fisheries sectoral documents addressed digital innovations.
	Analysis	Digital innovations are posited to have high potential to transform the primary productive sectors. The low rate of reference to such innovations in existing policy frameworks governing the agriculture and fisheries sectors highlights that many countries are yet to fully recognise this potential, which reduces the likelihood that such innovations are leveraged to their full extent.
	Recommendation	Ensure that the potential of digital innovations is reflected in relevant policy frameworks, with reference to inspirational examples and case studies where relevant.
	Finding	Only one-third of documents governing the agriculture and fisheries sectors addressed data infrastructure.
	Analysis	Data and information are critical to allow for evidence-based policy- and decision-making. Digital approaches to collecting, processing, managing and disseminating data and information are key in this context. The low rate of reference to data infrastructure in the policy frameworks governing the primary productive sectors suggests that there is scope to better represent: (i) the importance of data; and (ii) the potential of digital solutions for evidence-based decision-making at all levels.
	Recommendation	Integrate data infrastructure into the relevant agriculture and fisheries documents.
	Finding	Just 6 per cent of digitalisation documents addressed poverty eradication, and just 12 per cent of digitalisation documents referenced rural development.
	Analysis	Digitalisation and digital inclusion have been posited to be an enabler for poverty reduction, particularly in rural settings (Banga et al. 2020). It is envisaged that digitalisation and information technologies can drive a smart rural transformation (Lekhanya 2018). The low rate of reference to both poverty eradication and rural development may represent a missed opportunity to leverage the potential of digitalisation to achieve these national objectives.
	Recommendation	Emphasise the potential of digitalisation in supporting poverty reduction and rural development in digitalisation documents to highlight alignment with national objectives and strengthen the rationale for digitalisation.
	Finding	Half of digitalisation documents addressed business development.
	Analysis	Despite the value of digitalisation and ICTs in supporting an enabling environment for business development, these services are poorly addressed in digitalisation documents, with just half of all digitalisation documents included in this review referring to such services.
	Recommendation	Mainstream business development services into digitalisation policy and legal frameworks in order to support business development, including for, but not limited to, the agriculture and fisheries sectors.

	Finding	Less than one-third (31%) of digitalisation documents addressed aspects of environmental sustainability.
	Analysis	Digitalisation is posited to have the potential to reduce environmental impacts, such as by optimising supply chains and reducing energy consumption. However, there is a need for a nuanced and holistic sustainable approach to digitalisation to ensure that benefits are harnessed, and potential negative impacts are minimised (Niehoff 2022; Cioban and Cioban 2022). The low reference to environmental sustainability in digitalisation documents suggests that some countries are not adequately considering the potential sustainability benefits and risks associated with digitalisation.
	Recommendation	Develop the requisite policy and legislative frameworks to govern sustainable digitalisation, including by developing cost-benefit analyses, and designing interventions to mitigate environmental impact.
	Finding	Just 12 per cent of all documents addressed efforts aimed at including women or youth, or the importance of indigenous knowledge and inclusion.
	Analysis	The use of digital technologies to enhance efficiency or production, processing and trade can have many benefits for profitability. However, if digitalisation processes are not inclusive, this can also have unintended consequences, with potentially harmful implications (McCampbell et al. 2021). As such, it is important that policy and legal frameworks governing digitalisation consider patterns of inclusion and exclusion. The low reference to inclusion suggests that existing policy may not support the most inclusive outcomes.
	Recommendation	Ensure that documents are developed in an inclusive manner and explicitly address inclusivity to maximise impact and minimise unintended consequences.
	Finding	Commonwealth countries were at different stages of establishing the 'rules of the game' to govern digitalisation generally, and digitalisation in the agriculture and fisheries sectors specifically.
	Analysis	While there is no 'one size fits all', the lack of standardisation and differing regulatory regimes obstruct efforts to achieve representativeness, comparability and 'ease of doing business' both within and across countries.
	Recommendation	Support countries to develop more coherent and mutually supportive frameworks for digitalisation in the agriculture or fisheries sectors at the national and regional levels. This is particularly important for SIDS, as their small size makes it difficult to achieve economies of scale. The forthcoming Commonwealth guidance on agriculture and fisheries digitalisation can be used to guide the process of developing bespoke country-led solutions.

Note

1   Additional recommendations are presented at the national level in the Country Profiles (which are included in Part 2 of this report).

Part 2:
Country Profiles: An Overview of Digital Agriculture and Digital Fisheries Policies/Strategies at National Level

Antigua and Barbuda

Overview

Agriculture is primarily important for the domestic market. Antigua and Barbuda is developing an emerging blue economy, and is exploring financial innovation, including in blockchain technologies.

Five documents were found pertaining to data and/or digitalisation, thus contributing towards the enabling environment for digitalisation in Antigua and Barbuda. However, **none of these documents mentioned agriculture and/or fisheries explicitly**.

The following table sets out relevant policy and legislative documents contributing to the framework for digitalisation.

Digitalisation/ICTs

	Policy, strategy or legislation	References agriculture &/or fisheries?	Comments
	Information and Communication Technologies Policy (Draft)	✗	Provides a blueprint for the economic transformation of Antigua and Barbuda to a knowledge-based society. This policy will provide the requisite legal and regulatory framework, as well as financial and social incentives, for digitalisation.
	Data Protection Act: 2013	✗	Promotes the protection of personal data by public and private bodies, and for incidental and connected purposes.
	Electronic Crimes Act 2013 & Electronic Crimes (Amendment) Act 2018	✗	Provides for the prevention and punishment of electronic crimes and for related matters.
	Electronic Transactions Act 2013	✗	Gives legal effect to electronic documents, records and signatures, and for incidental purposes.
	Government Assisted Technology Endeavour (GATE) Programme	✗	Improves internet connectivity and spurs growth in tech-related fields, through the development of information and communication technology services for the citizenry and the country at large.

Sector-specific (agriculture and/or fisheries)

	Document	Exists?	References digitalisation?	Comments
	National agriculture policy/strategy	✓	✗	The Food and Nutrition Security Policy 2012 does not pertain to digitalisation.
	Agriculture ICT	✗		
	National fisheries policy/ strategy	✗		
	Fisheries ICT	✗		

Gaps and recommendations:

	Gaps		Recommendations
🔍	This review identified no agriculture- and/or fisheries-specific digitalisation documents.		Develop agriculture- and/or fisheries-specific digitalisation policy framework, starting with e-agriculture/e-fisheries strategy.
🔍	Agriculture and fisheries are poorly integrated into existing digitalisation documents.		Mainstream agriculture and fisheries into existing digitalisation regulatory frameworks.
🔍	Environmental sustainability, poverty reduction, inclusion and rural development are not substantively addressed in digitalisation documents.		Mainstream these themes into the development of sector-specific digitalisation policy frameworks to ensure that digitalisation contributes to sustainable development.

Australia

Overview

Australia has an export-oriented economy and is a major agriculture producer and exporter. Australia has begun leveraging the potential of digitalisation in the sector (see case).

> **Case: Australian start-up AgriDigital embraces blockchain to make agricultural supply chains simple**
>
> AgriDigital is an Australian agricultural start-up that uses blockchain technology to track produce across the grain supply chain. This gives growers and buyers a way to receive fair compensation and increases transparency, efficiency and trust for farmers. Since the first deal in 2016, more than 2,400 people have used the cloud platform, with more than 1.6 million tonnes of grain transacted totalling $360 million in grower payments. With the initial focus on the grains industry, AgriDigital intends to expand into livestock, cotton and other agricultural markets. It also plans to export its digital technology to Canada and the US.

Australia is a member of the Physical, Digital and Regulatory Connectivity clusters of the Commonwealth Connectivity Agenda. The following table summarises the documents that this review identified as being relevant to digitalisation/data.

Digitalisation/ICTs

	Policy, strategy or legislation	References agriculture &/or fisheries?	Comments
	Digital Transformation Strategy 2018–2025	✗	Delivers world-leading digital services for the benefit of all Australians.
	Digital Preservation Policy 4th Edition 2013	✗	Preserves digital collections and collaborates with others to preserve digital information resources.
	Australia Tech Future 2018	✓	Australia's Tech Future sets out the opportunities and the challenges in maximising the benefits on offer. It highlights the significant work already happening across government and identifies further action required to ensure all Australians can thrive in a global digital economy, including in agriculture and fisheries.
	Cyber Security Policy 2020	✗	Envisions a more secure online world for Australians, their businesses and the essential services upon which they all depend.
	Digital Economy Strategy 2021	✓	Aims to deliver a modern and digital economy to drive Australia's future prosperity.

	Policy, strategy or legislation	References agriculture &/or fisheries?	Comments
	Treasury Laws Amendment (Consumer Data Right) 2018 Bill	✗	This Act amends the law that relates to fair trading, competition, consumer protection and privacy.
	Consumer Data Right 2018 Bill	✗	The Consumer Data Right Bill gives Australians greater control over their data, empowering customers to choose to share their data with trusted recipients only for the purposes that they have authorised. The Right was implemented initially in the banking (Open Banking), energy and telecommunications sectors, and then rolled out economy-wide on a sector-by-sector basis (presumably including agriculture, although this is not stated).

Sector-specific (agriculture and/or fisheries)

	Document	Exists?	References digitalisation?	Comments
	National agriculture policy/ strategy	✓	✓	Through Delivering Ag2030, the Australian government is setting the foundations for the agriculture sector to continue to grow and build resilience to meet global challenges. This includes $241.2 million for digital services to take farmers to markets, building on initial enhancements to export systems already underway, alongside efforts to enhance digital infrastructure and digital economy, including opportunities for regional Australia and agricultural businesses, by providing $1.2 billion for the Digital Economy Strategy.
	Agriculture ICT	✓	✓	While not a national document, the 2018 Digital Agriculture Strategy Victoria outlines the Victorian government's plan to support Victorian farmers harness digital technologies to build a more efficient, sustainable and productive agriculture sector in Victoria. The centrepiece is a $27 million commitment to support Victorian farmers to adopt digital technologies, including the $12 million On-farm Internet of Things (IoT) Trial. Developed by the National Farmers Federation, the Australian Farm Data Code seeks to promote digital adoption in the farm sector, by ensuring farmers have confidence in how their data are collected, used and shared.

	Document	Exists?	References digitalisation?	Comments
	National fisheries policy/ strategy	✓	✓	The 2014 Second National Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing (NPOA-IUU II) seeks to prevent, deter and eliminate illegal, unreported and unregulated fishing. As such, Australia works with fishing countries and regional fisheries organisations to improve fisheries management capacity, strengthen surveillance and enforcement programmes, and share information and data, including through **e-monitoring**.
	Fisheries ICT	✓	✗	No national fisheries ICT digitalisation policy could be identified.

Gaps and recommendations:

	Gaps		Recommendations
🔍	This review identified no *national* agriculture- and/or fisheries-specific digitalisation documents, although digitalisation in these sectors is addressed in numerous other documents. Victoria has developed a *Digital Agriculture Strategy*, which could help to inform the development of national policy instruments to promote digitalisation. The gap is particularly pronounced for fisheries.	💡	Australia has committed to the development of a National Digital Agriculture Strategy as part of the National Innovation Agenda Policy Statement. Digital agriculture is one of the innovation priorities. It is recommended to complete this process, and consider scope for similar policy development to support digitalisation in the fisheries sector.
🔍	There is scope to embed agriculture and/or fisheries digitalisation into overarching policy and legislative frameworks, e.g. Digital Preservation Policy, Cyber Security Policy.	💡	Continue mainstreaming and embedding agriculture and fisheries into the existing policy frameworks governing digitalisation in Australia, particularly regarding regulatory frameworks. The Australian Farm Data Code is a good example in this regard.

The Bahamas

Overview

Tourism and financial services dominate the economy of The Bahamas (80% and 15%, respectively), but growth in the agriculture and fisheries sectors may contribute to national food security, which is currently achieved through imports.

Digitalisation/ICTs

	Policy, strategy or legislation	References agriculture &/or fisheries?	Comments
	Connect Your E-Business Strategy To The Bahamas – Bridging The Digital Divide 2003	✗	The policy endeavours for The Bahamas to be viewed as the e-business hub in the region.
	Policy Statement on Electronic Commerce and the Bahamian Digital Agenda 2003	✗	The statement sets out the government vision for The Bahamas to become a centre of excellence for e-commerce. It does not address the agricultural or fisheries sectors in this context.
	Data Protection Act 2008	✗	Protects the privacy of individuals in relation to personal data and regulates the collection, processing, keeping, use and disclosure of certain information relating to individuals and provides for matters incidental thereto or connected therewith.
	Computer Misuse Act 2006	✗	Makes provisions securing computer material against unauthorised access or modification and for connected purposes.
	Payments Instruments (Oversight) Regulations 2017 & Payments Systems Act 2012	✗	Allows for electronic payments and regulates payment institutions accordingly.
	Electronic Communications and Transactions Act 2006	✗	Provides for the legal recognition of electronic writing, electronic contracts, electronic signatures and/original information in electronic form in relation to commercial and other transactions and to provide for the facilitation of electronic transactions and related matters.

Sector-specific (agriculture and/or fisheries)

	Document	Exists?	References digitalisation?	Comments
	National agriculture policy/strategy	✓	✗	The 2017 National Food and Nutrition Security Policy and Agenda for Action sets out to create a food and nutrition secure nation, but doesn't mention digitalisation, ICTs or data. However, the 2021 Bahamas National Pathway for Food Systems Transformation in support of the 2030 Agenda includes a focus on digitalisation, particularly for agri-food system development.
	Agriculture ICT	✗		
	National fisheries policy/strategy	✓	✗	The Five Year Sector Strategy Plan for Fisheries and Aquaculture (2010–2014)[1] does not address digitalisation.
	Fisheries ICT	✗		

Gaps and recommendations:

	Gaps		Recommendations
🔍	This review identified no agriculture- and/or fisheries-specific digitalisation documents.	💡	Develop agriculture- and/or fisheries-specific digitalisation policy framework, starting with e-agriculture/e-fisheries strategy.
🔍	Agriculture and fisheries are poorly integrated into existing digitalisation documents.	💡	Mainstream agriculture and fisheries into existing digitalisation regulatory frameworks.
🔍	Environmental sustainability, poverty reduction, inclusion and rural development are not substantively addressed in digitalisation documents.	💡	Mainstream these themes into the development of sector-specific digitalisation policy frameworks to ensure that digitalisation contributes to sustainable development.

Bangladesh

Overview

The Bangladesh government recognises that the development of information and communication technology is an indispensable factor for the mid- to long-term growth of Bangladesh and is making efforts to improve the budget execution efficiency, mid- to long-term growth potential and administrative efficiency through e-Government. This is reflected in the number of digitalisation relevant policy documents, many of which highlight the importance of digitalisation to (primarily) the agricultural sector.

Digitalisation/ICTs

	Policy, strategy or legislation	References agriculture &/or fisheries?	Comments
	Digital Bangladesh & Vision 2021	✓	Digital Bangladesh has four pillars: digital government, human resource development, IT industry promotion, and connecting citizens. The document notes the potential of e-agriculture (but not e-fisheries).
	E-Government Master Plan 2018	✓	Seeks to streamline ICT development and services to improve efficiency and consistency of e-governance. Available e-services are mapped for agriculture and fisheries.
	E-Commerce Policy Framework	N/A*	Governs e-commerce operations in Bangladesh. Digital Commerce Operation Guidelines issued in 2021. This document could not be accessed for further analysis by the review team.*
	National Blockchain Strategy 2020	✓	Create a blockchain-enabled Bangladesh. Agriculture is one of the application domains, including for procurement, disintermediation and agricultural insurance. Fisheries not mentioned.
	National Strategy for Artificial Intelligence 2019–2024	✓	Bangladesh is embracing artificial intelligence (AI) for the digitalisation of the nation. Agriculture is one of the priority sectors, including for precision agriculture and automation solutions, and data intelligence.
	National Internet of Things Strategy 2020	✓	Aims to transform Bangladesh into a technology-based country by ensuring the use of Internet of Things (IoT) in every sector as an enabler for growth, including developing, incubating and financing IoT in agriculture (e.g., IoT devices for smart agriculture).
	National ICT Policy	N/A*	Creates the framework for digitalisation, including digital government and security. This document could not be accessed for further analysis by the review team.*
	Digital Security Act 2019	✗	Aims to ensure national digital security and enact laws regarding digital crime identification, prevention, suppression, trial and other related matters. No mention of agriculture or fisheries.

Sector-specific (agriculture and/or fisheries)

	Document	Exists?	References digitalisation?	Comments
	National agriculture policy/strategy	✓	✓	The Bangladesh National Agriculture Policy 2018 has a section on ICTs for the agriculture section. Moreover, the Country Investment Plan: Road map towards investment in agriculture, food security and nutrition 2011 sets out priority investment areas. It notes the need for ICT skill development and digitalisation in various agricultural subsectors, with a focus on data and monitoring and evaluation (M&E).
				Similarly, the 2013 National Livestock Extension Policy seeks to support demand-based extension services to livestock farmers in a participatory and decentralised manner. It is noted that ICT can support extension, including through web- and mobile-based technological advisory services, and digital early warning systems.
				The Medium Term Strategy and Business Plan of the Ministry of Agriculture identifies ICT and digitalisation as priorities, including digital agri-information/knowledge bank/repository, and promoting e-governance.
	Agriculture ICT	✗		The Strategic Plan on Agriculture and Rural Statistics 2016–2030 aims to guide strengthening and development of integrated agriculture and rural statistics systems. It promotes ICT applications and digitalisation in agricultural and rural statistics.
	National fisheries policy/ strategy	✓	✗	The 1998 National Fisheries Policy does not mention digitalisation or relevant technologies, although it notes the need to generate data required for sustainable development of marine fisheries. Similarly, the Aquaculture Sub-Strategy, 2006 and Inland Capture Fisheries Sub-Strategy, 2006 do not mention digitalisation. However, the National Aquaculture Development Strategy and Action Plan of Bangladesh 2013–2020 includes institutional objectives for digitising the fisheries resource database/information, management systems, and improving ICT capacities. It does not mention digitalisation.
	Fisheries ICT	✗		

Gaps and recommendations:

	Gaps		Recommendations
🔍	This review identified no agriculture- and/or fisheries-specific digitalisation documents. Numerous documents reference aspects of digitalisation in these sectors, but there is no strategic, coherent policy approach.	💡	Develop agriculture- and/or fisheries-specific digitalisation policy framework, starting with e-agriculture and/or e-fisheries strategy.
🔍	Agriculture and fisheries integration into existing digitalisation documents could be strengthened. Existing references provide little detail to support digitalisation efforts in these sectors.	💡	Incorporate mainstream agriculture and fisheries into existing digitalisation policy and regulatory frameworks.
🔍	Environmental sustainability, poverty reduction, inclusion and rural development were not substantively addressed in digitalisation documents.	💡	Mainstream these themes into the development of sector-specific digitalisation policy frameworks to ensure that digitalisation contributes to sustainable development.
🔍	Certain policy documents could be updated to promote relevance to digitalisation. For example, the Fisheries Policy is from 1998, while substrategies for fisheries and aquaculture are from the early 2000s.	💡	Update the Fisheries Policy and associated substrategies. to include key aspects of digitalisation

Barbados

Overview

Barbados has been investing in modernisation and digitalisation of various public sector services, led by the Ministry of Innovation, Science and Smart Technology. The National Agriculture Policy highlights that 'information technology has an important role to play in the development of an efficient information marketing system and in revolutionising agricultural extension services in Barbados so that the sector can become more knowledge based' (p155).

The following table sets out relevant policy and legislative documents contributing to the framework for digitalisation in Barbados.

Digitalisation/ICTs

	Policy, strategy or legislation	References agriculture &/or fisheries?	Comments
	Electronic Transactions Act 2001	✗	Makes provision for all electronic transactions.
	Data Protection Act 2019	✗	The Act provides a regulatory framework for the processing of personal data (informed by UK General Data Protection Regulation - GDPR).
	Telecommunications Act 2001	✗	Makes provision for the management and regulation of telecommunications.

Sector-specific (agriculture and/or fisheries)

	Document	Exists?	References digitalisation?	Comments
	National agriculture policy/strategy	✓	✗	The 2013 National Agriculture Policy Provides the framework for agriculture sector development. Knowledge-based competitiveness and ICT development are flagged as priorities. The document also mentions modernising the fishing fleet, but digitalisation specifically is not addressed.
	Agriculture ICT	✗		
	National fisheries policy/strategy	✗		
	Fisheries ICT	✗		

	Document	Exists?	References digitalisation?	Comments
•••	Other	✓	✓	The National Policy Framework for the Development of MSMEs Policy Objective 4 is 'To provide for the utility and ICT needs of MSMEs', while the MSME sector plays a leading role in agricultural production and marketing in Barbados. The policy seeks to *inter alia* 'encourage innovation, knowledge management and expanded use of ICT' (p51).

Gaps and recommendations:

	Gaps		Recommendations
🔍	This review identified no agriculture- and/or fisheries-specific digitalisation documents.	💡	Develop agriculture- and/or fisheries-specific digitalisation policy framework, starting with e-agriculture/e-fisheries strategy.
🔍	Agriculture and fisheries were poorly integrated into existing digitalisation documents.	💡	Mainstream agriculture and fisheries into existing digitalisation regulatory frameworks.
🔍	Environmental sustainability, poverty reduction, inclusion and rural development were not substantively addressed in digitalisation documents.	💡	Mainstream these themes into the development of sector-specific digitalisation policy frameworks to ensure that digitalisation contributes to sustainable development.

Belize

Overview

Agriculture is important to the economy of Belize in terms of food security, employment and foreign exchange. Belize is one of the few countries in the region that can boast of its food self-sufficiency status and its rising exports of key commodities. However, for Belize to continue achieving prosperity in agriculture and fisheries, greater efforts and investments must be made to the sector to become more competitive, and digitalisation is an important consideration herein. This is particularly relevant as the Government of Belize has just announced the new National Digital Agenda for the period 2022 to 2025 'Toward a Digital Belize'.[2]

Digitalisation/ICTs

	Policy, strategy or legislation	References agriculture &/or fisheries?	Comments
	National E-Government Strategy and Work Plan 2015–18	✓	Frames efforts to achieve 'An integrated, collaborative government delivering secure, quality public services that connect and empower people. The plan recognises that there is a 'failure to harness technological innovation, particularly ICT, to improve the existing factor-based economic sectors like forestry, fishing, agriculture' (p7). It notes the development of the Belize Electronic Licenses and Permit System (BELAPS) as a promising start for agriculture and fisheries.
	Belize Open Government Plan 2020	✓	The Open Government Plan aims to improve governance, including through digital government. It commits Belize to the use of open data for agriculture, particularly in the context of climate action. There is no mention of fisheries.
	National ICT Strategy 2011	✓	The strategy seeks to place ICTs at the centre of Belize socioeconomic development. The strategy notes potential ICT opportunities for agriculture, including community telecentres. The Ministry of Agriculture could also participate in a single window trading system.
	Electronic Transactions Act 2021	✗	Aims to give legal effect to all electronic documents, records and signatures.

Sector-specific (agriculture and/or fisheries)

	Document	Exists?	References digitalisation?	Comments
	National agriculture policy/strategy	✓	✓	The Agriculture and Food Policy 2015–2030 aims to support increased agricultural production, productivity, competitiveness and market opportunities. The policy recognises the potential of ICT to increase the efficiency and effectiveness of extension services.
	Agriculture ICT	✗		
	National fisheries policy/strategy	✓	N/A*	The Belize National Fisheries Policy, Strategy and Action Plan 2019. This document could not be accessed for further analysis by the review team.*
	Fisheries ICT	✗		

Gaps and recommendations

	Gaps		Recommendations
🔍	This review identified no agriculture- and/or fisheries-specific digitalisation documents.	💡	Develop agriculture- and/or fisheries-specific digitalisation policy framework, starting with e-agriculture/e-fisheries strategy.
🔍	Agriculture and fisheries were poorly integrated into existing digitalisation documents.	💡	Mainstream agriculture and fisheries into existing digitalisation regulatory frameworks.
🔍	Environmental sustainability, poverty reduction, inclusion and rural development were not substantively addressed in digitalisation documents.	💡	Mainstream these themes into the development of sector-specific digitalisation policy frameworks to ensure that digitalisation contributes to sustainable development.

Botswana

Overview

Botswana intends to spur economic growth through digital transformation, as set out in the Fourth Industrial Revolution Digital Transformation Strategy or 'SmartBots', which seeks to drive digital transformation across the economy, government and society. This process will prioritise key economic sectors, including agriculture (beef). Botswana has high levels of access to mobile telephony, although the majority of people lack affordable access to the internet. The enhanced ICT services required for effective participation in the knowledge economy and society continue to elude most of the country.[3] There are several programmes to support rural digitalisation, including *Nteletsa II*, which aims to increase rural access to ICT to connect Botswana's famers, and the Integrated Support Programme for Arable Agriculture Development, which enables digitalisation through critical infrastructure development.

Digitalisation/ICTs

	Policy, strategy or legislation	References agriculture &/or fisheries?	Comments
	National ICT Policy *(Maitlamo)* 2007	✓	The policy sets out a roadmap for ICT transformation. One of the fast-track initiatives is the 'Design of the Agricultural Extension Agents Network'.
	Digital Connectivity Standards 2021	✓	The Digital Connectivity Standards for villages guide government ministries, agencies and parastatals to implement their connectivity projects in line with Smart Bots. It mentions the roll out of 5G to cover the agriculture sector (inter alia). Fisheries is not mentioned.
	National Broadband Strategy 2018	✓	Seeks to promote a robust ICT system for the benefit of the people. It explicitly addresses agricultural broadband infrastructure, although it does not mention fisheries.
	Cybercrime and Computer Related Crimes Act 2018	✗	The Act seeks to secure computer material against unauthorised access or modification, but makes no mention of agriculture or fisheries.
	Electronic Communications and Transactions Act 2014	✗	The Act makes provision for the legality of electronic transactions, but makes no mention of agriculture or fisheries.
	Data Protection Act 2018	✗	Legislates data protection, but there is no mention of the agriculture or fisheries sectors.

Sector-specific (agriculture and/or fisheries)

	Document	Exists?	References digitalisation?	Comments
	National agriculture policy/strategy	✗		There appears to be no national agriculture policy/strategy. The National Master Plan for the Arable Agriculture and Dairy Development (NAMPAAD) Implementation Guidelines of 2001 seeks to improve agricultural sector performance 'by modernising it through the introduction of improved technologies', but digitalisation is not addressed.
	Agriculture ICT	✗		
	National fisheries policy/strategy	✗		
	Fisheries ICT	✗		

Gaps and recommendations

	Gaps		Recommendations
🔍	This review identified no national policies/strategies for the agriculture or fisheries sectors. There also appear to be no agriculture- and/or fisheries-specific digitalisation documents.	💡	Develop agriculture- and/or fisheries-specific policy framework, integrating digitalisation aspects into this framework. Once in place, this could be further strengthened through the development of sector-specific e-agriculture/e-fisheries policies.
🔍	Agriculture and - to a lesser extent - fisheries were integrated into existing digitalisation documents, but further detail could be provided to frame efforts to enhance digitalisation.	💡	Mainstream agriculture and fisheries into existing digitalisation regulatory frameworks.
🔍	Environmental sustainability, poverty reduction, inclusion and rural development were not substantively addressed in digitalisation documents.	💡	Mainstream these themes into the development of sector-specific digitalisation policy frameworks to ensure that digitalisation contributes to sustainable development.

Brunei Darussalam

Overview

The Ministry of Industry and Primary Resources is seeking to provide relevant e-services through an eMinistry. The eMinistry aims at creating a fast, efficient and business friendly online e-government system to enable local and foreign investors to secure licenses and other required services.

Digitalisation/ICTs

	Policy, strategy or legislation	References agriculture &/or fisheries?	Comments
	Digital Economy Masterplan 2020–2025	✓	Provides for digital transformation by the implementation of key projects under the nine priority clusters, which are expected to have a significant impact on economic growth. Agri-food is one of the nine priority clusters.
	Digital Government Strategy 2015–2020	✗	The strategy provides a roadmap for the digitalisation of government services, but makes no explicit mention of agriculture or fisheries.
	Electronic Transactions Act 2000	✗	The Act provides for the legal recognition of electronic transactions and records, but does not mention the agriculture or fisheries sectors.
	Data Protection Policy	✗	The policy addresses data protection, but there is no reference to the agriculture or fisheries sectors.
	Computer Misuse Act 2000	✗	The Act provides for securing computer material against unauthorised access or modification. There is no mention of agriculture or fisheries.
	Digital Payment Roadmap 2019–2025	✗	The roadmap provides a roadmap for the development and transition towards a digital payment ecosystem, but agriculture or fisheries are not explicitly mentioned.

Sector-specific (agriculture and/or fisheries)

	Document	Exists?	References digitalisation?	Comments
	National agriculture policy/strategy	✗		The Department of Agriculture and Agrifood promotes sustainable and competitive agribusiness, including through 'appropriate technologies'.[4]
	Agriculture ICT	✗		
	National fisheries policy/strategy	✗		The Department of Fisheries actively promotes the fisheries industry as one of the sectors that can contribute towards economic diversification; the industry is expected to contribute at least B$200 million annually to the country's gross domestic product (GDP).[5]
	Fisheries ICT	✗		
	Other	✓	✓	The Ministry of Development Strategic Plan 2018 – 2023 covers the core sectoral areas under the purview of the Ministry of Development, namely land use, housing, roads, water, drainage, sanitation, environment, construction industry and infrastructure financing. Core Strategy 3 aims at 'leveraging Information Technology to streamline operational and process structure', including e-services, digitalisation and enhanced integrated data management systems. However, agriculture and fisheries are not mentioned.

Gaps and recommendations

	Gaps		Recommendations
	This review identified no agriculture- and/or fisheries-specific digitalisation documents.		Develop agriculture- and/or fisheries-specific digitalisation policy framework, starting with e-agriculture/e-fisheries strategy.
	Agriculture and – to a lesser degree – fisheries were integrated into existing digitalisation documents, but further detail could be provided to frame efforts to enhance digitalisation.		Mainstream agriculture and fisheries into existing digitalisation regulatory frameworks.
	Environmental sustainability, poverty reduction, inclusion and rural development were not substantively addressed in digitalisation documents.		Mainstream these themes into the development of sector-specific digitalisation policy frameworks to ensure that digitalisation contributes to sustainable development.

Cameroon

Overview

Agriculture forms the backbone of Cameroon's economy, employing 43 per cent of its workforce (49 per cent of whom are women). It provides 15.1 per cent of the country's gross domestic product (GDP) and 30 per cent of its export revenue. However, the contribution of the digital sector to the country's GDP is still very low at 2.9 per cent. [6]

The government's digital strategic plan involves prioritising digital entrepreneurship. This includes developing a local digital industry, and encouraging research and innovation, with the specific objectives of producing more computers and ICT products domestically, reducing ICT imports, and creating research and development hubs for digital technologies.

Digitalisation/ICTs

	Policy, strategy or legislation	References agriculture &/or fisheries?	Comments
	National Strategy of Digital Cameroon 2017–2020	✓	The strategy focuses on defining strategic areas, actions and priorities with great impact on the digital development of the territory, enhancing the use of ICT services, fighting against poverty by creating jobs and increasing the national economic growth rate. The development of e-applications for agriculture (but not fisheries) are mentioned.
	eGovernment Master Plan	N/A*	The plan is to ensure accessibility of government services, including in rural areas, and provide technological support to transform governance. This document could not be accessed for further analysis by the review team.*
	Law No 201/0/013 Governing Electronic Communications	✗	The law governs electronic communications, but makes no mention of agriculture or fisheries.
	Law No 2010/012 Relating to Cybersecurity and Cybercriminality	✗	The law governs the security framework of electronic communication networks and information systems, but makes no mention of agriculture or fisheries.

Sector-specific (agriculture and/or fisheries)

	Document	Exists?	References digitalisation?	Comments
	National agriculture policy/strategy	✓	N/A*	The Cameroon New Agriculture Policy. This document could not be accessed for further analysis by the review team.*
	Agriculture ICT	✗		.
	National fisheries policy/strategy	✗		
	Fisheries ICT	✗		

Gaps and recommendations

	Gaps		Recommendations
	This review identified no agriculture- and/or fisheries-specific digitalisation documents.		Develop agriculture- and/or fisheries-specific digitalisation policy framework, starting with e-agriculture/e-fisheries strategy.
	Agriculture and fisheries were poorly integrated into existing digitalisation documents.		Mainstream agriculture and fisheries into existing digitalisation regulatory frameworks.
	Environmental sustainability, poverty reduction, inclusion and rural development were not substantively addressed in digitalisation documents.		Mainstream these themes into the development of sector-specific digitalisation policy frameworks to ensure that digitalisation contributes to sustainable development.

Canada

Overview

Canada is pursuing a digital transformation, as envisioned by the Digital Government Strategy. However, there is little evidence of policy or legislative documents to support digitalisation in the agriculture and fisheries sectors specifically.

Digitalisation/ICTs

	Policy, strategy or legislation	References agriculture &/or fisheries?	Comments
	Digital Government Strategy 2021–2024	✗	The strategy is about modernising to become more responsive, resilient and provide better services. There is no specific mention of agriculture or fisheries.
	Digital Canada 150 2014	✗	The document seeks to establish the foundations for a comprehensive approach to ensuring that Canada takes full advantage of the opportunities of the digital age. Agriculture and fisheries are not explicitly addressed.
	National Cyber Security Strategy 2018	✗	The strategy sets out Canada's vison for security and prosperity in the digital age, but there is no reference to its application to the agriculture or fisheries sectors specifically.
	Pan Canadian Artificial Intelligence Strategy 2017	✗	This pioneering document is the world's first national AI strategy. However, it does not explicitly address the agriculture or fisheries sectors.
	Personal Information and Electronic Documents Act 2000	✗	The Act seeks to support and promote electronic commerce by protecting personal information that is collected, used or disclosed in certain circumstances, but does not address the agriculture or fisheries sectors explicitly.

Sector-specific (agriculture and/or fisheries)

	Document	Exists?	References digitalisation?	Comments
	National agriculture policy/strategy	✗		
	Agriculture ICT	✗		.
	National fisheries policy/strategy	✗		
	Fisheries ICT	✗		

Gaps and recommendations

	Gaps		Recommendations
🔍	This review identified no agriculture- and/or fisheries-specific digitalisation documents.		Develop agriculture- and/or fisheries-specific digitalisation policy framework, starting with e-agriculture/e-fisheries strategy.
🔍	Agriculture and fisheries were poorly integrated into existing digitalisation documents.		Mainstream agriculture and fisheries into existing digitalisation regulatory frameworks.
🔍	Environmental sustainability, poverty reduction, inclusion and rural development were not substantively addressed in digitalisation documents.		Mainstream these themes into the development of sector-specific digitalisation policy frameworks to ensure that digitalisation contributes to sustainable development.

Cyprus

Overview

Cyprus shows strong documentation of digital strategies, but with little focus specifically in the agriculture/fisheries sector. For example, although there is mention of the importance of rural development in the Digital Cyprus 2025 Strategy, there is no mention of or focus on agriculture.

Digitalisation/ICTs

	Policy, strategy or legislation	References agriculture &/or fisheries?	Comments
	Digital Cyprus 2020–2225	✗	This strategy focuses on adapting the economy to a new digitised world. Although it mentions rural development, it does not mention agriculture or fisheries.
	Innovate Cyprus – CYRI – Strategy 2019	✓	The document focuses on the research and innovation side of technology. It has some mention of agriculture as an economic driver, although this is not elaborated.
	Digital Strategy for Cyprus 2012	✗	The strategy seeks to transform the government's services into e-services, but makes no explicit mention of agriculture or fisheries.
	Cybersecurity Strategy of the Republic of Cyprus 2017	✗	The strategy seeks to ensure that government services are safeguarded against cyber attacks, but has no direct relevance to agriculture or fisheries.

Sector-specific (agriculture and/or fisheries)

	Document	Exists?	References digitalisation?	Comments
	National agriculture policy/strategy	✗		It should be noted that Cyprus falls under the Common Agricultural Policy of the European Union.
	Agriculture ICT	✗		
	National fisheries policy/strategy	✗		It should be noted that Cyprus falls under the European Community Decisions and Regulation regarding fisheries.
	Fisheries ICT	✗		

Gaps and recommendations

	Gaps		Recommendations
🔍	This review identified no agriculture- and/or fisheries-specific digitalisation documents.	💡	Develop agriculture- and/or fisheries-specific digitalisation policy framework, starting with e-agriculture/e-fisheries strategy.
🔍	Agriculture and fisheries were poorly integrated into existing digitalisation documents.	💡	Mainstream agriculture and fisheries into existing digitalisation regulatory frameworks.
🔍	Environmental sustainability, poverty reduction, inclusion and rural development were not substantively addressed in digitalisation documents.	💡	Mainstream these themes into the development of sector-specific digitalisation policy frameworks to ensure that digitalisation contributes to sustainable development.

Dominica

Overview

Dominica's fisheries primarily supply the local market, and processing or storage facilities remain limited. The Ministry of Agriculture and Fisheries recognises the importance of leveraging Dominica's marine and terrestrial assets, including through agriculture and fisheries.[7] Dominica is further undertaking the development of a National Digital Transformation Strategy, but this process is not yet complete. Moreover, there is little evidence of digitalisation in the agriculture or fisheries sectors at present.

Digitalisation/ICTs

	Policy, strategy or legislation	References agriculture &/or fisheries?	Comments
	Information Technology Strategic Plan 2005	✗	The purpose of the plan is to use information technology for more effective governance.
	Electronic Evidence Act 2010	✗	The Act provides for electronic records to be entered into evidence. There is no mention of agriculture or fisheries.

Sector-specific (agriculture and/or fisheries)

	Document	Exists?	References digitalisation?	Comments
	National agriculture policy/strategy	N/A*	N/A*	The National Agriculture Policy & Action Plan 2017–2027. The CARICOM Secretariat, under the Agriculture Policy Programme (APP), was financing the development of a Policy and Action Plan for the Commonwealth of Dominica's agriculture sector, but this document, if available, could not be accessed for further analysis by the review team.*
	Agriculture ICT	✗		
	National fisheries policy/strategy	N/A*	N/A*	The Organisation of Eastern Caribbean States (OECS) was supporting the development of a National Fisheries Policy 2012–2037, but this document, if available, could not be accessed for further analysis by the review team.*
	Fisheries ICT	✗		

Gaps and recommendations

	Gaps		Recommendations
🔍	This review identified no agriculture- and/or fisheries-specific digitalisation documents.	✘	Develop agriculture- and/or fisheries-specific digitalisation policy framework, starting with e-agriculture/e-fisheries strategy.
🔍	Agriculture and fisheries were poorly integrated into existing digitalisation documents.	✘	Mainstream agriculture and fisheries into existing digitalisation regulatory frameworks.
🔍	Environmental sustainability, poverty reduction, inclusion and rural development were not substantively addressed in digitalisation documents.	✘	Mainstream these themes into the development of sector-specific digitalisation policy frameworks to ensure that digitalisation contributes to sustainable development.

Eswatini

Overview

Agriculture is important to Eswatini's economy, and smallholder agriculture remains the backbone of rural livelihoods in the country.[8] However, digitalisation could be further mainstreamed into sectoral documents to promote and facilitate agricultural digitalisation. Similarly, this objective could also be strengthened in existing policy and legislative frameworks for digitalisation.

Digitalisation/ICTs

	Policy, strategy or legislation	References agriculture &/or fisheries?	Comments
	National Information and Infrastructure and Communication Policy (Implementation Plan 2012–2016)	✓	The plan recognises ICT infrastructure for agriculture as a priority, with Programme 10 dedicated to 'develop initiatives for e-Agriculture' (p79). Activity 1 is to 'Establish a national ICT Master Plan for Agriculture' by the end of 2013, although this plan could not be found online.
	E-Government Strategy for Swaziland 2013–2017	✗	The document sets out to determine Eswatini's readiness for e-government, but makes no mention of agriculture or fisheries specifically.
	Draft Computer and Cyber Crime Bill	✗	The Bill outlines regulatory measures with respect to cybercrime/cyber security, but makes no mention of agriculture or fisheries.

Sector-specific (agriculture and/or fisheries)

	Document	Exists?	References digitalisation?	Comments
	National agriculture policy/ strategy	✓	✗	The 2018–2023 Ministry of Agriculture Strategic Plan sets out to optimise utilisation of agricultural resources, but makes no mention of digitalisation. However, the Strategic Plan for Agriculture and Rural Statistics (2019–2023) does acknowledge that 'Advances in ICT [are] required for improvement of data collection, management, archiving, analysis and dissemination are critical to enhance production of Agricultural and Rural Statistics.'
	Agriculture ICT	✗		
	National fisheries policy/strategy	✗		
	Fisheries ICT	✗		

Gaps and recommendations

	Gaps		Recommendations
🔍	This review identified no agriculture- and/or fisheries-specific digitalisation documents.	💡	Develop agriculture- and/or fisheries-specific digitalisation policy framework, starting with e-agriculture/e-fisheries strategy.
🔍	Agriculture and fisheries were poorly integrated into existing digitalisation documents.	💡	Mainstream agriculture and fisheries into existing digitalisation regulatory frameworks.
🔍	Environmental sustainability, poverty reduction, inclusion and rural development were not substantively addressed in digitalisation documents.	💡	Mainstream these themes into the development of sector-specific digitalisation policy frameworks to ensure that digitalisation contributes to sustainable development.

Fiji

Overview

While Fiji is largely dependent on food imports, the agricultural sector employs nearly two-thirds of the labour force.[9] Fish and fishing are key to Fiji's economy, and seafood is an important contribution to Fijian diets. However, digitalisation in these productive sectors remains poorly articulated.

Digitalisation/ICTs

	Policy, strategy or legislation	References agriculture &/or fisheries?	Comments
	digitalFiji	✗	digitalFIJI is a four-year programme to implement a number of government applications, enhance the overall ICT infrastructure, and build and develop capacity in digital transformation in the government. It does not address agriculture or fisheries specifically.
	Draft Self Regulating Guideline: E-Commerce Business in Fiji 2017	✗	The guideline is designed to guide all businesses and consumers buying and selling goods and services, or transmitting funds or data, over an electronic network, primarily the internet. It does not mention the agriculture or fisheries sectors.

Sector-specific (agriculture and/or fisheries)

	Document	Exists?	References digitalisation?	Comments
	National agriculture policy/ strategy	✓	✗	The Agriculture Sector Policy Agenda does not appear to address digitalisation, but this document could not be accessed for further analysis by the review team.* The Agriculture Strategic Development Plan 2010–12 does not mention digitalisation.
	Agriculture ICT	✗		
	National fisheries policy/strategy	N/A*	N/A*	The National Fisheries Policy does not appear to address digitalisation, but this document could not be accessed for further analysis by the review team.*
	Fisheries ICT	✗		

Gaps and recommendations

	Gaps		Recommendations
🔍	This review identified no agriculture- and/ or fisheries-specific digitalisation documents.	💡	Develop agriculture- and/or fisheries-specific digitalisation policy framework, starting with e-agriculture/ e-fisheries strategy.
🔍	Agriculture and fisheries were poorly integrated into existing digitalisation documents.	💡	Mainstream agriculture and fisheries into existing digitalisation regulatory frameworks.
🔍	Environmental sustainability, poverty reduction, inclusion and rural development were not substantively addressed in digitalisation documents.	💡	Mainstream these themes into the development of sector-specific digitalisation policy frameworks to ensure that digitalisation contributes to sustainable development.

The Gambia

Overview

Agriculture is a vital sector in The Gambia, accounting for about 17.8 per cent of the country's GDP. The Gambia recently launched the E-Government Strategy 2021–2024, which acknowledges the importance of ICTs to support the agricultural (but not fisheries) sector.

Digitalisation/ICTs

	Policy, strategy or legislation	References agriculture &/ or fisheries?	Comments
	E-Government Strategy 2021–2024	✓	The strategy seeks to provide enhanced, accessible, secure and quality public services through ICTs. It mentions the potential for enhanced agricultural production through e-agriculture, including through developing and integrating information systems. However, it does not elaborate this process further. Fisheries are not mentioned.
	Information and Communications Act 2009	✓	The Act seeks to promote co-operation to realise the full benefits of information and communications beyond infrastructure and technology, extending to, inter alia, agriculture. However, this point is not further elaborated.

Sector-specific (agriculture and/or fisheries)

	Document	Exists?	References digitalisation?	Comments
	National agriculture policy/ strategy	✓	✓	The Agriculture and Natural Resources (ANR) Policy (2009–2015) seeks to promote food and nutrition security. It also notes information and communication systems, including internet services – in the sector, 'particularly in the rural areas for easy collection, management and use of relevant production and market information for trade, marketing and access to essential resources'. However, these aspects are not elaborated in any detail.
	Agriculture ICT	✗		
	National fisheries policy/ strategy	✓	✗	The 2018 Fisheries and Aquaculture Policy of The Gambia provides the framework for the governance and management of fisheries and aquaculture, but the document makes no mention of digitalisation.
	Fisheries ICT	✗		

	Document	Exists?	References digitalisation?	Comments
•••	Other	✓	✓	The Trade Policy 2018–2022 recognises both agriculture and fisheries, as well as ICT (e-commerce) as key sectors for trade development. Moreover, the policy notes that the government recognises the development implications of e-commerce, and aims to strengthen ICT infrastructure to meet the demand from businesses.

Gaps and recommendations

	Gaps		Recommendations
🔍	This review identified no agriculture- and/or fisheries-specific digitalisation documents.	💡	Develop agriculture- and/or fisheries-specific digitalisation policy framework, starting with e-agriculture/e-fisheries strategy.
🔍	Agriculture and fisheries were poorly integrated into existing digitalisation documents.	💡	Mainstream agriculture and fisheries into existing digitalisation regulatory frameworks.
🔍	Environmental sustainability, poverty reduction, inclusion and rural development were not substantively addressed in digitalisation documents.	💡	Mainstream these themes into the development of sector-specific digitalisation policy frameworks to ensure that digitalisation contributes to sustainable development.

Ghana

Overview

Agriculture is an important source of employment and food security in Ghana,[10] while the country's valuable fisheries make an important contribution to GDP and livelihoods security.[11] The Government of Ghana, through the Ministry of Communication, has been working towards the development of a framework to support the inclusive digitalisation of the economy. However, the enabling environment for the productive sectors could be further strengthened.

Digitalisation/ICTs

	Policy, strategy or legislation	References agriculture &/or fisheries?	Comments
	Electronic Transactions Act 2008	✗	The Act governs electronic transactions generally, but makes no specific reference to the agriculture or fisheries sectors.
	Data Protection Act 2012	✗	The Act governs data protection generally, but makes no specific reference to the agriculture or fisheries sectors.
	National Cyber Security Policy and Strategy 2014	✓	The policy governs cyber security generally and includes a section on food and agriculture (but not fisheries), including addressing potential cyber security threats in the sector.

Sector-specific (agriculture and/or fisheries)

	Document	Exists?	References digitalisation?	Comments
	National agriculture policy/strategy	✓	✗	There are many agricultural policies, such as the Food and Agriculture Sector Development Policy (FASDEP II) and the 2015 Gender and Agriculture Development Strategy II (GADS II), but digitalisation is not explicitly addressed.
	Agriculture ICT	✗		
	National fisheries policy/strategy	✓	✗	The 2015 Fisheries Management Plan of Ghana seeks to rebuild fish stocks and enhance employment. However, it does not have a substantive focus on digitalisation.
	Fisheries ICT	✗		
	Other	✓	✓	The Coordinated Programme of Economic and Social Development Policies 2017–2024 addresses ICTs in the context of increasing efficiency and effectiveness and both public and private sectors. Both agriculture and fisheries are addressed, although there is limited emphasis on digitalisation within these sectors. The Investing for Food and Jobs (IFJ) Agenda 2018–2021 does briefly address digitalisation.

Gaps and recommendations

	Gaps		Recommendations
	This review identified no agriculture- and/or fisheries-specific digitalisation documents.		Develop agriculture- and/or fisheries-specific digitalisation policy framework, starting with e-agriculture/ e-fisheries strategy.
	Agriculture and fisheries were poorly integrated into existing digitalisation documents.		Mainstream agriculture and fisheries into existing digitalisation regulatory frameworks.
	Environmental sustainability, poverty reduction, inclusion and rural development were not substantively addressed in digitalisation documents.		Mainstream these themes into the development of sector-specific digitalisation policy frameworks to ensure that digitalisation contributes to sustainable development.

Grenada

Overview

The agricultural sector of Grenada employs about 14 per cent of the labour force.[12] Similarly, fisheries constitute an important primary productive sector for employment and economic activity, national food security and exports.[13] However, the degree to which existing policies and regulations reflect the importance of digitalisation in these sectors remains limited.

Digitalisation/ICTs

	Policy, strategy or legislation	References agriculture &/or fisheries?	Comments
	Information and Communication Technology (ICT): A Strategy and Action Plan for Grenada 2001–2005	✗	The strategy frames Grenada's efforts to promote a knowledge-based economy. Agriculture is mentioned as a 'high-value knowledge-based activity' (p3), but no further reference is made to agriculture or fisheries, or digitalisation in these sectors.
	Electronic Transactions Act 2013	✗	The Act governs electronic transactions, but makes no reference to agriculture of fisheries.
	Electronic Crimes Bill 2013	✗	The Act regulates electronic crimes, but makes no reference to agriculture of fisheries.

Sector-specific (agriculture and/or fisheries)

	Document	Exists?	References digitalisation?	Comments
	National agriculture policy/strategy	✓	✗	The Grenada Food and Nutrition Security Policy of 2013 does mention that ICTs should be applied to all aspects of development, but provides no further elaboration on this point. Grenada National Agricultural Plan does not mention digitalisation or ICTs.
	Agriculture ICT	✗		
	National fisheries policy/strategy	N/A*	N/A*	The European Union appears to have been supporting Grenada to develop a fisheries policy in 2012, but this document, if available, could not be accessed for further analysis by the review team.*
	Fisheries ICT	✗		

Gaps and recommendations

	Gaps		Recommendations
	This review identified no agriculture- and/or fisheries-specific digitalisation documents.		Develop agriculture- and/or fisheries-specific digitalisation policy framework, starting with e-agriculture/e-fisheries strategy.
	Agriculture and fisheries were poorly integrated into existing digitalisation documents.		Mainstream agriculture and fisheries into existing digitalisation regulatory frameworks.
	Environmental sustainability, poverty reduction, inclusion, and rural development were not substantively addressed in digitalisation documents.		Mainstream these themes into the development of sector-specific digitalisation policy frameworks to ensure that digitalisation contributes to sustainable development.

Guyana

Overview

Agriculture contributed about 17 per cent of GDP in 2020. It is also a major export earner and employs roughly 17 per cent of the labour force.[14] Similarly, the fisheries sector, which is dominated by marine fisheries, is an important contributor to the local economy and local livelihoods.[15] Aquaculture is also described as a promising economic activity for Guyana by the Guyana Extractive Industries Transparency Initiative (GYEITI). While digitalisation of the agriculture sector was briefly addressed in the ICT for Development Strategy of 2006, there was little elaboration of the strategic steps to achieve digitalisation in the primary productive sectors.

Digitalisation/ICTs

	Policy, strategy or legislation	References agriculture &/or fisheries?	Comments
	ICT4D Guyana National Strategy 2006	✓	The strategy mentions the need for information technology, including for agriculture. It notes that 'Geographic Information System (GIS) are in place at the Lands and Surveys Commission, the Forestry Commission, the Guyana Geology and Mines Commission', among others. It is noted that there is a need to increase the awareness of ICT for all sectors. Fisheries are not mentioned.
	Cybercrime Bill 2018	✗	The Act regulates cybercrime, but does not address the agriculture or fisheries sectors specifically.
	Electronic Communications and Transactions Bill 2019	✗	The Act regulates e-communications and e-transactions, but does not address the agriculture or fisheries sectors specifically.

Sector-specific (agriculture and/or fisheries)

	Document	Exists?	References digitalisation?	Comments
	National agriculture policy/ strategy	✓		The National Strategy for Agriculture 2013–2020 seeks to guide Guyana's agricultural development. Digitalisation is not addressed directly. For example, farmer and market information and data systems are mentioned, but the policy does not explain whether these are to be digital.
	Agriculture ICT	✗		
	National fisheries policy/strategy	✗		
	Fisheries ICT	✗		

Gaps and recommendations

	Gaps		Recommendations
🔍	This review identified no agriculture- and/ or fisheries-specific digitalisation documents.		Develop agriculture- and/or fisheries-specific digitalisation policy framework, starting with e-agriculture/ e-fisheries strategy.
🔍	Agriculture and fisheries were poorly integrated into existing digitalisation documents.		Mainstream agriculture and fisheries into existing digitalisation regulatory frameworks.
🔍	Environmental sustainability, poverty reduction, inclusion and rural development were not substantively addressed in digitalisation documents.		Mainstream these themes into the development of sector-specific digitalisation policy frameworks to ensure that digitalisation contributes to sustainable development.

India

Overview

The agriculture sector is key to India's economy; accordingly, the government has taken several measures to develop the sector. According to a report published by the National Association of Software and Services Companies (NASSCOM) in 2019, there were more than 450 agri-based tech-driven start-ups in India as of 2019,[16] and this number is posited to be growing rapidly in response to a surge in investments. The Ministry of Agriculture is supporting, for example, crop yield prediction models using AI through a partnership between the National Institution for Transforming India and IBM, AI sensors for smart farming, and drones for monitoring soil and crop health (SENSAGRI).[17] Moreover, many of the digital ICT policy documents referenced the value of digitalisation/ICTs in agriculture, although there was little elaboration of strategies to achieve or promote digitalisation in the sector.

Digitalisation/ICTs

	Policy, strategy or legislation	References agriculture &/or fisheries?	Comments
	National Policy on Information Technology 2012	✓	The policy seeks to enhance productivity and competitiveness in key sectors through ICT, including in the agriculture sector, although this point is not further elaborated (and fisheries are not mentioned).
	National Digital Communications Policy 2018	✓	The policy seeks to put measures in place to ensure that the advantages of new technologies are accessible and affordable. The policy governs digital communications. It briefly mentions agriculture.
	National Strategy for Artificial Intelligence 2018	✓	The strategy notes the value of AI to the agriculture sector, e.g., precision agriculture advisory. However, this point is not elaborated further.
	National Cyber Security Policy 2013	✗	The policy sets out the framework to ensure cyber security, but it does not address the agriculture or fisheries sectors.
	India Personal Data Protection Bill 2018	✗	The Bill regulates the protection of personal data, but this is not applied specifically to the agriculture or fisheries sectors.
	National Optical Fibre Network Project 2014	N/A*	This document, if available, could not be accessed for further analysis by the review team.*

Sector-specific (agriculture and/or fisheries)

	Document	Exists?	References digitalisation?	Comments
	National agriculture policy/ strategy	✓	✓	India's National Agriculture Policy Vision 2020 recognises the 'revolution in informatics and communication, and the opportunity of linking farmers, extension workers and scientists with the national and international databases', and the need for effective ICT systems in this regard.
				The Tamil Nadu Biotechnology Policy 2014 governs, inter alia, bioinformatics and seeks to strengthen information technology, including by establishing the Bio-IT Park to address the IT-related needs of the global biotech industry.
	Agriculture ICT	✗		
	National fisheries policy/ strategy	✓	✗	The National Inland Fisheries and Aquaculture Policy 2019, National Policy on Marine Fisheries 2017 and the National Fisheries Policy 2020 form the policy framework governing the fisheries sectors. There is little focus on digitalisation, although the National Inland Fisheries and Aquaculture Policy 2019 mentions the effective use of ICTs in the context of extension and support services.
	Fisheries ICT	✗		

Gaps and recommendations

	Gaps		Recommendations
🔍	This review identified no agriculture- and/or fisheries-specific digitalisation documents.	💡	Develop agriculture- and/or fisheries-specific digitalisation policy framework, starting with e-agriculture/e-fisheries strategy.
🔍	Agriculture and fisheries were poorly integrated into existing digitalisation documents.	💡	Mainstream agriculture and fisheries into existing digitalisation regulatory frameworks.
🔍	Environmental sustainability, poverty reduction, inclusion and rural development were not substantively addressed in digitalisation documents.	💡	Mainstream these themes into the development of sector-specific digitalisation policy frameworks to ensure that digitalisation contributes to sustainable development.

Jamaica

Overview

Agriculture and fisheries are key to strengthening agrifood systems and food security, and drive sustainable development, but rural digital inclusion could be further improved, according to the Inter-American Institute for Cooperation on Agriculture (IICA).[18] Only a small proportion of the rural population has specific digital skills. Moreover, digital and ICT policy documents do not consistently address digitalisation in the agriculture and fisheries sectors.

Digitalisation/ICTs

	Policy, strategy or legislation	References agriculture &/ or fisheries?	Comments
	Information and Communications Technology Policy (ICT) Policy 2011	✗	The policy seeks to provide a comprehensive framework for the ICT sector, in order to facilitate investment, strengthen all productive sectors and create a knowledge-based society. However, it does not explicitly address the agriculture or fisheries sectors.
	E-Powering Jamaica Master Implementation Plan 2007–2012	✗	The policy seeks to encourage ICT knowledge and access to broadband, among other things. There is no focus on agriculture or fisheries.
	National Cyber Security Strategy 2015	✓	The strategy seeks to establish a national cyber security framework. The strategy presents agriculture as 'critical infrastructure' in need of protection, but provides no further elaboration on how cyber security might relate to agriculture specifically.
	Electronic Transactions Act 2006	✗	The Act regulates electronic transactions, but makes no mention of agriculture or fisheries.
	Cybercrimes Act 2015	✗	The Act regulates cybercrimes. It makes no reference to the agriculture or fisheries sectors.
	Consumer Protection Act 2005	✗	The Act seeks to provide for the promotion and protection of consumer interest, in relation to the supply of goods and provision of services. It makes no mention of agriculture or fisheries.

Sector-specific (agriculture and/or fisheries)

	Document	Exists?	References digitalisation?	Comments
	National agriculture policy/ strategy	✓	✓	The Final Draft Agriculture Sector Plan under Vision 2030 Jamaica promotes increased application of ICT to agricultural production (p59).
				The Ministry of Agriculture and Fisheries Strategic Business Plan 2021–2025 commits to digitising agricultural records and improving access to ICT equipment.
				The 2017 Draft Youth in Agriculture Policy and Implementation Plan recognises that digital media can enhance youth engagement, and ICT tools can be used to build youth capacity to transition into, and participate in, the agriculture sector. The policy and plan commits to improving ICT platforms to give greater youth access to business advisory services, research and information sharing etc.
	Agriculture ICT	✗		
	National fisheries policy/ strategy	✓	✗	The Draft Fisheries Policy 2008, which seeks to ensure sustainable development of the fisheries industry, and improve systems and procedures for the management of the fishing industry (among others) does not address digitalisation or ICTs.
	Fisheries ICT	✗		

Gaps and recommendations

	Gaps		Recommendations
🔍	This review identified no agriculture- and/or fisheries-specific digitalisation documents.		Develop agriculture- and/or fisheries-specific digitalisation policy framework, starting with e-agriculture/e-fisheries strategy.
🔍	Agriculture and fisheries were poorly integrated into existing digitalisation documents.		Mainstream agriculture and fisheries into existing digitalisation regulatory frameworks.
🔍	Environmental sustainability, poverty reduction, inclusion and rural development were not substantively addressed in digitalisation documents.		Mainstream these themes into the development of sector-specific digitalisation policy frameworks to ensure that digitalisation contributes to sustainable development.

Kenya

Overview

The Kenyan agricultural sector is an economic cornerstone, but producers currently lack the contemporary technologies and decision-support tools necessary for sustaining and improving yields. According to a recent assessment by the FAO, World Bank, CGIAR and other partners, high technology costs, low digital literacy, limited infrastructure access and a weak enabling policy environment are the primary constraints to the adoption of digital agricultural solutions.[19] The same assessment highlights mobile, data, blockchain and weather station technologies as the most promising high-impact solutions for the challenges facing Kenyan agricultural stakeholders.

Similarly, the Kenya Marine and Fisheries Research Institute (KMFRI) notes that fisheries have untapped potential, but there is little evidence of an enabling environment for digitalisation in the sector.

Digitalisation/ICTs

	Policy, strategy or legislation	References agriculture &/ or fisheries?	Comments
	Digital Economy Blueprint 2019	✓	The blueprint recognises that the digitalisation of the agricultural sector offers new opportunities through innovations that upscale the agricultural value chain, and notes that agricultural information systems connecting government, farmers and agribusiness will improve food security. Moreover, digitising land records can help to reduce fraud and unlock value, while integrating ICTs in education increases the skills base.
	Data Protection Bill 2018	✗	The Act is in force to regulate the collection, retrieval, processing, storage, use and disclosure of personal data. It does not reference agriculture or fisheries.
	Computer Misuse and Cybercrimes Act 2021	✗	The Act regulates computer misuse and cybercrime in the economy, but does not address agriculture or fisheries explicitly.

Sector-specific (agriculture and/or fisheries)

	Document	Exists?	References digitalisation?	Comments
	National agriculture policy/ strategy	✓	✓	The Agricultural Sector Transformation and Growth Strategy 2019–2029 includes numerous strategies pertaining to digitalisation or the use of ICTs, such as digitally enabled government extension agents, digitalisation of data for better decision-making and performance management, and digital subsidy delivery programmes (including e-vouchers). This is also true for the National Agriculture Investment Plan 2019–2024.

	Document	Exists?	References digitalisation?	Comments
				Similarly, the Strategic Plan for the Ministry of Agriculture, Livestock, Fisheries and Cooperatives 2018–2022 notes the value of digital platforms and ICT infrastructure, although it notes that ICT literacy levels remain 'a challenge on performance and service delivery'. However, the Capacity Building Strategy for the Agricultural Sector 2016–2021 notes that there is a paucity of institutions offering ICT services, and inadequate ICT facilities. It notes that national government will 'facilitate use of ICT solutions in agriculture value chains'.
				The Kenya Climate Smart Agriculture Implementation Framework 2018–2027 highlights the need to upscale ICTs for information sharing and research, among others. Similarly, the Kenya Youth Agribusiness Strategy 2017–2021 highlights the benefits of digital platforms, while the National Agricultural Research System Policy 2012 notes the need for information sharing and suitable infrastructure to close the digital divide.
	Agriculture ICT	✗		
	National fisheries policy/ strategy	✓	✗	The National Oceans and Fisheries Policy 2008, which provides a policy framework for the fisheries sector, does not reference digitalisation or ICTs.
	Fisheries ICT	✗		
	Other	✓	✓	The National Trade Policy 2009 has a strong focus on e-commerce, including the use of electronic communications and digital information processing technologies in business transactions. It further notes that the agriculture sector remains 'the backbone of the Kenya economy'.

Gaps and recommendations

	Gaps		Recommendations
🔍	This review identified no agriculture- and/or fisheries-specific digitalisation documents.	💡	Develop agriculture- and/or fisheries-specific digitalisation policy framework, starting with e-agriculture/e-fisheries strategy.
🔍	Agriculture is relatively well integrated into existing digitalisation documents, but further detail could be provided to frame efforts to enhance digitalisation. This issue is even more pronounced for fisheries.	💡	Mainstream agriculture and especially fisheries into existing digitalisation regulatory frameworks.
🔍	Environmental sustainability, poverty reduction, inclusion and rural development were not substantively addressed in digitalisation documents.	💡	Mainstream these themes into the development of sector-specific digitalisation policy frameworks to ensure that digitalisation contributes to sustainable development.

Kiribati

Overview

Agriculture and fishing, along with forestry, contributes 26 per cent of Kiribati's GDP.[20] However, digitalisation of these sectors could be further strengthened. More broadly, the UN Conference on Trade and Development (UNCTAD) assessment of Kiribati's e-trade readiness has recommended policy actions aimed at seizing opportunities and removing barriers to increase the country's overall competitiveness in e-commerce and the broader digital economy.[21]

Digitalisation/ICTs

	Policy, strategy or legislation	References agriculture &/ or fisheries?	Comments
	National ICT Policy 2019	✓	The policy recognises ICT as a key enabler to improve economic and social developments. The policy also maps Kiribati's plan to develop e-government and digital infrastructure. The policy notes that ICTs can improve agricultural production and fisheries, among others, and the government commits to promoting e-agriculture and e-applications in agriculture. The policy is also linked to sectoral policies, like the Fisheries Policy.
	Digital Government Master Plan 2021	✓	The plan sets out Kiribati's commitment to transforming the delivery of public services, and using digital solutions to enhance good governance. The plan highlights the need to digitalise the Land Register in the Ministry of Environment, Lands and Agricultural Development. It does not mention fisheries.
	Kiribati National Cybersecurity Strategy 2020	✗	The strategy outlines how the government will strengthen protection of critical infrastructure against cyber attacks, among other things. The strategy recognises the food and agriculture sector as critical infrastructure, but does not elaborate cyber security approaches for the agriculture or fisheries sectors specifically.
	Kiribati National Cybercrime Act 2021	✗	The Act provides for the prevention, investigation and suppression of computer-related offences, and for other connected purposes. It does not mention the agriculture or fisheries sectors.

Sector-specific (agriculture and/or fisheries)

	Document	Exists?	References digitalisation?	Comments
	National agriculture policy/ strategy	✓	✗	The National Agriculture Strategy 2020–2030 notes that limited access to information and technologies, among other things, impedes the sector. It commits to strengthening information services, but does not reference digitalisation.
	Agriculture ICT	✗		.
	National fisheries policy/ strategy	✓		The Kiribati National Fisheries Policy 2013–2025 seeks to establish a clear vision with a calculated policy for managing and developing Kiribati's fisheries. It does not reference digitalisation or ICTs.
	Fisheries ICT			

Gaps and recommendations

	Gaps		Recommendations
🔍	This review identified no agriculture- and/or fisheries-specific digitalisation documents.	💡	Develop agriculture- and/or fisheries-specific digitalisation policy framework, starting with e-agriculture/e-fisheries strategy.
🔍	The integration of agriculture and particularly fisheries into digitalisation documents could be further strengthened, to better structure efforts to enhance digitalisation in these sectors.	💡	Mainstream agriculture and fisheries into existing digitalisation regulatory frameworks.
🔍	Environmental sustainability, poverty reduction, inclusion and rural development were not substantively addressed in digitalisation documents.	💡	Mainstream these themes into the development of sector-specific digitalisation policy frameworks to ensure that digitalisation contributes to sustainable development.

Lesotho

Overview

The Lesotho Vision 2020 has identified increased agricultural productivity and sustainable food security as one of the country's primary challenges and recognises that ICTs can be used to improve the food security of the nation by improving communication among producers and consumers, as well as providing greater access to information. However, according to IFAD, there are few policy documents for the agriculture sector, and existing policy documents are often outdated or poorly implemented.[22] The contribution of the fisheries sector remains limited in Lesotho, although there is scope for the development of aquaculture. It is not clear to what degree the benefits of digitalisation have been harnessed in the development of the sector to date.

Digitalisation/ICTs

	Policy, strategy or legislation	References agriculture &/or fisheries?	Comments
	National ICT Policy 2005	✓	Agriculture and food security is one of ten cross-cutting catalysts of the ICT policy. The policy notes that ICTs have the potential to revolutionise the management of the agricultural sector and improve food security. The policy outlines several strategies for agricultural ICTs.
	Lesotho National Broadband Policy 2014–18	✓	The National Broadband Policy outcomes include improving the efficiency of key sectors of the economy, particularly primary resources and agriculture.
	Lesotho Electronic Transactions and Electronic Commerce Bill 2013	✗	The Bill regulates electronic transactions and commerce. It does not specifically address e-transaction or e-commerce in the agriculture or fisheries sectors.

Sector-specific (agriculture and/or fisheries)

	Document	Exists?	References digitalisation?	Comments
	National agriculture policy/strategy	✗		
	Agriculture ICT	✗		
	National fisheries policy/strategy	✗		
	Fisheries ICT	✗		

Gaps and recommendations

	Gaps		Recommendations
🔍	This review identified no agriculture- and/or fisheries specific digitalisation documents.	💡	Develop agriculture- and/or fisheries-specific digitalisation policy framework, starting with e-agriculture/e-fisheries strategy.
🔍	Agriculture is relatively well integrated into existing digitalisation documents, but further detail could be provided to frame efforts to enhance digitalisation. Fisheries is not mainstreamed into existing digitalisation policies.	💡	Ensure that agriculture and (where relevant) fisheries continue to be mainstreamed and further embedded into existing digitalisation regulatory frameworks.
🔍	The review identified no national agriculture or fisheries policies.	💡	Strengthen the sectoral policy frameworks for agriculture and fisheries, ensuring that digitalisation is adequately mainstreamed into the frameworks.
🔍	Environmental sustainability, poverty reduction, inclusion and rural development were not substantively addressed in digitalisation documents.	💡	Mainstream these themes into the development of sector-specific digitalisation policy frameworks to ensure that digitalisation contributes to sustainable development.

Malawi

Overview

Agriculture is a pillar of the economy. The majority of the rural population relies on small-scale, rainfed farming, although productivity remains low. Mobile penetration levels in Malawi are high, but the electrification rate remains low.

Digitalisation/ICTs

	Policy, strategy or legislation	References agriculture &/ or fisheries?	Comments
	National ICT Policy 2013	✓	Agriculture is identified as one of three 'priority growth sectors' (p10), where ICT has the potential to stimulate, modernise and sustain processes and systems.
	National ICT Master Plan (2014–2031)	✓	The plan involves four pillars covering ICT infrastructure, innovation and human capital development, ICT industry development and e-business, as well as e-government services and growth sectors development, including in agriculture.
	Digital Economy Strategy 2020	✓	The strategy aims to boost access to connectivity by 2026, making internet access more affordable and reliable. The strategy includes 'Digital Solutions' for agriculture.
	Digital Government Strategy 2019	✓	The strategy aims to promote e-governance, including for agriculture.
	National Broadband Strategy 2019-2023	✓	The strategy aims to improve broadband service delivery. it explicitly notes that connectivity in rural areas, where agriculture is the main economic activity, needs to improve.
	Cybersecurity Strategy	✗	The strategy seeks to contribute to cyber security in Malawi. It does not mention agriculture or fisheries.
	Electronic Transactions and Cyber security Act 2016	✗	The Act regulates electronic transactions. It does not reference agriculture or fisheries.
	Draft Data Protection Act 2021	N/A*	This document could not be accessed for further analysis by the review team.*

Sector-specific (agriculture and/or fisheries)

	Document	Exists?	References digitalisation?	Comments
	National agriculture policy/strategy	✓	✓	The National Agriculture Policy of Malawi 2016–2020 seeks to transform the sector from subsistence to market-oriented production. The policy recognises the value of ICTs, including for agricultural information management, advocacy and communication, and extension.
	Agriculture ICT	✗		
	National fisheries policy/strategy	✓	✗	The National Fisheries and Aquaculture Strategy 2016 aims to address critical issues affecting fisheries and aquaculture development in Malawi. There is no mention of digitalisation or the use of ICTs.
	Fisheries ICT	✗		

Gaps and recommendations

	Gaps		Recommendations
🔍	This review identified no agriculture- and/or fisheries-specific digitalisation documents.	💡	Develop agriculture- and/or fisheries-specific digitalisation policy framework, starting with e-agriculture/e-fisheries strategy.
🔍	The focus on digitalisation and the potential application of ICTs to the fisheries sector could be better reflected in the sector policy.	💡	Mainstream digitalisation and the use of ICTs into the National Fisheries and Aquaculture Strategy.
🔍	Agriculture and fisheries were poorly integrated into existing digitalisation documents, and further detail could be provided to frame efforts to enhance digitalisation.	💡	Mainstream agriculture and fisheries into existing digitalisation regulatory frameworks.
🔍	Environmental sustainability, poverty reduction, inclusion and rural development were not substantively addressed in digitalisation documents.	💡	Mainstream these themes into the development of sector-specific digitalisation policy frameworks to ensure that digitalisation contributes to sustainable development.

Malaysia

Overview

The agriculture and fisheries (and forestry) sectors accounts for about 8 per cent of the country's GDP, but it is unclear to what degree the country has leveraged the benefits of digitalisation at present.

Digitalisation/ICTs

	Policy, strategy or legislation	References agriculture &/or fisheries?	Comments
	Public Sector ICT Strategy 2016–2020	✗	This five-year plan strategises the implementation of ICT practices and policies in the public sector, but it is not specific to the agriculture or fisheries sectors.
	Digital Economy Blueprint	✓	Agriculture is one of the four main sectors. Initiatives for the sector include promoting smart farming adoption through a centralised open-data platform among industry players, and creating more local digital platforms to enable access to the 'Farm to Table' digital marketplace.
	National Internet of Things Strategic Roadmap	N/A*	The roadmap seeks to create a comprehensive IoT ecosystem. It does not mention agriculture or fisheries explicitly. This document could not be accessed for further analysis by the review team.*
	National Broadband Strategy	N/A*	The strategy seeks to bring broadband to the whole nation through various initiatives. This document could not be accessed for further analysis by the review team.*
	National E-Commerce Strategic Roadmap 2016–2020	N/A*	The roadmap seeks to maximise impact and accelerate e-commerce GDP growth. This document could not be accessed for further analysis by the review team.*
	National Fiberisation and Connectivity Plan (NFCP)	✗	The NFCP aims to provide nationwide digital connectivity, and high-quality and affordable internet for all Malaysians in urban and rural areas.

Sector-specific (agriculture and/or fisheries)

	Document	Exists?	References digitalisation?	Comments
	National agriculture policy/strategy	✓	✓	The National Agrofood Policy 2021–2030 highlights the need for the end-to-end digitalisation of the value chain, and improve digital connectivity and information, among other things.
	Agriculture ICT	✗		
	National fisheries policy/strategy	✗		
	Fisheries ICT	✗		

Gaps and recommendations

	Gaps		Recommendations
	This review identified no agriculture- and/or fisheries-specific digitalisation documents.		Develop agriculture- and/or fisheries-specific digitalisation policy framework, starting with e-agriculture/ e-fisheries strategy.
	There appears to be no national fisheries and/or aquaculture policy, although aquaculture is mentioned in the National Agrofood Policy.		Develop a fisheries and/or aquaculture policy that addresses the potential opportunities presented by digitalisation and the sectoral application of ICTs.
	Agriculture and fisheries were poorly integrated into existing digitalisation documents, and further detail could be provided to frame efforts to enhance digitalisation.		Mainstream agriculture and fisheries into existing digitalisation regulatory frameworks.
	Environmental sustainability, poverty reduction, inclusion and rural development were not substantively addressed in digitalisation documents.		Mainstream these themes into the development of sector-specific digitalisation policy frameworks to ensure that digitalisation contributes to sustainable development.

Maldives

Overview

Maldives' economy is primarily reliant on tourism and fisheries.[23] The fishing industry is the country's second largest industry, and fishing presents a primary economic activity for many Maldivians. However, the sector's performance is unpredictable, and the contribution of fisheries to GDP has fallen due to a declining catch, increased fuel prices and illegal fishing by foreign vessels.[24] Smallholder agriculture is also important to a number of rural households. This review did not identify any digitalisation or ICT policy documents for Maldives. Similarly, while the National Fisheries and Agricultural Policy 2019–2029 does reference ICTs, it provides little guidance as to how digitalisation might be achieved.

Digitalisation/ICTs

	Policy, strategy or legislation	References agriculture &/or fisheries?	Comments
	✗	✗	✗

Sector-specific (agriculture and/or fisheries)

	Document	Exists?	References digitalisation?	Comments
	National agriculture policy/ strategy	✓	✓	The National Fisheries and Agricultural Policy 2019–2029 provides the governance framework for both sectors. It does mention ICT, but provides little elaboration as to how these sectors can promote digitalisation.
	Agriculture ICT	✗		
	National fisheries policy/strategy	✓	✓	The National Fisheries and Agricultural Policy 2019–2029 provides the governance framework for both sectors. It does mention ICT, but provides little elaboration as to how these sectors can promote digitalisation.
	Fisheries ICT	✗		

Gaps and recommendations

	Gaps		Recommendations
🔍	This review identified no agriculture- and/or fisheries-specific digitalisation documents.	💡	Develop agriculture- and/or fisheries-specific digitalisation policy framework, starting with e-agriculture/e-fisheries strategy.
🔍	This review identified no existing national digitalisation documents.	💡	Develop digitalisation policies and legislative documents to support digitalisation, including in the agriculture and fisheries sectors.
🔍	Environmental sustainability, poverty reduction, inclusion and rural development were not substantively addressed in digitalisation documents.	💡	Mainstream these themes into the development of sector-specific digitalisation policy frameworks to ensure that digitalisation contributes to sustainable development.

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Malta

Overview

The government affirms that the farming and fishing sectors are an intrinsic part of Maltese identity. However, present policy and legislative frameworks exhibit little reciprocal mainstreaming of digitalisation within the agriculture and fisheries sectors.

Digitalisation/ICTs

	Policy, strategy or legislation	References agriculture &/or fisheries?	Comments
	Digital Malta: National Digital Strategy 2014–2020	✗	The strategy sets out the Maltese government's vision to transform the country into one that will prosper as a digitally enabled nation in all sectors of society, but it does not specifically mention agriculture or fisheries.
	Electronic Commerce Act 2002	✗	The Act regulates e-commerce. It does not mention agriculture or fisheries specifically.
	Data Protection Act 2018	✗	The Act regulates the protection of data. It does not reference the agriculture or fisheries sectors specifically.

Sector-specific (agriculture and/or fisheries)

	Document	Exists?	References digitalisation?	Comments
	National agriculture policy/ strategy	✓	✓	The National Agriculture Policy seeks to provide strategic national direction for the agriculture sector. It notes there is a 'digital revolution', but does not address this in its strategies.
	Agriculture ICT	✗		
	National fisheries policy/strategy	✗		
	Fisheries ICT	✗		

Gaps and recommendations

	Gaps		Recommendations
🔍	This review identified no agriculture- and/or fisheries-specific digitalisation documents.	💡	Develop agriculture- and/or fisheries-specific digitalisation policy framework, starting with e-agriculture/e-fisheries strategy.
🔍	Agriculture and fisheries were poorly integrated into existing digitalisation documents.	💡	Mainstream agriculture and fisheries into existing digitalisation regulatory frameworks.
🔍	Environmental sustainability, poverty reduction, inclusion and rural development were not substantively addressed in digitalisation documents.	💡	Mainstream these themes into the development of sector-specific digitalisation policy frameworks to ensure that digitalisation contributes to sustainable development.

Mauritius

Overview

Mauritius is a net food importer, with local production constrained by its limited size and the absence of economies of scale. Nonetheless, the USA International Trade Administration notes that the agricultural sector is a best prospect industry sector for the country.[25] Similarly, the fisheries sector represents an important economic sector; it generates employment, foreign income and contributes to food security. The Mauritius Vision 30 calls for an intelligent and smart Mauritius, with the aim of developing Mauritius into a SMART or 'cyber' island. Accordingly, the number of digitalisation and ICT policy and regulatory documents has proliferated in recent years, but the degree to which these cover the agriculture or fisheries sectors remains limited.

Digitalisation/ICTs

	>Policy, strategy or legislation	References agriculture &/or fisheries?	Comments
	Digital Mauritius 2030 Strategic Plan	✗	The plan seeks to create the enabling environment for digitalisation. The plan notes that the economy has developed from an exclusively agriculture-based economy to a diversified upper middle-income country, but does not otherwise address the agriculture or fisheries sectors.
	Digital Government Transformation Strategy 2018–2022	✓	The strategy lays emphasis on the use of data for governance and develops 12 digital government pillars that contribute to the Sustainable Development Goals (SDGs). It briefly highlights the value of ICTs, e.g., open data and e-business strategies, including for agriculture and fisheries.
	Mauritius e-Government Strategy 2013–2017 Action Plan	✓	The action plan seeks to establish a 'networked government'. It committed to 'Implement e-agriculture Plan' by year three (i.e. 2016).
	Information and Communication Technologies Act 2001 (amended 2018)	✗	The Act establishes the ICT Authority, ICT Advisory Council and ICT Appeal Tribunal. It regulates and democratises ICTs and related matters. It does not reference agriculture or fisheries.
	National Broadband Policy 2012–2020 (NBP2012)	✗	The policy sets out a strategic vision for a broadband intelligent Mauritius. The policy notes that ICT usage is lowest in the primary sector, including both agriculture and fisheries. While the potential applications of ICT to agriculture are subsequently noted in passing, there is no further elaboration on this point.
	Cybercrime Strategy 2017–2019	✗	The strategy sets out the government's approach to fight cybercrime through improved law enforcement capability, an effective criminal justice framework, and active international agreement. It does not reference agriculture or fisheries.

	>Policy, strategy or legislation	References agriculture &/or fisheries?	Comments
	The Data Protection Act (DPA), amended 2017	✗	The DPA seeks to provide protection of the privacy rights of individuals. It does not reference agriculture or fisheries.
	The Computer Misuse and Cybercrime Act 2003	✗	The Act regulates computer misuse and cybercrime. It provides no mention of agriculture or fisheries.
	Mauritius Artificial Intelligence (AI) Strategy 2018	✓	The strategy embodies the government's commitment to making AI a cornerstone of the next development model. It notes that agriculture is a sector seeing rapid adoption of AI and machine learning, and notes the marine applications of AI towards an ocean economy, including to fisheries and seafood,
	National Cyber Security Strategy 2014–2019	✗	The strategy sets out the government's approach to fight cybercrime through improved law enforcement capability, an effective criminal justice framework, and active international agreement. It does not reference agriculture or fisheries.
	National Open Source Software (OSS) Strategy for the Republic of Mauritius 2014	✓	The strategy seeks to foster measures to design and create sustainable communities surrounding open-source software. It does not mention agriculture, but it alludes to 'other projects based on tourism, fishery' (p62) in the context of smartOSS. However, this is not further elaborated.
	National Open Data Policy 2017	✓	The Open Data Policy formulates appropriate guidelines and processes for ministries and departments in the release and management of government datasets as open data. It explicitly highlights agriculture statistics and prices in the context of open data, although fisheries is not mentioned.
	Electronic Transactions Act 2000	✗	The Act establishes the legal infrastructure necessary to implement secure electronic commerce and remove related uncertainties. It does not address agriculture or fisheries specifically.

Sector-specific (agriculture and/or fisheries)

	Document	Exists?	References digitalisation?	Comments
	National agriculture policy/strategy	✓	✗	The Strategic Plan for the Food Crop, Livestock and Forestry Sectors 2016–2020 establishes the policy framework the agriculture sector. It highlights ICT for effective agricultural knowledge management, to work smarter, enhance agricultural extension, and interact in new ways with farmers (74).
	Agriculture ICT	✗		*The e-Agriculture Plan noted in the Mauritius e-Government Strategy 2013–2017 Action Plan could not be found.
	National fisheries policy/ strategy	✗		The Five Year Fishery Development Plan highlights priorities for fisheries development. There is no evidence focus on digitalisation or ICTs.
	Fisheries ICT	✗		

Gaps and recommendations

	Gaps		Recommendations
🔍	This review identified no agriculture- and/or fisheries-specific digitalisation documents.	💡	Develop agriculture- and/or fisheries-specific digitalisation policy framework, starting with e-agriculture/e-fisheries strategy.
🔍	Agriculture and fisheries are poorly integrated into existing digitalisation documents.	💡	Mainstream agriculture and fisheries into existing digitalisation regulatory frameworks.
🔍	Environmental sustainability, poverty reduction, inclusion and rural development are not substantively addressed in digitalisation documents.	💡	Mainstream these themes into the development of sector-specific digitalisation policy frameworks to ensure that digitalisation contributes to sustainable development.

Mozambique

Overview

Agriculture is the main source of income for over 70 per cent of the Mozambican population and provides employment for 80 per cent of the population.[26] Mozambique is regarded as having great potential for agricultural production. Most fisheries are small scale artisanal, although industrial fishing is carried out, especially on the Sofala Bank.[27] In terms of ICT development, there have been some improvements in telecommunications network infrastructure and services, but there is little evidence of widespread digitalisation.[28]

Digitalisation/ICTs

	Policy, strategy or legislation	References agriculture &/ or fisheries?	Comments
	ICT Policy 2000	✓	The ICT Policy sets out Mozambique's efforts at promoting the use of ICTs. The policy does address agriculture and natural resources.
	National ICT Implementation Strategy 2002 and 2006	✓	The Implementation Strategy builds on the ICT Policy. Agriculture and rural development is one of the fundamental areas of action. Fisheries is not mentioned.
	Electronic Transactions Act 2010	✗	The Act regulates electronic transactions. It does not reference agriculture or fisheries.

Sector-specific (agriculture and/or fisheries)

	Document	Exists?	References digitalisation?	Comments
	National agriculture policy/strategy	✓	✓	The Strategic Plan for the Development of the Agriculture Sector (PEDSA) 2011–2020 provides the policy framework for the sector. Among other strategies, the plan highlights reinforced agricultural information systems, including through the use of ICTs.
	Agriculture ICT	✗		
	National fisheries policy/strategy	✗		
	Fisheries ICT	✗		

Gaps and recommendations

	Gaps		Recommendations
🔍	This review identified no agriculture- and/or fisheries-specific digitalisation documents.	💡	Develop agriculture- and/or fisheries-specific digitalisation policy framework, starting with e-agriculture/e-fisheries strategy.
🔍	Agriculture and fisheries were poorly integrated into existing digitalisation documents.	💡	Mainstream agriculture and fisheries into existing digitalisation regulatory frameworks.
🔍	Environmental sustainability, poverty reduction, inclusion and rural development were not substantively addressed in digitalisation documents.	💡	Mainstream these themes into the development of sector-specific digitalisation policy frameworks to ensure that digitalisation contributes to sustainable development.

Namibia

Overview

Agriculture is one of Namibia's most important sectors, with most of Namibia's population directly or indirectly depending on the sector.[29] According to the Marine Sustainability Council (MSC), fishing is the third-largest economic sector in the country.[30] The Namibian government's Vision 2030 stipulates that ICT must be the most important sector in the economic development of the country by 2030. However, evidence of an enabling environment for digitalisation in the primary sectors remains limited.

Digitalisation/ICTs

	Policy, strategy or legislation	References agriculture &/or fisheries?	Comments
	ICT Policy 2008	✗	The policy seeks to contribute to the growth of the Namibian ICT industry. It does not reference the agriculture or fisheries sectors specifically.
	Telecommunications Policy 2009	✗	The policy seeks to establish an enabling environment for telecommunications. It does not reference agriculture or fisheries.
	Broadcasting Policy	✗	The policy aims to support the transition to an integrated electronic communications sector. It does not mention agriculture or fisheries.
	Electronic Transactions and Communications Act 2019	✗	The Act regulates the use of electronic transactions and communications. It does not mention agriculture or fisheries.
	Cybercrime Bill	N/A*	This document could not be accessed for further analysis by the review team.*

Sector-specific (agriculture and/or fisheries)

	Document	Exists?	References digitalisation?	Comments
	National agriculture policy/ strategy	✓	✓	The Ministry of Agriculture, Water & Forestry – Strategic Plan 2017/18–2021/22 notes that inadequate ICT infrastructure and the lack of user competence is a barrier, although there is little elaboration as to how to overcome this challenge.
				Similarly, the Namibian Agriculture Marketing and Trade Policy and Strategy 2011 notes that 'ICT plays an important role in the productivity and competitiveness of the agriculture sector, and more so as a means of marketing and trade ... It is therefore necessary that the ICT systems be devised with the needs of the agriculture sector in mind.' (p32).

	Document	Exists?	References digitalisation?	Comments
	Agriculture ICT	✗		
	National fisheries policy/ strategy	✓	✗	The (Draft) Fisheries Policy of 2015 mentions that ICT technologies may be used in sectoral communications, but provides no further elaboration on this point.
	Fisheries ICT	✗		

Gaps and recommendations

	Gaps		Recommendations
🔍	This review identified no agriculture- and/or fisheries-specific digitalisation documents.	💡	Develop agriculture- and/or fisheries-specific digitalisation policy framework, starting with e-agriculture/e-fisheries strategy.
🔍	Agriculture and fisheries were poorly integrated into existing digitalisation documents.	💡	Mainstream agriculture and fisheries into existing digitalisation regulatory frameworks.
🔍	Environmental sustainability, poverty reduction, inclusion and rural development were not substantively addressed in digitalisation documents.	💡	Mainstream these themes into the development of sector-specific digitalisation policy frameworks to ensure that digitalisation contributes to sustainable development.

Nauru

Overvew

Over 70 per cent of the average Nauruan diet is sourced from locally produced food, according to the Pacific Agriculture Policy Project.[31] There is little evidence of an enabling environment for digitalisation or the use of ICTs in the primary sectors.

Digitalisation/ICTs

	Policy, strategy or legislation	References agriculture &/ or fisheries?	Comments
	Nauru ICT Policy	N/A*	This document could not be accessed for further analysis by the review team.*
	Cybercrime Act 2015	✗	The Act provides for the prevention of, investigation, suppression and imposition of penalties for computer-related offences in Nauru. Agriculture and fisheries are not mentioned.

Sector-specific (agriculture and/or fisheries)

	Document	Exists?	References digitalisation?	Comments
	National agriculture policy/strategy	✗		
	Agriculture ICT	✗		
	National fisheries policy/ strategy	✓	✓	The Nauru Fisheries and Marine Resources Authority (NFMRA) Corporate Plan 2015–2020 provides the policy framework for the development of the fisheries sector. It mentions the need for ICT infrastructure and good internet connectivity to allow for the management of NFMRA functions, particularly monitoring and licensing of foreign fishing vessels, and participating in regional decision-making processes.
	Fisheries ICT	✗		

Gaps and recommendations

	Gaps		Recommendations
🔍	This review identified no agriculture- and/or fisheries-specific digitalisation documents.	💡	Develop agriculture- and/or fisheries-specific digitalisation policy framework, starting with e-agriculture/e-fisheries strategy.
🔍	Agriculture and fisheries were poorly integrated into existing digitalisation documents.	💡	Mainstream agriculture and fisheries into existing digitalisation regulatory frameworks.
🔍	Environmental sustainability, poverty reduction, inclusion and rural development were not substantively addressed in digitalisation documents.	💡	Mainstream these themes into the development of sector-specific digitalisation policy frameworks to ensure that digitalisation contributes to sustainable development.

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New Zealand

Overview

The agriculture sector plays an important role in the economy, and the Minister of Economic Development of New Zealand recognises that the 'agritech landscape is bursting with ingenuity'.[32] Agritech is a priority sector because of its importance to New Zealand's transition to a highly productive, low-emissions future, its adjacency to a strong food and fibre sector, and existing expertise and investment in this area. However, while agriculture and fisheries are mentioned in some digitalisation policy and regulatory documents, there is little elaboration on these references. Further, no sector policies were found for agriculture and fisheries. However, New Zealand has developed the Agritech Industry Transformation Plan 2020, which creates a foundation for digital innovation in agriculture and fisheries, among others.

Digitalisation/ICTs

	Policy, strategy or legislation	References agriculture &/or fisheries?	Comments
	The Business Growth Agenda: Building a Digital Nation 2017	✔	The Business Growth Agenda (BGA) sets out the government's work to build a productive and competitive economy, focusing on the six key inputs businesses need to succeed, grow, and add jobs: export markets, investment, innovation, skilled and safe workplaces, natural resources, and infrastructure. The agenda highlights a government initiative to strengthen the uptake of precision agriculture, but there are no other references to the sector. There are no references to fisheries, although the Electronic Interactions Reform Bill is said to allow for online voting for Fish and Game Council elections.
	Government ICT Strategy 2015	✘	The ICT strategy seeks to exploit four high-level opportunities, namely: (i) exploiting emerging technologies; (ii) unlocking the value of information; (iii) leveraging agency transformations; and (iv) partnering with the private sector. There is no direct evidence of references to the agriculture or fisheries sectors.
	The Digital Strategy: Creating our Digital Future 2005	✔	The strategy notes that digital technology is already transforming farm management and revolutionising agricultural supply chains. The government wants to see further gains made in the agriculture sector, including through broadband. Fisheries are not mentioned.
	New Zealand's Cyber Security Strategy 2011	✘	The strategy provides for strengthened cyber security. It does not reference agriculture or fisheries.

Sector-specific (agriculture and/or fisheries)

	Document	Exists?	References digitalisation?	Comments
	National agriculture policy/strategy	✗		
	Agriculture ICT	✓		The Agritech Industry Transformation Plan 2020 refers to manufacturing, biotech and digital-based technology companies that are creating products, services, Intellectual Property (IP) and value chain solutions for the agriculture, aquaculture and fishing sectors, among others.
	National fisheries policy/strategy	✗		While there appears to be no national fisheries policy, the Fisheries Change Programme includes a substantive component on electronic tracking and digital monitoring.
	Fisheries ICT	✗		

Gaps and recommendations

	Gaps		Recommendations
	Agriculture and fisheries were poorly integrated into existing digitalisation documents; further detail could be provided to frame efforts to enhance digitalisation.		Mainstream agriculture and fisheries into existing digitalisation regulatory frameworks.
	This review identified no national policy frameworks governing the agriculture and fisheries.		Develop national policy frameworks for agriculture and fisheries and embed digitalisation as a key pillar.
	Environmental sustainability, poverty reduction, inclusion and rural development were not substantively addressed in digitalisation documents.		Mainstream these themes into the development of sector-specific digitalisation policy frameworks to ensure that digitalisation contributes to sustainable development.

Nigeria

Overview

The National Development Plan 'Nigeria Vision 20:2020' highlights the need to develop 'a vibrant ICT sector to drive and expand the national production frontiers in agriculture', among others. However, there is limited evidence of an enabling policy and legislative environment for digitalisation in the agriculture and fisheries sectors.

Digitalisation/ICTs

	Policy, strategy or legislation	References agriculture &/or fisheries?	Comments
	National ICT Policy 2012–2020	✗	The policy, which provides the framework for ICT development in Nigeria, highlights e-agriculture in the context of software development, and the use of ICT in governance in agriculture, among others.
	National Broadband Plan 2013–2018	✓	The plan briefly addresses e-agriculture and improved information and communication processes.
	Cybercrime Act 2015	✗	The Act regulates against cybercrime. It does not reference agriculture or fisheries.
	Electronic Transactions Bill 2010	✗	The Act regulates electronic transactions. It does not reference agriculture or fisheries.

Sector-specific (agriculture and/or fisheries)

	Document	Exists?	References digitalisation?	Comments
	National agriculture policy/ strategy	✓	✓	The Agricultural Policy for Nigeria, which frames development in the sector, does not reference digitalisation or the application of ICTs. However, the Agriculture Promotion Policy 2016–2020 briefly mentions web-based and digital mechanisms in the context of land use and titling. It also highlights the need to enhance ICT infrastructure.
	Agriculture ICT	✗		
	National fisheries policy/strategy	✓		
	Fisheries ICT	✓		

Gaps and recommendations

	Gaps		Recommendations
🔍	This review identified no agriculture- and/or fisheries-specific digitalisation documents.	💡	Develop agriculture and/or fisheries-specific digitalisation policy framework, starting with e-agriculture/e-fisheries strategy.
🔍	Agriculture and fisheries were poorly integrated into existing digitalisation documents.	💡	Mainstream agriculture and fisheries into existing digitalisation regulatory frameworks.
🔍	Environmental sustainability, poverty reduction, inclusion and rural development were not substantively addressed in digitalisation documents.	💡	Mainstream these themes into the development of sector-specific digitalisation policy frameworks to ensure that digitalisation contributes to sustainable development.

Pakistan

Overview

Pakistan's information technology sector is rapidly developing, and the government is looking to promote strategic enablers for accelerated digitalisation.[33] The agriculture sector contributes nearly 20 per cent to national GDP and provides livelihoods to about 60 per cent of the rural population.[34] However, while the Digital Pakistan Policy does highlight a number of high-level strategies to promote e-agriculture, there are few concrete policies or laws to enable this process.

Digitalisation/ICTs

	Policy, strategy or legislation	References agriculture &/or fisheries?	Comments
	Digital Pakistan Policy	✓	The policy frames national efforts at digitalisation in Pakistan. The policy includes a section on e-agriculture, which lists a number of high-level strategies to promote e-agriculture.
	Information Technology Policy of Pakistan	N/A*	This document could not be accessed for further analysis by the review team.*
	Prevention of Electronic Crimes Act 2007	✗	The Act regulates against electronic crimes. It does not mention agriculture or fisheries.
	National Broadband Programme 2007	N/A*	This document could not be accessed for further analysis by the review team.*

Sector-specific (agriculture and/or fisheries)

	Document	Exists?	References digitalisation?	Comments
	National agriculture policy/strategy	✓	✗	The National Agriculture and Food Security Policy Pakistan, which provides the policy framework for agricultural development, does not mention digitalisation and ICTs.
	Agriculture ICT	✗		
	National fisheries policy/strategy	✗		The National Policy and Strategy for Fisheries and Aquaculture Development in Pakistan 2007 does not appear to address digitalisation or the application of ICTs specifically.
	Fisheries ICT	✗		

Gaps and recommendations

	Gaps		Recommendations
	This review identified no agriculture- and/or fisheries-specific digitalisation documents.		Develop agriculture- and/or fisheries-specific digitalisation policy framework, starting with e-agriculture/e-fisheries strategy.
	Agriculture and fisheries were poorly integrated into existing digitalisation documents.		Mainstream agriculture and fisheries into existing digitalisation regulatory frameworks.
	Environmental sustainability, poverty reduction, inclusion and rural development were not substantively addressed in digitalisation documents.		Mainstream these themes into the development of sector-specific digitalisation policy frameworks to ensure that digitalisation contributes to sustainable development.

Papua New Guinea

Overview

Agriculture and fisheries are important sectors in the economy of Papua New Guinea (PNG). For example, agriculture accounts for approximately one-third of GDP in PNG.[35] However, the economy is constrained by digital communication infrastructure and poor rural connectivity, and there is scope to enhance the enabling environment for digitalisation in the primary sectors.[36]

Digitalisation/ICTs

	Policy, strategy or legislation	References agriculture &/ or fisheries?	Comments
	National Information and Communications Technology (ICT) Policy 2008	✓	The purpose of the policy is to secure the social and economic benefits of an efficient ICT sector, including in the agriculture sector. This includes strategies to promote the use of the internet for agriculture, and establish an e-marketplace enterprise for agriculture and fisheries.
	National Broadband Policy 2013	✓	The policy sets out strategies to enhance broadband coverage and usage. The policy commits to the development of new content targeted at PNG users, such as agricultural information and applications. There is commitment to develop detailed plans for lead applications in agriculture and fishing.
	Cybercrime Policy 2014	✗	The policy seeks to address cybercrime. Agriculture and fisheries are not mentioned.
	National Payments System Act 2013	✗	The Act establishes the National Payment System and empowers the Central Bank to regulate and oversee this system. It does not mention agriculture or fisheries.
	Directive on Electronic Fund Transfers 02/2019	✗	The directive legalises the enforcement of the National Payments System Act. It does not mention agriculture or fisheries.

Sector-specific (agriculture and/or fisheries)

	Document	Exists?	References digitalisation?	Comments
	National agriculture policy/ strategy	✓	✗	The National Food Security Policy 2018–2027 aims at 'growing agriculture for food security, good nutrition and health'. It briefly alludes to information and technologies for nutritious food production, but this point is not further elaborated.
	Agriculture ICT	✓	✓	The Papua New Guinea E-agriculture Strategy (2017–2023) seeks to set a new direction in view of the emerging opportunities in technology to bridge the information and knowledge gap.
	National fisheries policy/strategy	✓	✗	The National Oceans Policy of Papua New Guinea 2020–2030 aims to develop and establish an Integrated Ocean Management System within PNG's national jurisdiction. It does not address digitalisation or the application of ICTs.
	Fisheries ICT	✗		

Gaps and recommendations

	Gaps		Recommendations
🔍	This review identified no agriculture- and/or fisheries-specific digitalisation documents.		Develop agriculture- and/or fisheries-specific digitalisation policy framework, starting with e-agriculture/e-fisheries strategy.
🔍	Agriculture and fisheries were poorly integrated into existing digitalisation documents.		Mainstream agriculture and fisheries into existing digitalisation regulatory frameworks.
🔍	Environmental sustainability, poverty reduction, inclusion and rural development were not substantively addressed in digitalisation documents.		Mainstream these themes into the development of sector-specific digitalisation policy frameworks to ensure that digitalisation contributes to sustainable development.

Rwanda

Overview

Rwanda recognises the importance of digitalisation and is pursuing the Rwanda Economy Digitalisation Programme. The agricultural sector accounts for about one-third of the national GDP and employs over 65 per cent of the working population. Access to the use of digital technologies in Rwanda has grown significantly over the last decade because of strong policy support. Remaining challenges included relatively high connectivity costs, limited infrastructures and digital illiteracy, especially in rural areas. [37]

Digitalisation/ICTs

	Policy, strategy or legislation	References agriculture &/or fisheries?	Comments
	SMART Rwanda Master Plan 2015–2020	✓	The plan assesses the status quo and makes the case for accelerating progress towards a knowledge economy. It addresses agriculture in this context, with Objective 3 being to 'Transform agricultural practices to enhance productivity and increased commercialisation and industrialisation'.
	Cybercrime Bill 2016	✗	The Bill regulates against cybercrime. It does not address agriculture or fisheries.
	Rwanda Law No. 18 2010 (E-Signatures & Transactions)	✗	The law sets out the legal requirements and recognition of electronic messages. There is no mention of agriculture or fisheries.

Sector-specific (agriculture and/or fisheries)

	Document	Exists?	References Digitalisation?	Comments
	National agriculture policy/ strategy	✓	✓	The National Agriculture Policy 2017 stresses the need to leverage data and using integrated information technologies, while highlighting the need to 'seize opportunities offered by advances in digitalisation'. Similarly, the National Agricultural Extension Strategy 2009 notes the value of digital tools, e.g., Wi-Fi for extension. The Rwanda Strategic Plan for Agriculture Transformation 2018–2024 also recognises the values of a digitalised system, including for agribusiness payments, data collection, storage, processing and analysis, digital farmer registration and land profiling, and extension, among others.
	Agriculture ICT	✓	✓	The National ICT4Ag Strategy 2016–2020 recognises the importance of better co-ordination and appropriate solutions regarding the use of ICTs for sustainable agriculture, and provides frameworks to support this.
	National fisheries policy/ strategy	✗		
	Fisheries ICT	✗		

Gaps and recommendations

	Gaps		Recommendations
🔍	Rwanda has a National ICT4Ag Strategy, providing a valuable framework for digitalisation in the sector.	💡	Update the strategy using the guidelines under development by the Commonwealth Secretariat.
🔍	Agriculture and fisheries were poorly integrated into existing digitalisation documents; further detail could be provided to frame efforts to enhance digitalisation.	💡	Mainstream agriculture and fisheries into existing digitalisation regulatory frameworks.
🔍	Environmental sustainability, poverty reduction, inclusion and rural development were not substantively addressed in digitalisation documents.	💡	Mainstream these themes into the development of sector-specific digitalisation policy frameworks to ensure that digitalisation contributes to sustainable development.

Saint Lucia

Overview

While the tourism and services sectors are dominant, agriculture remains important for subsistence farming.[38] Similarly, the fishing industry has evolved from one that was primarily artisanal to a more commercial fishery. [39]

Digitalisation/ICTs

	Policy, strategy or legislation	References agriculture &/or fisheries?	Comments
	Information and Communication Technology (ICT) Sector Strategy & Action Plan	✗	The ICT Strategy and Action Plan does not substantively address the agriculture or fisheries sectors.
	St. Lucia National Broadband Policy and Plan 2013–2018	✗	The document promotes broadband. it does not address agriculture or fisheries.
	Electronic Transactions Bill	✗	The Bill promotes the development of e-commerce. It does not mention agriculture or fisheries.

Sector-specific (agriculture and/or fisheries)

	Document	Exists?	References digitalisation?	Comments
	National agriculture policy/strategy	✓	✗	The National Agricultural Policy 2009–2015 provides the policy framework for the sector. It does not address digitalisation or the use of ICTs.
	Agriculture ICT	✗		
	National fisheries policy/strategy	✗		
	Fisheries ICT	✗		

Gaps and recommendations

	Gaps		Recommendations
	This review identified no agriculture- and/or fisheries-specific digitalisation documents.		Develop agriculture- and/or fisheries-specific digitalisation policy framework, starting with e-agriculture/e-fisheries strategy.
	Agriculture and fisheries were poorly integrated into existing digitalisation documents.		Mainstream agriculture and fisheries into existing digitalisation regulatory frameworks.
	Environmental sustainability, poverty reduction, inclusion and rural development were not substantively addressed in digitalisation documents.		Mainstream these themes into the development of sector-specific digitalisation policy frameworks to ensure that digitalisation contributes to sustainable development.

Samoa

Overview

Samoa has one of the most stable and healthy economies in the Pacific region. However, there is a need to improve agriculture and fisheries productivity.[40] Digital innovation and ICT applications can support these sectors, but there is little evidence of an enabling environment to support digitalisation in these sectors.

Digitalisation/ICTs

	Policy, strategy or legislation	References agriculture &/or fisheries?	Comments
	Samoa National ICT Policy 2012–2017	✓	The ICT Policy seeks to provide an overarching framework to align the national ICT priorities of various sectors and ministries. The policy notes the need to provide enhanced (digital) opportunities for agriculture, among others, but does not elaborate these opportunities. It does not mention fisheries.
	Samoa National Broadband Policy	✗	The policy promotes broadband. It does not refer to agriculture or fisheries.
	Samoa National Cybersecurity Strategy 2016–2021	✗	The policy seeks to ensure cyber security. It does not address agriculture or fisheries.
	Electronic Transactions Act 2008	✗	The Act regulates e-transactions. It does not address agriculture or fisheries specifically.

Sector-specific (agriculture and/or fisheries)

	Document	Exists?	References digitalisation?	Comments
	National agriculture policy/strategy	✗		
	Agriculture ICT	✗		
	National fisheries policy/strategy	✗		
	Fisheries ICT	✗		

Gaps and recommendations

	Gaps		Recommendations
🔍	This review identified no agriculture or fisheries sector policy documents.	💡	Consider developing agriculture and fisheries sectoral policy frameworks to govern the development of these sectors.
🔍	This review identified no agriculture- and/or fisheries-specific digitalisation documents.	💡	Develop agriculture- and/or fisheries-specific digitalisation policy framework, starting with e-agriculture/e-fisheries strategy.
🔍	Agriculture and fisheries were poorly integrated into existing digitalisation documents.	💡	Mainstream agriculture and fisheries into existing digitalisation regulatory frameworks.
🔍	Environmental sustainability, poverty reduction, inclusion and rural development were not substantively addressed in digitalisation documents.	💡	Mainstream these themes into the development of sector-specific digitalisation policy frameworks to ensure that digitalisation contributes to sustainable development.

Seychelles

Overview

Agricultural land is scarce and local food production is limited, with most being artisanal fishing and small-scale cultivation of fruits and vegetables.[41] Moreover, digitalisation in Seychelles could be further strengthened.

Digitalisation/ICTs

	Policy, strategy or legislation	References agriculture &/ or fisheries?	Comments
	National ICT Policy 2010	✗	The policy seeks to guide ICT development, accessibility and utilisation on the national scale. It does mention the agriculture or fisheries sectors.

Sector-specific (agriculture and/or fisheries)

	Document	Exists?	References digitalisation?	Comments
	National agriculture policy/strategy	✓	✗	The National Food and Nutrition Security Policy 2013 mentions economic infrastructure, including ICT, once. This point is not further elaborated.
	Agriculture ICT	✗		
	National fisheries policy/strategy	✗		
	Fisheries ICT	✗		

Gaps and recommendations

	Gaps		Recommendations
🔍	This review identified no agriculture- and/or fisheries-specific digitalisation documents.	💡	Develop agriculture- and/or fisheries-specific digitalisation policy framework, starting with e-agriculture/e-fisheries strategy.
🔍	Agriculture and fisheries were poorly integrated into existing digitalisation documents.	💡	Mainstream agriculture and fisheries into existing digitalisation regulatory frameworks.
🔍	Environmental sustainability, poverty reduction, inclusion and rural development were not substantively addressed in digitalisation documents.	💡	Mainstream these themes into the development of sector-specific digitalisation policy frameworks to ensure that digitalisation contributes to sustainable development.

Sierra Leone

Overview

The enabling policy environment for digitalisation is set out in the National ICT Policy of 2009. This document addresses agriculture and food security as strategic policy considerations, in recognition of the national importance of agriculture. Sierra Leone's agricultural policy frameworks provide little reference to digitalisation.

Digitalisation/ICTs

	Policy, strategy or legislation	References agriculture &/or fisheries?	Comments
	National ICT Policy 2009	✓	The policy seeks to improve e-governance, integrate the use of ICTs and re-brand the image of Sierra Leone. The policy briefly addresses agriculture and food security in its strategic policy consideration.

Sector-specific (agriculture and/or fisheries)

	Document	Exists?	References digitalisation?	Comments
	National agriculture policy/strategy	✓	✗	The National Sustainable Agriculture Development Plan 2010–2030, which addresses priorities in the sector, highlights GIS digital frameworks, but otherwise provides little reference to digitalisation. The Sierra Leone Agricultural Research Institute Strategic Plan 2012–2021 recognises the potential for the use of ICT as an opportunity, although there is little elaboration on this point.
	Agriculture ICT	✗		
	National fisheries policy/strategy	✗		
	Fisheries ICT	✗		

Gaps and recommendations

	Gaps		Recommendations
🔍	This review identified no agriculture- and/or fisheries-specific digitalisation documents.	💡	Develop agriculture- and/or fisheries-specific digitalisation policy framework, starting with e-agriculture/e-fisheries strategy.
🔍	Agriculture and fisheries were poorly integrated into existing digitalisation documents.	💡	Mainstream agriculture and fisheries into existing digitalisation regulatory frameworks.
🔍	Environmental sustainability, poverty reduction, inclusion and rural development were not substantively addressed in digitalisation documents.	💡	Mainstream these themes into the development of sector-specific digitalisation policy frameworks to ensure that digitalisation contributes to sustainable development.

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Singapore

Overview

Existing digitalisation and ICT policy frameworks do not address the agriculture or fisheries sectors. There appear to be no agriculture or fisheries sectoral documents into which digitalisation could be mainstreamed.

Digitalisation/ICTs

	Policy, strategy or legislation	References agriculture &/ or fisheries?	Comments
	Digital Economy Framework for Action	✗	The framework seeks to promote the digital economy. It does not address agriculture or fisheries.
	Cybersecurity Act 2019	✗	The Act seeks to prevent, manage and respond to cyber security threats and incidents. It does not mention agriculture or fisheries.
	Computer Misuse Act 1993	✗	The Act makes provision to secure computer material against unauthorised access. It does not address the fisheries or agriculture sectors.
	Personal Data Protection Act 2012	✗	The law governs the collection, use and disclosure of personal data by all private organisations. It does not mention agriculture or fisheries.
	eGov2015: Connecting People; Enriching Lives	✗	The masterplan seeks to integrate systems, processes and services delivery within and beyond government, to improve governance. It does not mention agriculture or fisheries.
	Intelligent Nation 2015 (iN2015)	✗	This ten-year masterplan seeks to build Singapore into an Intelligent nation. It does not address agriculture or fisheries.
	Telecommunications Act 1999	✗	The Act provides for the operation and provision of telecommunication systems and services.
	Electronic Transactions Act 2010	✗	The Act provides for the security and use of electronic transactions. It does not mention agriculture and fisheries.
	Model AI Governance Framework	✗	The framework supports governance of AI developments. It does not address agriculture and fisheries.
	Digital Readiness Blueprint 2018	N/A*	This document could not be accessed for further analysis by the review team.*

Sector-specific (agriculture and/or fisheries)

	Document	Exists?	References digitalisation?	Comments
	National agriculture policy/strategy	✓		
	Agriculture ICT	✗		
	National fisheries policy/ strategy	✗		
	Fisheries ICT	✗		

Gaps and recommendations

	Gaps		Recommendations
🔍	This review identified no agriculture- and/or fisheries-specific digitalisation documents.	💡	Develop agriculture- and/or fisheries-specific digitalisation policy framework, starting with e-agriculture/e-fisheries strategy.
🔍	Agriculture and fisheries were poorly integrated into existing digitalisation documents.	💡	Mainstream agriculture and fisheries into existing digitalisation regulatory frameworks.
🔍	Environmental sustainability, poverty reduction, inclusion and rural development were not substantively addressed in digitalisation documents.	💡	Mainstream these themes into the development of sector-specific digitalisation policy frameworks to ensure that digitalisation contributes to sustainable development.

Solomon Islands

Overview

The Solomon Islands has a small agricultural sector but remains dependent on imported foods,[42] and fisheries are important for subsistence livelihoods. There is little evidence of sectoral policy frameworks or enabling environments for digitalisation or the application of ICTs in these sectors.

Digitalisation/ICTs

	Policy, strategy or legislation	References agriculture &/ or fisheries?	Comments
	Information Communication Technology Policy 2015	✓	This national ICT Policy sets out the policy of Solomon Islands government with respect to meeting the information and communications technology (ICT) needs of Solomon Islands people. The policy references the need to develop a network to share information and support agribusinesses and alternative livelihoods. It also addresses information systems in fisheries.

Photo by Gilly Tanabose on Unsplash

Sector-specific (agriculture and/or fisheries)

	Document	Exists?	References digitalisation?	Comments
	National agriculture policy/strategy	✗		
	Agriculture ICT	✗		
	National fisheries policy/strategy	✗		
	Fisheries ICT	✗		

Gaps and recommendations

	Gaps		Recommendations
	This review identified no agriculture- and/or fisheries-specific digitalisation documents.		Develop agriculture- and/or fisheries-specific digitalisation policy framework, starting with e-agriculture/ e-fisheries strategy.
	There appear to be no agriculture or fisheries sector national policy documents.		Develop agriculture and fisheries sector national documents, with digitalisation embedded into these.
	Agriculture and fisheries were poorly integrated into existing digitalisation documents; further detail could be provided to frame efforts to enhance digitalisation.		Mainstream agriculture and fisheries into existing digitalisation regulatory frameworks.
	Environmental sustainability, poverty reduction, inclusion and rural development were not substantively addressed in digitalisation documents.		Mainstream these themes into the development of sector-specific digitalisation policy frameworks to ensure that digitalisation contributes to sustainable development.

South Africa

Overview

There are several opportunities for digital agricultural solutions to substantially increase resource use efficiency, profitability, transparency, market participation and environmental sustainability.[43] Mobile platforms, vehicle tracking, database technology and blockchain technology are the most promising technologies for creating digital solutions in South Africa.

Digitalisation/ICTs

	Policy, strategy or legislation	References agriculture &/or fisheries?	Comments
	National e-Government Strategy and Roadmap	✔	The Strategy and Roadmap seeks to guide the digital transformation of public service in South Africa to support an inclusive digital society where all citizens can benefit from the opportunities offered by digital technologies. The strategy mentions e-agriculture activities.
	National Digital and Future Skills Strategy 2020	✔	The strategy seeks to ensure that all people can benefit from enhanced digital skills. It highlights the need to invest in digital skills and digital innovation skills, including in agriculture, among others.
	National Integrated ICT Policy White Paper 2016	✔	The paper highlights the need for an integrated approach that interlinks, for example, the use of ICTs in the agriculture sector. It further notes that sector-specific strategies and plans – including for agriculture – are needed to increase uptake and usage of ICTs.
	South Africa Broadband Policy – South Africa Connect 2013	✘	The policy seeks to promote an ecosystem of digital networks, services, applications, content and devices. Agriculture and fisheries are not referenced.
	Cybercrimes and Cybersecurity Bill 2017	✘	The Bill regulates against cybercrimes and promotes cyber security. It does not address agriculture and fisheries in a substantive manner.
	Electronic Communications and Transactions Act 2002	✘	The Act, which regulates e-communications and e-transactions, does not mention the agriculture or fisheries sectors.
	Protection of Personal Information Act 2013	✘	The Act regulates the protection of personal information. It does not mention agriculture or fisheries.

Sector-specific (agriculture and/or fisheries)

	Document	Exists?	References digitalisation?	Comments
	National agriculture policy/strategy	✓	✗	The Agricultural Policy Action Plan (APAP) 2015–2019 outlines appropriate responses to challenges in the agriculture sector. However, there is no substantive mention of agriculture or fisheries.
	Agriculture ICT	✗		
	National fisheries policy/strategy	✗	✗	The Policy for the small-scale fisheries sector in South Africa 2012 does not mention digitalisation or the application of ICTs. Similarly, the National Marine Fisheries Policy 1997 does not mention digitalisation.
	Fisheries ICT	✗		

Gaps and recommendations

	Gaps		Recommendations
	This review identified no agriculture- and/or fisheries-specific digitalisation documents.		Develop agriculture- and/or fisheries-specific digitalisation policy framework, starting with e-agriculture/e-fisheries strategy.
	Agriculture and fisheries were poorly integrated into existing digitalisation documents; further detail could be provided to frame efforts to enhance digitalisation.		Mainstream agriculture and fisheries into existing digitalisation regulatory frameworks.
	Environmental sustainability, poverty reduction, inclusion and rural development were not substantively addressed in digitalisation documents.		Mainstream these themes into the development of sector-specific digitalisation policy frameworks to ensure that digitalisation contributes to sustainable development.

Sri Lanka

Overview

Agriculture is the backbone of the economy, with almost half of rural poor people being small-scale farmers.[44] Sri Lanka has taken the initiative to develop the E-agriculture Strategy. The Government of Sri Lanka, led by the Information and Communication Technology Agency (ICTA), is promoting digital transformation.[45]

Digitalisation/ICTs

	Policy, strategy or legislation	References agriculture &/ or fisheries?	Comments
	ICT Road Map 2015–2020	N/A*	This document could not be accessed for further analysis by the review team.*
	Computer Crime Act	✗	The Act regulates against cybercrime. It does not reference agriculture or fisheries.
	Electronic Transactions Act 2006	✗	The Act regulates economic transactions. It does not reference agriculture or fisheries.

Sector-specific (agriculture and/or fisheries)

	Document	Exists?	References digitalisation?	Comments
	National agriculture policy/strategy	✓	✓	The National Agriculture Policy (NAP) seeks to support the sustainable transformation of the agriculture sector to a modernised agricultural sector that protects stakeholders across the value chain. It commits to encourage the development and adoption of *inter alia* ICT-based agriculture.
	Agriculture ICT	✓	✓	The Sri Lanka E-agriculture Strategy 2016 promotes e-solutions to transform agriculture for national prosperity.
	National fisheries policy/strategy	✗		
	Fisheries ICT	✗		

Gaps and recommendations

	Gaps		Recommendations
🔍	Sri Lanka has an E-agriculture Strategy, this could be further strengthened dating back to 2016. There may be scope to update or strengthen this document.		Update the E-agriculture Strategy to include and strengthen the main components of the digital agriculture and fisheries framework under development by the Commonwealth Secretariat.
🔍	Agriculture and fisheries were poorly integrated into existing digitalisation documents; further detail could be provided to frame efforts to enhance digitalisation.		Mainstream agriculture and fisheries into existing digitalisation regulatory frameworks.
🔍	Environmental sustainability, poverty reduction, inclusion and rural development were not substantively addressed in digitalisation documents.		Mainstream these themes into the development of sector-specific digitalisation policy frameworks to ensure that digitalisation contributes to sustainable development.

St Kitts and Nevis

Overview

St Kitts and Nevis has made a serious commitment to make ICT a leading sector of the economy. This commitment is set out in the five major branches of the National ICT Strategic Plan, which are: (i) building the information infrastructure; (ii)enabling the policy and legal environment; (iii) developing ICT human resources and building capacity; (iv) modernising government and delivering services electronically; and (v) leveraging ICT for economic and social development through public-private partnerships. St Kitts and Nevis is a net food importing country, but there are efforts underway to promote local production to benefit farmers.[46] However, while agriculture and digitalisation are cross-referenced in the relevant policy, efforts at digitalisation of the agriculture or fisheries sectors remain poorly articulated in national policy documents.

Digitalisation/ICTs

	Policy, strategy or legislation	References agriculture &/or fisheries?	Comments
	National ICT Strategic Plan	✓	The strategy seeks to present the composite ICT initiative and also set out a national ICT roadmap that is comprehensive and overarching. The strategy commits the government to support the creation and/or development of agribusiness portals. It notes that agribusiness is among the first targets of promoting and supporting initiatives of the enterprises towards ICT use.
	Electronic Transactions Act 2017	✗	The Act governs electronic transactions, but does not address the agriculture or fisheries sectors specifically.

Sector-specific (agriculture and/or fisheries)

	Document	Exists?	References digitalisation?	Comments
	National agriculture policy/strategy	✓	✓	The Agriculture Development Strategy 2013–2016 provides a framework and guide for actions to improve the production and marketing of crop and animal food and non-food products. It mentions ICT upgrades and literacy as one of the principal strategies to be employed.
	Agriculture ICT	✗		
	National fisheries policy/strategy	✗		
	Fisheries ICT	✗		

Gaps and recommendations

	Gaps		Recommendations
🔍	This review identified no agriculture- and/or fisheries-specific digitalisation documents.	💡	Develop agriculture- and/or fisheries-specific digitalisation policy framework, starting with e-agriculture/e-fisheries strategy.
🔍	Agriculture and fisheries were poorly integrated into existing digitalisation documents; further detail could be provided to frame efforts to enhance digitalisation.	💡	Mainstream agriculture and fisheries into existing digitalisation regulatory frameworks.
🔍	Environmental sustainability, poverty reduction, inclusion and rural development were not substantively addressed in digitalisation documents.	💡	Mainstream these themes into the development of sector-specific digitalisation policy frameworks to ensure that digitalisation contributes to sustainable development.

St Vincent and the Grenadines

Overview

St Vincent and the Grenadines' economy is based largely on agriculture. The government has been implementing a series of structural reforms to promote greater investment in the agricultural sector, which remains vulnerable to external shocks.[47] The overall policy for the fisheries sector is the sustainable use of all fisheries resources to maximise benefits to all citizens. However, there is little evidence of an enabling policy environment driving digitalisation in the agricultural and fisheries sectors.

Digitalisation/ICTs

	Policy, strategy or legislation	References agriculture &/or fisheries?	Comments
	St Vincent and the Grenadines e-Government Development Strategy Plan	N/A*	This document could not be accessed for further analysis by the review team.*
	Cybercrime Bill 2016	✗	The Bill provides for the creation of offences related to cybercrime and for related matters. It does not address agriculture or fisheries.

Sector-specific (agriculture and/or fisheries)

	Document	Exists?	References digitalisation?	Comments
	National agriculture policy/strategy	✓	✗	The Policy Framework and Strategic Plan for Agricultural Development 2012–2018, which governs agricultural development during the period, does not address digitalisation or the use of ICTs.
	Agriculture ICT	✗		
	National fisheries policy/strategy	N/A*	N/A*	The Fisheries and Aquaculture Policy 2018 could not be accessed for further analysis by the review team.*
	Fisheries ICT	✗		

Gaps and recommendations

	Gaps		Recommendations
	This review identified no agriculture- and/or fisheries-specific digitalisation documents.		Develop agriculture- and/or fisheries-specific digitalisation policy framework, starting with e-agriculture/e-fisheries strategy.
	Agriculture and fisheries were poorly integrated into existing digitalisation documents; further detail could be provided to frame efforts to enhance digitalisation.		Mainstream agriculture and fisheries into existing digitalisation regulatory frameworks.
	Environmental sustainability, poverty reduction, inclusion and rural development were not substantively addressed in digitalisation documents.		Mainstream these themes into the development of sector-specific digitalisation policy frameworks to ensure that digitalisation contributes to sustainable development.

Tanzania

Overview

Agriculture has long been the backbone of the Tanzanian economy, with over 80 per cent of the population dependent on this sector.[48] However, farm productivity remains low. The agricultural sector policy frameworks recognise this and are beginning to address aspects of digitalisation and the application of ICTs. However, the enabling environment for fisheries digitalisation remains limited.

Digitalisation/ICTs

	Policy, strategy or legislation	References agriculture &/or fisheries?	Comments
	National Information and Communications Technology Policy 2016	✓	The main objective of the policy is to accelerate socioeconomic development with potential to transform Tanzania into an ICT-driven middle-income economy and society. The integration of ICT in the productive sectors (including agriculture) is one of the objectives of the policy.
	Electronic and Postal Communications Regulations 2020	N/A*	This document, which was passed in 2020, could not be accessed for further analysis by the review team.* It may have been repealed in light of concerns surrounding the implications for freedom of public expression.

Photo by Chema Photo on Unsplash

Sector-specific (agriculture and/or fisheries)

	Document	Exists?	References digitalisation?	Comments
	National agriculture policy/ strategy	✓	✓	One of the key objectives of the National Agriculture Policy 2013 is to enhance 'a nation-wide ICT system to support agricultural development', including through effective partnerships, the utilisation and application of ICTs, and the optimal use and expansion of ICT capacity and infrastructure. The Agricultural Sector Development Strategy and its associated Agricultural Sector Development Programme 2015–2024 outlines high-level interventions for ICT promotion. Specifically, 'effective agricultural information management and communication of available technologies will be promoted, using modern ICT at the national and local levels'.
	Agriculture ICT	✗		
	National fisheries policy/ strategy	✓	✗	The National Fisheries Policy 2015 highlights that fisheries resources management is hampered by under capacity in terms of technologies and information, among other factors. However, there is little elaboration as to how such constraints might be addressed, and no mention of digitalisation or the use of ICTs directly.
	Fisheries ICT	✗		
	Other	✓	✓	The National Trade Policy 2003 sees the digital revolution as a unique opportunity, while stressing the importance of the agricultural sector. The policy highlights that agricultural transformation is critical to its success, and to Vision 2025.

Gaps and recommendations

	Gaps		Recommendations
🔍	This review identified no agriculture- and/or fisheries-specific digitalisation documents.	💡	Develop agriculture- and/or fisheries-specific digitalisation policy framework, starting with e-agriculture/e-fisheries strategy.
🔍	Agriculture and fisheries were poorly integrated into existing digitalisation documents.	💡	Mainstream agriculture and fisheries into existing digitalisation regulatory frameworks.
🔍	Environmental sustainability, poverty reduction, inclusion and rural development were not substantively addressed in digitalisation documents.	💡	Mainstream these themes into the development of sector-specific digitalisation policy frameworks to ensure that digitalisation contributes to sustainable development.

Tonga

Overview

Tonga has one of the highest rates of subsistence food production among Pacific island states. About three-quarters of Tonga's population live in rural areas, with agriculture and fisheries as their main source of livelihoods.[49] Moreover, according to IFAD, the agriculture sector alone contributes about 20 per cent to GDP. [50] However, the sector has exhibited little growth in recent decades. Despite the potential of digitalisation to support growth in these sectors, agriculture and fisheries are poorly mainstreamed into existing digitalisation policy frameworks, while digitalisation and the application of ICT are only superficially referenced in relevant agriculture or fisheries sector policy documents. Moreover, the apparent absence of a national ICT policy indicates that there is scope to strengthen the enabling environment for digitalisation in Tonga at an economy-wide level.

Digitalisation/ICTs

	Policy, strategy or legislation	References agriculture &/or fisheries?	Comments
	Cyber Crimes Legislation 2019	✗	The legislation regulates against cybercrime. It does not address agriculture or fisheries specifically.

Sector-specific (agriculture and/or fisheries)

	Document	Exists?	References digitalisation?	Comments
	National agriculture policy/strategy	✓	✓	The Tonga Agriculture Sector Plan (TASP) 2016–2020 notes that relevant agro-meteorological information and communication services will be developed using ICT technologies.
	Agriculture ICT	✗		
	National fisheries policy/strategy	✓	✗	The Tonga Deepwater Fishery Management Plan 2017–2019 and the Tonga Marine Aquarium Fishery Management and Development Plan 2017–2019 do not address digitalisation or the use of ICTs.
	Fisheries ICT	✗		

Gaps and recommendations

	Gaps		Recommendations
🔍	This review identified no agriculture- and/or fisheries-specific digitalisation documents.		Develop agriculture- and/or fisheries-specific digitalisation policy framework, starting with e-agriculture/e-fisheries strategy.
🔍	Agriculture and fisheries were poorly integrated into existing digitalisation documents; further detail could be provided to frame efforts to enhance digitalisation.		Mainstream agriculture and fisheries into existing digitalisation regulatory frameworks.
🔍	Environmental sustainability, poverty reduction, inclusion and rural development were not substantively addressed in digitalisation documents.		Mainstream these themes into the development of sector-specific digitalisation policy frameworks to ensure that digitalisation contributes to sustainable development.

Trinidad and Tobago

Overview

The agricultural sector is a relatively important sector for livelihoods.[51] Similarly, fisheries are mainly artisanal.[52] This review found limited evidence of an enabling environment for digitalisation in these sectors.

Digitalisation/ICTs

	Policy, strategy or legislation	References agriculture &/or fisheries?	Comments
	National ICT Plan and Blueprint 2018–2022	✓	The blueprint is a holistic five-year plan outlining a prioritised suite of programmes and projects to effectively guide ICT development over the next five years. The document commits to diversifying the economy through the ICT sector, including by developing linkages to key sectors like agriculture.
	National e-Commerce Strategy 2017–2021	✗	The e-Commerce Strategy outlines the government framework for the development of e-commerce in Trinidad and Tobago over the next three years. It does not provide significant reference to either agriculture or fisheries.
	Electronic Communications and Transactions Acts	✗	The Acts give legal effect to electronic documents, records, signatures and transactions. These Acts do not address agriculture of fisheries specifically.

Sector-specific (agriculture and/or fisheries)

	Document	Exists?	References digitalisation?	omments
	National agriculture policy/strategy	✓	✗	The Ministry of Food Production, Land and Marine Affairs (MFPLMA) Strategic Plan 2011–2015 serves as the framework for the MFPLMA to think strategically about its mandate. It recognises the need to urgently upgrade the Ministry's ICT platform and references digital surveys and maps, but is primarily focused on improving ministry operations, rather than the agriculture or fisheries sectors more broadly.
	Agriculture ICT	✗		
	National fisheries policy/strategy	✗		
	Fisheries ICT	✗		

Gaps and recommendations

	Gaps		Recommendations
🔍	This review identified no agriculture- and/or fisheries-specific digitalisation documents.	💡	Develop agriculture- and/or fisheries-specific digitalisation policy framework, starting with e-agriculture/e-fisheries strategy.
🔍	Agriculture and fisheries were poorly integrated into existing digitalisation documents.	💡	Mainstream agriculture and fisheries into existing digitalisation regulatory frameworks.
🔍	Environmental sustainability, poverty reduction, inclusion and rural development were not substantively addressed in digitalisation documents.	💡	Mainstream these themes into the development of sector-specific digitalisation policy frameworks to ensure that digitalisation contributes to sustainable development.

Tuvalu

Overview

Subsistence activities dominate Tuvalu's domestic fisheries and agriculture sectors. However, tuna fisheries of foreign fleets fishing in Tuvalu's waters are an important source of government revenue.[53] At present, there is little evidence of an enabling policy environment for digitalisation or the use of ICTs in these primary sectors.

Digitalisation/ICTs

	Policy, strategy or legislation	References agriculture &/ or fisheries?	Comments
	Infrastructure Strategy and Investment Plan 2012	✗	The plan presents a priority investment plan for economic infrastructure for the next five to ten years. It mentions the agriculture and fisheries sectors as examples, but does not specifically address digitalisation in these sectors.

Photo by Jean Wimmerlin on Unsplash

Sector-specific (agriculture and/or fisheries)

	Document	Exists?	References digitalisation?	Comments
	National agriculture policy/strategy	✓	✗	The Department of Agriculture Sector Plan 2016–2023 addresses Strategy 1 of the *National Strategy for Sustainable Development;* namely to establish an enabling environment for agriculture development. It does not address digitalisation or the application of ICTs.
	Agriculture ICT	✗		
	National fisheries policy/strategy	✗		
	Fisheries ICT	✗		

Gaps and recommendations

	Gaps		Recommendations
🔍	This review identified no agriculture- and/or fisheries-specific digitalisation documents.		Develop agriculture- and/or fisheries-specific digitalisation policy framework, starting with e-agriculture/e-fisheries strategy.
🔍	Agriculture and fisheries were poorly integrated into existing digitalisation documents.		Mainstream agriculture and fisheries into existing digitalisation regulatory frameworks.
🔍	Environmental sustainability, poverty reduction, inclusion and rural development were not substantively addressed in digitalisation documents.		Mainstream these themes into the development of sector-specific digitalisation policy frameworks to ensure that digitalisation contributes to sustainable development.

Uganda

Overview

Agriculture remains an important source of livelihoods in Uganda, with about 60 per cent of the population engaged in agriculture, fishing and forestry.[54] Uganda is a landlocked country, but it has many lakes and rivers. The fisheries sector is important in terms of employment, poverty reduction and foreign exchange revenues.

Digitalisation/ICTs

	Policy, strategy or legislation	References agriculture &/or fisheries?	Comments
	National ICT Policy 2014	✓	The policy seeks to enhance public-private partnership in the delivery of ICT infrastructure and services, including universal access to basic ICT infrastructure, technology neutrality of ICT services, and convergence of technologies, globalisation, human rights principles, democracy, and good governance. Agriculture is one of the emerging policy areas in which policy interventions are presented, alongside *inter alia* the internet, information security and e-government.
	Electronic Transactions Act 2011	✗	The Act provides for the use, security, facilitation and regulation of electronic communications and transactions, and to encourage the use of e-government services. It does not address agriculture or fisheries specifically.
	Electronic Signatures Act 2011	✗	The Act provides for and regulates the use of e-signatures. It does not address agriculture or fisheries specifically.
	Computer Misuse Act 2011	✗	The Act regulates computer misuse. It does not address the agriculture or fisheries sectors specifically.

Sector-specific (agriculture and/or fisheries)

	Document	Exists?	References digitalisation?	Comments
	National agriculture policy/strategy	✓	✗	The National Agriculture Policy 2013 is aimed at guiding all agriculture planning, policy, frameworks and strategies. There is no significant reference to digitalisation or the application of ICTs. The Agriculture Sector Strategic Plan 2015–2020 does note that ICT-based agri-communication systems can be used but provides no further reference to digitalisation or ICTs.

	Document	Exists?	References digitalisation?	Comments
	Agriculture ICT	✗		
	National fisheries policy/ strategy	✓	✗	The National Fisheries and Aquaculture Policy 2017 seeks to govern Uganda's fisheries and aquaculture sector. It does not address digitalisation or the use of ICTs.
	Fisheries ICT	✗		

Gaps and recommendations

	Gaps		Recommendations
	This review identified no agriculture- and/or fisheries-specific digitalisation documents.		Develop agriculture- and/or fisheries-specific digitalisation policy framework, starting with e-agriculture/e-fisheries strategy.
	Agriculture and fisheries were poorly integrated into existing digitalisation documents.		Mainstream agriculture and fisheries into existing digitalisation regulatory frameworks.
	Environmental sustainability, poverty reduction, inclusion and rural development were not substantively addressed in digitalisation documents.		Mainstream these themes into the development of sector-specific digitalisation policy frameworks to ensure that digitalisation contributes to sustainable development.

United Kingdom

Overview

The UK has a well-developed digitalisation policy and legislative framework, but it does not specifically make provision for digitalisation in the agriculture and fisheries sectors.

Digitalisation/ICTs

	Policy, strategy or legislation	References agriculture &/ or fisheries?	Comments
	Government ICT Strategy 2011	✗	The strategy sets out how government ICT will enable the delivery of public services in very different ways to the past. It does not specifically address agriculture or fisheries.
	UK Digital Strategy 2017	✗	The strategy has seven strands, namely (i) building world-class digital infrastructure for the UK; (ii) giving everyone access to the digital skills they need; (iii) making the UK the best place to start and grow a digital business; (iv) helping every British business become a digital business; (v) maintaining the UK government as a world leader in serving its citizens online; (vii) making the UK the safest place to work and live online; and (vii) unlocking the power of data in the UK economy and improving public confidence in its use. It does not specifically address agriculture or fisheries.
	National Cyber Strategy 2022	✗	The strategy seeks to strengthen cyber security. It does not specifically address agriculture or fisheries.
	Digital Economy Strategy 2015–2018	✗	The strategy seeks to help UK businesses to innovate by using digital technology. It does not specifically address agriculture or fisheries.
	Digital Economy Act 2017	✗	The Act contains a number of measures to support the UK to remain ahead and be a world leader in the digital economy. It does not specifically address agriculture or fisheries.
	Electronic Communications Act 2000 (2016 revision)	✗	The Act makes provision to facilitate the use of electronic communications and electronic data storage; to make provision about the modification of licences granted under section 7 of the Telecommunications Act 1984; and for connected purposes. It does not specifically address agriculture or fisheries.
	Future Telecoms Infrastructure Review	✓	The review assesses the status pertaining to nationwide full fibre connectivity. The review highlights the potential of telecommunications. For example, it notes the value of rural 5G for agriculture and the ability to deliver agritech innovations.

Sector-specific (agriculture and/or fisheries)

	Document	Exists?	References digitalisation?	Comments
	National agriculture policy/ strategy	✓	✓	The Path to Sustainable Faming: An Agricultural Transition Plan 2021–2024 commits to 'continuously improving all digital and operational services' (p37).
	Agriculture ICT[55]	✗		
	National fisheries policy/strategy[56]	✗		
	Fisheries ICT	✗		

Gaps and recommendations

	Gaps		Recommendations
	This review identified no agriculture- and/or fisheries-specific digitalisation documents.		Develop agriculture- and/or fisheries-specific digitalisation policy framework, starting with e-agriculture/ e-fisheries strategy.
	Agriculture and fisheries were poorly integrated into existing digitalisation documents; further detail could be provided to frame efforts to enhance digitalisation.		Mainstream agriculture and fisheries into existing digitalisation regulatory frameworks.
	Environmental sustainability, poverty reduction, inclusion and rural development were not substantively addressed in digitalisation documents.		Mainstream these themes into the development of sector-specific digitalisation policy frameworks to ensure that digitalisation contributes to sustainable development.

Vanuatu

Overview

Over 80 per cent of the population depends on agriculture for their livelihood, yet the rural sector contributes only 8 per cent of GDP. One of the priorities of the National ICT Policy is to integrate ICTs into sectoral policies, but there is limited evidence of this in the sectoral policies identified by this review, although the National Fisheries Sector Policy does make the link with the ICT Policy.

Digitalisation/ICTs

	Policy, strategy or legislation	References agriculture &/ or fisheries?	Comments
	Vanuatu National ICT Policy 2013	✓	The policy expresses a commitment of the Government of Vanuatu to maximise the contribution, efficiency and effectiveness of information and communication technologies (ICTs) in achieving the National Vision of 'A Just, Educated, Healthy and Wealthy Vanuatu', thereby empowering and benefiting every citizen and resident of Vanuatu. The policy notes the need to mainstream ICTs into sectoral policies, but provides little elaboration of this point.
	E-Business Acts	✗	The E-Business Acts establish an Internet Free Trade Zone, where businesses can conduct legitimate trading activities over the internet and take advantage of Vanuatu's low tax structure. It does not specifically address agriculture or fisheries.
	National Cybersecurity Strategy 2030	✗	The Vanuatu National Cyber Security Strategy (NCSS) 2030 is a plan of action designed to improve 'Security and Resilience' of Vanuatu's National Critical Infrastructure and services. It does not specifically address agriculture or fisheries.

Sector-specific (agriculture and/or fisheries)

	Document	Exists?	References digitalisation?	Comments
	National agriculture policy/strategy	✓	✗	The Ministry of Agriculture, Livestock, Forestry, Fisheries and Biosecurity Corporate Plan 2014–2018 does not address digitalisation or ICT applications specifically.
	Agriculture ICT	✗		

	Document	Exists?	References digitalisation?	Comments
🐟	National fisheries policy/strategy	✗	✓	The National Fisheries Sector Policy 2016–2031 promotes a fully functional digital recording system and notes that the sector should be supported by improved and the latest development of ICTs, including electronic reporting and monitoring, within the requirements of the ICT policy.
🐟	Fisheries ICT	✗		

Gaps and recommendations

	Gaps		Recommendations
🔍	This review identified no agriculture- and/or fisheries-specific digitalisation documents.	💡	Develop agriculture- and/or fisheries-specific digitalisation policy framework, starting with e-agriculture/e-fisheries strategy.
🔍	Agriculture and fisheries were poorly integrated into existing digitalisation documents.	💡	Mainstream agriculture and fisheries into existing digitalisation regulatory frameworks.
🔍	Environmental sustainability, poverty reduction, inclusion and rural development were not substantively addressed in digitalisation documents.	💡	Mainstream these themes into the development of sector-specific digitalisation policy frameworks to ensure that digitalisation contributes to sustainable development.

Zambia

Overview

With 60 per cent of the population dependent on agriculture, Zambia's agricultural sector represents the backbone of the rural economy and holds great potential for the entire country.[57] However, Zambia's agriculture sector faces challenges. Agriculture is one of the National ICT Policy's 13 pillars, with the adoption of e-commerce by small- and medium-sized enterprises especially highlighted.[58] However, evidence of an enabling policy environment for digitalisation in agriculture remains limited.

Digitalisation/ICTs

	Policy, strategy or legislation	References agriculture &/ or fisheries?	Comments
	E-Government Masterplan 2018–2030: Smart Zambia	✓	The SMART Zambia E-Government Masterplan aims at providing a clear road map to the acceleration of our effort toward delivering quality and responsive services to citizens, non-citizens, businesses, as well as improving collaboration within government institutions. One of the objectives is to support the country's economic diversification programme using ICTs, including by implementing smart platforms for agriculture (among other sectors). It highlights the Zambia Integrated Agriculture Management Information System.
	Zambia ICT Policy 2006	✓	The ICT Policy outlines the approach to promoting an ICT-enabled economy. Agriculture is one of the Goal Areas.
	ICT Act 2009	✗	The Act regulates ICT. It refers to the holding of any agricultural shows, but otherwise does not address agriculture or fisheries.
	Information and Communication Technologies Act 2001, amended December 2021	✗	An Act to provide a safe and effective environment for *inter alia* electronic transactions; promote secure electronic signatures; and facilitates electronic filing of documents by public authorities. It does not specifically address agriculture or fisheries.

Sector-specific (agriculture and/or fisheries)

	Document	Exists?	References digitalisation?	Comments
	National agriculture policy/strategy	✓	✗	The Second National Agricultural Policy 2016 seeks to guide the development of the agriculture sector. It does not address digitalisation or the application of ICTs.
	Agriculture ICT	✗		

	Document	Exists?	References digitalisation?	Comments
🐟	National fisheries policy/strategy	✗		
🐟	Fisheries ICT	✗		

Gaps and recommendations

	Gaps		Recommendations
🔍	This review identified no agriculture- and/or fisheries-specific digitalisation documents.	💡	Develop agriculture- and/or fisheries-specific digitalisation policy framework, starting with e-agriculture/e-fisheries strategy.
🔍	Agriculture and fisheries were poorly integrated into existing digitalisation documents.	💡	Mainstream agriculture and fisheries into existing digitalisation regulatory frameworks.
🔍	Environmental sustainability, poverty reduction, inclusion and rural development were not substantively addressed in digitalisation documents.	💡	Mainstream these themes into the development of sector-specific digitalisation policy frameworks to ensure that digitalisation contributes to sustainable development.

Notes

1   There appears to be a (draft) new five-year plan, but this could not be accessed online for analysis.

3   See https://www.pressoffice.gov.bz/cabinet-brief-33/

3   FAO (2021) Status of Digital Agriculture in 47 Sub-Saharan African Countries, Available at: https://www.fao.org/3/cb7943en/cb7943en.pdf

4   See http://www.agriculture.gov.bn/SitePages/eMinistry%20of%20Primary%20Resources%20and%20Tourism%20(eMPRT).aspx

5   See http://www.fisheries.gov.bn/SitePages/eMinistry%20of%20Industry%20and%20Primary%20Resources%20(eMIPR).aspx

6   FAO (2021) Status of Digital Agriculture in 47 Sub-Saharan African Countries, Available at: https://www.fao.org/3/cb7943en/cb7943en.pdf

7   https://agriculture.gov.dm/

8   World Food Programme (2020) Eswatini Annual Country Report 2020, https://docs.wfp.org/api/documents/WFP-0000125459/download/

9   https://www.ifad.org/en/web/operations/w/country/fiji

10   https://www.feedthefuture.gov/country/ghana/

11   http://rhody.crc.uri.edu/gfa/wp-content/uploads/sites/10/2018/04/Ghana-Fisheries-and-Aquaculture-Sector-Development-Plan-2011-2016.pdf

12   https://bigdata.cgiar.org/digital-country-profiles/grenada/

13   ACP Fish II - Strengthening fisheries management in ACP states. 2012. Fisheries Policy for Grenada Working document n°1 Support to formulate a fisheries and aquaculture policy for the Commonwealth of Dominica, Grenada, and St. Vincent and the Grenadines.

14   https://www.trade.gov/country-commercial-guides/guyana-agriculture-sector

15   https://www.gyeiti.org/fisheries

16   https://nasscom.in/sites/default/files/media_pdf/NASSCOM_Press_Release_Agritech_Report_2019.pdf

17   https://www.ibef.org/blogs/india-s-smart-agriculture-strategies

18   https://www.jamaicaobserver.com/latestnews/IICA_director_examines_barriers_to_digitalisation_of_agriculture_in_rural_areas

19   https://www.fao.org/3/cb3958en/cb3958en.pdf

20   https://pafpnet.spc.int/policy-bank/countries/kiribati#:~:text=Agriculture%2C%20along%20with%20forestry%20and,%2Dpine%2C%20breadfruit%20and%20papaya

21   https://unctad.org/system/files/official-document/dtlstict2019d15_en.pdf

22   https://webapps.ifad.org/members/eb/128/docs/EB-2019-128-R-18-Rev-1.pdf

23   https://www.ifad.org/en/web/operations/w/country/maldives

24   Ibid.

25   https://www.trade.gov/country-commercial-guides/mauritius-agricultural-sectors

26   https://www.ifad.org/en/web/operations/w/country/mozambique

27   https://www.fao.org/fishery/en/facp/moz

28   https://researchictafrica.net/publication/ict-in-mozambique/

29   https://www.trade.gov/country-commercial-guides/namibia-agricultural-sector

30   https://www.msc.org/media-centre/press-releases/press-release/namibian-fishery-is-second-in-africa-to-be-certified-as-sustainable#:~:text=Fishing%20is%20the%20third%20largest,where%20the%20hake%20is%20landed

31   https://pafpnet.spc.int/policy-bank/countries/nauru#:~:text=In%20Nauru%2C%20the%20agriculture%20sector,growing%20and%20producing%20root%20crops

32   https://www.mbie.govt.nz/dmsdocument/11601-aotearoa-agritech-unleashed-pdf (p9)

33 https://ciltinternational.org/wp-content/
uploads/2021/11/Digitalization-Pakistans-
Vision-2025.pdf

34 https://www.ips.org.pk/wp-content/
uploads/2020/08/National-Agriculture-and-
Food-Security-in-Pakistan.pdf

35 https://www.ifad.org/en/web/operations/w/
country/papua-new-guinea

36 https://www.weforum.org/agenda/2020/09/
papua-new-guinea-digital-transformation-
covid-19/

37 https://www.fao.org/3/cb2507en/cb2507en.
pdf

38 https://www.fao.org/3/ca0426en/CA0426EN.
pdf

39 https://www.fao.org/fishery/en/facp/lca

40 https://www.ifad.org/en/web/operations/w/
country/samoa

41 https://www.ifad.org/en/web/operations/w/
country/seychelles#:~:text=Agricultural%20
land%20is%20scarce%20and,and%20
many%20other%20basic%20commodities

42 https://borgenproject.org/
sustainable-agriculture-in-the-solomon-
islands/#:~:text=The%20Solomon%20
Islands%20does%20have,most%20
focus%20on%20disaster%20preparedness

43 https://www.afdb.org/en/documents/digital-
agriculture-profile-south-africa

44 https://www.ifad.org/en/web/operations/w/
country/sri-lanka

45 https://blogs.worldbank.org/
endpovertyinsouthasia/digitalization-way-
forward-sri-lanka

46 https://www.fao.org/3/BT838/bt838.pdf

47 http://www.cardi.org/
country-offices/st-vincent-the-
grenadines/#:~:text=Other%20key%20
agricultural%20products%20are,are%20
also%20growing%20in%20importance

48 http://extwprlegs1.fao.org/docs/pdf/
tan148257.pdf

49 https://pafpnet.spc.int/policy-bank/
countries/tonga#:~:text=Agriculture%20
is%20the%20predominant%20
economic%20activity%20in%20
Tonga.&text=About%2075%25%20of%20
Tonga's%20population,production%20
amongst%20Pacific%20Island%20Countries

50 https://www.ifad.org/
documents/38714170/40253395/
Policy+Case+Studies+-+Tonga+Agri
cultural+Sector+Plan+%28TASP%29.
pdf/0f358fb9-34d1-4804-b6ab-
95f8cb5efc71?t=1522854639000

51 http://www.cardi.org/country-offices/
trinidad-tobago/

52 https://www.worldfishcenter.org/publication/
marine-fisheries-trinidad-and-tobago

53 https://tuvalu-data.sprep.org/system/
files/FAO%20Fisheries%20%26%20
Aquaculture%20-%20Fishery%20and%20
Aquaculture%20Country%20Profiles%20
-%20Tuvalu.pdf

54 https://www.gou.go.ug/content/agriculture

55 There appears to be a UK Strategy for
Agricultural Technologies, but it does not
address digitalisation or focus on ICTs.

56 Fisheries in the United Kingdom were covered
under the Common Fisheries Policy of the
European Union, but this was set to change
following Brexit.

57 http://extwprlegs1.fao.org/docs/pdf/
zam189991.pdf

58 https://www.fao.org/3/cb7943en/cb7943en.
pdf

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Appendix A

The national distribution of **all documents** (including both digitalisation and agriculture/fisheries) is presented in Table A1. The countries with the highest numbers of documents are marked green and the countries with the lowest number of documents are marked red.

Table A1. Number of documents found per country

Country	Number of Documents	Country	Number of Documents
Bangladesh	17	Pakistan	6
Mauritius	14	Antigua And Barbuda	6
Kenya	12	Vanuatu	6
India	11	Barbados	5
Jamaica	11	Cameroon	5
Australia	10	Canada	5
Malawi	10	Eswatini	5
Singapore	10	New Zealand	5
South Africa	10	Sri Lanka	5
United Republic of Tanzania	10	Cyprus	4
Bahamas, The	8	Fiji	4
Ghana	8	Grenada	4
Namibia	8	Malta	4
St Vincent And the Grenadines	8	Mozambique	4
United Kingdom	8	St Kitts And Nevis	4
Zambia	8	Saint Lucia	4
Gambia, The	8	Samoa	4
Belize	7	Tonga	4
Malaysia	7	Trinidad And Tobago	4
Papua New Guinea	7	Lesotho	3
Uganda	7	Nauru	3
Rwanda	7	Sierra Leone	3
Botswana	6	Dominica	2
Brunei Darussalam	6	Seychelles	2
Guyana	6	Tuvalu	2
Kiribati	6	Maldives	1
Nigeria	6	Solomon Islands	1

The Commonwealth