DIGITAL ECOSYSTEM COUNTRY ASSESSMENT (DECA)

Pacific Islands

APRIL 2024

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April 2024

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KEY TERMS BOXES

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ACRONYMS

A4AIA	Alliance for Affordable Internet
AAPMI	Australia Asia Pacific Media Initiative
ABC	Australian Broadcasting Corporation
ADB	Asian Development Bank
AFI	Alliance for Financial Inclusion
AFP	Australian Federal Police
AML/CFT	Anti-Money Laundering/ Countering the Financing of Terrorism
APCERT	Asia Pacific Computer Emergency Team
APG	Asia Pacific Group on Money Laundering
APNIC	Asia Pacific Network Information Centre
ASYCUDA	Automated Systems for Customs Data
BBC	British Broadcasting Corporation
B2C	Business to Consumers
BOV	Bank of Vanuatu
BPNG	Bank of Papua New Guinea
BSO	Business Support Organization
BTCA	Better Than Cash Alliance
CAGR	Compound Annual Growth Rate
CAPEX	Capital Expenditure
CBDC	Central Bank Digital Currency
CBSI	Central Bank of Solomon Islands
CCP	Chinese Communist Party
CCTCP	Cyber and Critical Technology Cooperation Program
CCTV	China Central Television
CDCS	USAID Country Development Cooperation Strategy
CERT	Computer Emergency Response Team
CIRT	Computer Incident Response Team
CMM	Cybersecurity Capacity Maturity Model
COFA	Compacts of Free Association
CROP	Council of Regional Organizations in the Pacific
CSO	Civil Society Organizations

CSIRT	Computer Security Incident Response Team
CWDP	Cybersecurity Workforce Development Program
DAA	Digital Asia Accelerator (USAID)
DCCP	Digital Connectivity and Cybersecurity Partnership
DECA	Digital Ecosystem Country Assessment
DFAT	Australian Department of Foreign Affairs and Trade
DFS	Digital Financial Services
DICT	Department of Information and Communications Technology of Papua New Guinea
DNPM	Department of National Planning and Monitoring of Papua New Guinea
DO	Development Objective
EGDI	E-Government Development Index
EPI	United Nations E-Participation Index
ETC	Emergency Telecommunications Cluster
EWS	Early Warning Systems
EW4A	Early Warnings for All
FATF	Financial Action Task Force
FBC	Fijian Broadcasting Corporation
FBC	Fiji Business Council
FCCC	Fijian Competition and Consumer Commission
FCDO	Foreign, Commonwealth and Development Office
FIC	Forum Island Country
FINTEL	Fiji International Telecommunications Pte Limited
FIRST	Forum of Incident Response and Security Teams
FNU	Fiji National University
FPR	Framework for Pacific Regionalism
FSM	Federated States of Micronesia
FSMBA	Federated States of Micronesia Broadcasting Association
FSP	Financial Service Provider

G2B	Government-to-Business		**NCSI**	National Cyber Security Index
G2C	Government-to-Citizen		**NETP**	National Emergency Telecommunications Plans
GB	Gigabyte		**NFIS**	National Financial Inclusion Strategy
GBV	Gender-Based Violence		**NICTA**	National ICVT Authority of Papua New Guinea
GCI	Global Cybersecurity Index		**NGO**	Non-Governmental Organization
GFCE	Global Forum on Cyber Expertise		**NRBT**	National Reserve Bank of Tonga
GSCC	Global Cyber Security Capacity Centre		**NSS**	National Security Strategies
ICANN	Internet Corporation for Assigned Names and Numbers		**NTA**	National Telecommunications Authority
ICT	Information and Communication Technology		**OCO**	Oceania Customs Organization
ID	Identification for Development		**OCSC**	Oceania Cyber Security Center
IGF	Internet Governance Forum		**ODA**	Official Development Assistance
ILO	International Labor Organization		**OGCIO**	Office of the Government Chief Information Officer (Vanuatu)
IMF	International Monetary Fund		**OGP**	Open Government Partnership
IoT	Internet of Things		**OPEX**	Operating Cost
ISOC	Internet Society		**PACD**	Pacific AML/CFT Capacity Development Program
ISP	Internet Service Provider		**PACMAS**	Pacific Media Assistance Scheme
ITU	International Telecommunication Union		**PaCSON**	Pacific Cyber Security Operation Network
JSI	Joint Statement Initiative		**PAFTS**	Pacific Aid-for-Trade Strategy
KCCI	Kiribati Chamber of Commerce and Industry		**PDEP**	Pacific Digital Economy Program
LCL	Less than Contained Load		**PDH**	Pacific Data Hub
MBA	Masters of Business Administration		**PFF**	Pacific Freedom Forum
MFAT	New Zealand Ministry of Foreign Affairs and Trade		**PFIP**	Pacific Financial Inclusion Programme (UNCDF)
MFTA	Melanesian Free Trade Agreement		**PFTAC**	Pacific Financial Technical Assistance Center
MFI	Microfinance Institution		**PHT**	Pacific Humanitarian Team
MIDA	Media Industry Development Act (Fiji)		**PIC**	Pacific Island Countries
MISTT	Mobile Internet and Skills Training Toolkit		**PICNIS**	Pacific Islands Chapter of the Internet Society
MLEC	Model Law on Electronic Commerce		**PIFS**	Pacific Islands Forum Secretariat
MMA	Marshall Islands Monetary Authority		**PIGF**	Pacific Internet Governance Forum
MNO	Mobile Network Operator		**PILON**	Pacific Island Law Officers' Network
MSME	Micro, Small, and Medium Enterprise		**PINA**	Pacific Islands News Media Association
NBC	National Broadcasting Corporation of Papua New Guinea		**PITA**	Pacific Islands Telecommunications Association
NBS	National Bank of Samoa		**PITUA**	Pacific Islands Telecommunications Union
NCS	National Cybersecurity Strategies			

PNCC	Palau National Communications Corporation
PNG	Papua New Guinea
PNGCCI	Papua New Guinea Chamber of Commerce and Industry
PoC	Point of Contact
PoS	Point of Service
PRC	People's Republic of China
PRCP	Pacific Regional Connectivity Program
PRIF	Pacific Regional Infrastructure Facility
PRISAP	Pacific Regional ICT Strategic Action Plan
PSP	Payment Service Provider
PTI	Pacific Trade Invest
QR	Quick Response
RAN	Radio Access Network
RBF	Reserve Bank of Fiji
RCEP	Regional Comprehensive Economic Partnership
RMI	Republic of the Marshall Islands
SBC	Samoa Broadcasting Corporation
SIBC	Solomon Islands Broadcasting Corporation
SICCI	Solomon Islands Chamber of Commerce and Industry
SIDS	Small Islands Developing States
SITA	Samoa Information Technology Association
SOE	State-Owned Enterprise
SPC	South Pacific Community
STEM	Science, Technology, Engineering, and Mathematics
TA	Technical Assistance
TBC	Tonga Broadcasting Commission
TFGBV	Technology-Facilitated Gender-Based Violence
TPP	Trans-Pacific Partnership
TRBR	Telecommunications Radiocommunications and Broadcasting Regulator (Vanuatu)
TVBC	Tuvalu Broadcasting Corporation

TVET	Technical and Vocational Education and Training
TVWS	TV White Space
TWICT	Tonga Women in ICT
UAP	Universal Access Policy
UNCDF	United Nations Capital Development Fund
UNCITRAL	United Nations Commission on International Trade Law
UNCTAD	United Nations Conference on Trade and Development
UNDP	United Nations Development Program
UNDRR	United Nations Office for Disaster Risk Reduction
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNESCAP	United Nations Economic and Social Commission for Asia and the Pacific
UNICEF	United Nations International Children's Emergency Fund
UNITECH	University of Technology, Papua New Guinea
UPNG	University of Papua New Guinea
UPU	Universal Postal Union
USAID	United States Agency for International Development
USF	Universal Service Fund
USP	University of the South Pacific
UTRAMS	United Technical Request and Mission Support
Van IGF	Vanuatu Internet Governance Forum
VBTC	Vanuatu Broadcasting and Television Corporation
VCCI	Vanuatu Chamber of Commerce and Industry
VDEC	Vanuatu Digital Entrepreneurship Challenge
WB-GFDRR	World Bank Global Facility for Disaster Reduction and Recovery
WCO	World Customs Organization
WITSI	Women in Information Technology Solomon Island
WTO	World Trade Organization

Executive Summary

DECA BACKGROUND

The U.S. Agency for International Development's (USAID's) Digital Strategy was launched in April 2020. The goal is to achieve and sustain open, secure, and inclusive digital ecosystems that contribute to broad-based measurable development and humanitarian assistance outcomes through the responsible use of digital technology.

The Digital Ecosystem Country Assessment (DECA) is a flagship initiative of the Digital Strategy. It examines three pillars of a nation's digital ecosystem: (1) digital infrastructure and adoption; (2) digital society, rights, and governance; and (3) digital economy. The Pacific Island countries (PICs) regional DECA covers 12 countries: Federated States of Micronesia (FSM), Fiji, Kiribati, Nauru, Palau, Papua New Guinea (PNG), Republic of Marshall Islands (RMI), Samoa, Solomon Islands, Tonga, Tuvalu, and Vanuatu.[1] It was funded by the U.S. Department of State through the Digital Connectivity and Cybersecurity Partnership (DCCP) and therefore accounts for both USAID and U.S. Department of State priorities.[2] USG prioritized topics included connectivity infrastructure, cybersecurity, private sector engagement, public sector absorptive capacity, and climate change adaptation and resilience. The DECA was also informed by the USAID Pacific Islands Strategic Framework 2022-2027, which has three development objectives: Community Resilience Strengthened; Resilient Economic Growth Advanced; and Democratic Governance Strengthened.[3]

The PICs regional DECA informs the development, design, and implementation of U.S. Government (USG) strategies, projects, and activities. The goal is to support USG to better understand, work with, and strengthen Pacific Island country and regional digital ecosystems. The DECA does not evaluate existing programs, but rather assesses the digital ecosystem and identifies how USG current or future programming can build upon or strengthen that ecosystem.

PACIFIC ISLANDS: CONTEXTUAL BACKGROUND

The regional DECA includes 12 Pacific Island countries (PICs): Fiji, Kiribati, Papua New Guinea (PNG), Federated States of Micronesia (FSM), the Republic of The Marshall Islands (RMI), Samoa, Solomon Islands, Nauru, Palau, Vanuatu, Tuvalu, and Tonga.[4] The broader region includes 14 countries and covers 20 million square miles of ocean and 117,000 square miles of land area.[5] Based on 2022 data, PNG has the largest population

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1   Throughout the report the 12 countries included in the assessment are referred to as DECA PICs.

2   The DECA Research Team worked with representatives from USAID Philippines, Mongolia, and Pacific Islands, U.S. Department of State Bureau for East Asia and Pacific Affairs, U.S. Department of State Cyberspace and Digital Policy Bureau, and the Office of the Science and Technology Advisor to the Secretary of State. Throughout the report these stakeholders are collectively referred to as U.S. Government (USG) stakeholders unless otherwise specified.

3   "Strategic Framework for the United Nations: 2022-2027," USAID https://www.usaid.gov/pacific-islands/strategic-framework.

4   Appendix C contains descriptive statistics of DECA PICs including population (rural/urban) and GNI per capita.

5   "The Pacific Islands: Policy Issues, "The Congressional Research Service, February 2, 2017, https://sgp.fas.org/crs/row/R44753.pdf

(approximately 10M) followed by Fiji (approx. 930,000) and countries with the smallest population include Nauru (approximately 12,600) and Tuvalu (11,000)[6] (Appendix C).[7] In most DECA PICs, GNI per capita is less than USD10,000, with the exception of Fiji, Nauru and Palau. In FSM, PNG, Kiribati, Solomon Islands, and Vanuatu, GNI per capita is less than USD 5,000.[8] Numerous challenges to gender parity in the PICs include: sociocultural norms that favor males in decision-making and inheritance; the predominance of gender-based violence; and social expectations that women will perform unpaid domestic work.[9]

The U.S. presence in the PICs is longstanding and has increased in recent years, due in part to growing national security concerns.[10] The U.S. relationship with the FSM, RMI, and Palau is governed by Compacts of Free Association.[11] Palau, RMI, and FSM have their own governments and pursue independent foreign policies but are heavily dependent on the U.S. for financial assistance through grants and other federal programs and for defense. Citizens of the three countries can reside and work in the U.S. as lawful non-immigrants and serve in the U.S. armed forces.[12] In June 2022, Australia, Japan, New Zealand, the United Kingdom, and the United States launched the Partners in the Blue Pacific (PBP) initiative to more efficiently and effectively support PIC priorities.[13] In 2023, the U.S. opened or announced intent to open four embassies in Solomon Islands (January); Tonga (May); Vanuatu (planned); and Kiribati (planned).[14]

DIGITAL ECOSYSTEMS IN THE PACIFIC: KEY FINDINGS AND RECOMMENDATIONS

Significant advancements in connectivity infrastructure have taken place, particularly at the first mile, but last-mile connectivity remains a key challenge. Growing demand for broadband services across the Pacific resulted in rapid expansion of undersea cable projects with more than 10 international cables connecting 10 of the 12 DECA PICs. In many cases, undersea cable developments boosted bandwidth capacity and lowered costs for telecom providers. Regional experts are concerned that cable loans put PICs under considerable strain to repay debt. Satellite technology remains an important component of PICs connectivity infrastructure due to a variety of factors including gaps in fiber optic cable infrastructure and for network resiliency. The internet is predominantly mobile across PICs, driven by developments in telecom regulation and policy, and market liberalization. The mobile internet connectivity coverage gap decreased from 33% in

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6   The U.S. also recognizes Cook Islands and Niue as of 2023. Niue has a population of approximately 2,000. https://www.whitehouse.gov/briefing-room/statements-releases/2023/09/25/statement-by-president-biden-on-the-recognition-of-the-cook-islands-and-the-establishment-of-diplomatic-relations/#:~:text=September%2025%2C%202023-,Statement%20by%20President%20Biden%20on%20the%20Recognition%20of%20the%20Cook,the%20Establishment%20of%20Diplomatic%20Relations&text=Today%2C%20I%20am%20proud%20to,relations%20between%20our%20two%20nations.

7   "World Bank Development Indicators," https://databank.worldbank.org/source/world-development-indicators.

8   "World Bank Development Indicators."

9   Pacific Region Infrastructure Facility (PRIF), "Inclusive Infrastructure in the Pacific: Study on Gender Equality and Social Inclusion, "https://www.theprif.org/sites/default/files/documents/PRIF_GESI-Report_V3.pdf.

10   ABC News, "US opens embassy in Solomon Islands to counter China," https://abcnews.go.com/Politics/wireStory/us-opens-embassy-solomon-islands-counter-china-96822933.

11   "The Pacific Islands: Policy Issues," The Congressional Research Service, February 2, 2017, https://sgp.fas.org/crs/row/R44753.pdf

12   "The Pacific Islands: Policy Issues."

13   "Statement by Australia, Japan, New Zealand, the United Kingdom, and the United States on the Establishment of the Partners in the Blue Pacific (PBP)," The White House, June 24, 2022, https://www.whitehouse.gov/briefing-room/statements-releases/2022/06/24/statement-by-australia-japan-new-zealand-the-united-kingdom-and-the-united-states-on-the-establishment-of-the-partners-in-the-blue-pacific-pbp/.

14   "US eyes massive ramp-up in diplomatic personnel and spending at new Pacific island embassies," AP News, July 13, 2023, https://apnews.com/article/us-tonga-kirbati-vanuatu-solomon-islands-0d32ea1c21ecc4dbbc1288ce6c3b77d3

2018 to 14% in 2022 across PICs.[15] However, mobile connection rates (SIM cards per capita)[16] across the PICs range from more than 140% in Palau, Nauru and Fiji to below 40% in Tuvalu, PNG, FSM and RMI,[17] with many remote and rural communities remaining unconnected. As the most populous country in the region, PNG has the largest unconnected population, with nearly 60% of the population unconnected.[18] PICs with lower mobile connection rates tend to have limited telecom competition. In RMI, FSM, and Tuvalu, small populations and state-owned incumbent operators with entrenched political interests limit competition.

Emerging technologies and new approaches with the potential to disrupt the connectivity landscape in PICs are proliferating across the region, offering promise for expanding connectivity, boosting broadband speeds, building resilience, and strengthening digital ecosystems. LEO satellite technology has the potential to close the digital divide by providing reliable, flexible backhaul offering high-speed connectivity to underserved or unconnected areas across the Pacific. Despite the significant potential of LEO for last-mile connectivity, stakeholders hold mixed views on the suitability of LEO satellites for the region, given LEO providers' varied business models and approaches across diverse digital ecosystems and regulatory environments. The lack of regulatory harmonization across PICs makes it challenging for LEO providers to navigate the many unique policy environments. Open RAN architecture offers opportunities to lower barriers to entry, promote vendor diversity, and support innovation in telecommunications markets across the region. Industry awareness and perceived readiness for Open RAN vary, providing rich opportunities for building knowledge, training, and support for Open RAN in the Pacific.

RECOMMENDATIONS

✓ **Drive affordable last-mile connectivity solutions and promote digital inclusion.** Promote public-private partnerships and community-centered business models that address last-mile connectivity challenges and strengthen digital ecosystems. Regarding satellite technologies, engage with and support diverse MEO and LEO satellite providers by enhancing PIC governments' and existing private sector players' understanding of these emerging players to build confidence and to allay fears. Regarding Open RAN, build private sector skills and support knowledge exchange.

Infrastructure resiliency challenges, exacerbated by the region's vulnerability to climate change, plague PICs, forcing countries into vicious cycles of response and recovery. Eight out of twelve DECA PICs have only one or no international undersea cables. Even for countries with more than one international undersea cable, networks face resiliency issues. UN entities such as WFP'S ETC have attempted to bolster preparedness and resilience in the region, but there is high potential for digital technologies to play a more central role in disaster risk reduction and climate change adaptation.

RECOMMENDATIONS

✓ **Build resilient systems at the regional, country and community levels.** This can be done by convening stakeholders to identify regional infrastructure gaps. Consider supporting organizations to build preparedness and resilience for the long-term and investing in initiatives that leverage technology to build community resilience, such as early warning systems (EWS).

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15 "The Mobile Economy Pacific Islands 2023, GSMA, 2023, https://www.gsma.com/mobileeconomy/wp-content/uploads/2023/05/GSMA-ME-Pacific-Islands-2023.pdf Mobile internet coverage gap is defined by GSMA as those are not covered by a mobile broadband (3G and above) signal.

16 Mobile connection rates refers to the total number of SIM cards divided by population.

17 Data Portal using data from GSMA Intelligence. Mobile connections can be greater than 100% as an individual can own multiple SIM cards.

18 GSMA, "The Mobile Economy."

Low mobile adoption and significant mobile usage gaps caused by affordability challenges, low digital literacy, and lack of locally relevant content leave people behind and risk widening existing inequalities. Mobile broadband networks (3G and 4G) cover 86% of the Pacific region's population, yet only 27% use mobile internet, leaving a 59% usage gap.[19] The Pacific region has the second highest mobile usage gap worldwide behind Sub-Saharan Africa. Affordability challenges intensified by subsea cable loan debt, low digital literacy levels, and a lack of locally relevant content are primary reasons for low mobile adoption. The COVID-19 pandemic accelerated the digitalization of services, heightening the urgency of addressing digital divides that play out across gender, geography, disability, and other factors. Lack of data on connectivity, access, and use of digital technologies prevents effective interventions and policies to address barriers. Digital risks such as fraud, online harassment, and exploitation of women are also a major concern for the region, particularly for countries with lower adult literacy rates and significant language diversity such as PNG, Solomon Islands, and Vanuatu. Steady progress is being made with stakeholders, including civil society groups and the private sector, in addressing digital literacy barriers and safety online for marginalized groups. However, interventions are disparate and often underfunded.

RECOMMENDATIONS

✓ **Enhance digital literacy to improve digital adoption and online safety, particularly across marginalized groups such as women and girls, LGBTQI+, and persons with disabilities.** Engage with and invest in local and regional organizations that deliver digital literacy training to remote communities. Support governments in embedding digital literacy into national curricula and in designing inclusive government digital services and systems. It is important to pair digital literacy with connectivity intervention rollouts, particularly in remote outer islands.

The proliferation of mis- and disinformation is a growing challenge across the region due in part to a shift in media consumption away from traditional broadcast to digital media, including to social media. There is an absence of local fact-checking and watchdog organizations and a lack of moderators fluent in Pacific languages. Local media organizations lack financial resources to hire, train, and retain journalists, which compromises reporting quality and allows undue foreign influence. Financial difficulties among media outlets stem from decreased advertising revenues, the digital transformation, and disruptions from the COVID-19 pandemic. The move to online information consumption coincides with an increased use of online platforms to perpetuate violence against marginalized and vulnerable groups. Women journalists and politicians face online harassment and threats, often leading to offline violence and negative long-term professional implications for women.

RECOMMENDATIONS

✓ **Promote a free, open, and safe online information space through training and capacity building in digital journalism for media professionals, particularly women.** Consider workshops for media professionals on engaging in mobile journalism, building a social media presence, creating engaging online content, and monetizing followers.

In certain PICs, journalists face legal challenges to fair and free reporting online. The draft Media Development Policy in PNG contains provisions to regulate the media and to license journalists, and outlines sanctions for non-compliance. The repeal of the 2010 Media Industry Development Act (MIDA) is an opportunity

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19   "The Mobile Economy Pacific Islands 2023 Executive Summary," GSMA, 2023.Note this analysis includes American Samoa, Cocos (Keeling) Islands, Cook Islands, Fiji, French Polynesia, Guam, Kiribati, Marshall Islands, Micronesia, Nauru, New Caledonia, Niue, Norfolk Island, Northern Mariana Islands, Palau, Papua New Guinea, Samoa, Solomon Islands, Tokelau, Tonga, Tuvalu, Vanuatu, Wallis, and Futuna Islands.

to advance media freedom and freedom of expression in Fiji. Rural and remote communities face information poverty, where residents do not have access to traditional broadcast or digital media. Outside of urban centers, radio remains the most trusted source of news and information, overcoming connectivity and literacy barriers. The region has not yet developed legal and regulatory frameworks in terms of right-to-information laws and data protection and privacy legislation.

RECOMMENDATIONS

✓ **Support the development of a vibrant, independent, impartial, and sustainable media landscape in the Pacific Islands.** Provide training on how to monetize digital content. Support public interest media in gaining skills to counter mis- and disinformation and partner with technology companies to establish a Pacific-specific fact-checking organization.

✓ **Provide support for the development of legal and regulatory frameworks that champion freedom of expression online and freedom of the press as well as data protection, data privacy, and access to information.** Strengthen civil society by fostering coalition- building among existing CSOs to increase information-sharing and best practices about advancing rights through national legal and regulatory frameworks.

Government ICT ministries and their equivalents face challenges in digital system development and digital services maintenance due to low capacity exacerbated by difficulties in retaining talent. PICs rank among the lowest in the world on the UN E-Government Development Index and UN E-Participation Index. Digital ID initiatives are in development, although progress is fragmented and incomplete. While there is openness to open-source software and cloud computing, the absence of data privacy regulations in some cases undermines their adoption. The lack of platforms, applications, or initiatives that actively seek feedback from users hinders optimization of digital services according to the needs and preferences of users.

RECOMMENDATIONS

✓ **Provide technical assistance and skill-building opportunities to government staff in support of government system and service digitalization.** Training topics can include: data analysis for data-driven policy decisions; safe and secure approaches to using open-source software; and the importance of using interoperable systems. Support can be provided across the region and enable government stakeholders to come together for peer-to-peer intra-Pacific learning and information-sharing. Consider the option of embedded technical consultants or contracting technical positions to the private sector, especially in smaller PICs. Identify opportunities to advise on effective and safe design and implementation of national digital ID systems in close collaboration with existing World Bank and UNDP programs. Look for opportunities to support the use of open-source software and platforms for digital government systems and services. Capacity building and technical support will be required to ensure their safe and secure adoption. This support could come from the private sector. Additionally, government networks and data across the globe and specifically in the Pacific are vulnerable to damage or disruptions caused by natural disasters and acts of aggression. To mitigate such risks advocate for the adoption of cloud based cybersecurity solutions (with servers located in a third country).

The Pacific Island region faces cybersecurity vulnerabilities due to an absence of comprehensive cybersecurity strategies, limited coordination with local advisory bodies, and low absorptive capacity. Donor support in cybersecurity is currently focused on capacity building and basic incident response training. Coordination among different advisory bodies and stakeholders is critical for effective cybersecurity

measures. PICs have experienced notable cyber attacks in recent years targeting government services and critical infrastructure. Governments struggle to attract and retain skilled cybersecurity professionals who often migrate to the private sector or abroad after training. Cyber hygiene practices are weak, with few programs directly addressing this issue.

RECOMMENDATIONS

✓ **Increase coordination in cybersecurity capacity building with a focus on CERTs, workforce development, regulatory frameworks, and cyber hygiene across the ecosystem.** Work with existing coordination bodies to create a systematic approach to curbing oversaturation in cybersecurity capacity building efforts. Support the development of a robust cybersecurity workforce. This could be done through partnerships with higher education and global cybersecurity institutions. Any workforce development program should consider integrating workforce retention strategies such as bonding agreements to public service to address the challenge of skilled talent leaving PICs for more attractive opportunities abroad. Build the technical and operational capacities of CERTs as they are critical local focal points.

Institutional and infrastructural limitations impede the transition to a Pacific digital economy, particularly in smaller economies. Digital trade and e-commerce takeoff are undermined by weak enabling factors including variables described above such as low digital literacy, gaps in cybersecurity, data protection and policy legislation, and unreliable connectivity. The region has seen some growth due to improved trade facilitation infrastructure and the adoption of international standards supported by UN agencies (UNESCAP, UPU, UNCTAD and UNCITRAL). Weak export competitiveness among Pacific MSMEs is reflected by negligible cross-border trade among PICs. MSMEs also lack the capacity to adopt digital tools to buy and sell goods and services online. While the region is experiencing an upturn in economic activity on digital platforms, most e-commerce activity is limited to consumer goods, food, handicrafts, and tourism.

RECOMMENDATIONS

✓ **Cultivate digital engagement by enhancing local capacity for e-commerce in PICs. Support the development of local e-commerce platforms for small, remote, and disadvantaged communities.** Provide support for the increased bankability of local products, services, and providers. This can be done through exposure to best international practices.

✓ **Reduce policy and regulatory barriers to e-commerce and digital trade. One approach is to support a strengthened Pacific E-commerce Portal.** There is opportunity to accelerate adoption, implementation, monitoring, and upgrade of national digital economy and e-commerce strategies harmonized with the regional framework. This could include supporting e-commerce-related laws based on UNCITRAL model laws to increase confidence among consumers and businesses and boost the predictability of e-commerce.

Digital Financial Services (DFS) including branchless banking and mobile money have seen a slow increase in uptake. Despite challenges such as low financial literacy and regulatory uncertainty, DFS—especially mobile money and potentially QR payments play a significant role in financial inclusion in the PICs. However, commercial banks are not interested due to the small market sizes. Digital assets such as CBDC, stable coins, and crypto assets are gaining traction with countries like Fiji as they demonstrate high adoption rate, yet concerns about volatility and criminal use persist.

RECOMMENDATIONS

✓   **Promote the adoption of DFS and digital assets to increase financial inclusion and economic opportunities by supporting the deployment of non-bank digital payment solutions and alternative sources of finance for e-commerce ventures across the region.** These ventures could be used to accelerate and improve the disbursement of humanitarian assistance (cash relief) in PICs. Consider helping to integrate business-friendly digital payment solutions spearheaded by commercial banks and MNOs. Assist governments in developing enabling policies and regulations on DFS and digital assets in compliance with AML/CFT rules. Find opportunities to promote the use of FinTech and digital assets for remittances.

✓   **Support the development and dissemination of educational materials on digital assets.** These materials can be targeted at government officials, regulators, businesses, and consumers and could cover topics such as the basics of digital assets, the different types of digital assets, the potential benefits and risks of digital assets, and how to use digital assets safely. Support the development of pilot projects to test the use of digital assets among more mature PICs. These pilot projects can explore different ways to use digital assets to improve financial inclusion, promote economic growth, and deliver government services. The recently released White House Comprehensive Framework for Responsible Development of Digital Assets can be leveraged to implement these pilot projects.

The digital talent pool, dominated by youth, is growing in response to the increased demand for local skills. However, out-migration and a lack of skilled workers result in a mismatch between supply and demand. The tech startup ecosystem is starting to grow but faces insufficient funding, lack of localization, and support for later-stage startups. Growth is hindered by a skill deficit and the low appeal of entrepreneurship. Governments and development partners are key supporters of the very early stage tech startup ecosystem.

RECOMMENDATIONS

✓   **Build strong foundations for digital skills development that bridge the gaps between demand and supply. Support ecosystem builders that can provide local solutions to local problems.** Improve secondary and tertiary education curricula to prepare future generations for the digital jobs of tomorrow. Explore partnerships with the private sector to deliver digital skills training, making training accessible to all people regardless of income or location. Support the development of online and distance learning programs ranging from basic digital literacy to more advanced skills such as coding and data analysis.

ROADMAP FOR THE REPORT

About this Assessment section provides background on the DECA framework and goals.

DECA Findings section presents key findings on the PICs regional and national digital ecosystems. This section is organized into three sub-sections by DECA pillar: digital infrastructure and adoption; digital society, rights, and governance; and digital economy.

DECA Recommendations section outlines how the international development community can work with and support the PICs regional and national digital ecosystems to achieve improved development outcomes.

Navigation tip: The navigation bar in the footer throughout this report helps you move between sections. Dark blue text will indicate the current section you are in.

SECTION 1:

About this Assessment

USAID's Digital Strategy aims to improve USAID development and humanitarian assistance outcomes through the responsible use of digital technology and strengthen the openness, inclusiveness, and security of country digital ecosystems. The Digital Strategy and the DECA are part of USAID's holistic approach to helping achieve the Sustainable Development Goals (SDGs).

As part of the Digital Strategy implementation, the DECA examines three broad areas to understand the opportunities and challenges in a country's digital ecosystem:

1. Digital Infrastructure and Adoption
2. Digital Society, Rights, and Governance
3. Digital Economy

> **KEY TERMS | BOX 1:** What is a digital ecosystem?
>
> A digital ecosystem comprises stakeholders, systems, and an enabling environment that together empower people and communities to use digital technology to access services, engage with each other, and pursue economic opportunities.

The regional PICs DECA included 12 countries: Federated States of Micronesia (FSM), Fiji, Kiribati, Nauru, Palau, Papua New Guinea (PNG), Republic of Marshall Islands (RMI), Samoa, Solomon Islands, Tonga, Tuvalu, and Vanuatu.[20] It took place between late January 2023 and August 2023. It included desk research, consultations with USG, and about 10 weeks of virtual interviews. The Research Team conducted 108 interviews with stakeholders from civil society, academia, the private and public sectors, and international organizations.

FIGURE 1. USAID's Digital Ecosystem Framework
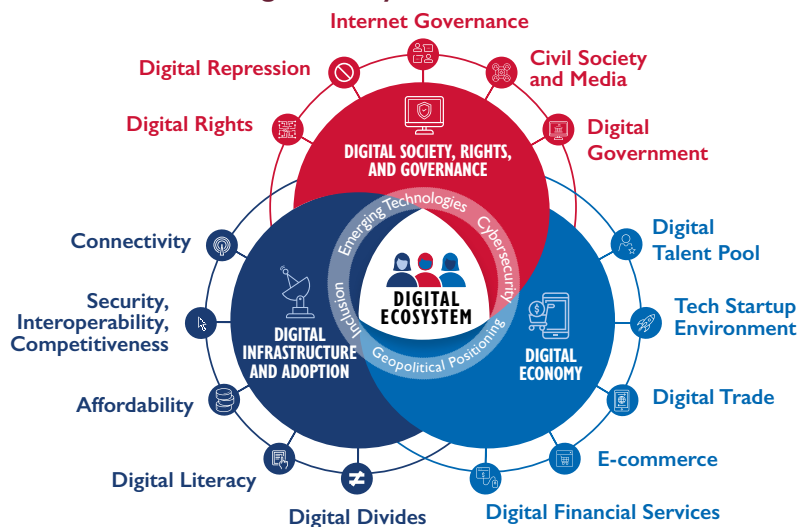
The DECA was funded by the U.S. Department of State via the Digital Connectivity and Cybersecurity Partnership (DCCP). It therefore accounts for both USAID and the U.S. Department of State priorities.[21] Rather than act as an authoritative source on the country's digital ecosystem, the DECA is intended to be a rapid assessment of opportunities and challenges tailored to USG's programmatic priorities, and thus does not cover all of the USAID program offices and projects in-depth.

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20   Throughout the report the 12 countries included in the assessment are referred to as DECA PICs.

21   The DECA Research Team worked with representatives from USAID Philippines, Mongolia, and Pacific Islands, U.S. Department of State East Asia Pacific, and U.S. State Department Bureau of Cyberspace and Digital Policy. Throughout the report these stakeholders are collectively referred to as U.S. Government (USG) stakeholders unless otherwise specified.

SECTION 2:
DECA Findings

PILLAR 1: DIGITAL INFRASTRUCTURE AND ADOPTION

Digital Infrastructure and Adoption refers to the resources that make digital systems possible and how individuals and organizations gain access to and use these resources. Digital infrastructure includes geographic network coverage, network performance, internet bandwidth, and spectrum allocation as well as telecom market dynamics around security, interoperability, and competitiveness. This pillar also examines behavioral, social, and physical barriers and opportunities for equitable adoption (digital divides, affordability, and digital literacy): who uses and who does not use digital technologies and why.

KEY TAKEAWAYS: DIGITAL INFRASTRUCTURE AND ADOPTION

FINDINGS

- Advancements in connectivity infrastructure have been made, particularly at the first mile, but last-mile coverage remains a key challenge. To date, there has been heavy focus on undersea cables but only modest success in finding viable models for the last-mile.

- Emerging technologies and new approaches with the potential to disrupt the connectivity landscape in PICs are proliferating. LEO/MEO satellites offer significant potential for last-mile connectivity, but there are mixed views on the suitability and feasibility of new technology and business models across the region's diverse digital ecosystems and regulatory environments. Open RAN adoption across the PICs could lead to increased vendor diversity and innovation in the telecommunications sector. However, there are varying levels of industry awareness and perceived readiness for Open RAN, offering rich opportunities for building knowledge, training, and support for Open RAN in the Pacific.

- Infrastructure resiliency challenges, exacerbated by the region's vulnerability to climate change, plague PICs. Eight out of twelve DECA PICs have one or no international undersea cables. Even in countries with more than one international undersea cable, networks face resiliency issues. There is high potential for digital technologies to play a central role in disaster risk reduction and climate change adaptation.

- Low mobile adoption and significant mobile usage gaps caused by affordability challenges, low digital literacy, and lack of locally relevant content leave people behind. Digital divides and online safety risks for marginalized communities are a significant concern across PICs. Some stakeholders are addressing these challenges but interventions are disparate and underfunded.

RELEVANT RECOMMENDATIONS

1. Drive affordable last-mile connectivity solutions that promote digital inclusion

2. Build resilient systems at the regional, national, and community level

3. Enhance digital literacy, especially across marginalized groups, to improve digital adoption and online safety

INTRODUCTION

Significant advancements in connectivity infrastructure have taken place, particularly at the first mile, but last-mile connectivity and resiliency challenges plague the region. Across PICs, the internet is predominantly mobile, driven by developments in telecom regulation and policy and market liberalization. However, connectivity

trends vary substantially, with mobile connection rates (total number of SIM cards divided by population) ranging from more than 140% in Palau, Nauru, and Fiji to rates under 25% in RMI and FSM.[22] Emerging technologies offer promise for future connectivity in the region, but there are mixed views on the suitability and feasibility of new technology and business models across the region's diverse digital ecosystems.

Low mobile adoption and significant mobile usage gaps, caused by affordability challenges, low digital literacy, and lack of locally relevant content, leave people behind. Digital risks—such as fraud, online harassment, and exploitation of women—are a major concern for the region, but steady progress is being made, with some interventions addressing digital literacy barriers and safety online for marginalized groups.

1.1 SIGNIFICANT ADVANCEMENTS IN CONNECTIVITY INFRASTRUCTURE, ESPECIALLY AT THE FIRST- AND MIDDLE-MILE

Significant advancements in the Pacific Islands region's connectivity infrastructure have taken place over the past 20 years, particularly at the first and middle mile (Figure 2), driven by the expansion of subsea cables, and developments in satellite technologies. The connectivity landscape across the 12 DECA PICs is extremely diverse. Figure 2 provides a general overview of the connectivity infrastructure detailing elements of the first, middle, and last-mile including various approaches to expanding last-mile connectivity.

FIGURE 2. Building a network

CONSIDERATIONS FOR RURAL CONNECTIVITY:

Fiber to Home/Office
COST: High fixed costs, low variable costs
DETAILS: Laying fiber to remote, sparsely populated areas can be logistically and financially challenging

TVWS
COST: Moderate fixed costs, moderate variable costs
DETAILS: equipment is more specialized and expensive than WiFi, but can transmit signal around obstacles and across greater distances

Microwave
COST: Low fixed costs, low variable costs
DETAILS: easy and less expensive than fiber to deploy, but requires line-of-sight between radios and there may be licensing restraints

Fixed Wireless / WiFi Networks
COST: Variable fixed costs, low variable costs
DETAILS: relatively easy and inexpensive to set up, but may require line-of-sight between antennas and original backhaul connection, depending on technology used

Satellite
COST: High fixed costs, high variable costs
DETAILS: Using satellite receivers in a remote community can be easy, but service can be expensive

Mobile Networks
COST: Moderate fixed costs, moderate variable costs
DETAILS: deploying equipment in rural areas can be prohibitively expensive, but accessing unused licensed spectrum for community networks may be possible to lower costs

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22   Data Portal using data from GSMA Intelligence. Mobile connections can be greater than 100% as an individual can own multiple SIM cards.

1.1.1 GROWING DEMAND FOR BROADBAND SERVICES RESULTED IN RAPID EXPANSION OF UNDERSEA CABLE PROJECTS

The business case for investing in first mile infrastructure, (i.e. undersea fiber optic cables and satellite infrastructure) is challenging with many island communities traditionally relying on international aid and loans for cable development. Growing demand for fast, reliable connectivity, driven by user migration to smartphones, cloud adoption, and online entertainment platforms, has led to rapid expansion of new undersea cable projects in the PICs.

Fifteen years ago, only four PICs were connected to an international undersea cable.[23,24] There are now more than ten undersea international cables connecting the DECA PICs (Table 1 and Appendix A). International cables usually connect to the main islands, and domestic cables are then used to link them to outer islands. While FSM, Fiji, PNG, and Samoa have two or more international cables, six PICs in the assessment rely on one international cable, and Tuvalu and Nauru have no operational undersea cables.[25] Both rely on satellite connectivity at the first mile. Relying on a single cable reduces redundancy, increasing vulnerability to outages caused by cable damage from fishing, anchoring, or natural disasters (Box 4).

TABLE 1. Number of undersea cables across DECA PICs[26]

COUNTRY	TOTAL ACTIVE UNDERSEA CABLES (INTERNATIONAL[27] AND DOMESTIC)	TOTAL DOMESTIC	TOTAL INTERNATIONAL	TOTAL UNDERSEA CABLES PLANNED
FSM	3	1	2	1 (East Micronesia cable)
Fiji	6	0	6	
Kiribati	1	0	1	1 (East Micronesia cable)
Nauru	0	0	0	1 (East Micronesia cable)
Palau	1	0	1	1 (branch of Echo)
PNG	4	2	2	1 (Pukpuk 1)
Samoa	3	0	3	
Solomon Islands	1	0	1	
Tonga	2	1	1	
Tuvalu	0	0	0	
Vanuatu	1	0	1	
RMI	1	0	1	

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23   "Maximising availability of international connectivity in the Pacific," ITU, 2018, https://www.itu.int/en/ITU-D/Regulatory-Market/Documents/Infrastructure_portal/Maximising-availability-of-int-connectivity-in-the-pacific.pdf

24   In 2007, only CNMI (Northern Mariana Islands), Guam, Fiji, and PNG were connected to an international submarine cable.

25   Geoff Huston, "The Politics of Submarine Cable in the Pacific," CircleID, June 5, 2022 , https://circleid.com/posts/20220605-the-politics-of-submarine-cable-in-the-pacific.

26   DECA compilation based on UNCTAD report (Digital Economy Report Pacific Edition 2022) and DECA research

27   International undersea cables in Table 1 include intercontinental, inter-regional, and intra-regional.

FIGURE 3. Map of undersea cables in the Pacific in 2023[28]
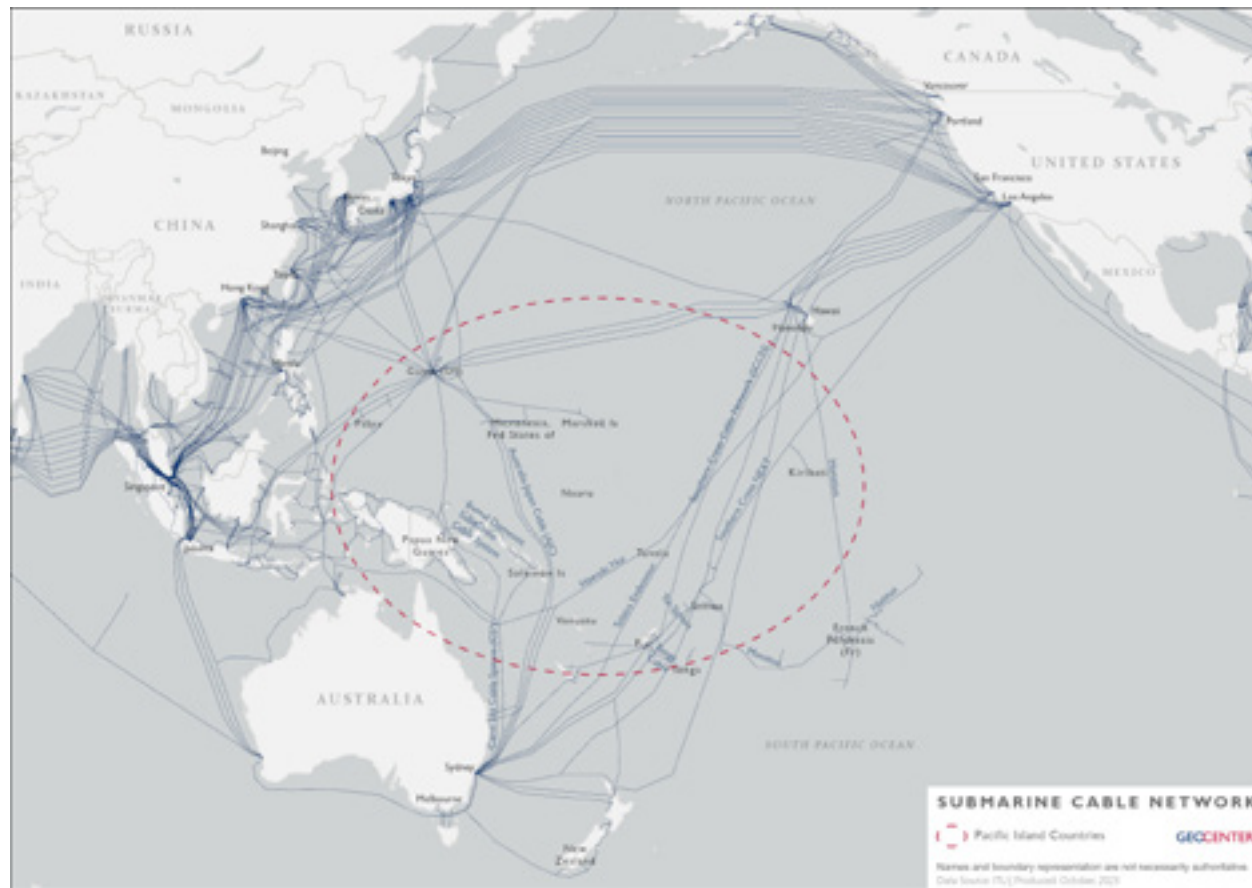
Over the last few years, big tech companies such as Google, Meta, Microsoft, and Amazon have increasingly invested in undersea cables around the world due to their huge demand for data center traffic.[29] In the Asia Pacific region, Echo (led by Google and Meta) and Bifrost (led by Keppel T&T, Meta, and Telin) are the first two cables to go through a route crossing the Java Sea. The cables connect Singapore, Indonesia, and North America and aim to increase undersea capacity in the trans-Pacific by some 70%.[30] They are due for completion in 2023 and 2024 respectively. Google's Apricot Cable, due for completion in 2024,[31] will extend Google Cloud services to markets that complement the reach of Bifrost and Echo.[32,33] Echo is the only cable of the three with a landing point in any of the DECA PICs, and it lands in Palau. According to donors, the current challenge is to find investment and subsidized funding to connect this new capacity that is crossing the Pacific down to the

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28   "Global Communications Explained," Telegeography, n.d., telegeography.com.

29   Alan Mauldin, "A Complete List of Content Providers' Submarine Cable Holdings," Telegeography, November 9, 2017, https://blog.telegeography.com/telegeographys-content-providers-submarine-cable-holdings-list.

30   Aradhana Aravindan, Fanny Potkin "Facebook, Google plan new undersea cables to connect Southeast Asia and America," Reuters, March 29, 2021, ,https://www.reuters.com/world/asia-pacific/facebook-google-plan-new-undersea-cables-connect-southeast-asia-america-2021-03-29/.

31   Bikash Koley, "Announcing Apricot: a new subsea cable connecting Singapore to Japan," Google Cloud Blog, August 16, 2021 https://cloud.google.com/blog/products/infrastructure/new-apricot-subsea-cable-brings-more-connectivity-to-asia.

32   Geoffrey L. Irving, "Leaning on the big switch in the Pacific: Why the United States dominates Pacific telecom infrastructure," February 1, 2023, https://cimsec.org/leaning-on-the-big-switch-in-the-pacific-why-the-united-states-dominates-pacific-telecom-infrastructure/

33   Google Apricot will connect Singapore, Japan, Guam, the Philippines, Taiwan and Indonesia.

PICs through branching units connecting the main trunk lines.[34] Without additional investment, they risk becoming digital flyover countries.

Other recent developments include Southern Cross's Next Cable, completed in 2022, which provides the first international submarine fiber connections to Tokelau and Kiribati, and reinforces Fiji's growing role as a digital hub for the Pacific Islands, with now six international undersea cables connecting to it.[35] The East Micronesia Cable, supported by the United States, Australia, and Japan will connect FSM, Kiribati, and Nauru to the existing HANTRU-1 cable, located in Pohnpei, FSM,[36] and is set for completion in 2025.

In many cases, undersea cable developments boosted bandwidth capacity and lowered costs for telecom providers. However, regional experts are concerned that cable loans[37] put PICs under considerable strain to pay back debt (Section 1.5.2).[38]

Nations are increasingly focusing on security concerns stemming from control of submarine cable infrastructure [39] as such control affects availability of essential services, availability of data, and access to content. In 2018, the Australian government stepped in to fund Solomon Islands first subsea cable (Coral Sea Cable), meaning that Huawei Marine (rebranded in 2020 as HMN Technologies)—originally contracted by Solomon Islands Government—was no longer involved.[40]

BOX 1: Translating undersea cable capacity into connectivity for Pacific Islanders

Although significant investments were made in undersea cables across the Pacific, less attention was paid to translating cable capacity into accessible and affordable connectivity at the last-mile. In several PICs, State Owned Enterprises (SOEs) are in charge of cable infrastructure, acting as wholesale retailers of the internet at the national level. There have been many issues with access to the new cables once they landed, and ISPs face pricing challenges. Below are examples of how challenges with undersea cable governance can undermine affordable internet for end-consumers and efforts by regulators to overcome them.

In Fiji, FINTEL (Fiji International Telecommunications Pte Limited) is the cable landing operator supporting the international gateway, including the Southern Cross submarine cable network. In 2019, the Fijian Competition and Consumer Commission (FCCC) reduced previously unaffordable charges for the FINTEL cable landing station to ensure affordable broadband access for Fijians. Costs were reported to have reduced from USD 40,000 for a 10-gigabyte line to USD 640.[41]

In PNG, DataCo is a regulated SOE that provides wholesale communications services to the ICT market. It has a monopoly on control of undersea cables landed in the country.

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34   USAID, interview by DECA team, May 2023, online.

35   "Southern Cross 400GbE services now available," Telecom TV, January 17, 2023, https://www.telecomtv.com/content/access-evolution/southern-cross-400gbe-services-now-available-46426/.

36   "Advancing Delivery of the East Micronesia Cable Project," USAID Press Release, March 17, 2023, https://www.usaid.gov/pacific-islands/press-releases/mar-17-2023-advancing-delivery-east-micronesia-cable-project.

37   Appendix A includes a table detailing the cable loan funders, which include the World Bank, Asian Development Bank, and the Exim Bank of China.

38   Private sector tech company, interview by DECA team, May 2023, online.

39   Geoff Huston, "The Politics of Submarine Cable in the Pacific," CircleID, June 5, 2022 , https://circleid.com/posts/20220605-the-politics-of-submarine-cable-in-the-pacific. In 2018, Australia rejected a plan for a cable built by Huawei Marine Networks connecting Australia to the Solomon Islands and PNG.

40   Jonathan Barrett, "Pacific island turns to Australia for undersea cable after spurning China," Reuters, June 24, 2021, https://www.reuters.com/world/asia-pacific/exclusive-pacific-island-turns-australia-undersea-cable-after-spurning-china-2021-06-24/.

41   Vaughan O'Grady, "Fijian regulator slashes cable landing station charges," Developing Telecoms, September 20, 2019, https://developingtelecoms.com/telecom-technology/telecom-revenue-billing/8771-fijian-regulator-slashes-cable-landing-station-charges.html.

BOX 1 (CONTINUED): Translating undersea cable capacity into connectivity for Pacific Islanders

Coral Seas Cable in PNG was expected to significantly reduce broadband costs. However, a few interviewees noted that in both PNG and Solomon Islands, the cable has not helped to decrease mobile internet prices.[42] [43]

National backhaul in PNG is a barrier to last-mile connectivity, with Digicel PNG's CEO buying more satellite capacity now than before the cable was built because it is so unreliable.[44]

"The Coral Seas Cable comes to Port Moresby, but distributing it to the beaches is extremely difficult. There is fiber that goes up to the highlands area, with an estimated population of 3 million people, but its availability has been historically only 20% due to vandalism and other outages."

– Colin Stone, CEO, Digicel PNG

Complex market dynamics between SOEs managing undersea cables, ISPs, and MNOs limit effective competition in some markets:

"As an internet service provider, you are both a customer of a big telco as well as a competitor, so that limits your ability to compete because you are always worried about if your provider (upstream bandwidth provider) will try to shut you down in some way because you are more of a threat than a benefit to them when you get too large."

– John Garrity, BEACON, May 2023

To prevent anti-competitive monopolies at cable landing stations presenting barriers, ITU recommends full competition and sharing of sites in order to maximize the benefits of undersea internet cables, with practices in Singapore[45] presented as an exemplar[46]

1.1.2 SATELLITE TECHNOLOGY REMAINS AN IMPORTANT COMPONENT OF PICS CONNECTIVITY INFRASTRUCTURE

There are three types of satellites around the Earth: geostationary (GEO), medium Earth orbit (MEO), and low Earth orbit (LEO), all of which have a role to play in the PICs (Figure 4).

Traditionally, satellite technology using GEO satellites was the main means of communication for PICs with the rest of the world, but the deployment of undersea fiber cables in more recent years has transformed the landscape. Nevertheless, GEO satellite technology remains an important component of connectivity infrastructure in the region, with satellite companies providing services to less populated and remote areas where fiber optic cables are not viable. Satellite technology also acts as a backup for redundancy purposes, and is critical for disaster response and recovery. One of the major satellite operators, Kacific, launched the Kacific-1 satellite into geostationary orbit in 2019, greatly improving services across many PICs.[47]

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42   Academic expert, interview by DECA team, April 2023, online.

43   Amanda H A Watson, Picky Airi, Moses Sakai "No change in mobile internet prices in PNG," DEVPOLICYBLOG, July 30, 2020, https://devpolicy.org/no-change-in-mobile-in-internet-prices-in-png-20200730/.

44   Digicel PNG, interview by DECA team, May 2023, online.

45   "GSR 2008 Discussion Paper," ITU, February 2008, https://www.itu.int/ITU-D/treg/Events/Seminars/GSR/GSR08/discussion_papers/IntlSharing_Singapore_web1.pdf

46   Amanda H.A. Watson, "Undersea Internet Cables in the Pacific Part 2: Cybersecurity, Geopolitics and Reliability," Australian National University, Department of Public Affairs, 2021, https://dpa.bellschool.anu.edu.au/sites/default/files/publications/attachments/2021-08/undersea_internet_cables_in_the_pacific_part_2_-cybersecurity_geopolitics_and_reliability_amanda_h_a_watson_department_of_pacific_afffairs_in_brief_2021_20.pdf.

47   Kacific operates in PNG, Tuvalu, Kiribati, Fiji, Samoa, Tonga, and FSM.

FIGURE 4. Comparison of GEO, MEO and LEO satellites[48]

GEO satellites at altitudes of 35,786 km
Full orbital period of 24 hours
Latency (round trip) of approximately 477 ms

MEO satellites at altitudes of 2,000–35,786 km
Full orbital period of 127 minutes to 24 hours
Latency (round trip) of approximately 27–477 ms

LEO satellites at altitudes of 160–2,000 km
Full orbital period of 88–127 min
Latency (round trip) of approximately 2–27 ms

> *"[GEO] satellite has a huge complementary role to play in increasing the resilience of various networks in the region… Yes, having more fiber drives substitute use for broadband away from satellites, but growth in capacity drives need for resilience and reticulation, which drives increasing demand in satellite capacity."*
>
> — Ivan Fong, Managing Director, Kacific

Some satellite providers such as SES are complementing their GEO satellites with medium earth orbit (MEO) satellites, combining coverage, low latency, and high throughput competencies.[49] MEO satellites have played a key role in disaster response. Following disruption to data services across PNG caused by an earthquake in 2022, Digicel Pacific partnered with SES using its O3b MEO satellite system to restore networks and bolster resiliency.[50]

LEO satellite systems are fast emerging, with a variety of companies, technologies, and business models. LEO satellites are predicted to lower cost structures and make satellite connectivity more competitive.[51] Together with undersea cables, LEO satellites will likely create the future backbone of connectivity infrastructure in the Pacific, but it remains to be seen to what extent and in what time frame LEO satellites will be a gamechanger for the region (Section 1.4).

1.2 ACROSS PICS, THE INTERNET IS PREDOMINANTLY MOBILE, BUT TELECOM REGULATION AND CONNECTIVITY TRENDS VARY SUBSTANTIALLY

In low- and middle-income countries (LMICs), mobile phones are the primary and often only means for people to gain access to the internet. More than 3.4 billion people in LMICs use a mobile phone for access to the

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48   John Garrity, Arndt Husar, "Digital Connectivity and Low Earth Orbit Satellite Constellations Opportunities for Asia and the Pacific," Asian Development Bank, April 2021, https://www.adb.org/sites/default/files/publication/696521/sdwp-076-digital-connectivity-low-earth-orbit-satellite.pdf.

49   SES, interview by DECA team, April 2023, online.

50   Vaughan O'Grady, "Digicel Pacific partners with SES for PNG satcoms coverage," Developing Telecoms, November 2, 2022, https://developingtelecoms.com/telecom-technology/satellite-communications-networks/14163-digicel-pacific-partners-with-ses-for-png-satcoms-coverage.html.

51   John Garrity, Arndt Husar, "Digital Connectivity and Low Earth Orbit Satellite Constellations Opportunities for Asia and the Pacific," Asian Development Bank, April 2021, https://www.adb.org/sites/default/files/publication/696521/sdwp-076-digital-connectivity-low-earth-orbit-satellite.pdf.

internet,[52] accounting for 85% of broadband connections in 2022.[53] The majority of PIC DECA countries are low- or middle-income countries, so the trend is similar. In 2020, 72% of Asia and Pacific web traffic originated from smartphones.[54]

Fixed broadband usage is low with an average penetration rate of 2.9% across PICs DECA countries, compared to a global average of 15%.[55] High costs of laying terrestrial fiber-optic cables across remote islands result in expensive fixed broadband. Additionally, mobile phones are more readily available and cheaper than computers and laptops in the PICs.[56] Among the eight DECA PICs with data available on fixed line broadband,[57] Fiji is the cheapest, with the average fixed line broadband package costing USD 36 per month, and Vanuatu is the costliest, at USD 164 per month. The DECA PIC regional average of USD 86, compares to a global average of USD 57, making fixed broadband connectivity unaffordable for many Pacific islanders.[58]

1.2.1 MARKET LIBERALIZATION AND TELECOM REGULATION SPURRED COMPETITION, BUT MAJOR RESOURCE GAPS PERSIST

Challenges to market liberalization in small Pacific Island markets

Market liberalization over the past 20 years has improved access to and affordability of connectivity services. Many PICs now have more than one telecommunication company in operation (Table 3). However, small populations and low densities make it difficult for telecommunication markets to support multiple players and state-owned incumbent operators with entrenched political interest in a number of PICs limit competition in the region.

Samoa was one of the first countries in the Pacific to liberalize its telecom market and establish a regulatory infrastructure. In 2006, Digicel (now owned by Telstra) launched its first operation in Samoa, and now has a presence in six PICs.[59] In 2019, 50 percent of DECA PICs had only one mobile operator.[60] [61] By 2023, the overall number of telecom players had increased; only Tuvalu (the smallest DECA market) and RMI have a single MNO (Table 4). Not all other PICs experience effective competition, with dominant MNOs in FSM, Nauru, Palau, and PNG, owning the vast majority of market share, contributing to high mobile prices for consumers.

> *"A lot of them [PIC countries] legislatively today are liberalized but they still have some sort of restriction, almost an implicit restriction on the number of licenses or operators that they would like to have in each of these markets."*
>
> – Private sector organization, interview by DECA Team, May 2023

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52   Nadia Jeffrie, "The Mobile Gender Gap Report 2023," GSMA, June 8, 2023, https://www.gsma.com/mobilefordevelopment/programme/connected-women/the-mobile-gender-gap-report-2023/#:~:text=Women%20are%2019%25%20less%20likely,smartphone%20(see%20Figure%201).

53   International Telecommunication Union (ITU) estimates for 2022.

54   Shannon Williams, "Two Thirds of APAC Website Traffic Now Mobile – Study," eCommerce News, March 22, 202, https://ecommercenews.co.nz/story/two-thirds-of-apac-website-traffic-now-mobile-study.

55   ITU, (2020), Fixed broadband subscriptions: Refers to fixed subscriptions to high-speed access to the public Internet (a TCP/IP connection), at downstream speeds equal to, or greater than, 256 kbit/s divided by population and multiplied by 100

56   "Average price of laptops in the Asia-Pacific region in 2022, by country," Statista, January 12, 2024, https://www.statista.com/forecasts/1262412/asia-pacific-laptops-price-market.

57   FSM, Fiji, Palau, PNG, RMI, Samoa, Tonga, and Vanuatu from cable.co.uk.

58   FSM, Fiji, Palau, PNG, RMI, Samoa, Tonga, and Vanuatu from cable.co.uk .

59   Papua New Guinea, Fiji, Vanuatu, Samoa, Tonga and Nauru.

60   "The Mobile Economy Pacific Islands 2019," GSMA, 2019, https://www.gsma.com/mobileeconomy/wp-content/uploads/2020/03/GSMA_MobileEconomy2020_Pacific_Islands.pdf.

61   "The Mobile Economy Pacific Islands 2019," GSMA, 2019, https://www.gsma.com/mobileeconomy/wp-content/uploads/2020/03/GSMA_MobileEconomy2020_Pacific_Islands.pdf.

A further challenge for many PICs is that the supply of international connectivity is an effective monopoly, often controlled by submarine cable operators, so even when markets are successfully liberalized, in reality, a monopoly exists. The World Bank has encouraged liberalization efforts in the region. World Bank efforts to introduce competition in RMI in 2013 were unsuccessful, and the country has the lowest mobile penetration rate in the region. Revived World Bank efforts—Digital RMI[62],[63] and Digital FSM[64] projects—focused on market structure reform among other areas, aiming to encourage new providers into both markets. Regional experts express conflicting views on whether these smaller markets are large enough to sustain more than one MNO.[65]

Telecommunications regulators have evolved, but have limited resources and capacity

Telecommunications regulators set regulations on spectrum management, price regulation, licensing, cybersecurity, universal services and access, competition, and consumer protection, with the aim of supporting reliable and affordable telecommunications markets.

The majority of PICs have telecommunications regulators (Table 2). The degree of regulatory independence varies with some PICs, such as Palau, moving toward independence by reducing reliance on government funding.[66] Less populated countries such as Tuvalu retain regulatory mechanisms within the government. Many stakeholders believe that independent regulators are key for PICs digital ecosystems to flourish.

> *"I think if they really want to make things affordable and better, then they need a regulator that is independent to push what is important for what the country needs."*
>
> — State-owned enterprise, interview by DECA Team, May 2023

Limited resources and capacity challenge regulators to keep pace with fast-moving technology advancements. In Palau, regulation is not yet set up to cover emerging LEO providers.[67] Regulatory functions in Tuvalu currently sit within the Ministry of Justice, Communications, and Foreign Affairs and have very limited capacity beyond providing licensing to amateur radio operators.[68]

According to UNESCAP, although many PICs have progressed in key regulatory policy reforms in the telecommunication sector, the lack of technical expertise among some of these regulatory authorities often limits their effectiveness. The World Bank and other donors play an important technical advisory role supporting regulators and governments with the development of Digital Policy Frameworks. ITU and other international organizations also help in addressing technical knowledge gaps on spectrum management policies, licensing, and implementing universal service funds.[69]

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62   "New World Bank Project will Expand Internet Access for Marshall Islands," The World Bank Press Release, September 1, 2021, https://www.worldbank.org/en/news/press-release/2021/09/01/new-world-bank-project-will-expand-internet-access-for-marshall-islands#:~:text=24%20inhabited%20atolls%20and%20islands%2C%20including%20Majuro%20and%20Ebeye

63   As of August 2023, the Government of RMI decided to "pause" the digital RMI project component that would have liberalized its telecom market.

64   "Digital Federated States of Micronesia Project," The World Bank, 2020, https://projects.worldbank.org/en/projects-operations/project-detail/P170718.

65   DECA team interviews with regional experts in April and May 2023, online.

66   Palau Government interviewee, interview by DECA team, May 2023, online.

67   Palau Government interviewee, interview by DECA team, May 2023, online.

68   Tuvalu Government interviewee, interview by DECA team, May 2023, online.

69   "Broadband Connectivity in Pacific Island Countries," UNESCAP, January 2018, https://www.unescap.org/sites/default/files/PACIFIC_PAPER_Final_Publication_1_1.pdf.

TABLE 2. Telecommunications regulators in PICs[70]

COUNTRY	REGULATORY AUTHORITY	NAME OF AUTHORITY[71]	ADDITIONAL INFORMATION
FSM	Yes	FSM Telecommunication Regulation Authority (TRA)[72]	TRA is an independent regulator established through the FSM Telecommunications Act of 2014.
Fiji	Yes	Telecommunications Authority of Fiji (TAF)[73]	TAF was established through the Telecommunications Act of 2008. Responsible for all ICT issues with the exception of competition and consumer issues, which come under the Fiji Commerce Commission.
Kiribati	Yes	Communications Commission of Kiribati[74]	The Communications Commission of Kiribati is the regulatory authority for ICT issues formed in 2005.
Nauru	Yes	Nauru Utilities Corporation (NUC)[75]	NUC is an independent statutory authority operating under the guidance of the Nauru Utilities Corporation Act 2007. NUC regulates Nauru's telecommunications, electricity, and water sectors.[76]
Palau	No	*see additional information	The Bureau of Communications, within the Ministry of Public Infrastructure and Industries, implements regulatory functions. Palau's telecommunications regulatory function is moving toward independence by reducing reliance on Government funding.[77]
Papua New Guinea	Yes	National Information & Communications Technology Authority (NICTA)[78]	NICTA is an independent regulator of ICT established through the NICTA Act 2009.
Republic of the Marshall Islands	No	*see additional information	The Ministry of Transportation, Communications & Information Technology oversees the telecommunications sector in RMI. There is no independent regulator currently but the country is working toward liberalization of the ICT sector. [79]
Samoa	Yes	Office of the Regulator[80]	The Office of the Regulator was established in 2006 through the Telecommunications Act 2005 to provide regulatory functions for Samoa's telecommunication sector. It is also responsible for broadcasting, postal services, and electricity.

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70   Based on DECA Team research as of August 2023.

71   "Micronesia Regulatory Authority - Institutional structure," DataHub, n.d., https://datahub.itu.int/data/?e=FSM&c=&i=100089&s=3144&d=Name+of+authority.

72   "FSM Telecommunication Regulatory Authority," TRA, n.d., www.tra.fm.

73   "Telecommunications Authority of Fji," TAF, n.d., http://www.taf.org.fj/.

74   "Communications Commission of Kiribati," CCK, August 31, 2013, http://www.cck.ki/.

75   "Nauru Utilities Corporation," NUC, n.d., https://www.nuc.com.nr/.

76   "Where Technology Meets Connectivity," ISP Today, n.d., https://isp.page/news/naurus-telecommunication-regulatory-framework-an-analysis/.

77   Ministry of Public Infrastructure & Industries, Palau, interview by DECA team, May 2023, online.

78   "National Information and Communications Technology Authority," NICTA, n.d., http://www.nicta.gov.pg/

79   Ministry of Public Infrastructure & Industries, Palau, interview by DECA team, May 2023, online.

80   "Office of the Regulator," Samoa, n.d., http://www.regulator.gov.ws/.

COUNTRY	REGULATORY AUTHORITY	NAME OF AUTHORITY[71]	ADDITIONAL INFORMATION
Solomon Islands	Yes	Telecommunications Commission Solomon Islands (TCSI)[81]	TCSI is an independent regulator established in 2009 providing economic and technical management of Solomon Islands telecommunications sector.
Tonga	No	*see additional information	The Department of Communications within the Ministry of Meteorology, Energy, Information, Disaster Management, Environment, Climate Change and Communications (MEDIDECC) is responsible for frequencies licensing and importation of telecoms equipment.[82]
Tuvalu	No	*see additional information	The Ministry of Justice, Communication and Foreign Affairs oversees the telecommunications sector in Tuvalu.
Vanuatu	Yes	Telecommunications, Radiocommunications and Broadcasting Regulator (TRBR)[83]	TRBR is the regulatory authority for ICT issues formed in 2008.

Regional policy and regulation are fractured and there are limited mechanisms for coordination

The absence of an effective regulatory framework and the lack of harmonized regulations (i.e., fragmentation) across a region can discourage private sector investment.[84] This is especially true in small island developing states, which may not attract investment on their own. Although there are some mechanisms for regional coordination, such as APT (Asia-Pacific Telecommunity)[85] and PITA (Pacific Islands Telecommunications Association),[86] varying geopolitical alignments and the differing levels of maturity of digital ecosystems across the vast expanse of the Pacific make it difficult for harmonized regulation. A good example is APT's efforts in spectrum harmonization across Asia Pacific countries,[87] including new frequency spectrum such as the 700MHz band through the APT 700Mhz Band Plan to guide countries in the region in their spectrum management and planning.[88]

1.2.2 MOBILE NETWORK OPERATORS AND CONNECTIVITY TRENDS VARY GREATLY ACROSS THE PICS

Fourteen MNOs operate across the PICs (Table 3) with two dominant MNOs: Digicel (now acquired by Telstra) and Amalgamated Telecom Holdings (ATH).[89] ATH is a public company, which in recent years expanded across the Pacific with mobile networks in nine PICs. ATH markets within the scope of this DECA include Fiji (owning Vodafone Fiji, the country's leading mobile operator), Kiribati, PNG, Samoa, and Vanuatu. ATH also owns other ICT companies including Datatec in Fiji (one of Fiji's leading ICT companies) and FINTEL (operates international

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81   "Telecommunications Commission of Solomon Islands". n.d. https://www.tcsi.org.sb/.

82   "3.4 Tonga Telecommunications," Logistics Cluster, n.d., https://dlca.logcluster.org/34-tonga-telecommunications.

83   Telecommunications Radiocommunications and Broadcasting Regulator, Vanuatu, n.d., https://www.trbr.vu/en/

84   Paul Garnett, "Accelerating Universal Digital Connectivity," UNDP 2021, https://www.undp.org/sites/g/files/zskgke326/files/migration/asia_pacific_rbap/UNDP-RBAP-Accelerating-Universal-Digital-Connectivity-2021.pdf.

85   APT is an intergovernmental organization established in February 1979 with the aim of promoting ICT development in the Asia-Pacific region.

86   PITA is a non-profit organization representing the interests of Pacific small island nations in telecommunication.

87   "APT Recommendation on Frequency Arrangements For The Implementation Of Imt In The Band 698-806 Mhz,"APT, 2016, https://www.apt.int/sites/default/files/Upload-files/AWG/APT-AWG-REC-08_APT_Recommendation_APT700.docx.

88   Asia-Pacific Telecommunity, interview by DECA team, March 2023, online.

89   Liam Pye, Josh Rayfield, Rachel Carr, "Vodafone PNG : A Network of Possibilities," https://www.apacoutlookmag.com/company-profiles/vodafone-png-a-network-of-possibilities.

telecommunication facilities and connectivity for operators in Fiji and the region).[90] In 2019, ATH acquired BlueSky Group which has MNOs and submarine cables in Samoa, American Samoa and the Cook Islands.[91]

In 2021, Digicel had about 2.5 million subscribers across the entire PICs region.[92] It is currently the leading mobile operator in PNG, Nauru, Samoa, Tonga and Vanuatu, and the number two mobile operator in Fiji.[93] In October 2021, the Australian MNO, Telstra, partnered with the Australian Government to acquire Digicel Pacific, retaining Digicel's brand and management team. The USD 1.3 billion purchase was largely funded by the Australian Government.

TABLE 3. MNOs operating across DECA PICs[94]

COUNTRY	MNO*[95]
FSM (1)	FSM Telecom*
	iBoom
Fiji (3)	Vodafone (ATH)
	Digicel (Telstra)
	Telecom Fiji (ATH)*
Kiribati (2)	Vodafone (ATH)
	Ocean Link
Nauru (2)	Digicel (Telstra)
	PacCell (Acclinks)
Palau (3)	Palau National Communications Corporation (PNCC)*
	PT Waves (Palau Telecom)
	Palau Mobile (formerly Palau Wifi)
PNG (3)	Digicel (Telstra)
	Telikom
	Vodafone (ATH)
Samoa (2)	Digicel (Telstra)
	Vodafone (ATH)
Solomon Islands (2)	Our Telekom (Solomon Telekom)
	bmobile-Vodafone
Tonga (3)	Digicel Tonga
	TCC (U-call)
	Wantok Mobile
Tuvalu (1)	Tuvalu Telecommunication Corporation (TTC)*
Vanuatu (2)	Digicel (Telstra)
	Vodafone (ATH)

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90   Amalgamated Telecom Holdings. "ATH Annual Report 2023." 2023. Accessed November 17, 2023. https://www.ath.com.fj/wp-content/uploads/2023/12/ATH-2023-Annual-Report-FINAL-As-of-17-11-23.pdf

91   Amalgamated Telecom Holdings. "ATH Annual Report 2023." 2023. Accessed November 17, 2023. https://www.ath.com.fj/wp-content/uploads/2023/12/ATH-2023-Annual-Report-FINAL-As-of-17-11-23.pdf.

92   This refers to the Pacific Islands region including countries outside of the DECA scope.

93   Andrew Penn, "Expanding the Telstra family with Digicel Pacific," Telstra, October 25, 2021, https://www.telstra.com.au/exchange/expanding-the-telstra-family-with-digicel-pacific.

94   Based on DECA Team research as of August 2023.

95   MNOs with an asterisk are whole or part state owned entities.

Mobile connectivity trends

Unique mobile subscriber rates are relatively low in the Pacific region at 47%, compared to 62% in the Asia Pacific region and 70% globally.[96] Although the region is predicted to experience some growth, with mobile subscriber penetration estimated by GSMA to reach 50% by 2030 (adding an additional 1 million subscribers), trends are below the predicted global average of 73%.[97] The Pacific Islands mobile penetration predicted growth rate of 3% between 2022 and 2030 is below the 8% predicted growth rate for the Asia Pacific region.[98]

The development of mobile telecommunications varies substantially across the region, with mobile connection rates (total number of SIM cards divided by population) ranging from highs of over 140% in Palau, Nauru, and Fiji, to lows below 40% in Tuvalu, PNG, FSM and RMI (Figure 5). As the most populous country in the region, PNG has the largest unconnected population, with nearly 60% of its population unconnected. Across the region there is great variation in both population size and mobile connection rates (Figure 5.)

FIGURE 5. Mobile connections as a percentage of population vs. population (2022)
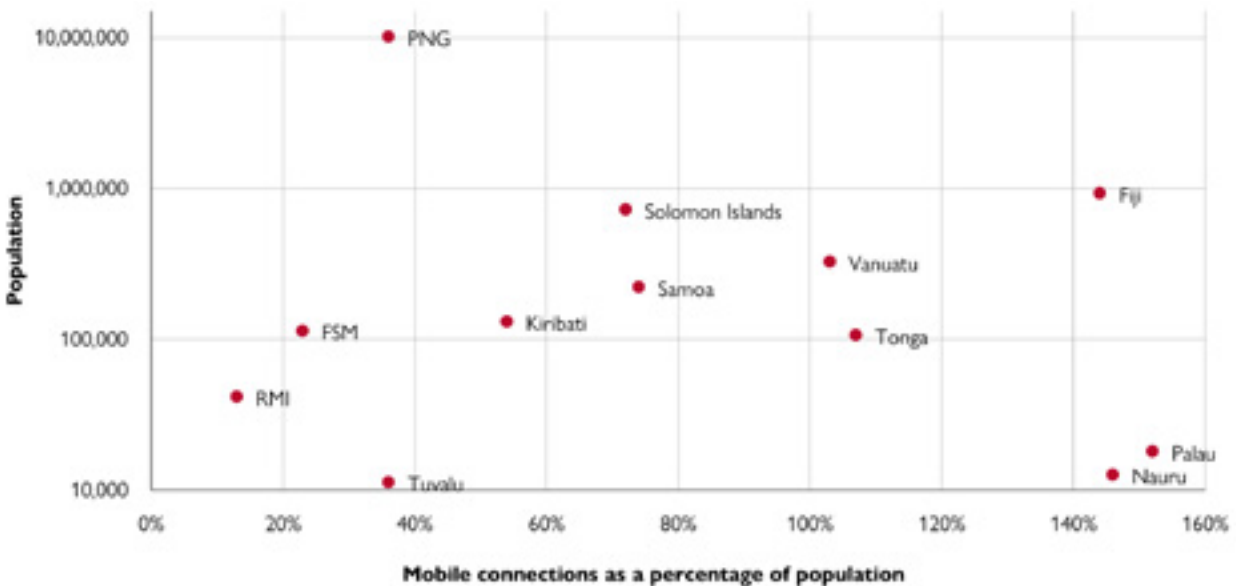
Source: Data Portal (2022) using data from GSMA Intelligence; World Bank Data Bank population 2022.

Unique mobile subscriber rates also vary considerably, with penetration rates of over 80% in Fiji and Palau, but below 50% in PNG, Solomon Islands, Vanuatu and Tuvalu. A multitude reasons account for the varying mobile penetration rates, including the relative GDP of each country, as well as digital infrastructure and telecom market dynamics (Section 1.1 and 1.2) and demand side characteristics, such as behavioral and social barriers and opportunities (Section 1.5 and 1.6).

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96   GSMA, (2023), The Mobile Economy Pacific Islands 2023 Executive Summary. Note this analysis includes American Samoa, Cocos (Keeling) Islands, Cook Islands, Fiji, French Polynesia, Guam, Kiribati, Marshall Islands, Micronesia, Nauru, New Caledonia, Niue, Norfolk Island, Northern Mariana Islands, Palau, Papua New Guinea, Samoa, Solomon Islands, Tokelau, Tonga, Tuvalu, Vanuatu, Wallis and Futuna Islands.

97   "The Mobile Economy Pacific Islands 2023," GSMA, 2023, https://www.gsma.com/mobileeconomy/wp-content/uploads/2023/05/GSMA-ME-Pacific-Islands-2023.pdf.

98   The Mobile Economy Asia Pacific 2023," GSMA, 2023, https://www.gsma.com/mobileeconomy/wp-content/uploads/2023/07/Mobile-Economy-Report-Asia-Pacific-2023.pdf.

FIGURE 6. Unique mobile subscribers (as a percentage of total country population)[99]
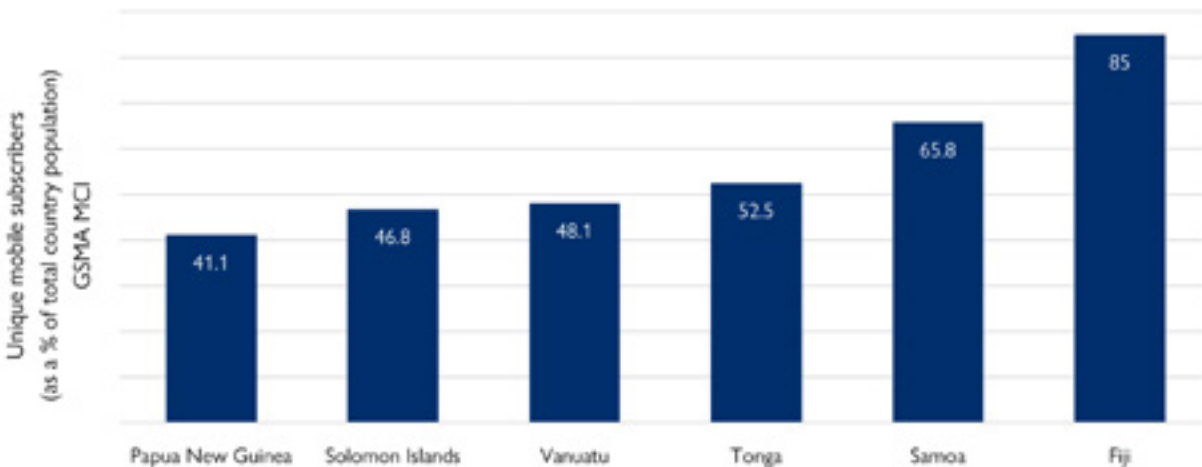
Mobile broadband and coverage trends

Mobile broadband networks (3G and 4G) cover 86% of the Pacific region's population, yet only 27% use mobile internet,[100] creating a usage gap of 59% of the population not using mobile internet, despite being covered by mobile broadband (see Section 1.5.1 for discussion on mobile usage gap). 4G adoption in the PICs accounts for just under 50% of total connections and is forecast by GSMA to reach 61% by 2030, as MNOs retire legacy networks, repurpose spectrum, and migrate customers to 4G networks.[101] Some countries, including Samoa and Fiji, have nearly nationwide 4G coverage, while others, including Solomon Islands and PNG, have much lower 4G coverage rates (Figure 7).[102] Steps have been taken to extend coverage, but a coverage gap remains due to high OPEX and CAPEX costs for MNOs, particularly in rural and remote areas. Mobile operators, other private sector players, donors, and governments are focused on extending coverage to underserved areas (Section 1.3).

FIGURE 7. 4G coverage as a percentage of the population[103]

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99   "GSMA Mobile Connectivity Index," 2022, https://www.mobileconnectivityindex.com/index.html. Data available for six DECA countries.

100   "The Mobile Economy Pacific Islands 2023," GSMA, 2023, https://www.gsma.com/mobileeconomy/wp-content/uploads/2023/05/GSMA-ME-Pacific-Islands-2023.pdf. This analysis includes American Samoa, Cocos (Keeling) Islands, Cook Islands, Fiji, French Polynesia, Guam, Kiribati, Marshall Islands, Micronesia, Nauru, New Caledonia, Niue, Norfolk Island, Northern Mariana Islands, Palau, Papua New Guinea, Samoa, Solomon Islands, Tokelau, Tonga, Tuvalu, Vanuatu, Wallis and Futuna Islands.

101   Tim Hiatt, James Joiner, "The Mobile Economy Pacific Islands 2023 Executive Summary, GSMA Intelligence, January 2023, https://data.gsmaintelligence.com/research/research/research-2023/the-mobile-economy-pacific-islands-2023-executive-summary.

102   "GSMA Mobile Connectivity Index," 2022, https://www.mobileconnectivityindex.com/index.html. Data available for six DECA countries. Data unavailable for other DECA PICs.

103   Hiatt, The Mobile Economy Pacific Islands 2023 Executive Summary, GSMA. Data unavailable for other DECA PICs.

Mobile broadband is unaffordable in the majority of PICs

Broadband affordability: Beyond the price of digital services, it is necessary to understand the affordability or ease of purchasing, relative to consumer income. The UN Broadband Commission defines internet affordability as "1 for 2": 1GB of mobile broadband that costs less than 2 percent of average monthly income. Using A4AI data across 10 PICs,[104] only two PICs meet the "1 for 2" benchmark. The most affordable mobile data is in Nauru and Palau, at 1.6% and 1.9% of GNI respectively. PNG's mobile broadband is the least affordable, at 11.3%; nearly 6 times more than the 2% GNI benchmark (Figure 8).

Disparity of income levels within countries is also a major factor contributing to affordability. In PNG, affordability is a critical barrier for marginalized groups. PNG has one of the least affordable internet rates across the Pacific and according to A4AI, taking the lower incomes of women into consideration makes the internet less affordable as a proportion of earnings.[105]

FIGURE 8. Affordability of mobile broadband[106]
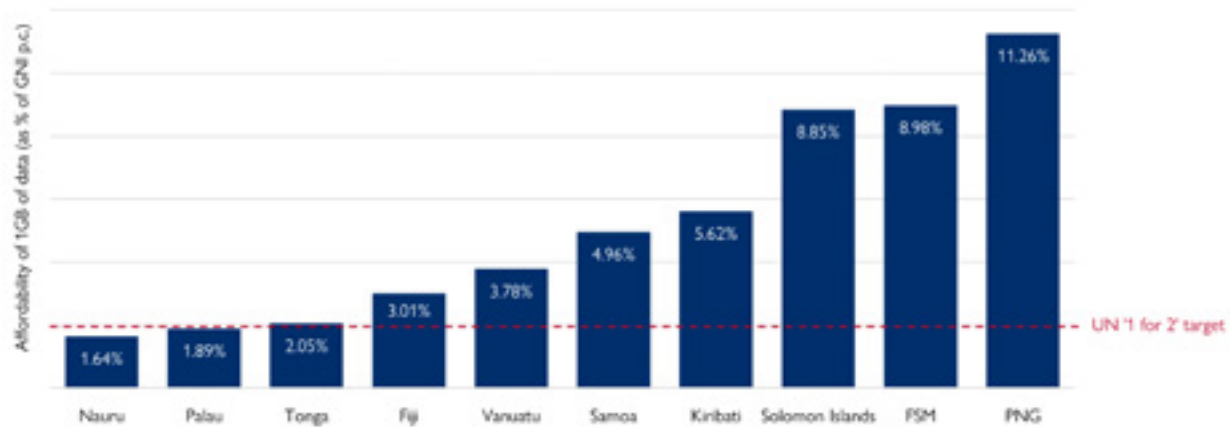
Smartphone affordability: Available data suggests that barriers to smartphone affordability are greatest in Kiribati and FSM, with smartphone cost being the highest against percentage of monthly income (55% and 41% respectively).[107] Smartphones in Nauru (5%) and PNG (12%) are the most affordable, although averages across countries mask discrepancies across groups with varying income levels. Smartphone adoption is rapidly expanding and forecast by GSMA to reach 91% of connections by 2030, tripling from 30% of connections in 2018.[108] A range of more affordable smartphones is growing across the Asia region, with Australian company MINTT launching smartphone devices in PNG in 2017 priced below feature phones, and Digicel PNG selling smartphones with 2GB RAM and 16GB memory for as low as USD 28.[109]

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104 2021 dataset. Tuvalu and Marshall Islands data was unavailable.

105 Pacific Digital Gender Scorecards: Regional Synthesis Report," Alliance for Affordable Internet, September 13, 2022, https://a4ai.org/research/pacific-digital-gender-scorecards-regional-synthesis-report/.

106 "Mobile Broadband Pricing," Alliance for Affordable Internet (A4AI), 2021, https://adi.a4ai.org/extra/baskets/A4AI/2021/mobile_broadband_pricing_gni.php.

107 "2022 prices and affordability of smartphones and feature phones by country," A4AI, 2022, https://docs.google.com/spreadsheets/d/1SBlHrjDu4Nq1Pv7pyCCYIpQWAjNkPQtgtdbCa1tbA5A/edit#gid=1471166238.

108 The Mobile Economy Pacific Islands infographic," GSMA, 2023, https://www.gsma.com/mobileeconomy/wp-content/uploads/2023/01/GSMA_ME_PacificIslands2023_Infographic_DPS.pdf.

109 Private sector company, interview by DECA team, May 2023, online.

1.3 LAST-MILE CONNECTIVITY AND RESILIENCY CHALLENGES PLAGUE PICS, BUT EMERGING TECHNOLOGIES OFFER PROMISE

While first mile connectivity infrastructure has progressed, PICs continue to face challenges at the last-mile. The impact of policy and private sector efforts to accelerate coverage expansion in remote and rural areas have been mixed but progress has been made, with the mobile internet connectivity coverage gap decreasing from 33% in 2018 to 14% in 2022.[110]

Resiliency challenges, exacerbated by the region's vulnerability to climate change, plague PICs, forcing countries into cycles of response and recovery. Some actors are beginning to leverage opportunities presented by mobile networks for anticipatory action and disaster risk reduction. The potential of emerging technologies is being explored in some PICs with diverse views and understanding of the role that these technologies will play across the region's unique digital ecosystems and regulatory environments (Section 1.4).

1.3.1 LAST-MILE CONNECTIVITY: CHALLENGES AND ROLLOUT INITIATIVES

> 📖 **KEY TERMS | BOX 2:** Last-Mile Connectivity and Universal Services Fund
>
> **Last-Mile Connectivity** is where the end users access the internet using devices (mobile phones, laptops, tablets, computers) through local access networks.
>
> **Universal Service Funds** (USFs) are a mechanism designed to promote network infrastructure development in areas that commercial access providers deem uneconomical. Essentially established as subsidy programs, USFs are resourced through contributions drawn from the revenues of telecommunications operators. USF funds are often applied to help de-risk or otherwise complement network investments in underserved (or unserved) areas. In many cases, USFs target projects that serve schools, hospitals, and other anchor institutions where demand for services can be aggregated.

The commercial case for last-mile connectivity across PICs

Often the commercial case for rural connectivity does not stack up for MNOs in the PICs. The dispersed and remote nature of thousands of small islands with challenging topographies makes building base stations expensive for ISPs. Together with high operating expenditure, costs are often unsustainable, especially given low population densities, low incomes, and poor power infrastructure. In many cases, this results in a commercially unviable business case for expanding mobile broadband infrastructure across many remote parts of the Pacific. According to GSMA, deploying new base stations in rural areas can cost up to two times as much as in urban areas, and OPEX costs can be up to three times as much, while revenues may be only one-tenth of revenues per base station in urban areas.[111]

> *"When you have one person per square kilometer in areas of the country putting up a cell tower, then flying a helicopter out to refuel, because there is no power, it is very difficult to justify the economics"*
>
> – Colin Stone, CEO, Digicel PNG

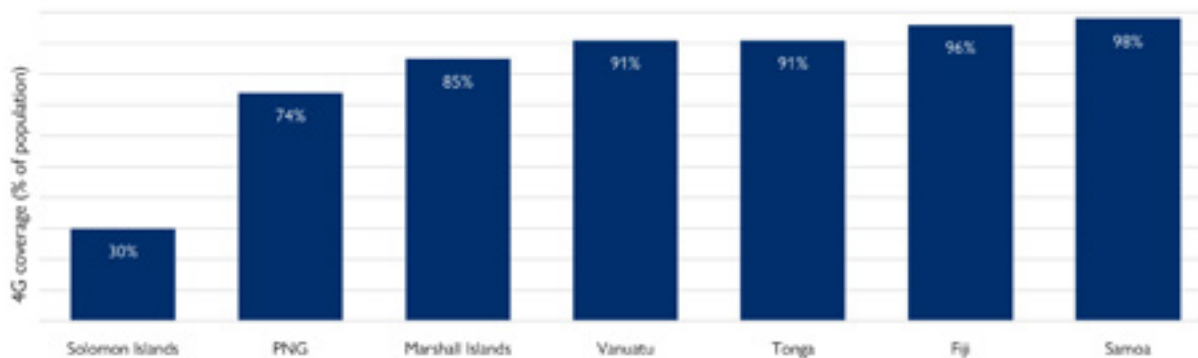110   "The Mobile Economy Pacific Islands 2023," GSMA, 2023, https://www.gsma.com/mobileeconomy/wp-content/uploads/2023/05/GSMA-ME-Pacific-Islands-2023.pdf.

111   "Accelerating Rural Connectivity: Insights from the GSMA Innovation Fund for Rural Connectivity," GSMA, December 2022, https://www.gsma.com/mobilefordevelopment/wp-content/uploads/2023/01/Accelerating-Rural-Connectivity.pdf.

Regulatory and policy barriers to connectivity, such as spectrum availability, access to land, law and order (including handset and fuel theft and destruction of equipment at tower sites), and licensing, further complicate efforts.[112]

Attempts at rural and remote island connectivity expansion

Government efforts at expanding connectivity: Several governments have attempted to incentivize MNOs to expand coverage to rural and remote areas. Universal Access Policies (UAPs) are one such mechanism that has been adopted by half of the PICs in this assessment.[113] In interviews, MNOs complained that competitors did not pay into Universal Service Funds (USFs)[114] or failed to meet rollout obligations.

> *"Universal Access Service is a failed model. We had rollout obligations as a license holder, we are the only ones to admit our obligations, we built [infrastructure] to every local level government"*
>
> *— Anonymous*

Vanuatu's UAP, supported by DFAT, and implemented by Vanuatu's Telecommunications Radiocommunications and Broadcasting Regulator (TRBR), appears to have delivered the most success. The UAP was first passed in November 2013, aiming to make telecommunications services (mobile voice and data) available to 98% of the population by 2018, at an agreed uniform price, through a Pay or Play approach.[115] A secondary objective was for all schools and government offices to have access to broadband coverage. The UAP required service providers to either expand telecoms service rollouts to underserved and unserved areas (Play), or to pay a 4% levy of their net revenue each year (Pay).

In 2015, TRBR signed UAP deals with Digicel Vanuatu, Vodafone Vanuatu, and Telsat Broadband, committing them to rollouts and service upgrades to 25 unserved or underserved rural sites. By January 2018, mobile voice coverage increased from 87% to 98.8% and mobile data coverage increased from 52% to 86.2%. The UAP also succeeded in connecting schools and government offices by using complementary connectivity solutions, such as Kacific's VSAT service, in places where it was physically impossible to extend mobile networks.[116]

In July 2021, Vodafone, Digicel, and Wantok signed up to participate in the second stage of the UAP,[117] which, according to stakeholder interviews, continues to be a success. Service providers who opt to Play receive waivers on import duties, on 700MHz spectrum license fees, and on levies.

Private sector efforts in rural connectivity expansion: Despite complex challenges to last-mile connectivity, there are examples of private sector entities—including MNOs and satellite providers—making impressive commitments to invest in connectivity expansion to underserved areas. In May 2023, Digicel PNG announced plans to build 70 new towers in 2023/24 to expand its 4G LTE coverage beyond 72% of the population.[118]

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112   Jonathan Brewer, Yoonee Jeong, Arndt Husar "Last Mile Connectivity: Addressing the Affordability Frontier," Asian Development Bank, December 2022, https://www.adb.org/sites/default/files/publication/847626/sdwp-083-last-mile-connectivity-affordability-frontier.pdf

113   ITU DataHub. Countries that have adopted UAPs include Fiji, Kiribati, PNG, Samoa, Vanuatu and Marshall Islands.

114   The terms Universal Service and Universal Access are defined as ensuring that telecommunications services are available on a widespread basis, usually outside of any mobile operator's existing coverage.

115   "2015, Universal Access Policy," TRBR, 2015, https://www.trbr.vu/en/telecom-industry/universal-access/universal-access-policy.

116   "Universal Access Policy (UAP) Stakeholders Tenth and Final Report on the Status of Implementation of the Government's Universal Access Policy," TRBR, January 2019, https://www.trbr.vu/attachments/article/756/uap_stakeholder_10th_and_final_report.pdf.

117   James Barton, "Digicel, Vodafone and WanTok sign up to Vanuatu UAP," Developing Telecoms, July 6, 2021m https://Developingtelecoms.Com/Telecom-Technology/Wireless-Networks/11468-Digicel-Vodafone-And-Wantok-Sign-Up-To-Vanuatu-Uap.Html.

118   "Digicel PNG to build more new towers in rural PNG," DICT I PNG, May 7, 2023, https://www.ict.gov.pg/digicel-png-to-build-more-new-towers-in-rural-png/.

BOX 2: Kacific's community WiFi networks

The satellite provider Kacific is focusing on connecting the underserved and expanding their community WiFi networks across remote and rural areas in FSM, Kiribati, PNG, Solomon Islands, and Vanuatu. Kacific works with sponsors who offset up front equipment or infrastructure costs including satellite terminals. The model works by providing bandwidth to community members who use their mobile phones to connect to the WiFi network enabled by satellite through pay-as-you-go data plans. Kacific creates digital vouchers for partners and agents in communities who resell them at a margin. To stimulate demand for their internet services, each month Kacific adds a bundle of free bandwidth to the accounts of agents for them to use as they like.

"It [community WiFi networks] may not be the most economically attractive service to deploy, but from a demand stimulation and growth perspective we think it's important to do."

– Ivan Fong, Managing Director, Kacific

As the service is rolled out, Kacific increasingly understands the challenges faced by end users. These include a high prevalence of unbanked individuals with limited access to bank accounts or physical currency. While partnering with an MNO to integrate their product into a digital wallet could be a solution, the lack of a unified payment mechanism across many of the countries Kacific works in is a challenge. Electricity, low availability of WiFi-enabled handsets, and limited understanding of how to use the internet and the benefits it can bring are among key barriers for end users.

FIGURE 9. Kacific's community WiFi network[119]

"Getting the service out there, making people aware of the benefits and what they can use it for in a way that is beneficial to them, is a key driver to addressing some of these issues. We've seen in PNG once people realize the benefits of what they can do with the internet and you show them how to use a phone, we've seen the supply of handsets being addressed somewhat by relatives that work in the cities, bringing back used phones for the community"

– Ivan Fong, Managing Director, Kacific, interview by DECA Team

While WiFi is an attractive technology to use given the relatively low infrastructure cost to set up the system, Kacific is exploring more advanced technologies that would provide superior internet connectivity. Complementing satellite technology with Open RAN and micro/pico cell sites to provide broadband service, using a partnership model between satellite providers and MNOs, and placing community needs at the center would be an interesting evolution of the community WiFi model.[120]
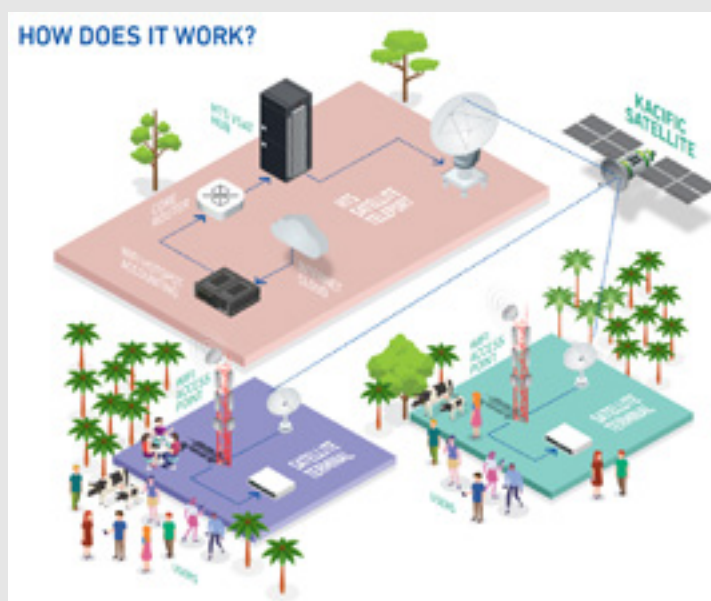
Grants and loans for mobile connectivity rollouts

Multilateral organizations like the ADB provide loans to governments and private sector players, called non-sovereign loans. In 2021, ADB provided a USD 25 million loan to PNG's second largest mobile operator,

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119   "Kacific Community Wi-FI," Kacific, n.d., https://kacific.com/services/community-wifi-2/.

120   Kacific, interview by DECA team, May 2023, online.

Amalgamated Telecommunications Holding (ATH),[121] to roll out 4G networks in PNG, aiming to improve competition dynamics in the country.[122]

Foreign governments also provided foreign assistance for the expansion of connectivity across the PICs, through grants and loans.[123] In 2021, Australia committed AUD 6.5 million (~USD 4.5 million) grant to build six 3G and 4G towers across three provinces in the Solomon Islands using Ericsson mobile communications equipment, Australian-supplied towers, and NEC microwave links. Due for completion in 2023, enhanced connectivity is targeted at improving border security, improving resilience to natural disasters, and boosting business opportunities for rural communities.[124]

Aggregating demand

Other actors such as the ADB are exploring opportunities associated with providing connectivity alongside public services. Aggregating demand will enable people with low spending power to afford subsidized connectivity services provided by the government. ADB is closely watching different initiatives to drive digital adoption, such as ITU's Smart Islands project (Box 3). This can provide important lessons as to how initiatives like the Smart Islands project can be used as a catalyst for digital adoption and for identifying sustainable models for the community to pay for broadband internet.

BOX 3: Smart Islands – delivering digital transformation to island communities.

ITU, together with other UN agencies and development partners, including DITRDCA Australia and ADB, has spearheaded the Smart Villages and Smart Islands (SVSI) initiative which seeks to "deliver connectivity and scalable and sustainable services to disadvantaged island communities."[125]

The premise of the model is a whole-of-government approach to digital transformation, focusing on cross-cutting areas, such as digital infrastructure, capacity building, cybersecurity, digital services, digital inclusion, and emergency telecommunication. The SVSI program aims to achieve this digital transformation at the community level with a focus on marginalized groups such as women, youth, persons with disabilities, and older persons. It leverages four pillars:

1. improving broadband connectivity
2. making broadband affordable
3. enhancing digital skills
4. providing digital services, to make an impact on people's lives based on their local priorities

Each country project starts with a needs assessment conducted at the community level (see Vanuatu example[126]) to understand the challenges and solutions across the four pillars and to see how they align with the national requirements. This is followed by program roll out and scale-up. Smart Islands implementation has already started in Fiji, Kiribati, Nauru, Samoa, Tonga and Vanuatu. Other Pacific countries including PNG, FSM, RMI, Tuvalu, and Palau have expressed interest in the program.

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121   "ADB Approves $25 Million Cornerstone Investment to Improve Telecom Services in PNG," Asian Development Bank, September 3, 2020, https://www.adb.org/news/adb-approves-25-million-cornerstone-investment-improve-telecom-services-png.

122   Asian Development Bank, interview by DECA team, May 2023, online.

123   Grants are transfers made in cash, goods or services for which no repayment is required and loans (concessional and non-concessional) must be paid back.

124   "Australia Funds Six New Mobile Towers to Boost Solomon Islands' Security," Solomon Times Online, August 27, 2021, https://www.solomontimes.com/news/australia-funds-six-new-mobile-towers-to-boost-solomon-islands-security/11054

125   "Smart Islands," ITU, n.d., https://www.itu.int/en/ITU-D/ICT-Applications/Pages/smart-islands.aspx.

126   "South Malekula: A smart island of Vanuatu: Preliminary study of needs and priorities 2021,"ITU, 2021, https://www.itu.int/en/ITU-D/ICT-Applications/Documents/Smart%20Islands/Smart-Island_VUT_S-Malekula.pdf

BOX 3 (CONTINUED): Smart Islands – delivering digital transformation to island communities.

FIGURE 10. Smart Islands program – problem and solutions tree
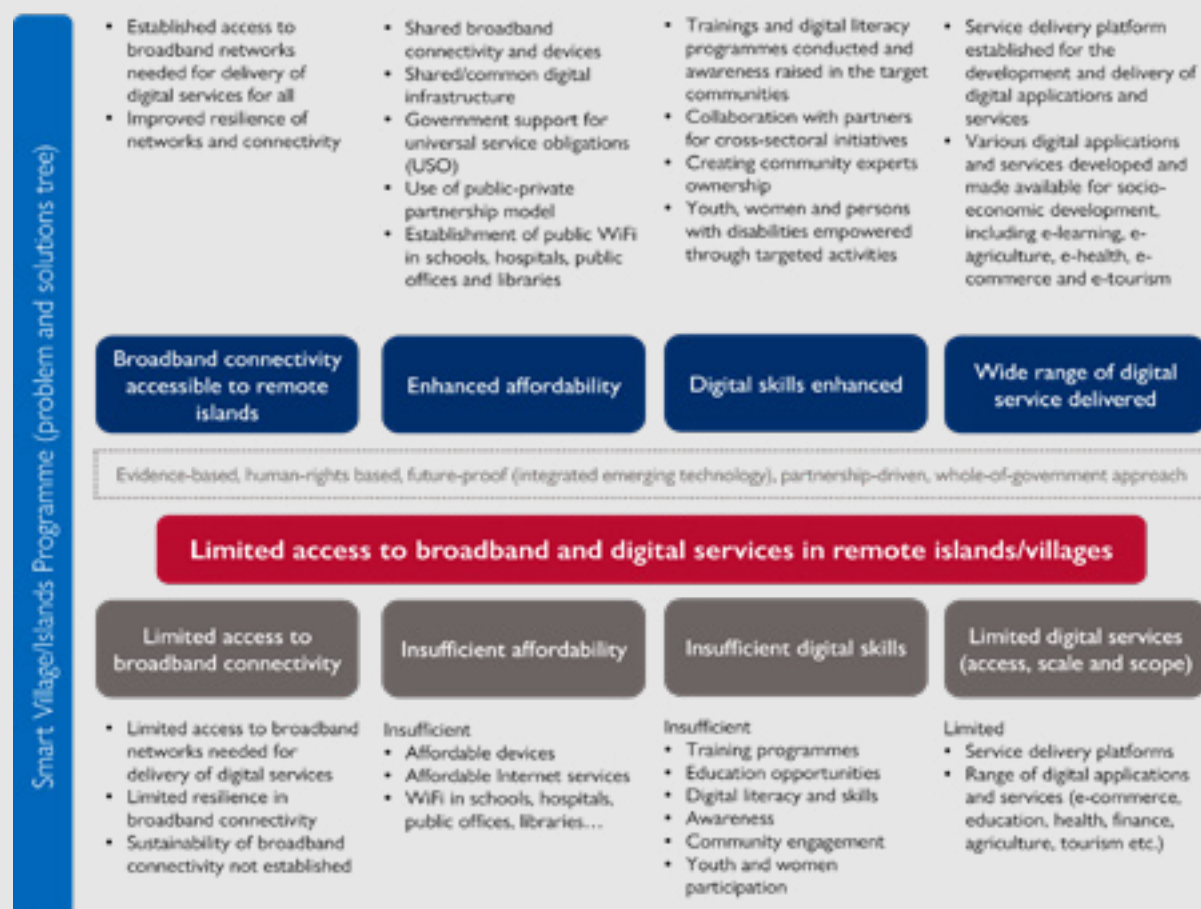
Source: South Malekula: *A Smart Island of Vanuatu* (ITU, 2021)

1.3.2 RESILIENCY CHALLENGES AND OPPORTUNITIES

As social and economic life in the Pacific becomes more reliant on digital ecosystems, the need for resilient infrastructure becomes more vital at the regional, country, and community levels. Resilience, redundancy, and security of networks must be at the forefront of government and private sector actor agendas. Previously, donors focused heavily on connectivity because of undersea cable projects, but now focus more on applications, cybersecurity, and resilience.[127]

There are calls for a more strategic, collaborative, region-wide approach to building resilient infrastructure. An interviewee from the Australia National University noted that some support for connectivity infrastructure in the PICs has been piecemeal, particularly for undersea cable developments. This has left numerous PICs with a single cable and limited redundancy.[128]

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127   Asian Development Bank, interview by DECA team, May 2023, online.

128   Academic expert from Australia National University, interview by DECA team, April 2023, online.

Climate and natural disaster vulnerabilities and efforts to bolster preparedness and resilience

PICs are among the most vulnerable countries in the world to natural hazards and to the effects of climate change owing to their low elevations and placement along the Pacific Ring of Fire and Pacific Cyclone Belt. Eight out of twelve DECA PICs have only one or no international subsea cables. Even for countries with more than one international subsea cable, networks face resiliency issues. Recent examples include network disruptions in Tonga and Vanuatu (Box 4). In the case of RMI, Majuro—the main island–is one of the narrowest islands in the world (30-40 feet wide). All of its mobile towers are vulnerable, especially to tidal waves. The National Telecommunication Authority (RMI's sole MNO) is conducting surveys to understand where seawalls must be built to prevent towers from being washed away.[129]

BOX 4: Disasters destroy connectivity infrastructure in Tonga & Vanuatu

Undersea cables carry 99 percent of international internet traffic,[130] and yet more than 100 submarine cables break every year,[131] or around two every week. The majority are caused by human activity, particularly ship anchors and fishing, but natural hazards can also cause major damage. The sheer impact of natural hazards and vulnerability of PICs, especially those reliant on a single undersea cable, was highlighted in Tonga in January 2022.

The Hunga Tonga-Hunga Ha'apai volcano erupted on January 15, triggering tsunamis that severed Tonga's international cable, shredding an 89-kilometer stretch of cable.[132] There was also damage to Tonga's domestic cable that connected the two outer islands, shutting off domestic and international connectivity.

> *"We were completely dark for about 3 days, except for those that had Sat phones, but the general public was out of communication for at least a week. After a week, people were agitated, they couldn't hear from their families. Eventually, once the two telcos increased satellite bandwidth, we were getting better connectivity, and after five weeks the international cable was back up and running."*
>
> – CEO Semisi Panuve, Tonga Cable Ltd

The repair should have taken two weeks, but several factors hampered repair efforts. The repair ship was stationed 4,700km away in PNG, farther than its usual point in Samoa. The COVID-19 pandemic also complicated the recovery. Volcanologists from the U.S. first had to fly to PNG because of COVID-19 border restrictions elsewhere. The repair ship then sailed to Samoa for spare cables, but COVID-19 restrictions required the volcanologists to wait for one week to enter the Samoan port.

In the interim, LEO operator Starlink provided 50 terminals to connect remote islands in the aftermath of the disaster. A six-month Temporary Telecommunications Service License was granted by the Fijian regulator to SpaceX in February 2022 for the installation and operation of a satellite Earth station in Fiji.

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129   NTA, interview by DECA team, May 2023, online.

130   "A lone undersea internet cable connected Tonga to the world — a volcanic eruption broke it," The Verge, January 19, 2022, https://www.theverge.com/22891031/tonga-volcano-eruption-broke-undersea-internet-cable-repair.

131   Rona Rita David, "Submarine Cables: Risks and Security Threats," Energy Industry Review, March 25, 2022, https://energyindustryreview.com/analysis/submarine-cables-risks-and-security-threats/.

132   "Volcano Damage to Tonga Undersea Cable Worse Than Expected," VOA News, February 15, 2022, https://www.voanews.com/a/volcano-damage-to-tonga-undersea-cable-worse-than-expected-/6443686.html.

BOX 4 (CONTINUED): Disasters destroy connectivity infrastructure in Tonga & Vanuatu

The disaster came three years (nearly to the day) after a ship anchor damaged Tonga's cable, cutting internet communication for two weeks. Following the 2019 cable damage, the country made efforts to improve resilience, including by signing a 15-year contract with Kacific. However, the Kacific service was not activated following the volcanic eruption due to a dispute over an outstanding USD 5.7 million payment owed by the Tongan Government to Kacific.[133] The Tongan Government is pursuing a second cable funded by the New Zealand and Australia governments to further enhance resilience.[134]

Vanuatu: Vanuatu has the highest disaster risk of any country in the world, followed by Solomon Islands and Tonga according to the 2021 World Risk Index.[135] Comprised of more than 80 islands, Vanuatu has high exposure and vulnerability to tropical cyclones, floods, storm surges, and earthquakes. Every decade, 20 to 30 cyclones pass over Vanuatu, with up to five of them causing severe damage.[136] The most destructive in recent years— Cyclone Pam in 2015—killed 11 people, displaced 65,000, and caused economic damages equivalent to 64% of the country's GDP.

In March 2023, over the course of three days, two Category 4 cyclones (Judy and Kevin) battered Vanuatu, affecting more than 80% of the population, and triggering a six-month state of emergency. Digicel Vanuatu and Vodafone Vanuatu were severely disrupted with 80% of the country's communication networks damaged.[137]

"The damage was huge and in order to restore the network here in Port Villa it was relatively easy, but in outer islands, just getting there is very difficult. You can imagine if you want to ship a generator, it is very challenging. We prepare well. If it is a big cyclone, we recruit technical support from other countries. We get our own chopper as well, to help us move the equipment. You have to worry about not just the infrastructure, you really need to worry about the most important factor of the business, the people. Without the people you cannot do anything."

– CEO, Digicel Vanuatu

Digicel Vanuatu's CEO said Vanuatu's extreme weather makes it the most operationally challenging country in the four continents in which he has worked. Digicel connects outer islands with single microwave links, so connectivity among these islands is lost if a tower blows down in a storm, but costs for satellite back-up have been too high to justify paying for full redundancy. Many stakeholders consider Starlink a game changer, forcing traditional satellite providers to lower their prices or to adapt their approach (Section 1.4).

"It is very expensive to be able to have full redundancy on satellite; financially it is not justified. Having said that, we always have partial backup for essential services in case of any cyclones, especially on main islands where most of the population is."

– CEO, Digicel Vanuatu

Digital technologies can play a vital role in disaster risk reduction and climate change adaptation in the region. Several actors (ITU, GSMA, USAID Climate Ready) are focused on supporting PICs to build preparedness and resilience providing technical assistance, funding, networking, knowledge-sharing opportunities, and communications equipment to governments and private sector entities. ITU is assisting Pacific Islands countries in developing their National Emergency Telecommunication Plan (NETP) and by providing emergency telecommunication equipment support in times of disaster (e.g. PNG, Tonga, Vanuatu).

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133   Bart Hogeveen, "What the Tonga disaster tells us about the South Pacific's cyber resilience," ASPI, February 16, 2022, https://www.aspistrategist.org.au/what-the-tonga-disaster-tells-us-about-the-south-pacifics-cyber-resilience/.

134   Tonga Cable Ltd, interview by DECA team, May 2023, online.

135   "World Risk Report 2021: Focus: Social protection," UNDRR Prevention Web, September 28, 2021, https://www.preventionweb.net/publication/world-risk-report-2021-focus-so"cial-protection#:~:text=The%20countries%20with%20the%20highest,exposure%20to%20extreme%20natural%20events.

136   "Climate Risk Country Profile: Vanuatu, World Bank Group, 2021, https://climateknowledgeportal.worldbank.org/sites/default/files/country-profiles/15825-WB_Vanuatu%20Country%20Profile-WEB.pdf.

137   "IT and Telecommunications specialists head to Vanuatu to assist in restoring communications," Relief Web, March 13, 2023, https://reliefweb.int/report/vanuatu/it-and-telecommunications-specialists-head-vanuatu-assist-restoring-communications.

BOX 5: World Food Program's (WFP's) Emergency Telecommunications Cluster (ETC)

WFP's ETC has supported emergency telecommunications preparedness across 12 PICs under the Pacific Humanitarian Team (PHT) since 2016.[138] This includes supporting PICs with National Emergency Telecommunications Plans (NETP), prepositioning emergency telecommunication equipment, and strengthening national response capability.

"A lot of this is not about the solution and the physical hardware, it's about the coordination. It's rudimental and basic things; how do we make sure someone picks up what has been delivered off the airplane, how do we make sure people can use equipment; can they prioritize usage in adequate ways. That work is crucial to ensure assistance is utilized at its best"
— Oscar Caleman, WFP Regional IT Emergency Preparedness & Response (EPR) Officer

ETC emphasizes the importance of building sustainable solutions, ensuring that partnerships are developed over the long term so solutions can be designed to meet local needs and contexts.

"Whatever we do we have to have that component of building long-term investments in the communities, organizations, and governments receiving this assistance… it's not about fancy systems, it's about foundations, it's about human capital, it's about building the base level up with our counterparts"
— Oscar Caleman, WFP Regional IT Emergency Preparedness & Response (EPR) Officer

ETC states that many initiatives fail because they do not build sustainability and capacity into the community they are supporting. This is one of the frequent challenges ETC encounters in the PICs:

"If you travel across the Pacific and go to remote islands what you will see is remnants of digital initiatives; satellite phones tucked away in some government office, solar panels dying in the jungle, or ancient radios rusting in a corner of a health center."
— Oscar Caleman, Regional IT Emergency Preparedness & Response (EPR) Officer

ETC has also provided governments with hardware and capacity building on the use of drones in emergencies, a technology they see as offering significant potential for disaster response. ETC recently delivered tools and training to the Tongan government following the 2022 volcanic eruption.[139] Drones are primarily used for risk assessments and post-impact assessments of infrastructure such as towers and mapping of hard-to-reach areas. Drones have also been piloted in the Philippines to provide post-disaster connectivity. GSMA provided a grant to Nokia Saving Lives for a pilot that enables data collection through LTE connected drones, with real time applications including video streaming, mapping, gas sensing, and search and rescue analytics.[140]

Leveraging technology to build community resilience

Digital technologies can play a vital role in disaster risk reduction and climate change adaptation in the region. Technology can be leveraged for early warning systems (EWS) to alert isolated communities of potential hazards. ITU is spearheading the Early Warnings for All (EW4A) initiative, aiming for worldwide access to an EWS by 2027, stating that "EWS are a proven climate adaptation measure estimated to provide a tenfold return on investment." [141] In the PICs, the World Meteorological Organization (WMO), the UN Office for Disaster Risk Reduction (UNDRR), and the World Bank Global Facility for Disaster Reduction and Recovery (WB-GFDRR) are implementing a 2020-2024 four-year, $4.8 million USD project that seeks to strengthen EWS in the region.[142]

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138   "Preparedness in the Pacific Islands," ETC, November 230, 2016, https://www.etcluster.org/preparedness/preparedness-pacific"-islands.

139   "Drones take flight in Tonga," ETC, October 6, 2022, https://www.etcluster.org/blog/drones-take-flight-tonga.

140   "Nokia Saving Lives," GSMA, June 2018, https://www.gsma.com/mobilefordevelopment/wp-content/uploads/2022/02/Nokia_Saving_Lives.pdf.

141   Vanessa Gray, Rachel Gianfranchi, "Early warning systems: Saving lives through mobile connection," ITU, January 17, 2023, https://www.itu.int/hub/2023/01/early-warning-systems-mobile-connectivity/.

142   "New project scales up early warning systems in the Pacific," WMO, July 14, 2021," https://public.wmo.int/en/media/news/new-project-scales-early-warning-systems-pacific.The project is being implemented across Tuvalu, Nauru, Palau, Marshall Islands, Solomon Islands, Cook Islands, Micronesia, Fiji, Kiribati, Niue, Vanuatu and Tonga.

The expanding reach of mobile broadband networks across PICs makes mobile networks a powerful channel for alerting Pacific islanders about potential hazards. Cell broadcast can target people in at-risk areas, and is the most effective, proven technology for delivering EWS. It has significant advantages over sending bulk SMS, including being displayed on the phone automatically with no user interaction, its ability to send differentiated messages to specific areas, and it is not affected by network congestion.[143] Currently cell broadcast has not been widely used across PICs, but there are plans in some countries to roll it out. In Palau, as part of a proposal for Open RAN, the state-owned MNO (PNCC) is building in cell broadcast capability,[144] recognizing the benefits it can bring to communities.

> *"With cell broadcast, you're able to communicate directly with the cell phone; it sets off an alarm on the phone and gives really useful information for customers to understand what the issue is. If you just hear a siren, you don't know exactly what's going on, it's a primitive means of solving a problem when we have more advanced capabilities…"*
>
> – CEO, PNCC

Solutions for reaching isolated communities with no mobile coverage are also imperative. USAID/OFDA supported the National Oceanic and Atmospheric Administration (NOAA) with the deployment of satellite terminals (known as "chatty beetles" because of their rugged outer case) that enable text messaging in low connectivity areas to disseminate weather alerts to remote locations in eight PICs.[145] Lynk, an innovative satellite provider, enables MNOs to provide unlimited connectivity (i.e. no uncovered areas across sea or land) to their customers in the short term, enabling emergency cell broadcast services, two-way emergency messaging, and regular SMS messaging (Box 6).

Climate monitoring and weather forecasting

Weather forecasting is a vital need for many communities across PICs and offers another use case where mobile technology can play a critical role in building community resilience. Agriculture is an important sector for many PICs, but it is increasingly vulnerable to the impacts of climate change. In PNG, where agriculture is a source of livelihood for more than 85% of the population, accurate and timely weather forecasts and climate predictions are essential. Digicel PNG, GSMA, and Wageningen University in the Netherlands use commercial microwave links in existing mobile network infrastructure to estimate rainfall at a high resolution and in near time. Leveraging mobile phone networks to close the weather data gap has potential for rainfall nowcasting and flood and landslide early warnings, but requires further work to develop the technical approach and explore opportunities for service provision.[146] NTA in RMI are leveraging their towers for climate monitoring systems in partnership with a private company.[147]

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143   " Mobile Network Public Warning Systems and the Rise of Cell-Broadcast," GSMA, January 2013, https://www.gsma.com/mobilefordevelopment/wp-content/uploads/2013/01/Mobile-Network-Public-Warning-Systems-and-the-Rise-of-Cell-Broadcast.pdf.

144   PNCC, interview by DECA team, April 2023, online.

145   Chatty Beetles have been deployed in Fiji, FSM, Kiribati, Palau, the Marshall Islands, Samoa, Tonga, and Tuvalu https://www.usaid.gov/pacific-islands/disaster-risk-reduction.

146   "Mobile Network Public Warning Systems and the Rise of Cell-Broadcast ," GSMA, January 2013, https://www.gsma.com/mobilefordevelopment/wp-content/uploads/2013/01/Mobile-Network-Public-Warning-Systems-and-the-Rise-of-Cell-Broadcast.pdf.

147   NTA, interview by DECA team, May 2023, online.

BOX 6: Lynk – lifesaving communications for unconnected areas

Recognizing that critical communications are out of reach for communities in unconnected areas, Lynk was founded in 2015 to develop direct-to-standard-phone connectivity with continuous global coverage.[148] Lynk uses space-based cell towers, partnering with MNOs to extend infrastructure to fill coverage gaps, meet customers at the last-mile, and provide connectivity during emergencies.[149]

They currently have three commercial cell towers in space and as of May 2023, were planning to launch three more in November 2023 with an additional six in January 2024. Updated implementation details are not available. Lynk have demonstrated two-way commercial and emergency messaging service and are planning to scale to provide services beyond messaging including mobile money, voice, and broadband. Lynk does not require ground stations.[150]

> *"With regards to the Pacific, the terminal is the problem. If you require someone to pay $500 for a terminal (or government to subsidize it) it doesn't work, you need to connect to the device that someone can own and afford."*
>
> – COO, Lynk

Lynk can also provide connectivity services across vast expanses of ocean, an attractive proposition for MNOs who want to provide continuous connectivity to their customers during sea crossings.[151] Starlink and AST Space Mobile are developing similar direct-to-phone technologies, but they may be a few years out from testing and operations.[152]

The Asia Pacific region is a priority for Lynk. In June 2023, Lynk launched its first ever deployment with a mobile operator, launching the first commercial sat-to-phone service with PNCC in Palau. In Tuvalu, Lynk is aiming to provide connectivity to half of Tuvalu's population. Vodafone Fiji also completed testing in January 2023 and is obtaining approvals from the Ministry of Communications to launch the service.[153] PIC MNOs working with Lynk are enthusiastic about their direct-to-device technology, especially when compared to fixed-terminal LEO operators.

> *"We see potential in satellite direct-to-device technology to bring about massive change and reduction in digital inequality caused by socioeconomic and geographic circumstances. We firmly believe the focus of the satellite discussion in our region should be on direct-to-device satellite services."*
>
> – CEO, PNCC

1.4 THE FUTURE OF PICS CONNECTIVITY INFRASTRUCTURE

Emerging technologies and new approaches with the potential to disrupt the connectivity landscape in PICs are proliferating across the region. 5G (1.4.1), Open RAN (1.4.2), and LEO satellites (1.4.3) offer promise for boosting broadband speeds, building resilience, strengthening telecommunications sectors and digital ecosystems more broadly, and expanding last-mile connectivity. However, stakeholders in the Pacific hold mixed views on the suitability of technologies like LEO across diverse digital ecosystems and regulatory environments. There are varying levels of industry awareness of new approaches such as Open RAN.

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148 "What We Do" LYNK, 2024, https://lynk.world/what-we-do/.

149 Lynk, interview by DECA team, May 2023, online.

150 Lynk, interview by DECA team, May 2023, online.

151 PNCC, interview by DECA team, April 2023, online.

152 Interview with CEO of Lynk: The Five Nine Podcast: Charles Miller, CEO, Lynk | Fierce Wireless

153 Vodafone Fiji, interview by DECA team, March 2023, online.

1.4.1 NETWORK MODERNIZATION AND 4G UPTAKE NEEDED BEFORE 5G ROLLOUT

5G rollout is gathering pace globally, supporting enhanced mobile broadband, fixed wireless access, massive Internet of Things (IoT), and ultra-reliable low-latency communications (URLLC).[154] In the Pacific Islands region, 5G adoption is low, comprising 0.2% of connections in 2022, and forecast to reach 17% of total connections (1.5 million connections) by 2030. This compares to 5G connections expected to reach 40% of total connections in the Asia Pacific region (excluding China and Taiwan) by 2030.[155]

Many MNO stakeholders from across the region, including in Vanuatu and PNG, state that their digital ecosystems are not yet developed enough for 5G, referring to low smartphone penetration with 5G compatibility and limited use cases suitable for their markets. 2G and 3G remain dominant across many PICs, and the main focus is on increasing 4G uptake and adoption.[156]

> *"4G adoption is a priority for the Pacific. Telecom operators do not currently have any business case to invest in 5G networks unless they have to modernize their network and in doing so they can make it 5G compatible. That's the only way 5G adoption is happening, unless other countries come up with huge industrial use cases that are applicable to the Pacific, and they roll it out on a limited basis. 'In the Pacific' is the keyword. The local context plays a big role."*
>
> – Asian Development Bank

In more mature markets, such as Fiji and Palau, 5G preparations are underway. In 2017, Vodafone Fiji was the first MNO in the Pacific to conduct a trial on 5G. They ran pre-5G trials with ZTE and deployed a pre-5G site in their Data Center. Plans are underway to roll out 5G in the CBD areas soon. While the cost of fiber, which is owned by Telecom Fiji, is a potential bottleneck for Vodafone Fiji's 5G roll-out, they are exploring use cases of how to best utilize 5G.[157]

> *"Efforts are being made to develop a cost-effective 5G rollout strategy. Collaboration with regulatory bodies aims to minimize transmission expenses and ensure efficient deployment. The focus is on using existing fiber infrastructure, avoiding the need for a separate nationwide network. The goal is a financially viable 5G rollout without unnecessary costs."*
>
> – Nilesh Chand, Regional Program Manager, Vodafone Fiji

According to GSMA, despite the challenges, digital connectivity with 5G at the core has the potential to play a key role in the Pacific, enabling the digital transformation of enterprises and improving connectivity for homes and enterprises, while also meeting the growing connectivity needs of consumers.[158] Spectrum policy decisions at international, regional, and national levels are crucial to support the development of existing and future mobile networks and infrastructure. The World Radiocommunication Conference in 2023 (WRC-23) offered an important opportunity to secure future spectrum resources for mobile use, enabling the Pacific Islands to unlock the full potential of existing and future mobile. The Pacific region stands to benefit from the global

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154   The Mobile Economy Pacific Islands 2023 Executive Summary, GSMA, 2023, https://www.gsma.com/mobileeconomy/wp-content/uploads/2023/05/GSMA-ME-Pacific-Islands-2023.pdf.

155   GSMA, The Mobile Economy Pacific Islands 2023.

156   The Mobile Economy Pacific Islands 2023 Executive Summary, GSMA, 2023, https://www.gsma.com/mobileeconomy/wp-content/uploads/2023/05/GSMA-ME-Pacific-Islands-2023.pdf.

157   Vodafone Fiji, interview by DECA team, March 2023, online.

158   GSMA, The Mobile Economy Pacific Islands 2023.

harmonization of spectrum bands for mobile use, according to GSMA.[159] It will be important for Pacific Island governments and regulators to chart the path for 5G with a clear spectrum roadmap, providing industry players the ability to strategically plan for the future.[160]

1.4.2 OPEN RAN IN THE PACIFIC

📖 KEY TERMS | BOX 3: Open RAN

Mobile networks consist of two key components: a Radio Access Network (RAN) and a Core Network (Core). The RAN includes antennae and the base stations. When calls are made or when someone is streaming data, the antennae transmit and receive signals to and from mobile devices. This signal is digitized in a RAN base station and connected to the Core. The Core enables operators to charge for data use and calls, connects users to the internet, and ensures that users are authenticated for the services they are using. In most cases, it is currently difficult to use different vendors for RAN components, and interoperability between RAN equipment from different vendors is challenging.

Open RAN is an effort to establish industry standards for RAN equipment interoperability so mobile operators are not locked into a single vendor to manage their networks. Open RAN interfaces allow interoperable hardware and software from multiple vendors to be combined. If the security of a specific vendor's hardware or software is or becomes a concern, the operator can find alternatives.

Disaggregating the RAN is expected to create new network deployment scenarios, spur innovation, facilitate local equipment assembly, enhance security transparency, and minimize risks facing the industry as it scales up its networks for the future.

Opening up proprietary elements and interfaces in the RAN will diversify the network equipment and software ecosystem, bringing in new suppliers and additional market competition. Open RAN may also reduce base station costs which is critical for mobile operators deploying 5G due to the large number of base stations that will be required.

As of August 2022, at least 91 operators from 47 countries had conducted Open RAN trials, deployments, or commitments, with one-third of them in the Asia Pacific.[161]

FIGURE 11. Monolithic (Traditional) RAN to Open and Virtualized RAN[162]

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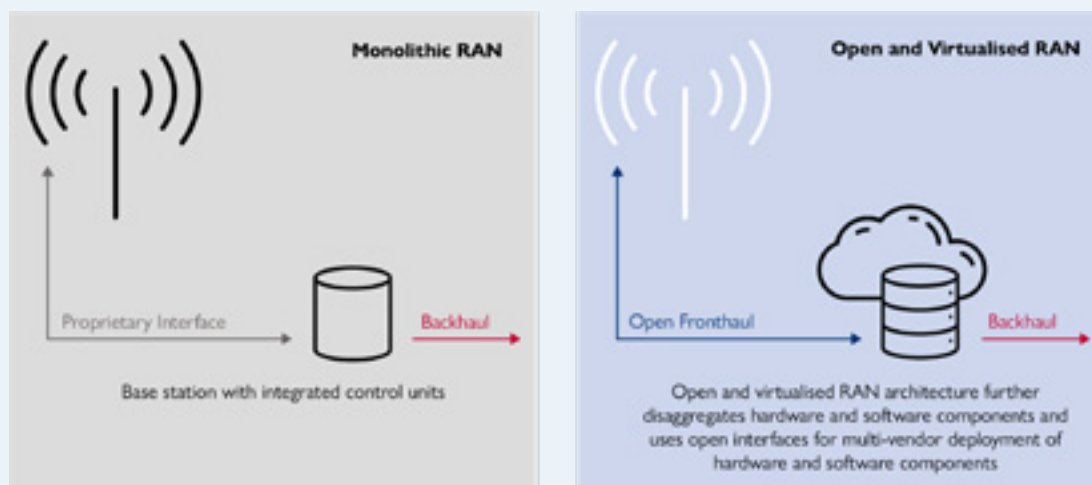
159   GSMA, The Mobile Economy Pacific Islands 2023.

160   GSMA, The Mobile Economy Pacific Islands 2023.

161   "The Mobile Economy Pacific Islands 2023," GSMA, 2023, https://www.gsma.com/mobileeconomy/wp-content/uploads/2023/05/GSMA-ME-Pacific-Islands-2023.pdf.

162   "Open and Virtualised Radio Access Networks: An Explanatory Guide for Policymakers," GSMA, February 2021, https://www.gsma.com/publicpolicy/wp-content/uploads/2021/02/GSMA_Open_and_Virtualised_Radio_Access_Networks_An_Explanatory_Guide_for_Policymakers.pdf.

Considerations of Open RAN architecture

Open RAN architecture encompasses two dimensions: *decomposition*, enabling modularity and *disaggregation*, enabling cloudification and virtualization.[163]

Competition and innovation: A key element of Open RAN architecture design is its ability to lower barriers to entry, promoting competition, vendor diversity, and innovation. A multi-vendor Open RAN ecosystem not only creates opportunities for new businesses, it also allows MNOs to add new services/ and features without being locked in by a single vendor, which can occur under the traditional RAN environment where proprietary software and hardware are provided by a single vendor. This can mitigate supply chain risks for MNOs, among other advantages.[164]

Security: Open RAN builds on the security enhancements of 5G, extending security benefits offered by virtualization from the core to the edge of the network.[165] Open RAN has potential security advantages when compared to non-disaggregated, non-virtualized RAN, including "openly specified, verifiable security controls and capabilities associated with virtualization and cloudification that can help to improve operational security tasks."[166] Increased transparency into the RAN also allows operators more visibility into what is happening in the network, enabling real time diagnosis and prevention of problems.[167] Like any new open system, the deployment of Open RAN introduces new security considerations for MNOs. The disaggregated multi-vendor environment requires specific focus on changes to the threat surface area at the interfaces between technologies integrated through the architecture.[168] A recent Quad report found that while 10 Open RAN components and interfaces have high rated security risks associated with them, only 4% of analyzed security threats are unique to Open RAN. In other words, Open RAN does not fundamentally change the security risks for telecommunications compared to more traditional RAN.[169]

Cost: Open RAN includes enhanced competition in the base station market, which could result in a reduction in the cost of equipment. In addition to CAPEX savings, OPEX can also be reduced if "Open RAN can support operators in adding a layer of network automation on top of their existing network management systems, according to GSMA."[170] Optimizing energy efficiency is also demonstrating cost savings.[171]

Industry readiness and awareness of Open RAN across PICs

The deployment and success of Open RAN in PICs is dependent on various factors: the maturity of key enablers including infrastructure availability; MNO capability; supportive regulatory policies; vendor interest; and demand for 5G/private network use cases enabled through Open RAN. MNOs in PICs with relative maturity of these

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163 "Open Radio Access Network Security Considerations," NSA, September 15, 2022, https://www.nsa.gov/Press-Room/News-Highlights/Article/Article/3159347/esf-members-nsa-and-cisa-publish-open-radio-access-network-security-considerati/.

164 "Open RAN Security Report," NTIA, May 22, 2023, https://www.ntia.gov/report/2023/open-ran-security-report.

165 "Open Radio Access Network Security Considerations," NSA and CISA, n.d., https://media.defense.gov/2022/sep/15/2003077576/-1/-1/0/esf_open_radio_access_network_security_considerations.pdf.

166 NTIA, Open RAN.

167 NSA and CISA, Open Radio Access Network.

168 NSA and CISA, Open Radio Access Network

169 NTIA, Open RAN.

170 "The Mobile Economy Pacific Islands 2023," GSMA, 2023, https://www.gsma.com/mobileeconomy/wp-content/uploads/2023/05/GSMA-ME-Pacific-Islands-2023.pdf.

171 "How we won the acceleration architecture debate," Qualcomm, March 20, 2023, https://www.qualcomm.com/news/onq/2023/03/how-we-won-the-acceleration-architecture-debate.

key enablers show enthusiasm for the benefits Open RAN offers, while some PIC government stakeholders and MNOs with less mature digital ecosystems are less familiar with the concepts of Open RAN architecture.[172]

Leading operators in Fiji—Vodafone Fiji and Telecom Fiji¸—are optimistic about Open RAN advantages and are actively evaluating its feasibility.[173]

> *"Open RAN offers telecom operators a range of benefits spanning diversified vendor options and reduced vendor lock-in, cost savings through interoperability, rapid innovation integration, improved coverage, and quality of service, and collaborative opportunities within the telecom community. These advantages collectively enhance network performance, cost-effectiveness, and the ability to adapt to evolving industry trends."*
>
> – Nilesh Chand, Vodafone Fiji, Regional Program Manager

Palau's state-owned telco (PNCC) has funding and technical assistance from USTDA to replace its existing national 3G and 4G mobile network with Open RAN architecture. The TA will provide data, analysis, and detailed implementation plans to replace existing infrastructure. It will also provide training for PNCC personnel to support project implementation and long-term sustainability.[174] Key drivers referenced by PNCC for Open RAN architecture include OPEX cost-saving, including for power, and removing challenges associated with vendor lock-in.

> *"We estimate that we can probably reduce our monthly operation and maintenance cost of our mobile network by 30% by moving to an Open RAN solution."*
>
> – Simon Fraser, CEO, PNCC

Other regional MNOs are still in the assessment stage, stating that in the long term, Open RAN can provide a more secure ecosystem, but in the short term, they are still determining how to mitigate risk during the transition period.[175] Operator trust in these systems plays a key role in their willingness to adopt Open RAN architecture. One MNO CEO mentioned that capability assessments and due diligence of integrators is critical to ensure that vendors will still be operating in five to ten years.[176] The interviewee mentioned that assurances are needed after one of the leading integrators in the Pacific region, Parallel Wireless, experienced widespread layoffs in 2022, primarily due to global economic market conditions and supply chain issues.[177] MNOs in the PICs mentioned that pilots are important for this reason, as well as for the possibility of incumbent vendors making it difficult to integrate with third party suppliers.[178]

The need for support, knowledge, and training on Open RAN in the Pacific

Other private sector stakeholders said that the primary challenge of Open RAN deployment in the region is due to gaps with capacity, knowledge, and training. Some interviewees (private sector and policymakers) in

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172   Anonymous Government and MNO stakeholders, interviews by DECA team, May 2023, online.

173   DECA team interviews with Vodafone Fiji and Telecom Fiji, May 2023, online.

174   "USTDA Grants Technical Assistance for Palau Network Modernization," The Mirage, June 22, 2023, https://www.miragenews.com/ustda-grants-technical-assistance-for-palau-1031831/.

175   Anonymous interviewee, interview by DECA team, May 2023, online.

176   Vodafone Cooke Islands, interview by DECA team, May 2023, online.

177   Mike Dano, "After mass layoffs, Parallel Wireless works to soothe customers," Light Reading, July 7, 2022, https://www.lightreading.com/open-ran/after-mass-layoffs-parallel-wireless-works-to-soothe-customers/d/d-id/778865.

178   Vodafone Cooke Islands, interview by DECA team, May 2023, online.

less mature digital ecosystems are unfamiliar with the concepts of Open RAN, or see it as a longer term priority given their current reliance on legacy networks (2G & 3G).[179]

Industry readiness, particularly gaps in internal MNO expertise, are a challenge around the world. A core concern for MNOs in PICs is on training and capability building, with many wanting to ensure that if Open RAN networks are built they can be properly maintained.[180] MNOs point out that additional training is needed to build local expertise in deploying and running Open RAN architecture.[181] Building industry readiness through knowledge, training, and support for Open RAN rollouts is critical for determining the pace at which Open RAN will be adopted in the region.

Initiatives to promote knowledge exchange and training are already underway. In 2022, USAID launched the Asia Open RAN Academy in the Philippines to enhance knowledge of and accessibility to Open RAN, and to promote and maintain standards in Open RAN and the telecommunications industry.[182] The Academy aims to bring safe and secure cutting-edge technology from Japan and the U.S. to the Indo-Pacific region through an alliance of government, business, academia, and civil society stakeholders.[183]

1.4.3 LOW EARTH ORBIT (LEO) SATELLITE SOLUTIONS ARE PROLIFERATING ACROSS THE PICS

Developments and benefits of LEO satellites

Low earth orbit (LEO) satellites (160–2,000 km above the Earth's surface) have been in existence since the 1950s and have traditionally been used by governments for communications. However, several developments in recent years, including satellite technology improvements, reductions in launch costs, and high-speed internet connection demands, have accelerated commercial deployments.

LEO satellites can better connect inaccessible and remote areas with their closer distance to the Earth's surface offering low latency and high speed internet connections, typically at least five times faster than GEO satellites.[184] This means that the user experience is similar to or can exceed levels of service from fiber optic cables. LEO constellations require a network of hundreds or thousands of satellites which orbit the Earth approximately every **88-127** minutes in order to provide internet service.[185] With global coverage, limited ground level infrastructure requirements (at least in the future), and cheaper prices compared to GEO satellites, LEO technology has the potential to close the digital divide by providing reliable, flexible backhaul offering high-speed connectivity to underserved or unconnected areas across the Pacific. LEO connectivity can also play a transformational role for PICs that require enhanced redundancy and resilience (Section 1.3), offering capacity and coverage for disaster preparedness and response.[186] [187]

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179 2G and 3G networks account for more than 50% of total mobile connections in the region.

180 PNCC, interview by DECA team, May 2023, online.

181 PNCC, interview by DECA team, May 2023, online.

182 "The Asia Open RAN Academy," USAID Fact Sheet, n.d., https://www.usaid.gov/sites/default/files/2022-12/Asia%20Open%20RAN%20 Academy%20Factsheet_2.pdf.

183 Partners include Japan's Ministry of Internal Affairs and Communications and leading global telecommunications companies Fujitsu, NEC, NTT DOCOMO, and Rakuten Symphony USAID Launches Asia Open RAN Academy - U.S. Embassy & Consulates in Japan (usembassy.gov).

184 "What are the differences between LEO and GEO satellites?" The AST Group, September 1, 2023, https://www.theastgroup.com/en/ insights/leo-connectivity/what-are-the-differences-between-leo-and-geo-satellites.

185 Asian Development Bank. (n.d.). *Digital Connectivity: Low Earth Orbit Satellite*. Retrieved February 7, 2024, from https://www.adb.org/sites/ default/files/publication/696521/sdwp-076-digital-connectivity-low-earth-orbit-satellite.pdf

186 John Garrity, Arndt Husar, "Digital Connectivity and Low Earth Orbit Satellite Constellations," Asian Development Bank, April 2021, https://www.adb.org/news/features/five-ways-low-earth-orbit-satellites-impact-asia-pacific.

187 OneWeb, interview by DECA team, April 2023, online.

LEO satellites were mentioned frequently in interviews. Accelerated investment in LEO constellations is encouraging for connectivity options across the Pacific region. In theory, the increase in global satellite capacity should reduce the cost of bandwidth.[188]

> *"What is really exciting for places like the PICs is that there may be a growing glut of satellite broadband capacity. This may result in bankruptcy of these [satellite provider] companies, but we're seeing a steady decline in the cost of bandwidth."*
>
> — John Garrity, BEACON

LEO providers in the PICs: Starlink, OneWeb, Lynk, and Kuiper

Established LEO satellite frontrunners include SpaceX's Starlink and OneWeb which are ramping up activities in the PICs. Starlink is the most advanced with more than 4,000 satellites deployed (as of May 2023) comprising more than half of all satellites in space.[189] SpaceX's main competitive advantage is its ability to launch satellites at substantially lower costs than other providers because of its reusable rockets. They focus on B2C (business to consumer), requiring licenses and government (regulator) permissions to register as a new service provider in each market of operation. Many PIC stakeholders are enthusiastic about Starlink's potential in the region.

> *"I think Starlink will have the biggest impact because it really upends the classic price book of an incumbent fixed line operator. What Starlink will do is break apart all that classic telco restriction of limiting bandwidth and only making high speed services available to the limited number of customers who can afford it. Starlink looks very attractive compared to local operators' high speed plans; local operators will really have to improve services across the board."*
>
> — Mike Lott, Independent industry consultant

Despite the hype, stakeholders spoke of the challenges Starlink will face in the region including: affordability, particularly of their Starlink terminals that are priced out of reach for the majority of Pacific islanders; and their B2C model,[190] given the regulatory complexities associated with it and the low penetration of card payments that would otherwise enable individuals to pay for the service.[191] There are many instances of people buying terminals in Honolulu and other nearby markets and taking them to the PICs, which can be illegal (as in Vanuatu[192]) or a regulatory gray area (as in RMI), as policymakers try to keep up with developments.

Until Starlink develops their next generation of satellites which will have ISLs (inter satellite links), the technology requires ground stations within roughly a 500km range to send up the signal to a satellite. Although ISLs will solve this ground infrastructure challenge, they present new regulatory concerns,[193] with some PIC Governments expressing concern that data should be passing through ground stations in their jurisdiction, which ISLs would bypass.

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188   Garrity, Digital Connectivity.

189   Lisa Grossman, "Half of all active satellites are now from SpaceX. Here's why that may be a problem," Science News, March 3, 2023, https://www.sciencenews.org/article/satellites-spacex-problem-space-pollution.

190   Asian Development Bank, interview by DECA team, May 2023, online.

191   Independent industry consultant, interview by DECA team, April 2023, online.

192   Caleb Fotheringham, "Starlink high-speed internet could reach the remotest islands," RNZ, March 2, 2023, https://www.rnz.co.nz/international/pacific-news/485124/starlink-high-speed-internet-could-reach-the-remotest-islands.

193   USAID BEACON Project, interview by DECA team, May 2023, online.

While Starlink was "very aggressive in promoting themselves, and hyping their service before it was ready"[194] they received regulatory approval in Fiji[195] and are in the process of obtaining licenses in Vanuatu[196] and Tuvalu.[197] Starlink is still figuring out how best to offer their service in these smaller markets where their classic launch model is not suitable.

OneWeb finished deploying its 634 satellites in May 2023 and is now focused on developing the ground segment, building gateways to have full coverage by the end of 2023.[198] More up to date implementation details are unavailable. OneWeb's satellites are at a higher altitude than Starlink's, so fewer are needed for global coverage. OneWeb's business model is to partner with local MNOs and ISPs to provide middle mile backhaul service rather than to provide services directly to consumers. This is in part because in OneWeb's experience, regulators prefer their own local businesses to have licenses and because local partners know regulatory requirements and contextual needs best, making a wholesale model more effective.

An interviewee from OneWeb stated that the Pacific region is an important market for them and said that they are on track to start commercial operation by the end of 2023. They are building five gateways in Fiji, French Polynesia, Guam, Hawaii, and Nauru, in addition to three gateways in Australia, to provide full coverage of the region.

Other LEO providers including Lynk are also deploying services in the PICs (Box 6). Project Kuiper by Amazon expects to launch its first satellites in the latter half of 2024. It has approval from FCC for 3,236 satellites and requires 578 for commercial service. Like Starlink, Kuiper's business model is based on B2C services and relies on Amazon-designed terminals for residential, enterprise, and government customers.[199] Numerous other LEO satellite constellations have been announced, but deployments and plans are less advanced, particularly for the Pacific region.

The jury is still out regarding LEO's game changing role for the Pacific

Stakeholders expressed a range of views on the potential of LEO technologies in the Pacific. The variety of different approaches and business models ranging from Starlink's fixed terminal direct-to-consumer business model to OneWeb's MNO partnership model to Lynk's satellite-to-phone technology (Box 6), each have distinct implications for stakeholders in their existing digital ecosystems.

While many interviewees—predominantly donors—referred to the impact of LEO satellites in the Pacific with their ability to increase internet bandwidth in remote areas and to push down prices, private sector and government stakeholders warned against the hype, given the realities on the ground. Some fear that fixed terminal LEO providers, such as Starlink, competing with operators, will actually increase digital divides, forcing local carriers to raise rates to account for lost revenue.[200]

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194   Anonymous interviewee, interview by DECA team, May 2023, online.

195   ISP Page, https://isp.page/news/connecting-micronesia-the-role-of-starlink-in-the-pacific-islands/.

196   "STARLINK is coming to Vanuatu," Vanuatu Business Review, March 15, 2023, https://vbr.vu/feature/starlink-is-coming-to-vanuatu/.

197   Government official, interview by DECA team, May 2023, online.

198   Jason Rainbow, "OneWeb completes constellation deployment for global broadband," Space News, March 27, 2023, https://spacenews.com/oneweb-completes-constellation-deployment-for-global-broadband/.

199   "Here's your first look at Project Kuiper's low-cost customer terminals," Amazon, March 14, 2023, https://www.aboutamazon.com/news/innovation-at-amazon/heres-your-first-look-at-project-kuipers-low-cost-customer-terminals.

200   Anonymous interviewee, interview by DECA team, May 2023, online.

ADB claims that Starlink can offer complementary service to the telcos, given its ability to serve remote areas, which telcos will never find an economically reasonable investment. An interviewee from ADB explained that Starlink can provide service to remote, unconnected areas, spurring development and proving the demand case.[201]

Some policymakers think LEOs could undermine government investment in existing infrastructure, particularly cable infrastructure for which governments incurred debt .[202] Governments, including in Palau, would also prefer an in-country presence, with at the very least a local office that could answer to concerns from the public around quality-of-service, for example,[203] which goes against Starlink's lean business model.

Regulation as a potential roadblock for LEO providers

For LEO providers requiring local ground stations such as Starlink and OneWeb, regulatory approvals are required in every country of operation. LEO operators providing business to customer (B2C) services (like Starlink) require business licenses. The lack of regulatory harmonization across PICs makes it challenging and time-consuming for LEO providers to navigate the many unique regulatory environments. In many PICs, the speed of commercial development is faster than the speed of regulation change, complicating matters for LEO providers. Restrictive policy and regulatory environments that may be protecting legacy technologies, legacy companies, or political interests are a major barrier in capitalizing on and benefiting from growing investment in emerging technologies.[204] Given the small populations and low spending power across many PICs, regulatory environments will play a critical role in how much LEO providers choose to prioritize the Pacific region with other more profitable regions at play.

1.5 AFFORDABILITY CHALLENGES, LOW DIGITAL LITERACY, AND LACK OF LOCALLY RELEVANT CONTENT FUEL MOBILE USAGE GAP

Beyond digital infrastructure, assessing adoption trends and the behavioral, social, and physical barriers that prevent individuals from using digital services is a critical part of understanding PICs digital ecosystems. The Pacific has the second largest mobile usage gap of any region in the world (behind Sub-Saharan Africa)[205] [206] (Figure 12), owing to affordability challenges, low digital literacy, and a lack of locally relevant content. Tackling these barriers is essential to ensure that the benefits of the internet can be realized by more citizens, particularly marginalized and vulnerable groups.

1.5.1 MOBILE INTERNET USAGE GAPS ACROSS PICS ARE SOME OF THE LARGEST IN THE WORLD

Mobile broadband networks cover 86% of the Pacific region's population, yet only 27% of that population are mobile internet users.[207] This translates into a mobile internet usage gap of 59% of the population who are not

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201   Asian Development Bank, interview by DECA team, May 2023, online.

202   Anonymous government interviewee, interview by DECA team, May 2023, online.

203   Ministry of Public Infrastructure & Industries, Palau, interview by DECA team, May 2023, online.

204   USAID BEACON Project, interview by DECA team, May 2023, online.

205   "The Mobile Economy Pacific Islands 2023," GSMA, 2023, https://www.gsma.com/mobileeconomy/wp-content/uploads/2023/05/GSMA-ME-Pacific-Islands-2023.pdf.

206   "The State of Mobile Internet Connectivity 2022," GSMA, 2022, https://www.gsma.com/r/wp-content/uploads/2022/12/The-State-of-Mobile-Internet-Connectivity-Report-2022.pdf?utm_source=website&utm_medium=download-button&utm_campaign=somic22.

207   GSMA, The Mobile Economy Pacific Islands 2023. Note this analysis includes American Samoa, Cocos (Keeling) Islands, Cook Islands, Fiji, French Polynesia, Guam, Kiribati, RMI, FSM, Nauru, New Caledonia, Niue, Norfolk Island, Northern Mariana Islands, Palau, Papua New Guinea, Samoa, Solomon Islands, Tokelau, Tonga, Tuvalu, Vanuatu, Wallis and Futuna Islands.

using mobile internet despite being covered by mobile broadband. This gap is nearly 20% higher than the global average and is among the highest of all regions in the world. GSMA expects the gap to grow to 69% by 2030 with only 31% of the Pacific population predicted to adopt mobile internet.

FIGURE 12. Mobile internet connectivity[208, 209]
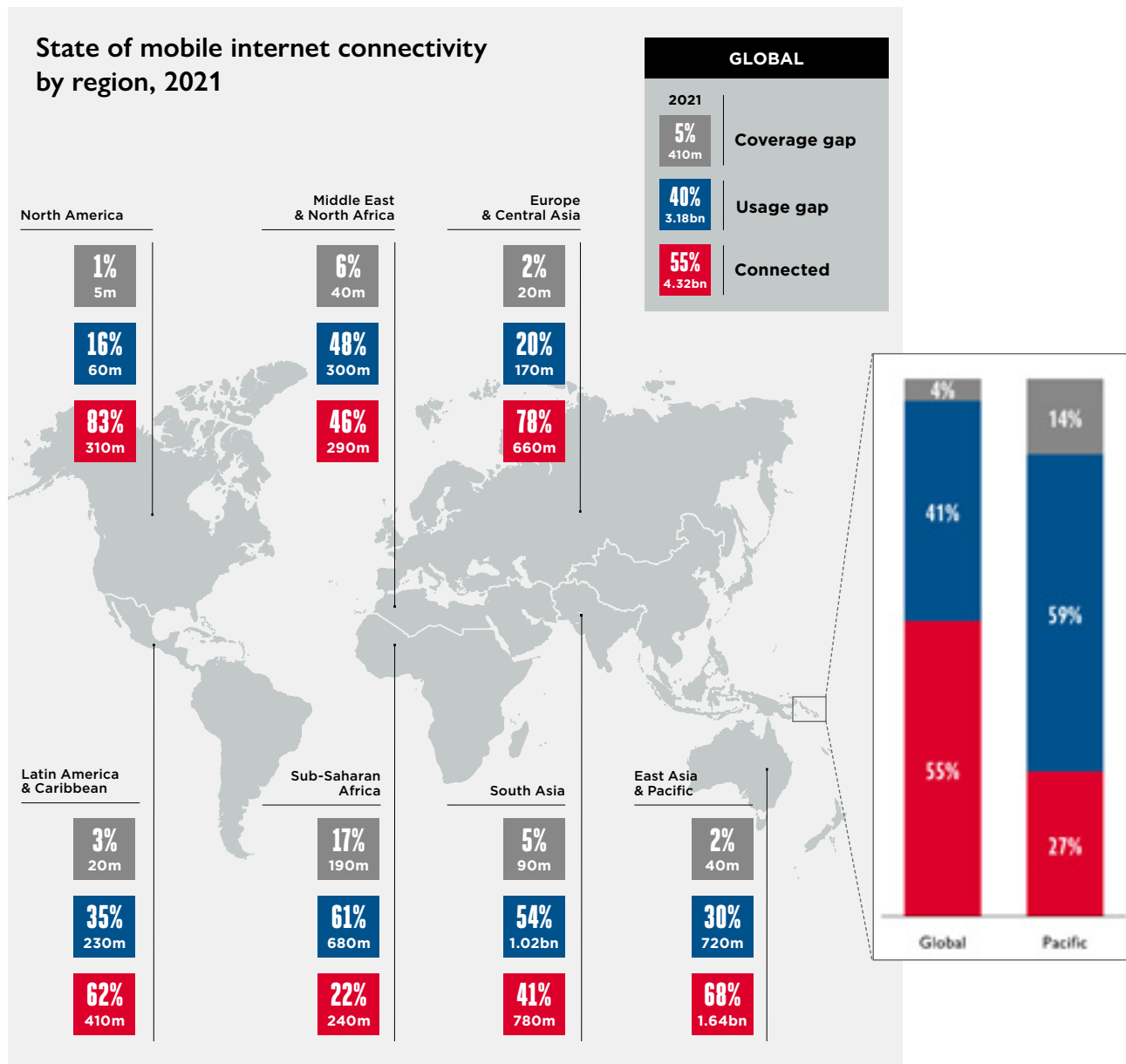
Base: Total population
Note: Totals may not add up to 100% due to rounding. Every year, GSMA Intelligence updates its estimates of the number of mobile internet subscribers in each country, incorporating new (and/or updated) data from operators, regulators, national statistics agencies and consumer surveys where available. In some countries and regions, estimates of mobile internet adoption may therefore differ from what was presented in previous State of Mobile Internet Connectivity reports.
Source: GSMA Intelligence

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208   GSMA, The Mobile Economy Pacific Islands 2023.

209   "The State of Mobile Internet Connectivity Report 2022," GSMA, 2022, https://www.gsma.com/r/wp-content/uploads/2022/12/The-State-of-Mobile-Internet-Connectivity-Report-2022.pdf?utm_source=website&utm_medium=download-button&utm_campaign=somic22.

1.5.2 AFFORDABILITY CHALLENGES INTENSIFIED BY UNDERSEA CABLE LOANS

One of the most regularly cited demand side challenges to digital adoption in the PICs is affordability of broadband data and handsets (see Section 1.2.2 on smartphone affordability). The solution is not as simple as encouraging MNOs and ISPs to reduce broadband costs, because complex market dynamics exist across the first and middle mile, resulting in high prices for the end consumer.

Several stakeholders said that despite undersea cable builds across the Pacific, in many cases, the expected price cuts to consumers for broadband are only slowly being realized.[210] This is, in part, because debt from cable loans (taken out by governments from the ADB and then lent to cable companies on ADB's terms) forces cable companies to keep wholesale prices high. There is a limit to how much the wholesale interconnection fee can adjust, according to calculations based on the loans and the credits built into these connections.[211] This results in ISPs and MNOs charging customers more to remain profitable. One interviewee urged donors to:

> *"Buy-out submarine cable loans [and] restructure financing so cable companies are taking in enough revenue to be sustainable cable operators. Take out paying back a loan as part of pricing. [The current approach] doesn't work, this is a barrier to development of these islands when internet capacity is so expensive. It's a barrier no other country needs to deal with"*
>
> — Telco2 Limited

Some PICs cannot bring down the wholesale price because of pre-existing arrangements with satellite providers. This leaves them tied to waiting for the contract to run out before they can adjust the price.[212] With the next wave of LEO technology innovation, governments are concerned about the impact these new providers will have on their ability to pay off cable loans.[213]

> *"We welcome the capacity of these LEO satellites and Starlink but are conscious of our market. With companies like Starlink coming in, we are mindful that we have two companies that we are in debt to; those are cables that we have to pay off."*
>
> — Ministry of Public Infrastructure & Industries, Palau

Governments with state-owned MNOs and ISPs receive less government revenue if prices reduce and service providers become less profitable. A number of PICs tax handsets to bring in additional government revenue, but this undermines digital access and use. The mobile industry in Samoa is currently lobbying the government to reduce the tax on devices, especially import duties on handsets.[214]

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210   Women in IT Solomon Islands (WITSI), interview by DECA team, April 2023, online.
      Telco2 Limited, interview by DECA team, April 2023, online.

211   Asian Development Bank, interview by DECA team, May 2023, online.

212   Asian Development Bank, interview by DECA team, May 2023, online.

213   Ministry of Public Infrastructure & Industries, Palau, interview by DECA team, May 2023, online.

214   Digicel Samoa, interview by DECA team, April 2023, online.

1.5.3 LOW DIGITAL LITERACY AND A LACK OF LOCALLY RELEVANT CONTENT PREVENT DIGITAL ADOPTION

Stakeholders from across the digital ecosystem referred to low digital literacy levels as among the top barriers to digital adoption. This reflects a global trend with digital skills and affordability remaining the two biggest barriers to mobile internet adoption and use.[215]

Digital literacy has two core dimensions: capacity and safety (Figure 13). The former refers to the pre-requisite technical knowledge and skills required to use digital devices, and the latter (discussed further in Section 1.6.3) to the skills and awareness required to use digital tools carefully while navigating potential harms and cyber threats successfully.

FIGURE 13. Digital literacy core elements
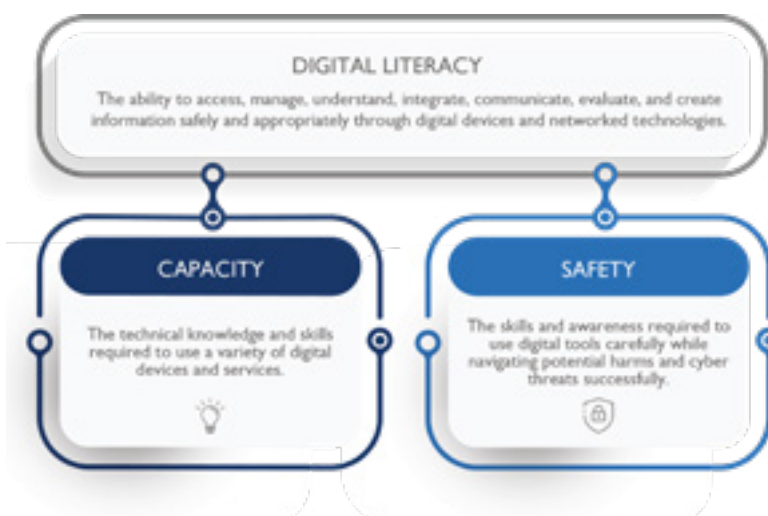
Broadband adoption is strongly correlated with the ability to read and write,[216] and low literacy and digital literacy levels, caused by under-resourced education systems, are often the primary barriers to internet adoption, particularly among women.[217] Based on available data for six PICs, there appears to be a correlation between literacy levels and mobile phone ownership across select DECA PICs, particularly those with lower adult literacy rates, including PNG, Solomon Islands, and Vanuatu.

While some PICs include a focus on digital literacy and skills in their National ICT Policies, it is unclear to what extent these policies are implemented. It is primarily the lower middle-income countries (FSM, Kiribati, Samoa, Solomon Islands and Vanuatu), the poorer countries in the region, that include integration of ICT curricula in schools and vocational programs in their policies. In a United Nations Educational, Scientific and Cultural Organization (UNESCO) report, lack of funding for quality education was highlighted as a key challenge for the Pacific region, alongside a limited supply of ICT graduates from Pacific universities inhibiting ICT capacity in the region's job market, including in government departments.[218]

Although research and data on digital literacy in PICs are limited, existing evidence demonstrates low digital literacy levels as a key barrier to digital inclusion, particularly for more remote communities. GSMA/UNHCR research in Iowara, PNG found that nearly two-thirds of women cited low digital literacy as the primary reason

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215 "The State of Internet Connectivity Report 2022," GSMA, 2022, https://www.gsma.com/r/wp-content/uploads/2022/12/The-State-of-Mobile-Internet-Connectivity-Report-2022.pdf?utm_source=website&utm_medium=download-button&utm_campaign=somic22.

216 "Broadband Connectivity in Pacific Island Countries," UNESCAP, January 2018, https://www.unescap.org/sites/default/files/PACIFIC_PAPER_Final_Publication_1_1.pdf.

217 Nadia Jeffrie, "The Mobile Gender Gap Report 2023," GSMA, June 8, 2023, https://www.gsma.com/mobilefordevelopment/programme/connected-women/the-mobile-gender-gap-report-2023/#:~:text=Women%20are%2019%25%20less%20likely,smartphone%20(see%20Figure%201).

218 "Pacific Education for All 2015 Review," UNESCO Apia Office, 2015, https://uis.unesco.org/sites/default/files/documents/pacific-education-for-all-2015-review-en_1.pdf.

for not using mobile internet.[219] In an assessment conducted in South Malekula, Vanuatu in December 2020[220] for the Smart Islands initiative, one of the common daily challenges experienced by communities related to digital literacy and skills, with participants explaining the need for basic training on how to use mobile phones to grow their businesses (for example to market and sell their products).[221] As a result, the initiative is embedding digital skills development as a core component of its programming.

Some governments are embedding digital literacy into national programs. NICTA, PNG's telecommunications regulator, includes a digital literacy program under its Universal Access and Service Strategic Plan. It aims to "support training/capacity building activities that increase the utilization of ICTs by all citizens, businesses, and government/public offices, to achieve a broader contribution of ICTs to social and economic development."[222] This includes delivering basic and intermediate digital skills training to interested members of the public through digital hubs.[223]

Linguistic diversity results in a lack of locally relevant content

Linguistic diversity across the region is significant. UNESCO's Linguistic Diversity Index ranks PNG, Vanuatu, and Solomon Islands as the three countries with the highest linguistic diversity in the world.[224] The most commonly used languages on the internet are not widely spoken in PICs with large linguistic diversity. This linguistic diversity can create challenges for content providers in developing scale, limiting the availability of relevant content in local languages. GSMA's Mobile Connectivity Index[225] includes *content and services* as one of four key enablers of mobile internet connectivity and PICs score particularly poorly on this indicator (Solomon Islands [27.1] and PNG [27.8] and Vanuatu [38.6] have the lowest scores).

> *"The three main challenges on the demand side are the availability of smartphones or gadgets, the prices, and content. There isn't much local content and I'm not sure people, especially in outer islands, are very interested in international content. If you look at the usage, most of the usage is YouTube and Facebook."*
>
> – CEO, Digicel Vanuatu

Although most people in Vanuatu's capital speak English, Digicel Vanuatu translates 80% of their content into Bislama to ensure that relevant content is available in the local language.[226] This is one example of steps taken by the private sector to address digital divides exacerbated by the low availability of online content and services that are relevant and accessible to local and Indigenous populations.

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219   The Digital Worlds of Displacement-Affected Communities, GSMA, 2022, https://www.gsma.com/mobilefordevelopment/the-digital-worlds-of-displacement-affected-communities/.

220   The researcher met with 700 people across seven villages.

221   "South Malekula: A smart island of Vanuatu: Preliminary Study of Needs and Priorities," ITU, 2021, https://www.itu.int/en/ITU-D/ICT-Applications/Documents/Smart%20Islands/Smart-Island_VUT_S-Malekula.pdf.

222   "Universal Access and Service (UAS) Strategic Plan 2023-2027," NICTA, n.d., https://uas.nicta.gov.pg/images/2023_public/UASStrategicPlan2023-2027.pdf.

223   "Universal Access and Service," NICTA, n.d., https://uas.nicta.gov.pg/

224   "Investing in cultural diversity and intercultural dialogue: UNESCO world report," UNESCO, 2009, https://unesdoc.unesco.org/ark:/48223/pf0000185202.

225   2022 data available for 6 DECA PICs countries: Fiji, Papua New Guinea, Samoa, Solomon Islands, Tonga, Vanuatu. All scores are out of 100.

226   Bislama is one of Vanuatu's official languages.

BOX 7: PNG Case study: digital ecosystem challenges and Digicel initiatives[227]

As the most populous country in the region, PNG has the largest unconnected population. PNG experiences a multiplicity of challenges on both the supply and demand side. According to Digicel PNG's CEO, the biggest inhibitors to digital adoption in the country are power availability and education. The MNO developed several initiatives to remove barriers to entry for consumers (see additional details in Appendix B) including:

- Development and rollout of solar charging systems with 40 USB ports across small shops in villages. These devices give the ability to charge 300,000 devices per day (including phones and laptops).

- Design of 2G phones that are subsidized and sold for as low as USD 3 and USD 28 (low-cost smartphones with 2GB RAM and 16GB memory).

- Construction by the Digicel Foundation of more than 680 classrooms across the country over 12 years. Digicel's daily educational TV programming is available free to air on the nationwide TV platform and on Digicel's messaging app, Bip. (Digicel Foundation initiative)

1.6 DIGITAL DIVIDES AND ONLINE SAFETY RISKS NEGATIVELY IMPACT MARGINALIZED AND VULNERABLE COMMUNITIES

Significant digital divides across the Pacific leave marginalized and vulnerable groups behind and present them with major online safety risks. A lack of research and data in the Pacific to understand barriers more deeply results in digital divides and online safety not receiving the attention they deserve, making it difficult to design effective interventions to address digital divides. There are some unique interventions seeking to close digital divides (Box 8), but they are disparate and often underfunded.

KEY TERMS | BOX 4: The digital divide explained

The digital divide is the distinction between those who have access to and can use digital products and services and those who are excluded. Digital divides often overlap, stemming from inequities in literacy, cost, social norms, or availability of relevant content. Digital divides may be associated with gender, economic status, geography, and age, among other factors.

1.6.1 DIGITAL DIVIDES RISK WIDENING EXISTING INEQUALITIES

With technology and internet adoption rapidly advancing across the region, digital inequality runs the risk of widening existing offline sociocultural and economic inequalities.[228] The COVID-19 pandemic accelerated the digitalization of services, heightening the urgency of addressing digital divides, which play out across lines of gender, geography, disability, and other factors. These divides also operate in conjunction with one another, further inhibiting the ability to connect.

Urban and rural divides

ITU's Regional Director for Asia and the Pacific, Atsuko Okuda, stated that the Pacific region's stark disparity between urban and rural connectivity is among the worst in the world.[229] Around 75% of Pacific islanders live

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227   Liam Pye, Josh Rayfield, Rachel Carr, "Vodafone PNG : A Network of Possibilities," APAC Outlook, June 5, 2023, https://www.apacoutlookmag.com/company-profiles/vodafone-png-a-network-of-possibilities.

228   Paul Garnett, "Accelerating Universal Digital Connectivity, UNDP, 2021, https://www.undp.org/sites/g/files/zskgke326/files/migration/asia_pacific_rbap/UNDP-RBAP-Accelerating-Universal-Digital-Connectivity-2021.pdf

229   "How ITI is bridging the digital divide," Telecom Review Asia Pacific, October 2022, https://www.telecomreviewasia.com/index.php/news/interviews/2985-how-itu-is-bridging-the-digital-divide.

in rural areas, far above the global average of 43%.[230] Rural populations face greater barriers to secure, affordable internet connectivity and reliable power sources inhibiting equitable access to economic and social opportunities.[231]

While significant investments have been made at the first mile connecting urban populations, stakeholders said that populations living at the last-mile are being left behind. An interviewee from Solomon Islands[232] claimed that while the rollout of Huawei towers was targeted at reaching the last-mile, the lack of infrastructure within the community (e.g., community centers, ICT hubs, digital devices) and the absence of resources and training made available to rural communities left communities unable to benefit from enhanced connectivity.

Gender digital divide

Beyond urban-rural digital divides there are significant digital gender divides across the Pacific. Digital technology can accentuate gender inequality trends if not addressed effectively and at worst can result in technology-facilitated gender-based violence (TFGBV). Across DECA PICs, social media usage trends suggest that digital gender divides are greatest in PNG and Solomon Islands.[233]

Out of six DECA countries with available mobile ownership and mobile internet data,[234] PNG has the largest digital gender divide. The gender gap in mobile phone ownership stands at 63% and the gap in mobile internet access is 31% (Figure 14).[235] PNG scores poorly in global indicators on advancing gender equality, ranking 160 out of 161 countries on the UNDP's 2021 Gender Inequality Index.[236] The scale of gender inequality in PNG is reflected in the stark digital gender divide.

FIGURE 14. The digital gender divide across the Pacific (2022)
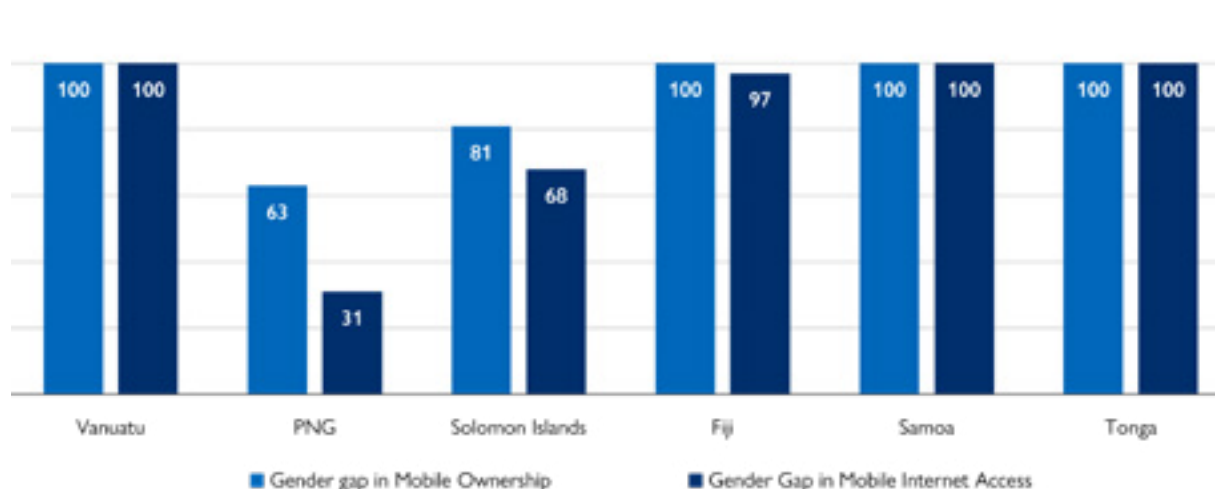
Source: GSMA Mobile Connectivity Index, 2022. Data unavailable for other PICs.

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230 "Rural population (% of total population)," The World Bank, 2022, https://data.worldbank.org/indicator/SP.RUR.TOTL.ZS.

231 "Digital Economy Report Pacific Edition 2022," UNCTAD, 2022, Digital Economy Report, Pacific edition, https://unctad.org/publication/digital-economy-report-pacific-edition-2022.

232 Anonymous interviewee, interview by DECA team, April 2023, online.

233 Data Portal reports: https://datareportal.com/reports/digital-2022-marshall-islands.

234 "GSMA Mobile Connectivity Index: Papua New Guinea | Detail and Analysis," GSMA, 2022, https://www.mobileconnectivityindex.com/index.html#year=2022&zoneIsocode=FJI,PNG,WSM,SLB,TON,VUT&analysisView=VUT. Countries with data available include Fiji, PNG, Samoa, Solomon Islands, Tonga and Vanuatu.

235 GSMA, Mobile Connectivity Index.

236 "About UN Women Papua New Guinea," UN Women Asia and the Pacific, n.d., https://asiapacific.unwomen.org/en/countries/png/about-un-women-png.

Research shows significant cultural barriers to being digitally connected for Papuan[237] and refugee women living in Iowara, PNG,[238] as it is believed that digital access contributes to extramarital affairs and family breakdown. There are also examples of cultural norms and lack of awareness inhibiting women's phone use in Solomon Islands:

> *"It's not just about affordability, it's also about cultural norms. Only the men in most families I know are allowed to have phones. Husbands don't allow wives to have access to phones… if men were more aware of what opportunities are out there for their wives to sell what they are creating at home, they'd be more likely to allow wives to have phones for themselves"*
>
> – Anonymous interviewee

Research from both PNG and Solomon Islands suggests that increased phone ownership by men and women can lead to gender-based violence (GBV) as mobile phones can be conduits of violence.[239] Among refugee women in PNG, GBV was the most-reported concern about the potential impacts of mobile use (24% of survey respondents). This reflects a broader challenge in PNG which is widely considered one of the most dangerous countries in the Pacific region for women and girls[240] where as many as two-thirds of women experience violence at home. Disinformation has been reported as being used to target personal relationships, for example using photoshopped images of individuals implying adultery, creating conflict in communities.[241] There are also serious concerns over scams. Phishing messages and fraudulent calls are a major concern for people—usually women—with low digital literacy and less familiarity using phones and who fear being exploited financially.[242]

Civil society groups including Tonga Women in ICT (TWiICT), Women in IT Solomon Islands (WITSI), and SMARTSistas in Vanuatu, among others are working tirelessly to close digital gender divides through a range of activities including awareness-raising in schools, cyber awareness and digital literacy trainings, technology workshops, Girls in ICT Days, and community outreach. (See additional information on gender dynamics in the digital ecosystem in).

BOX 8: Vanuatu SMARTSistas ICT camps for girls

SMART Sistas (Sistas Mastering Advanced Real Technology) strives to empower girls aged 11 to 18 years to bridge the gender gap in ICT and become leaders in the ICT field. The organization works with the Vanuatu government and is supported by local ISPs, USAID through Peace Corps, and donors. Since 2016, SMART Sistas has organized ICT camps for girls in collaboration with US Peace Corps Volunteers and NGOs. Six have taken place in the capital Port Villa and SMARTSistas is now targeting rural areas. Ten girls aged 11 to 15 years attend each camp and receive:

- 24 hours of ICT technical training;
- 12 hours of leadership and gender empowerment training; and
- 4 hours of career exploration in telecommunications, television, radio broadcasting, computer hardware, software and services, and electrical media.

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237   Stephanie Ketterer Hobbis, "Mobile phones, gender-based violence, and distrust in state services: Case studies from Solomon Islands and Papua New Guinea," The Strategist, Australian Strategic Policy Institute (ASPI), February 16, 2022.

238   *The Digital Worlds of Displacement-Affected Communities*, GSMA, 2022.

239   Stephanie Ketterer Hobbis, "Mobile phones, gender-based violence, and distrust in state services: Case studies from Solomon Islands and Papua New Guinea," The Strategist, Australian Strategic Policy Institute (ASPI), February 16, 2022.

240   humanrightsmeasurement.org/wp-content/uploads/2020/06/HRMI-Pacific-Report.pdf

241   The Digital Worlds of Displacement-Affected Communities, GSMA, 2022, https://www.gsma.com/mobilefordevelopment/the-digital-worlds-of-displacement-affected-communities/.

242   GSMA, The Digital Worlds of Displacement-Affected Communities.

BOX 8 (CONTINUED): Vanuatu SMARTSistas ICT camps for girls

An important component of the training is building the confidence and self-esteem of the girls in technology through skills development. Each successful participant is awarded a Certificate of Completion, certifying that the applicant has successfully completed five days of intensive training. Participants also receive a subsidized laptop to encourage them to continue to practice the skills learned during the training.

The program has been well received by local communities, with community leaders inviting the training program to go back to their areas on an annual basis, or to run the training as part of the curriculum in schools. The first cohorts are now at university (including University of South Pacific in Fiji and Wellington University in New Zealand) and should complete undergraduate degrees in the next year. Some have also started internships with organizations such as the Vanuatu Internet Governance Forum and TitanFX.[243]

SMARTSistas aims to create a ToT manual for others to replicate their model across PICs. The organization is hoping to create an ICT hub where community members can continue to learn and to build sustainability.

Disability divides

As the Pacific region increasingly comes online and digitalizes services, persons with disabilities are left behind by technology products and services that are not made accessible and affordable for them. GSMA reports that worldwide more than one billion people need at least one form of assistive technology (AT), yet only 10% have adequate access to their required AT.[244]

A Fijian disability advocate[245] raised concerns about public and private digital services in Fiji being inaccessible for persons with disabilities. The level of web accessibility on government websites that provide critical information is very low, excluding persons with disability from access to public services. Lack of accessibility features in digital wallets to facilitate remote payments of utility services including water and electricity were also mentioned. Although financial institutions are rolling out financial literacy training across the country, online courses are not designed for persons with disabilities. During the COVID-19 pandemic, persons with disabilities that preclude them from engaging on digital platforms (e.g., blindness and other vision limitations, motor or dexterity impairments, and learning disabilities among others) were disproportionately affected negatively by not being able to sell their goods face-to-face. They struggled to continue running their businesses because of their limited digital skills (including for financial services) to gain access to and participate on e-commerce platforms.

Persons with disabilities living in rural maritime areas experience disproportionate barriers to digital inclusion, as they are likely to have limited to no digital literacy, increasing their reliance on carers and excluding them from the digital economy and society.[246]

Age divides

GSMA research demonstrates that older people in PNG are less likely to use mobile phones.[247] The trend of older generations being reluctant or unsure of how to use technology was also reflected by interviewees from

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243   Peace Corps Vanuatu, interview by DECA team, April 2023, online.

244   https://www.gsma.com/mobilefordevelopment/assistive-tech/.

245   Fiji Disabled People's Federation, interview by DECA team, April 2023, online.

246   Independent expert, interview by DECA team, April 2023, online.

247   The Digital Worlds of Displacement-Affected Communities, GSMA, 2022, https://www.gsma.com/mobilefordevelopment/the-digital-worlds-of-displacement-affected-communities/.

Tonga. This is driven by insecurity and a lack of trust in mobile technology due to experiences or perceptions of cyber attacks and fraud.[248]

1.6.2 A LACK OF DATA ON CONNECTIVITY, ACCESS, AND USE OF DIGITAL TECHNOLOGIES PREVENTS EFFECTIVE INTERVENTIONS AND POLICIES TO ADDRESS BARRIERS

Addressing digital divides is a critical challenge across PICs, particularly in countries like PNG which has the largest unconnected population, with 87% of the population residing in rural areas across 600 islands, and speaking 800+ languages. An important factor in addressing the digital divide is the availability of data. Although some qualitative data on digital divides across the region is available, nationwide statistically representative, disaggregated data for measuring and monitoring digital divides is limited.

BOX 9: Bridging data shortfalls

The ADB, World Wide Web Foundation, and local partners used the Women's Rights Online[249] global methodology to assess digital gender gaps across PNG, Samoa, and Tonga to produce score cards on five indicators (Table 4). PNG scored the lowest across all indicators with Tonga as the only country collecting sex-disaggregated ICT data, and no countries set robust timebound targets to address digital divides in national ICT policies.

TABLE 4. Summary of Women Rights Online Scorecards (out of 10)[250]

	PNG	SAMOA	TONGA
Relevant content & services	5	7	6
Overall score (%)	47	71	72
Internet access and women's empowerment	4	7	7
Affordability	4	7	8
Digital skills & education	3	8	8
Online safety	7	7	8

1.6.3 ONLINE SAFETY INTERVENTIONS ARE EMERGING, BUT FURTHER EFFORTS ARE REQUIRED

Online safety is an overlooked yet serious concern across PICs. Low digital literacy and awareness put marginalized groups at risk, and although a few disparate organizations (e.g., Women in IT Solomon Islands; Tonga Women in ICT, Meta, and Save the Children), are attempting to address the issues, more concerted efforts are needed.

"Online safety is a significant issue across the Pacific. It's a really big challenge and no one is actually looking at it in any deep way; bullying and harassment, child exploitation, exploitation of women and girls. No one is looking at it as much as they should."

– Private sector representative

248   Tonga Women in ICT (TWiICT), interview by DECA team, April 2023, online.

249   "Women's Rights Online Digital Gender Gap Audit Scorecards," World Wide Web Foundation, October 5, 2022, https://webfoundation.org/research/digital-gender-gap-audit/.

250   Sarah Boxall, "The Pacific digital transformation: is everyone a winner?" DevPolicy Blog, November 2, 2022, https://devpolicy.org/the-pacific-digital-transformation-is-everyone-a-winner-20221102/ .

In Solomon Islands and Tonga,[251] interviewees mentioned reports of cyber bullying and online sexual harassment, particularly of girls. Parents are concerned about the online exposure of young children with low awareness and the lack of tools to restrict children's access to potentially damaging content online. Both men and women are the target of online scams and identity theft, but women are reported as being more vulnerable, due to lower digital literacy skills.[252]

BOX 10: Initiatives to improve safety online

Meta and Save the Children's I Am Digital initiative[253]

Meta and Save the Children's *I am Digital* campaign is a unique example of an INGO partnering with a private sector company to deliver digital literacy and safety online.[254] Digital skills trainings (online and in-person) have been developed to educate children and their parents about online safety issues, including how to avoid online abuse and exploitation across seven PICs. In 2021, education materials were developed for people living with disabilities. Phase 1 (January 2021) of the program began in Fiji, PNG, Samoa, and Tonga, and Phase 2 (December 2021) was rolled out in Kiribati, Vanuatu, Solomon Islands. An advisory group has been instrumental in steering the programmatic work of *I am Digital.*, primarily composed of government representatives from each of the seven countries, as well as Save the Children, and academics, UN, and youth representatives. In Phase 3 (December 2022) Save the Children Fiji began working with the Fijian Government's Education Ministry to rollout high school visits to deliver the *I Am Digital* curriculum initiative.

Pacific Get Safe Online campaign.

The Pacific Get Safe Online campaign raises awareness of online safety and security issues, with websites in local languages launched in Vanuatu, Fiji, Tonga, Samoa, Kiribati, Tuvalu and PNG. In Vanuatu, cybersecurity awareness is encouraged through music, with songs performed by Vanuatu musicians (see more in Pillar 2, section 2.6.3).[255]

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251   Tonga Women in ICT (TWiICT) and Women in IT Solomon Islands, interview by DECA team, April 2023, online.

252   Women in IT Solomon Islands, interview by DECA team, April 2023, online.

253   "#IamDigital Pacific Islands," Meta (Facebook), n.d., https://wethinkdigital.fb.com/pc/en-us/iamdigital/.

254   #IamDigital Pacific Islands.

255   "Get Safe Online Vanuatu," Get Safe Online, n.d., https://www.getsafeonline.org.vu/en/.

PILLAR 2: DIGITAL SOCIETY, RIGHTS, AND GOVERNANCE

Digital Society, Rights, and Governance focuses on how digital technology intersects with government, civil society, and the media. This pillar is divided into three sub-pillars: Internet Freedom; Civil Society and Media; and Digital Government. Internet Freedom explores factors that enable or constrain the exercise of human rights and fundamental freedoms online. This includes individual rights to freedom of speech, privacy, and free assembly, and the abuse of these rights through digital repression. Civil Society and Media identifies key institutions and how they report on, advocate around, and influence online freedoms. Digital Government looks at the government's efforts to manage internal information technology (IT) processes and systems, deliver citizen- and business-facing e-services, and engage with the public through digital channels.

KEY TAKEAWAYS: DIGITAL SOCIETY, RIGHTS, AND GOVERNANCE

FINDINGS

- There has been a shift in the consumption of news and information away from traditional broadcast to digital media, but rural and remote communities face information poverty, where residents do not have access to traditional broadcast or digital media. Radio is the most trusted source of news and information overcoming connectivity and literacy barriers, especially outside of urban centers. Female journalists and politicians are vulnerable to harassment and threats online, which can lead to offline violence and have long term negative professional implications.

- In some PICs, the proliferation of online mis- and disinformation goes unchecked due in part to the absence of local fact-checking and watchdog organizations. Few PICs have developed legal and regulatory frameworks- for right to information and data privacy and protection legislation.

- Media organizations lack financial resources to hire, train, and retain talent, which compromises reporting quality and allows undue foreign influence.

- Digital government system and service development and maintenance is undermined by limited capacity and talent retention challenges. Openness to open-source software and cloud computing is evident, but the absence of data privacy regulations slows uptake. PICs rank among the lowest in the world on the UN E-Government Development Index and in the UN E-Participation Index. While digital ID systems and initiatives are being developed, progress is fragmented and incomplete.

- National cybersecurity strategies and CERTs are limited in the region and threats are on the rise. Donor support in cybersecurity is saturated in awareness-raising, strategy and policy development, and basic incident response training. Recent cyber attacks targeted government systems. Governments struggle to retain skilled professionals, and cyber hygiene practices are weak with limited programs to address this issue.

RELEVANT RECOMMENDATIONS

4. Promote training and capacity building opportunities in digital journalism for media professionals

5. Support the development of a vibrant, independent, impartial, and sustainable media landscape

6. Enhance civic engagement and the protection of freedom of expression online through policy and grassroots-level initiatives

7. Support government system and service digitalization through technical assistance and skill-building

8. Increase coordination and decrease duplication in cybersecurity capacity building with a focus on CERTs, workforce development, regulatory frameworks, and cyber hygiene across the ecosystem

INTRODUCTION

Improved connectivity infrastructure has brought with it increased social media adoption, but local media organizations struggle to shift online and remain underfunded and understaffed. They are challenged to use social media platforms to reach new audiences, increase revenue, and spread factual information. Civil society is very thin in the Pacific, with almost no organizations working in digital rights advocacy or fact-checking. Weak independent media and civil society can expose the information space to the spread of disinformation and misinformation, foreign influence, and online violence leading to offline violence, especially toward women.

Digital government system and service development and use is fragmented and only five DECA PICs have digital government strategies or equivalents. While most countries have digital government platforms that allow citizens access to government services, use remains low due to factors including low digital literacy, low user trust in digital platforms, and resistance to change.

In recent years, significant advancements have been made in cybersecurity, including the development of cybercrime legislation, the formulation of comprehensive cybersecurity strategies, and the establishment of operational national Computer Emergency Response Teams (CERTs). However, major gaps persist and cybersecurity threats are on the rise. Only three DECA PICs have published national cybersecurity strategies and major attacks in the last three years have targeted government systems.

2.1 RESOURCE CONSTRAINTS SEVERELY UNDERMINE DIGITAL MEDIA INDEPENDENCE AND DEVELOPMENT

2.1.1 INFORMATION CONSUMPTION SHIFTS FROM TRADITIONAL MEDIA TO SOCIAL MEDIA

Across the Pacific, there is a shift away from broadcast media to digital media in the consumption of news and information. This shift is most prevalent among young people. Facebook is the most widely used social media platform and is where most people receive news and information. Most users have access to social media platforms through their mobile phones. Facebook and Instagram come pre-installed on smartphones and with cheaper or no data charges compared to the wider internet[256] in Papua New Guinea and Fiji[257] and in other Pacific countries.[258] One interviewee noted that many users in PNG and Fiji do not go beyond these pre-installed applications to explore the wider internet on their web browsers.[259]

Telecom companies in Fiji, Nauru, Papua New Guinea, Samoa, Tonga, Vanuatu[260] and Solomon Islands[261] provide mobile data at a lower cost than for other data or free of charge for access to Facebook – referred to as zero-rated applications (Box 11). Users in Samoa can purchase 7GB of data for USD 11 to use over a week or they can buy 8GB of data for the same price to use over the same seven-day time period, but 4GB is solely for

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256   Dr. Amanda H.A. Watson, Jemima Garrett, *Facebook's monopoly danger in the Pacific*, The Lowy Institute, March 26, 2021, https://www.lowyinstitute.org/the-interpreter/facebook-s-monopoly-danger-pacific.

257   NuiNet Papua New Guinea, interview by DECA team, April 19, 2023.

258   Sue Ahearn, *Social media "bullshit" threatens control of Covid-19 outbreak in PNG*, DevPolicy Blog, March 23, 2021, https://devpolicy.org/social-media-bullshit-threatens-control-of-covid-19-outbreak-in-png-20210323-3/.

259   NuiNet Papua New Guinea, interview by DECA team, April 19, 2023.

260   *Facebook's Australia ban threatens to leave Pacific without key news source*, The Guardian, February 18, 2021, https://www.theguardian.com/world/2021/feb/19/facebooks-australia-ban-threatens-to-leave-pacific-without-key-news-source.

261   Joshua Mcdonald, *Why Pacific Communities rely on Facebook for access to news*, The Diplomat, February 23, 2021, https://thediplomat.com/2021/02/why-pacific-communities-rely-on-facebook-for-access-to-news/

access to Facebook.[262] The younger generation consumes content on social media platforms such as X (formerly Twitter), and TikTok, indicating a slight shift from Facebook.[263,264]

BOX 11: Zero-rated applications explained

Zero-rated applications are those that ISPs and MNOs allow customers to use without incurring charges; the consumption does not count against their data plan. Zero-rating is criticized as anti-competitive as it offers users (especially those who cannot afford data packages) a limited internet experience. Zero-rated content has a competitive advantage over non zero-rated content, which could be struggling to reach the market. Moreover, zero-rated agreements favor major content providers like Meta as they are the only ones that can afford and sustain zero-rating deals with ISPs.[265] Besides the potential anti-competitive impact of this phenomenon,[266] it can also promote a tiered internet ecosystem where some people do not have access and are not aware of the social and economic benefits of the internet as compared to privileged groups.[267] Arguments in favor of zero-rating claim that it provides more online content to people who otherwise would not be able to have access to it.[268]

Social media offers a mostly free platform for citizens to engage and hold their governments accountable.[269] In Fiji, social media filled a void left by repressive government measures that controlled traditional media.[270] In countries including Kiribati, Vanuatu, PNG, and Tuvalu, the government turned to social media to help ensure transparency and to meet citizens where they are (online). Handwritten election results were posted online in Kiribati. In Vanuatu, the national broadcaster live streamed the entire ballot-counting process on Facebook.[271] Social media was used to inform voters of candidates, issues, and the electoral process in PNG.[272] In 2019, Tuvalu live streamed its Parliamentary proceedings on Facebook.[273]

Governments are actively using social media to communicate with their constituents by posting their press statements on Facebook.[274]

262   Dr. Amanda H.A. Watson, *Facebook's monopoly danger in the Pacific*, The Lowy Institute, March 26, 2021, https://www.lowyinstitute.org/the-interpreter/facebook-s-monopoly-danger-pacific.

263   Pacific Media and Communications Specialist, interview by DECA team, March 30, 2023.

264   Melanesian News Network, interview by DECA team, March 14, 2023.

265   "Zero-rating practices in broadband markets," European Union Office of Publications, 2017, https://op.europa.eu/en/publication-detail/-/publication/e47d8605-969e-11e7-b92d-01aa75ed71a1.

266   European Union, Zero-rating practices.

267   Samantha Bates, Christopher Bavitz, Kira Hessekiel, " Zero-rating & internet adoption: the role of Telcos, ISPs & Technology Companies in expanding internet access, " Harvard Library, October 2017, https://dash.harvard.edu/bitstream/handle/1/33982356/2017-10_zerorating.pdf.

268   Nick McClellan, Darrell M. West, "Zero rating: a boon to consumers, or a net neutrality nightmare?" The Brookings Institution, March 23, 2016, https://www.brookings.edu/articles/zero-rating-a-boon-to-consumers-or-a-net-neutrality-nightmare/

269   Romitesh Kant, Jason Titifanue, Jope Tarai, et al., "Internet under threat? The politics of online censorship in the Pacific Islands, "Pacific Journalism Review 24 (2) 2018, https://ojs.aut.ac.nz/pacific-journalism-review/article/view/444.

270   Communications Fiji Ltd., interview by DECA team, March 23 2023

271   Romitesh Kant, "Pacific digital toolbox needs expanding to hammer out misinformation," RNZ, July 19, 2022, https://www.rnz.co.nz/international/pacific-news/471243/pacific-digital-toolbox-needed-to-hammer-out-misinformation.

272   Mihail Sora, "Building the Australia-PNG Digital Ecosystem," Lowy Institute, June 15, 2023, https://www.lowyinstitute.org/publications/building-australia-png-digital-ecosystem.

273   "Tuvalu Parliament sessions go live," RNZ, November 29, 2019, https://www.rnz.co.nz/international/pacific-news/404419/tuvalu-parliament-sessions-go-live.

274   Talanoa 'o Tonga, interview by DECA team, May 10, 2023.

BOX 12: Independent News Networks and their use of social media across the region:

The Pacific Newsroom: The Pacific Newsroom on Facebook is one of the few news aggregators with almost 70,000 Facebook followers[275] and 6,000 X (formerly Twitter) followers.[276] It features articles authored by local journalists,[277] academics, analysts, bloggers, and citizen journalists and has a large following of academics and diplomats.[278] The Facebook page addresses a huge information gap, reports breaking stories,[279] and acts as a town square where users can interact.[280]

The Melanesian News Network: The Melanesian News Network is a Solomon Islands-based Facebook page with more than 7,000 followers, featuring local and regional news stories.[281] The Melanesian News Network was founded by journalist Dorothy Wickham who decided to go online because of shifts to digital media consumption and delivery in Solomon Islands and to ensure against political interference or pressure.[282]

Talanoa 'o Tonga: Talanoa 'o Tonga, which means Stories of Tonga, is an English language news website established in 2019 by journalist Kalafi Moala. Talanoa 'o Tonga was created to ensure that media in Tonga can play a watchdog role for the government and society in general.[283] Talanoa 'o Tonga has more than 6,000 followers on Facebook.[284]

2.1.2 INDEPENDENT MEDIA RESOURCE CONSTRAINTS UNDERMINE THE INTEGRITY OF THE PACIFIC INFORMATION SPACE

Local media organizations lack the resources to hire, train, and retain the best journalists. This compromises the quality of reporting and leads to high staff turnover.[285] Inadequate compensation causes journalists to leave the profession.[286] Notably, female journalists receive lower salaries than their male colleagues, which drives many women to leave journalism to seek higher paying opportunities.[287] According to Associate Professor in Pacific Journalism Shailendra Singh, from the University of the South Pacific, their research indicates that the Pacific has "the youngest, least qualified, and least experienced journalist corps in the world."[288] Journalists lack professional development opportunities such as capacity- building and training opportunities, which compromises the quality of reporting. A 2021 survey of Pacific Island journalists revealed that almost half hold a post-secondary degree, which is lower than among counterparts in other countries.[289]

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275 The Pacific Newsroom, Facebook, https://www.facebook.com/groups/Pacificnewsroom/

276 Twitter, https://twitter.com/newsroom_the?lang=en

277 The Pacific Newsroom, https://www.facebook.com/groups/Pacificnewsroom/.

278 Sue Ahearn, "Social media "bullshit" threatens control of Covid-19 outbreak in PNG," DevPolicy Blog, March 23, 2021, https://devpolicy.org/social-media-bullshit-threatens-control-of-covid-19-outbreak-in-png-20210323-3/

279 Industry Expert, interview by DECA team, March 29, 2023, online.

280 Sri Krishnamurthi, "The Pacific Newsroom-the virtual 'kava bar' news success story," Asia Pacific Report, November 6, 2021, https://asiapacificreport.nz/2021/11/06/the-pacific-newsroom-the-virtual-kava-bar-news-success-story/.

281 Melanesian News Network, https://www.facebook.com/677MNN/.

282 Industry Expert, interview by DECA team, March 29, 2023, online.

283 Talanoa 'o Tonga, interview by DECA team, May 10, 2023, online.

284 Talanoa 'o Tonga, Facebook, https://www.facebook.com/people/Talanoa-o-Tonga/100075833414987/.

285 Dr. Amanda H.A.Watson, "Communication, information and the media," Papua New Guinea Government, Economy and Society, Australian National University, https://press-files.anu.edu.au/downloads/press/n9594/pdf/book.pdf.

286 Anonymous interviewee, interview by DECA team, May 5, 2023, online.

287 Faith Valencia-Forrester, Bridget Backhaus, Heather Stewart, "In her own words: Melanesian women in media," Pacific Journalism review 26 (1) 2020, https://ojs.aut.ac.nz/pacific-journalism-review/article/view/1104/1339.

288 Academic expert in Pacific Journalism, interview by DECA team, April 5, 2023, online

289 Shailendra Bahadur Singh, Folker Hanisch, "Watchdogs under pressure: Pacific Islands journalists' demographic profiles and professional views," Pacific Journalism Review 27 (1& 2) 202.

Some local media organizations are on the brink of bankruptcy. They suffer financially due to decreased advertising revenue, disruptions caused by the COVID-19 pandemic, and a challenging transition to using digital media. Industry experts report that many journalists in Solomon Islands have not received their salaries in several months and newspapers are near collapse with some newspapers relying only on revenue generated from street sales.[290] In an attempt to increase readership, many media organizations with websites have implemented online paywalls. This has met with varied success and made the news expensive for the public. Although print newspapers sell for FJD 1.50, some users still prefer to get the same news free online from other news media sources. The challenge for the news media is to produce "unique, exclusive content for our audience."[291] Fiji Village began as a subscription only website, but it did not generate enough revenue so it transitioned to rely exclusively on website advertising and Google AdSense. The challenge facing digital media is how to monetize a website's popularity, social media followers, shares, and likes.[292]

Local media organizations lack the financial resources and human capital to pursue independent investigations into corruption, environmental issues, and natural disasters.[293] A recent Transparency International survey of more than 6,000 Pacific Islanders from ten 10 PICs revealed that corruption is perceived as a serious regional problem in the public sector. Interviewees noted that corruption is a sensitive topic for the media to cover and more training and resources are needed on how to properly conduct investigations into corruption.

Digital media provides opportunities for lower cost content creation. Traditional broadcast journalism requires expensive equipment, while mobile journalism allows reporters to produce low cost, high quality content. This low cost production is ideal for news media organizations in small media systems, such as the Pacific, where advertising marks are small and the returns are marginal.[294] Some media organizations have found success in the multi-platform approach. The advantage of multi-platform media is that it allows users to access news and information via multiple mediums: digital media, television, radio, and print. One interviewee said that traditional linear broadcasters are faced with learning how to coexist with digital platforms and social media and how to survive and thrive in the digital landscape.[295] Media organizations in Fiji utilize social media as tools to direct traffic to their websites and take advantage of the live stream feature to broadcast content.[296] Some media professionals have taken the opportunity to learn new skills like video production, adjusted their writing style for online publications, and purchased new smartphones to participate in the digital ecosystem.[297]

> **BOX 13: FijiVillage**
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> FijiVillage is a news website linked to several radio stations that can be streamed online. It has an extensive social media presence on Facebook, Instagram, and TikTok with 393,000 Facebook followers,[298] 90,000 followers on Instagram[299] and more than 20,000 followers on TikTok.[300] Radio hosts connect with their listeners on social media and on radio continuously.

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290   Industry Expert, interview by DECA team, Mar 29, 2023, online.

291   Fiji media practitioner, interview by DECA team, April 11, 2023, online.

292   Communications Fiji Ltd, interview by DECA team, March 23, 2023, online.

293   Watson, Communication, information.

294   Academic expert in Pacific Journalism, interview by DECA team, April 5, 2023, online.

295   Pacific Cooperation Broadcasting Limited (Pasifika TV), interview by DECA team, April 2023, online.

296   Anonymous interviewee, interview by DECA team, March 30, 2023, online.

297   Fiji media practitioner, interview by DECA team, April 2023, online.

298   Fiji Village, https://www.facebook.com/fijivillage/.

299   Fiji Village, https://www.instagram.com/fijivillage/.

300   Fiji Village, https://www.tiktok.com/@fijivillage.com?lang=en.

BOX 13 (CONTINUED): FijiVillage

Fijian election debates were exclusively broadcast on the FijiVillage website with edited highlights on radio.[301] The Fijian diaspora accounts for about 40% of FijiVillage online users. The news website targets the dynamic, online diaspora, providing them with an online space to connect, gather, and connect with news from back home.[302] The success of FijiVillage is due to the growth of the digital ecosystem in Fiji.[303]

Communications Fiji Limited which owns FijiVillage, runs a news website called PNG Haus Bung and radio stations in Papua New Guinea.[304] PNG Haus Bung has 24,000 followers on Facebook,[305] 125 subscribers on YouTube,[306] and 302 followers on X (formerly Twitter).[307] According to Communications Fiji Limited, their operations in PNG are challenged by the high cost of the internet affecting users and media organizations.[308]

2.1.3 INFORMATION POVERTY AND THE IMPORTANCE OF RADIO IN THE PACIFIC ISLANDS

Remote and rural areas in the PICs experience information poverty, which refers to communities that lack access to any type of news and information due to the absence of broadcast or digital media. For example, Solomon Islands Broadcasting Corporation broadcasts television only in the capital Honiara.[309]

The autonomous region of Bougainville within PNG (Figure 15) has limited access to television, radio, and newspapers.[310, 311] Communications infrastructure remains damaged as a result of the decade-long Bougainville civil war that ended in 2001.[312] The Australian Broadcasting Corporation broadcasts Radio Australia to Bougainville via FM frequency and internet streaming.[313] Yet, there are areas that lack radio signals and have limited access to other forms of media.[314] People get their news on the telephone by talking to their families who live in the cities.[315] Some locations such as islands in Milne Bay Province in PNG (Figure 15), lost their only connection to the outside world when Australia shut down shortwave radio broadcasting in 2017.[316, 317] Some

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301   Communications Fiji Ltd, interview by DECA team, March 2023, online.

302   Communications Fiji Ltd, interview by DECA team, March 2023, online.

303   Communications Fiji Ltd, interview by DECA team, March 2023, online.

304   Communications Fiji Ltd, interview by DECA team, March 2023, online.

305   PNG Haus Bung on Facebook, https://www.facebook.com/pnghausbungnews/.

306   PNG Haus Bund, https://www.youtube.com/channel/UCFt2gXYRc6rmXVZDPlTClww.

307   PNG Haus Bung, https://twitter.com/png_hausbung.

308   Communications Fiji Ltd, interview by DECA team, March 2023, online.

309   Anonymous interviewees, interview by DECA team, May 2023, online.

310   Verena Thomas, Jackie Kauli, Catherine Levy, et al., "Bougainville Audience Study, Phase 2," June 2019, https://eprints.qut.edu.au/197398/8/Bouganville_Audience_Study_Full_Report_Phase_2_email_version.pdf.

311   Dr. Amanda H.A. Watson, Jeremy Miller, Adriana Schmidt, "Preparing for the Referendum: Research into the Bougainville Peace Agreement Telephone Information Hotline, Discussion Paper 2020/2," Department of Pacific Affairs, https://dpa.bellschool.anu.edu.au/sites/default/files/publications/attachments/2021-04/preparing_for_the_referendum-_research_into_the_bougainville_peace_agreement_telephone_information_hotline_amanda_watson_jeremy_miller_adriana_schmidt_discussion_paper_2020_02_department_of_pacific_affairs.pdf.

312   Brian Harding, Camille Pohle, "The Next Five Years Are Crucial for Bougainville's Independence Bid," USIP, August 12, 2022, https://www.usip.org/publications/2022/08/next-five-years-are-crucial-bougainvilles-independence-bid.

313   ABC, "How can I listen to ABC Radio Australia?," https://www.abc.net.au/pacific/ways-to-listen

314   Dr. Amanda H.A. Watson, Jeremy Miller, Adriana Schmidt, *Preparing for the Referendum: Research into the Bougainville Peace Agreement Telephone Information Hotline*, Discussion Paper 2020/2, Department of Pacific Affairs, https://dpa.bellschool.anu.edu.au/sites/default/files/publications/attachments/2021-04/preparing_for_the_referendum-_research_into_the_bougainville_peace_agreement_telephone_information_hotline_amanda_watson_jeremy_miller_adriana_schmidt_discussion_paper_2020_02_department_of_pacific_affairs.pdf.

315   Industry Expert, interview by DECA team, Mar 2023, online.

316   Australia National University, interview by DECA team, April 2023, online.

317   John Greenshields, "Why Australia must restore shortwave radio to the Pacific," DEVPolicy Blog, September 19, 2017, https://devpolicy.org/australia-must-restore-shortwave-radio-pacific-20170919/.

islands in Milne Bay Province have unreliable phone service, which is expensive where available, and there is no internet and radio service. The local population learned about the national election results 10 days after counterparts in the city from visitors to their province.[318]

FIGURE 15. Map of PNG highlighting the semi-autonomous region of Bougainville and Milne Bay

Radio remains the most trusted source of news and information in the region, especially in rural areas.[319] It may be the only accessible source of information in remote and rural areas and is an affordable and accessible means of communication, overcoming connectivity and literacy barriers. There are no television stations in Kiribati, only a government-run radio station and a weekly newspaper.[320] In the absence of other means of mass communication, radio fills an important gap in the information space, especially in emergencies and disasters. After extreme weather events knocked out radio transmission in Palau in 2012 and 2013, the UNDP installed AM Broadcasting System antenna to enable radio transmission to the entire country.[321]

2.1.4 THE IMPORTANCE OF STATE OWNED PUBLIC BROADCASTERS AND PUBLIC INTEREST MEDIA

State-owned national broadcasters have a wide reach in the Pacific and are an important source of news and information. Often their role is defined as assisting the government in nation-building.[322] National public

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318   Greenshields, Why Australia must restore shortwave.

319   Romitesh Kant, Jason Titifanue, Jope Tarai, et al. "Internet under threat? The politics of online censorship in the Pacific Islands," Pacific Journalism Review 24 (2) 2018, https://ojs.aut.ac.nz/pacific-journalism-review/article/view/444.

320   BBC, Kiribati media guide, https://www.bbc.com/news/world-asia-pacific-16433902.

321   "Installing AM Broadcasting System to enhance Palau disaster communications," UNDP, April 15, 2022, https://www.undp.org/pacific/press-releases/installing-am-broadcasting-system-enhance-palau-disaster-communications

322   Academic expert in Pacific Journalism, interview by DECA team, April 2023, online.

broadcasters require financial support to maintain their equipment and to be able to provide transmission to the entire country. According to Shailendra Singh, Associate Professor in Pacific Journalism at the University of the South Pacific, many public broadcasters in the Pacific are underfunded with the exception of Fiji.[323]

TABLE 5. State Owned Broadcasters in the Pacific Islands

COUNTRY	STATE OWNED BROADCASTER
Fiji	Fijian Broadcasting Corporation (FBC)
Federated States of Micronesia	Federated States of Micronesia Broadcasting Association (FSMBA) is an association of public radio broadcasters
Kiribati	Broadcasting and Publications Authority oversees Radio Kiribati
Republic of Marshall Islands	Radio Marshalls V7AB broadcasts AM and FM radio across 750,000 square miles.
Nauru	Nauru Media operates Nauru Television and Nauru Radio.[324]
Palau	No TV stations based in Palau[325]; *no publicly available information on state owned broadcaster*
Papua New Guinea	The National Broadcasting Corporation (NBC)
Samoa	TV9 (under Ministry of Communications and Information Technology MCIT)
Solomon Islands	Solomon Islands Broadcasting Corporation (SIBC)
Tonga	Tonga Broadcasting Commission (TBC)
Tuvalu	Tuvalu Broadcasting Corporation (TVBC) operates two national radio networks AM and FM
Vanuatu	Vanuatu Broadcasting and Television Corporation (VBTC)

2.1.5 FOREIGN MEDIA OUTLETS PROVIDE CRITICAL PERSPECTIVE AND PLAY AN IMPORTANT ROLE IN DIVERSIFYING THE INFORMATION LANDSCAPE

Foreign media outlets cover stories that local media cannot produce as original reporting due to censorship constraints, government intimidation tactics, and local sensitivities around certain topics. Local media organizations often feel freer to rebroadcast stories that are produced by foreign media.[326] Two interviewees explained that local media are often "delighted when the Australian Broadcasting Corporation (ABC) does investigations on China" and then can state what the ABC covered.[327] Pasifika TV provides free TV content via satellite or online streaming that is primarily produced in New Zealand and then re-broadcast in the region. It also uses its LiveU network (PacHub) to receive and distribute content that is produced in the Pacific to encourage local storytelling and sovereignty. The TV service has a strong focus on building capacity and capability and supports Pacific broadcasters with equipment, infrastructure, and training.[328] Many PIC residents rely on the ABC and Radio New Zealand for objective coverage of current events in their countries.

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323   Academic expert in Pacific Journalism, interview by DECA team, April 2023, online.

324   "Nauru Profile", BBC News, July 31, 2012, https://www.bbc.com/news/world-asia-pacific-15433625. Nauru Broadcasting Service does not have a webpage.

325   "Palau Media Guide," BBC, June 27, 2023, https://www.bbc.com/news/world-middle-east-15446662.

326   Industry Expert, interview by DECA team, March 2023, online.

327   Industry Expert, interview by DECA team, March 2023, online.

328   Pacific Cooperation Broadcasting Limited (Pasifika TV), interview by DECA team, April 2023, online.

Recent initiatives by the Guardian and the ABC emphasize the importance of hiring Pacific journalists to cover the region,[329] elevating local voices to an international audience, and compensating them with a competitive salary.[330] ABC's Pacific Local Journalism Network, is an initiative launched in November 2022 consisting of a team of journalists from Samoa, Tonga, Vanuatu, Fiji, Solomon Islands, and Timor Leste.[331] Content produced by the Pacific Local Journalism Network feeds into all of the ABC international news networks including content shared on their digital platforms.[332,333] The reception in the region has been positive. Seeing "brown people, brown faces" covering local news "strikes a chord in the region. It has greater traction with locals compared to a foreigner covering the region remotely." [334]

2.1.6 THE SPREAD OF MISINFORMATION AND DISINFORMATION ON SOCIAL MEDIA IS WIDESPREAD, FACT-CHECKING ORGANIZATIONS ARE ABSENT, AND CONTENT MODERATORS FLUENT IN LOCAL LANGUAGES DO NOT EXIST

> **KEY TERMS | BOX 5:** Malinformation, misinformation, and disinformation
>
> **Malinformation** is the deliberate publication of private information for personal or private interest, as well as the deliberate manipulation of genuine content. Malinformation is based on reality but is used and disseminated to cause harm.
>
> **Misinformation** is information that is false, but not intended to cause harm. Individuals who do not know that a piece of information is false may spread it on social media in an attempt to be helpful.
>
> **Disinformation** is false information that is deliberately created or disseminated with the express purpose of causing harm. Producers of disinformation typically have political, financial, psychological, or social motivations.
>
> Source: *USAID Disinformation Primer*

Linguistic diversity undermines effective fact-checking. Social media networks do not hire content moderators fluent in local languages such as Tok Pisin, Pidgin, and iTaukei so they are unable to effectively help control the spread of false narratives.[335] Twitter, YouTube, and TikTok have had limited interactions with Pacific Island governments.[336] One interviewee said that in Fiji, an Australian-based evangelical movement called the "Eleventh Hour Ministry" spread disinformation about COVID-19 vaccinations[337] on Facebook and even though the video was reported as disinformation, Facebook was not able to take down the content because they "didn't have the capacity to look at the iTaukei language."[338] Social media networks do not invest in language-specific algorithm development for Pacific languages given their small user bases and there are no dedicated

329   Industry Expert, interview by DECA team, March 2023, online.

330   Academic expert in Pacific Journalism, interview by DECA team, April 2023, online.

331   Unknown Author. "ABC Radio Australia Pacific Freelancers – Seeking Expressions of Interest." ABC Radio Australia Pacific Freelancers, n.d., https://www.abc.net.au/xmlpublic/radio/documents/ABC%20Radio%20Australia%20Pacific%20Freelancers_Seeking%20 Expressions%20of%20Interest.pdf.

332   Anonymous interviewee, interview by DECA team, May 2023, online.

333   Natasha Johnson, "ABC launches new TV show, The Pacific, putting Pacific people at the center of the storytelling," ABC, April 5, 2023, https://www.abc.net.au/news/backstory/2023-04-06/the-pacific-tahlea-aualiitia-local-journalism-network-fiji/102189936.

334   Academic expert in Pacific Journalism, interview by DECA team, April 2023, online.

335   Romitesh Kant, "How the Pacific Islands became a hotbed of online misinformation," July 12, 2022, https://thespinoff.co.nz/ media/12-07-2022/how-the-pacific-islands-became-a-hotbed-of-online-misinformation.

336   "The Pacific Covid-19 Infodemic: Challenges and Opportunities in the Pacific's response to an online information crisis," The Asia Foundation, 2020, https://asiafoundation.org/wp-content/uploads/2020/11/The-Pacific-COVID-19-Infodemic_Jan4.2021.pdf

337   https://www.fijivillage.com/news/Church-Minister-of-Eleventh-Hour-Ministry-fronts-court-for-allegedly-posting-malicious-videos-4fr5x8/?fbclid=IwAR3xEGKjLHx-tPkJVgfmpE9XHSez5wkAsjE1GNAwCIsUYIyfoTHWtJpoGpg#.YOZ6djTgaPl.facebook; https://fb.watch/ n4sNik8Tr0/

338   Romitesh Kant, PhD Scholar, The Australian National University, interview by DECA team, May 2023, online.

fact-checking teams in the region. The Australian Associated Press fact-checks Facebook posts from both the Pacific Islands and Australia, which highlights the lack of local fact-checking teams or initiatives.[339]

Misinformation on social media during the COVID-19 pandemic led to criticisms of prominent doctors and scientists and threatened government response to the pandemic,[340] resulting in physical violence against healthcare personnel working to vaccinate the population.[341] In PNG, conspiracy theories spread on Facebook during the COVID-19 pandemic contributed to one of the lowest vaccination rates in the world.[342] Some Facebook groups encouraged their members to publish posts only in Tok Pisin to avoid Facebook's fact checking mechanism and removal of their false posts.[343] In Samoa, disinformation during Samoa's mass vaccination rollout in 2019 contributed to low vaccination rates.[344]

Some governments harnessed the power of the internet to combat some of the mis- and disinformation around the COVID-19 pandemic and to communicate important public health messages to their constituencies. The governments of Tonga, Samoa, Palau, Solomons, and Kiribati posted information on their Ministries of Health or Disaster Management websites, while Vanuatu and PNG created new web pages dedicated to the COVID-19 pandemic. Nauru and FSM shared health-related information on their government websites.[345] The government in Vanuatu was able to counter the spread of false information online given the smaller size of the country and by supplying verified information on the Ministry of Health's Facebook page.[346]

The absence of fact-checking and watchdog organizations to verify information in broadcast and digital media compounds the battle against the spread of misinformation and disinformation.[347] Local media associations are run on a voluntary basis and do not have the human capacity or financial resources to counter the spread of false information in the media.[348] Only three individuals make up the Media Council of PNG and an informal fact-checking mechanism exists through a WhatsApp group of editors.[349] In Fiji, the local media council has been defunct since the passage of the 2010 Media Industry Development Authority Decree. The April 2023 repeal of MIDA presents an opportunity to bring the council back to life.[350]

In some cases, local media councils and associations play an important role in enriching the skills of journalists and strengthening the media ecosystem. The Media Association of Solomon Islands provided online training

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339   Romitesh Kant, "Pacific digital toolbox needed to hammer out misinformation," RNZ, July 19, 2022, https://www.rnz.co.nz/international/pacific-news/471243/pacific-digital-toolbox-needed-to-hammer-out-misinformation.

340   Sue Ahearn, "Misinformation threatens control of Covid-19 outbreak in Papua New Guinea," Australian Strategic Policy Institute, March 29, 2021, https://www.aspistrategist.org.au/misinformation-threatens-control-of-covid-19-outbreak-in-papua-new-guinea/.

341   Johnny Blades, "Mob attacks on vaccination teams commonplace in PNG," RNZ, November 8, 2021, https://www.rnz.co.nz/international/pacific-news/455215/mob-attacks-on-vaccination-teams-commonplace-in-png.

342   Industry Expert, interview by DECA team, March 2023, online.

343   Romitesh Kant, Leanne Jorari, Tess Newton Cain, "Covid-19 awareness, online discourse, and vaccine distribution in Melanesia: Evidence and analysis from Fiji, Papua New Guinea, and Vanuatu," The Asia Foundation, https://asiafoundation.org/wp-content/uploads/2021/04/Pacific-Islands_Covid-19-awareness-online-discourse-and-vaccine-distribution-in-Melanesia.pdf

344   U.S. Embassy Apia contribution.

345   "The Pacific Covid-19 Infodemic: Challenges and Opportunities in the Pacific's response to an online information crisis," The Asia Foundation, 2020, https://asiafoundation.org/wp-content/uploads/2020/11/The-Pacific-COVID-19-Infodemic_Jan4.2021.pdf

346   Kant, Covid-19 awareness.

347   DTalanoa 'o Tonga, interview by DECA team, May 2023, online.

348   Industry Expert, interview by DECA team, March 2023, online.

349   Anonymous interviewee, interview by DECA team, April 2023, online.

350   Pita Ligaiula, "Fijian Media reps begin work to revive Fiji Media Council," https://pina.com.fj/2023/04/06/fijian-media-reps-begin-work-to-revive-fiji-media-council/

for 15 local journalists on how to conduct fact-checking.[351] The Media Council of Tonga provided training opportunities for young journalists on topics such as fact-checking and investigative journalism.[352]

2.1.7 IMPACTS OF DIGITAL TECHNOLOGY ON GENDER BASED VIOLENCE

Women face serious online threats of violence and harassment across the Pacific. Technology-facilitated gender-based violence (TFGBV) is defined as any act of violence committed, assisted, or aggravated by technology that results in or may result in physical, sexual, or other harm to someone because of their gender.[353] Multiple interviewees noted that social media platforms such as Facebook, Instagram, Viber, and WhatsApp are used to share images and videos of gender-based violence.[354] Prominent female politicians and journalists face online threats over their work, their choice of clothing, and their appearance. Female political candidates in Fiji experience a disproportionate number of sexist and abusive Facebook messages and posts compared to their male counterparts, which has led some women to reevaluate their involvement in politics due to concerns for the social standing of their family.[355] Domestic violence is a widespread problem and digital technology is used as the medium to spread and perpetuate gender-based threats and harassment. One interviewee mentioned that in PNG videos of domestic violence incidents are posted online and are shared widely.[356] Another spoke about image-based sexual abuse and images or videos documenting gender-based violence being shared on social media across the region.[357] A female journalist in Fiji talked about facing online threats of violence for her work reporting on the COVID-19 pandemic and on the Fijian elections in December 2022. She needed full time security protection for three weeks around the Fijian elections because of threats on her life, based on the assessment of her employer. She explained that online threats can easily translate into offline violence because personal information is often publicly available online. According to an anonymous interviewee, women do not feel safe to share their opinions online and different rules apply to women compared to men when it comes to freedom of expression online.[358] A study of social media posts by and about or in response to Fijian politicians found that men were much more likely to post content that is "sexist, racist, threatening, politically victimizing, or abusive," to express their opinions freely, and to engage with their political opponents than women. Female politicians were taken less seriously and users focused on women's appearance rather than on the substance of their politics.[359] A recent survey of female Fijian journalists, conducted by the USP Journalism Program, found that two thirds of respondents report that sexual harassment is prevalent in their workplaces and in the field on assignment. Of those surveyed, 83% reported that they have experienced harassment on Facebook. Female journalists self-censored their social media posts, chose their assignments carefully, and some have refused to interview men, while others have left journalism.[360]

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351   Melanesian News Network, interview by DECA team, March 2023, online.

352   Talanoa 'o Tonga, interview by DECA team, May 2023, online.

353   "FAQs: Trolling, stalking, doxing and other forms of violence against women in the digital age," UN Women, n.d., https://www.unwomen.org/en/what-we-do/ending-violence-against-women/faqs/tech-facilitated-gender-based-violence#:~:text=Technology%2Dfacilitated%20gender%2Dbased%20violence,or%20economic%20harm%20or%20other.

354   Anonymous interviewee, interview by DECA team, March 2023, online.

355   Rajan Murti, "Social media discourse a barrier to women candidates in Fiji," IDEA, March 3, 2023, https://www.idea.int/news-media/news/social-media-discourse-barrier-women-candidates-fiji.

356   Anonymous interviewee, interview by DECA team, April 2023, online.

357   Pacific Media and Communications Specialist, interview by DECA team, March 2023, online.

358   Anonymous interviewee, interview by DECA team, May 2023, online.

359   Rasto Kuzel, Ivan Godarsky, Branislav Kohn, et al., "How Women Politicians of Fiji are treated on Facebook," IDEA, https://www.idea.int/sites/default/files/publications/how-women-politicians-on-fiji-treated-on-facebook.pdf.

360   Geraldine Panapasa, Shailendra Bahadur Singh, "Prevalence and impact of sexual harassment on female journalists: a Fiji case study, "The University of the South Pacific Journalism Programme, Fiji Women's Rights Movement, March 2022.

"Women here have to be careful all the time, they have to think about what they look like, what they sound like, what they are wearing, right even down to the color of their lipstick when they are online, on social media or in the digital space."[361]

– Anonymous Interviewee

Women in PNG are accused of sorcery on social media,[362] which can threaten their physical safety.[363] Many are murdered over these false rumors, particularly in PNG's Highlands region where women are often burnt and tortured[364] and in other remote areas.[365] [366] According to 2018 World Health Organization (WHO) data, intimate partner violence across the Pacific is higher compared to the rest of the world. Kiribati, Fiji, PNG, and Solomon Islands have the highest proportion worldwide of ever-partnered women and girls experiencing physical or sexual violence by a current or former intimate partner.

Some survivors of domestic violence have used digital technologies to improve an environment with few legal resources and opportunities to escape their abusers. One interviewee discussed her own experience as a survivor of domestic violence and how she founded a Facebook group that connects survivors and provides a safe space for them to share their experiences. Identities and locations are changed to protect user safety. The interviewee discussed establishing an informal network of people online who provide help to survivors of domestic violence seeking safety in PNG.[367] .

FIGURE 16. Intimate partner violence, (percent, 2018)
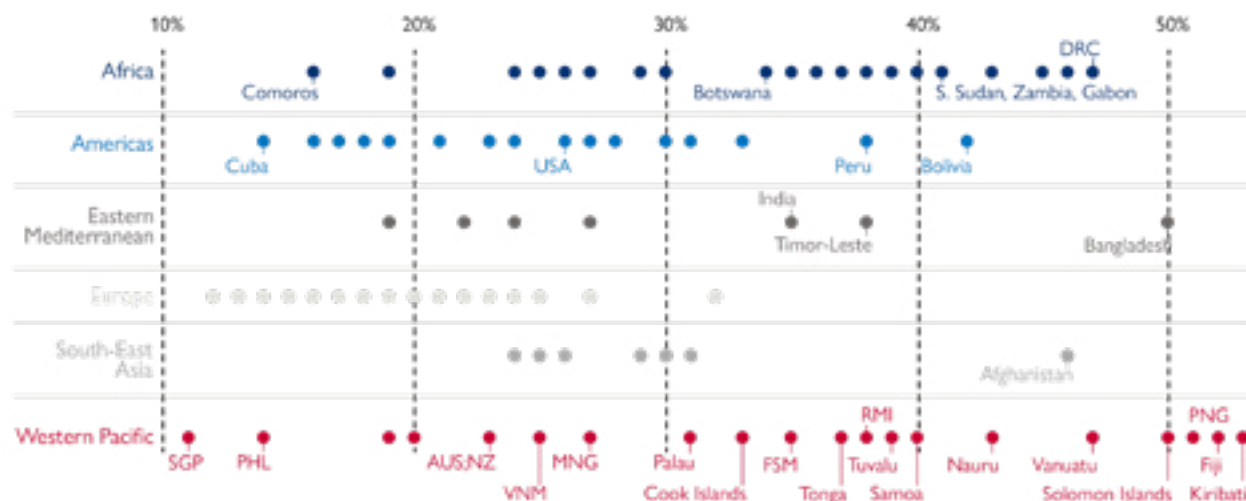
Source: World Health Organization, 2018, Proportion of ever-partnered women and girls aged 15-49 years subjected to physical and/or sexual violence by a current or former intimate partner in their lifetime

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361   Anonymous interviewee, interview by DECA team, May 2023, online.

362   Pacific Media and Communications Specialist, interview by DECA team, March 2023, online.

363   Anonymous interviewee, interview by DECA team, May 2023, online.

364   Anonymous interviewee, interview by DECA team, May 2023, online.

365   Governance expert, interview by DECA team, June 2023, online.

366   Rebecca Kuku, "They just slaughter them: how sorcery violence spreads fear across Papua New Guinea," The Guardian, November 13, 2020, https://www.theguardian.com/world/2020/nov/14/they-just-slaughter-them-how-sorcery-violence-spreads-fear-across-papua-new-guinea.

367   Anonymous interviewee, interview by DECA team, May 2023, online.

2.2 THE LEGAL PROTECTION OF HUMAN RIGHTS ONLINE IN THE PACIFIC ISLANDS IS NOT FULLY DEVELOPED: DATA PRIVACY AND PROTECTION AND FREEDOM OF INFORMATION LAWS

Data protection legislation is not yet developed in the region. No country has a standalone data privacy and protection legislation. Fiji has several laws with various privacy provisions such as the Constitution, the Telecommunications Promulgations and the Online Safety Act but no explicit data privacy and protection legislation. Vanuatu engaged the Council of Europe to advise the development of such legislation[368] and Tonga is in the process of drafting a Data Protection and Privacy Bill.[369] In May 2023, Vanuatu's Prime Minister announced the launch of the country's National Data Protection and Privacy Policy with the objective of protecting personal information online, but it has not yet been formally passed into law.[370]

PICs have laws that protect the right to freedom of expression and of press. However, legislation specifically dealing with social media and internet use do not exist. The Constitutions of Fiji,[371] Palau,[372] Papua New Guinea,[373] the Republic of the Marshall Islands[374] and Tonga[375] protect both freedom of expression or speech and freedom of the press. The Constitutions of the Federated States of Micronesia,[376] Kiribati,[377] Nauru,[378] Samoa,[379] Solomon Islands,[380] Tuvalu[381] and Vanuatu[382] explicitly guarantee freedom of expression but do not protect freedom of the press.

TABLE 6. Data Protection and Right to Information Laws and Policies across PICs

COUNTRY	DATA PROTECTION LAW	RIGHT TO INFORMATION LAWS
Vanuatu	In 2021, Vanuatu engaged the Council of Europe to assist in drafting data protection legislation. In May 2023, Vanuatu announced the launch of the National Data Protection and Privacy Policy.	Right to Information Act 2016

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368 "Vanuatu engaged in work on Data Protection legislation," Council of Europe, December 13, 2021, https://www.coe.int/en/web/data-protection/-/vanuatu-engaged-in-work-on-data-protection-legislation.

369 "Legislation," Digital Transformation Department, Department of Prime Minister's Office Tonga, https://digitaltransformation.gov.to/?page_id=367.

370 Ezra Toara, "Data Protection and Digital Communication to Safeguard Integrity and Online Safety," Daily Post Digital Network, May 19, 2023, https://www.dailypost.vu/news/data-protection-and-digital-communications-policies-to-safeguard-integrity-and-online-safety/article_f945a860-ecdf-5f4e-a41a-d9ffe2eedd1c.html.

371 The Constitution of the Republic of Fiji, https://www.laws.gov.fj/ResourceFile/Get/?fileName=2013 Constitution of Fiji (English).pdf.

372 The Constitution of the Republic of Palau, https://www.wipo.int/wipolex/en/text/200951.

373 The Constitution of the Independent State of Papua New Guinea, Constitution - PNG.rtf (parliament.gov.pg).

374 The Constitution of the Republic of the Marshall Islands, https://rmiparliament.org/cms/constitution.html?showall=1.

375 Talanoa 'o Tonga, interview by DECA team, May 2023, online.

376 Fourth Constitutional Convention of the Federated States of Micronesia, https://constitution.gov.fm/constitution/.

377 The Constitution of Kiribati, https://faolex.fao.org/docs/pdf/kir129834.pdf.

378 Nauru's Constitution of 1968, https://www.constituteproject.org/constitution/Nauru_1968.pdf?lang=en.

379 Samoa's Constitution of 1962 with Amendments through 2017, https://www.constituteproject.org/constitution/Samoa_2017.pdf?lang=en.

380 Solomon Islands' Constitution of 1978 with Amendments through 2009, https://faolex.fao.org/docs/pdf/sol132844.pdf.

381 The Constitution of Tuvalu, https://tuvalu-legislation.tv/cms/images/LEGISLATION/PRINCIPAL/1986/1986-0001/ConstitutionofTuvalu_2.pdf.

382 Laws of the Republic of Vanuatu Consolidated Edition 2006, https://www.gov.vu/images/legislation/constitution-en.pdf.

COUNTRY	DATA PROTECTION LAW	RIGHT TO INFORMATION LAWS
Fiji	Telecommunications Promulgations 2008; Online Safety Act 2018; The Constitution of the Republic of Fiji establishes the right to privacy, including "confidentiality of personal information and communications."[383]	Information Act 2018
PNG	Cybercrime Code Act 2016 includes provisions for unlawful disclosure of electronic information	No Right to Information (RTI) law exists; National Right to Information Policy 2020-2030; Section 51(1) of the PNG Constitution grants access to information to public documents; PNG is committed to passing the RTI law as part of its Open Government Partnership (OGP) membership;[384] UNDP's anti-corruption program developed the draft RTI policy for the Department of Information and Communications Technology (DICT). The RTI technical working group (TWG) is reviewing the draft RTI Policy and expects to be completed in late 2023. DICT and Transparency International PNG are co-chairs of the TWG. Stakeholders include: Department of National Planning and Monitoring; the State Solicitor; the Constitutional and Law Reform Commission; the Department of Justice; and the Attorney General. International partners include: UNDP and IFES (under USAID PROJECT Governance)[385]
Tonga	Data Protection and Privacy Bill is under development	No freedom of information legislation, Information Disclosure Policy 2012[386]
Solomon Islands	No data protection or privacy legislation	No RTI law exists; Article 12 of the Constitution provides freedom to receive information.
Samoa	Telecommunications Act 2005, sections 48 (Confidentiality of customer information), 49 (confidentiality of customer communications), 50 (protection of personal information)	Draft Right to Information Policy led by the Ministry of Communications and Information Technology with assistance from the United Nations Educational, Scientific and Cultural Organization (UNESCO)
Kiribati	No data protection or privacy legislation	Draft Freedom of Information Bill[387]
FSM	No data protection or privacy legislation	Draft Freedom of Information Bill was submitted to the FSM Congress for consideration in 2021
Palau	No data protection or privacy legislation	Open Government Act 2014
Tuvalu	No data protection or privacy legislation	No freedom of information legislation
Nauru	No data protection or privacy legislation	No freedom of information legislation
RMI	No data protection or privacy legislation	No freedom of information legislation

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383 The Constitution of the Republic of Fiji, https://www.fiji.gov.fj/getattachment/a3cddc01-dc73-4823-83b8-f290672ddae0/2013-Constitution-of-The-Republic-of-Fiji.aspx.

384 National Right to Information Policy 2020-2030, https://www.ict.gov.pg/Policies/Right%20to%20Information%20Policy/Right%20to%20Informstion%20Policy%20-%20Consultation%20Paper.pdf.

385 PROJECT Governance, Human Rights and Social Development Division, Pacific Community, interview by DECA team, June 2023, online.

386 "Status of the Right to Information in Pacific Islands Countries," United Nations Office on Drugs and Crime (UNODC), https://www.unodc.org/roseap/uploads/archive/documents/pacific/2020/UN-PRAC_Paper_-_Status_of_Right_to_Information_in_Pacific_Island_Countries.pdf.

387 "Status of the Right to Information in Pacific Islands Countries," United Nations Office on Drugs and Crime, https://www.unodc.org/roseap/uploads/archive/documents/pacific/2020/UN-PRAC_Paper_-_Status_of_Right_to_Information_in_Pacific_Island_Countries.pdf.

Some PICs have legislation on the right to information and whistleblower protections. While legislation may exist, roadblocks related to staffing delays and poor enforcement in rural areas prevent the actual implementation of these laws.[388] Difficulties in enforcing access to information laws include geographical distances, lack of literacy, and poor infrastructure.[389] The 2016 Right to Information Act in Vanuatu guarantees all individuals the right to request information from government agencies and from private companies.[390] In Vanuatu, most requests for information come from the capital Port Vila and not from rural areas. The government is working to make records electronic to simplify access for citizens living in rural areas.[391]

The 2014 Open Government Act established the right of information in Palau allowing individuals to access government documents, to freely attend government meetings, and to request meeting Minutes.[392] The 2018 Information Act in Fiji established the right to access to government information and to correct or remove incorrect or misleading personal information.[393]

While only three countries—Fiji, Palau, and Vanuatu— have passed standalone freedom of information legislation, the region is making progress in developing such policies (Table 6). A 2019 Transparency International survey of 24 government agencies in PNG found that 90% of face-to-face requests for information in government records were unfulfilled as public agencies maintained a "culture of secrecy."[394] PNG developed a national Right to Information Policy[395] and committed to developing a Right to Information law under the country's membership in the Open Government Partnership.[396] One interviewee said that the absence of access to information legislation in Solomon Islands is a barrier to freedom of the press and to freedom of expression because the media face obstacles in gaining access to information from the authorities.[397] Transparency International in Solomon Islands is advocating for the passage of a draft access to information bill, which has not yet been ratified by Parliament.[398] Nauru, Tuvalu, and the RMI do not have legislation in this area.

2.3 CIVIL SOCIETY IS THIN ACROSS THE PACIFIC, BUT SEEKS TO COMBAT WIDESPREAD CORRUPTION

Understanding the state of civil society and media in the Pacific Islands is hampered by the lack of available information on the smaller island countries. Research indicates that there are few to no civil society groups active online. There are no civil society organizations that advocate specifically for digital rights such as data privacy and protection and freedom of expression online or that work to address digital repression. There are no fact-checking organizations or any that combat the spread of disinformation and misinformation online.

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388   "CPI 2021 for Asia Pacific: grand corruption and lack of freedoms holding back progress," Transparency International, https://www.transparency.org/en/news/cpi-2021-for-asia-pacific-grand-corruption-holding-back-progress.

389   " A way forward Pacific Media Consultation Report 2021," The International Federation of Journalists, March 23, 2021, https://www.ifj.org/fileadmin/user_upload/A_Way_Forward_Pacific_Media_Consultation_Report_March_2021.pdf

390   "Right to Information Act 2016", Republic of Vanuatu, https://faolex.fao.org/docs/pdf/van172667.pdf.

391   "A Way Forward: Pacific Media Consultation Report 2021," The International Federation of Journalists, March 23, 2021, https://www.ifj.org/fileadmin/user_upload/A_Way_Forward_Pacific_Media_Consultation_Report_March_2021.pdf.

392   Open Government Act, Palau, http://www.paclii.org/pw/legis/num_act/ogarn9322014275/.

393   "Information Act 2018," Fiji, https://www.fiji.gov.fj/getattachment/9d6f70b2-0bb6-48b4-b66b-3dc2e9acf59b/Act-9---Information-Act.aspx.

394   "PNG needs right to information (RTI) law to address public-sector corruption," Transparency International, https://png-data.sprep.org/resource/png-needs-right-information-rti-law-address-public-sector-corruption.

395   "National Right to Information Policy 2020-2030," Department of Information and Communications Technology, Papua New Guinea, June 2021, https://www.ict.gov.pg/Policies/Right%20to%20Information%20Policy/Right%20to%20Informstion%20Policy%20-%20Consultation%20Paper.pdf.

396   "Freedom of Information," Open Government Partnership Papua New Guinea, n.d., https://www.ogp.gov.pg/freedom-of-information/

397   Transparency International Solomon Islands,interview by DECA team, May 2023, online.

398   Transparency International Solomon Islands,interview by DECA team, May 2023, online.

One interviewee said that existing civil society organizations might issue a statement if something important happened in terms of digital rights but these statements are reactive, not proactive.[399]

2.4 INTERNET GOVERNANCE IN THE REGION IS STARTING TO ADVANCE, WITH FRAGMENTED EFFORTS

The organizations that promote multi-stakeholder approaches to internet governance in the Pacific are the Pacific Islands Chapter of the Internet Society (PICISOC), the Asia Pacific Network Information Centre (APNIC), and the Pacific Internet Governance Form (PIGF) (see Table 9 for details on each organization). PICISOC was established in 1994 as IT-PacNET and became PICISOC in 2002, all DECA PICs are members.[400] PICISOC's annual conference, PacINET, convenes practitioners working on issues such as Geographic Information Systems (GIS), Remote Sensing (RS), cybersecurity, and women in technology.[401] APNIC, established in 1993, holds technical conferences, carries out research on use of the internet, and provides training through its academy for network operators, educators, and regulators.[402] PIGF, a sub-regional IGF initiative organized in 2017, serves as a multi-stakeholder platform for discussing internet governance related matters in the Pacific region.[403] The latest PIGF meeting was in September 2021, and was hosted as a hybrid event by multiple stakeholders including PICISOC, the IGF, the University of the South Pacific (USP), the APNIC, the Internet Society (ISOC), the Asia Pacific Top Level Domain Association (APTLD), InternetNZ, and the Internet Corporation for Assigned Names and Numbers (ICANN). The event highlighted topics around internet governance in the region such as the importance of data use, encryption protocols, securing Domain Name Systems (DNS), and DNS ecosystem protection as a collective responsibility.[404] Vanuatu is the only country in the region that has a national IGF initiative. Vanuatu IGF (VanIGF) was established in 2019 with support from the Vanuatu Government.[405] VanIGF works with key stakeholders such as the Vanuatu Police Force, OGCIO, TRBR (telecom regulator), CERT Vanuatu, the Vanuatu Bureau of Standards, the Ministry of Justice and Community Services, and community groups, as well as international stakeholders such as META, Save the Children, the Pacific Community (SPC), and UNICEF.[406]

BOX 14: The impact of Tuvalu's control of the .tv domain

Tuvalu was allocated the .tv domain by ICANN in 1995. The country began to monetize the domain name in 1998 by leasing it to interested service providers. Tuvalu signed an agreement with Verisign in 2001 to allow Verisign to operate and market the .tv domain; the agreement was renewed in 2011. The .tv domain earns USD $5 million per year or about 1/12 of Tuvalu's annual GNI.[407] Tuvalu's contract with Verisign expired in 2021. Following the expiration, Tuvalu Telecommunications Corporation confirmed that the nation partnered with GoDaddy to manage the .tv domain.[408]

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399   Academic expert in Pacific Journalism, interview by DECA team, April 2023, online.

400   "What is PICISOC?" Pacific Islands Chapter of the Internet Society (PICISOC), n.d., https://www.picisoc.org/about-us/what-is-picisoc/.

401   Tonga Women ICT Inc., World Wide Web Foundation, n.d., https://www.womenrightsonline.net/partners/tonga-women-in-ict-inc.

402   Home | APNIC., n.d., https://www.apnic.net.

403   "Regional IGF Initiatives," Internet Governance Forum, n.d., https://www.intgovforum.org/en/content/regional-igf-initiatives.

404   "Pacific Internet Governance Forum (IGF) 2021 Report," 2021, https://www.intgovforum.org/en/content/pacific-igf-0.

405   "Vanuatu IGF - Who We Are and What," https://www.internet.org.vu/aboutus.html.

406   Vanuatu Internet Governance Forum, interview by DECA team, March 2023, online.

407   Alexander Lee, "Tuvalu Is a Tiny Island Nation of 11,000 People. It's Cashing in Thanks to Twitch," Washington Post, December 23, 2019, https://www.washingtonpost.com/video-games/2019/12/23/tuvalu-is-tiny-island-nation-people-its-cashing-thanks-twitch/

408   Anthony Stewart, "Tuvalu Strikes digital gold with new .tv domain deal," ABC Pacific, January 12, 2022, https://www.abc.net.au/pacific/programs/pacificbeat/tuvalu-tv-deal/13704112

BOX 14 (CONTINUED): The impact of Tuvalu's control of the .tv domain

The value of the .tv domain increased in recent years due to its association with the live-streaming platform Twitch. As sites using .tv grow in prominence, earnings from .tv domain could potentially replace Tuvalu's fishing industry, which currently contributes the largest portion to its GNI.[409] Earnings from Tuvalu's domain name help provide essential government services and development budgets.[410]

"Much of the funds received by Tuvalu from .tv sales go straight into government coffers and general development budget. The digital twin[411] and Government digitization projects, though in early phases, will benefit from .tv domain name sales just like all other GoT projects."

— Interview with the Ministry of Justice, Communications, and Foreign Affairs, Tuvalu.

2.5 DIGITAL GOVERNMENT SYSTEMS ACROSS THE REGION ARE IN VERY EARLY STAGES

Despite some advances in digital government platforms and systems, the PICs rank among the lowest in the world on the UN E-Government Development Index (EGDI).[412] Compared to other DECA PICs, Fiji ranks first on the EGDI followed by Tonga and Palau while PNG, Solomon Islands, and FSM rank lowest. These scores do not correlate with GDP per capita (Figure 17).

FIGURE 17. PICs E-Government Development Index vs. GDP per capita 2022
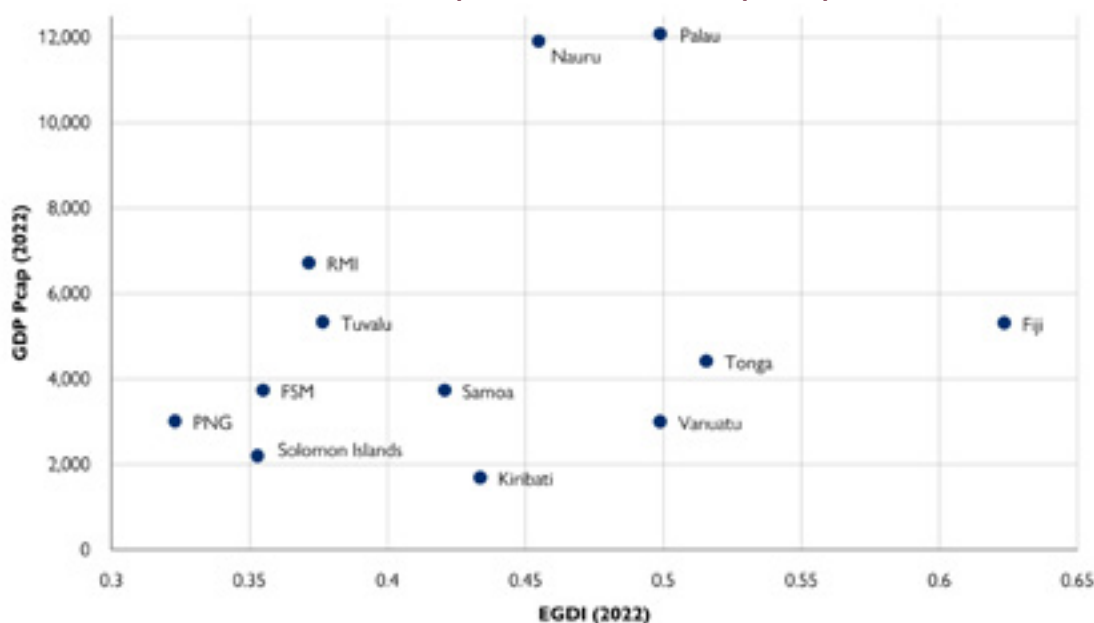
Source: EGDI 2022; World Bank Data Bank GDP per capita (current USD), 2022.

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409   Lee, Tuvalu Is a Tiny Island Nation.

410   Ministry of Justice, Communications and Foreign Affairs, Tuvalu, interview by DECA team, May 2023, online.

411   Kalolaine Fainu, "Facing extinction, Tuvalu considers the digital clone of a country," The Guardian, June 27, 2023, https://www.theguardian.com/world/2023/jun/27/tuvalu-climate-crisis-rising-sea-levels-pacific-island-nation-country-digital-clone. Amidst the escalating threat of rising sea levels, Tuvalu announced development of a digital nation, also referred to as Digital Twin, as part of the Future Now Project.

412   "E-Government Development Index (EGDI)," UN E-Government Knowledgebase, n.d., https://publicadministration.un.org/egovkb/en-us/About/Overview/-E-Government-Development-Index. The EGDI is based on a comprehensive survey of the online presence of all 193 United Nations Member States, which assesses national websites, their development patterns, and access characteristics alongside how e-government policies and strategies are applied in general and in specific sectors for delivery of essential services.

The EGDI assesses government website development and evaluates access characteristics such as infrastructure and educational levels to reflect how a country is using information technologies to promote access and inclusion. Regional collaboration on digital government is often channeled through the ICT Working Group, one of the seven sectoral working groups of the Council of Regional Organizations in the Pacific (CROP) under the PIFS umbrella.[413]

Digital government strategy development varies across the PICs. Five PICs have digital government strategies (or equivalents), five are in progress, and two do not have any type of digital government strategy (Table 7).

Fiji was first in the region to launch an E-Government Strategic Plan in 2001, followed by an E-Government Master Plan in 2007. [414] Fiji also has a broader Digital Government Transformation Program called DigitalFIJI, which is part of a 20-year National Development Plan that aims to strengthen public administration, government services, and telecommunication infrastructure.Fiji's most recent digital transformation strategy ran from 2017 to 2022. In early 2023, the director of the Digital Government Transformation Office announced that the Fijian government is working on a new strategy.[415]

In recent years, several other PICs have followed suit. PNG's Digital Government Plan 2023-2027 is preceded by the PNG Digital Transformation Policy 2020 and is mandated under the Digital Government Act 2022.[416] Vanuatu is actively developing a comprehensive strategic framework for digital government with a "whole of government approach."[417] The country also launched a Smart Villages and Smart Islands pilot with the International Telecommunication Union (ITU) and support from Australia's Department of Infrastructure, Transport, Regional Development, Communications and the Arts (DITRDCA) and Vanuatu's Office of the Government Chief Information Officer (OGCIO).[418] In Solomon Islands, the government is in the early stage of developing its first National Digital Strategy in partnership with UNDP. In 2021, the partnership led to the establishment of the Digital Transformation Authority in SI.[419] Since 2019, Tonga's Digital Government Strategic Framework 2019-2024 has received implementation support from the World Bank. FSM, RMI, Nauru and Kiribati are in the process of developing digital government strategies. These countries, along with Palau, joined a Digital Program with UN Organizations led by ITU including FAO, ILO, UNOPS, UNESCO, UNICEF, and UNODC, under the overall leadership of the UN Resident Coordinator Multi-Country Office Micronesia.[420] At present, Palau and Tuvalu[421] have not begun to develop digital government strategies.

413   "Council of Regional Organisations of the Pacific," Pacific Islands Forum, n.d., https://www.forumsec.org/council-of-regional-organisations-of-the-pacific/#1507175105152-f00da375-ce46.

414   Bart Hogeveen, "ICT for development in the Pacific Islands," Australian Strategic Policy Institute, February 19, 2020, https://www.aspi.org.au/report/ict-development-pacific-islands; Based on available information, it isn't clear if the 2007 Master Plan replaced the 2001 Strategic Plan.

415   Aisha Azeemah, "Digitalization strategies," The Fiji Times, February 11, 2023, https://www.fijitimes.com/digitalisation-strategies/

416   "Digital Government Plan 2023-2027: An Overview," DICT I PNG, https://www.ict.gov.pg/digital-government-plan-2023-2027-an-overview/.

417   "'Least developed' no longer: How digital transformation drove Vanuatu's LDC graduation," The UN specialized agency for ICTs (ITU), February 8, 2021, https://www.itu.int/hub/2021/02/least-developed-no-longer-how-digital-transformation-drove-vanuatus-ldc-graduation/.

418   Saemi Matsumoto, Dalsie Tolang, "Transforming a Small Island into a Smart Island: Southern Malekula, Vanuatu," March 9, 2023, Joint SDG Fund, https://jointsdgfund.org/article/transforming-small-island-smart-island-southern-malekula-vanuatu.

419   "Shaping Solomons Islands' digital future," UNDP Pacific Office, March 31, 2022, https://www.undp.org/pacific/news/shaping-solomons-islands%E2%80%99-digital-future.

420   "UN Agencies and Micronesian Governments Unite to Accelerate SDGs Through Digital Transformation," United Nations Micronesia, July 12, 2023, https://micronesia.un.org/en/239356-un-agencies-and-micronesian-governments-unite-accelerate-sdgs-through-digital-transformation.

421   Kalolaine Fainu, "Facing extinction, Tuvalu considers the digital clone of a country," The Guardian, June 27, 2023, https://www.theguardian.com/world/2023/jun/27/tuvalu-climate-crisis-rising-sea-levels-pacific-island-nation-country-digital-clone.

TABLE 7. Key government entities and strategies related to digital government

COUNTRY	RELEVANT GOVERNMENT ENTITY	NATIONAL ICT POLICY	E-GOVERNMENT/DIGITAL GOVERNMENT STRATEGIES
Fiji	Digital Government Transformation Office; Ministry of Communications	National ICT Policy[422]	Digital Government Transformation Programme (digitalFIJI)
PNG	Minister for Information and Communications Technologies	National ICT Policy 2008; Digital Government Plan 2023-2027 (draft)	Digital Government Plan 2023-2027
Tonga	Digital Transformation Department, Department of Prime Minister's Office Ministry of Meteorology, Energy, Information, Disaster Management, Environment, Communication and Climate Change (MEIDECC)	National ICT Policy[423]	Tonga Digital Government Strategic Framework 2019-2024
Solomon Islands	Digital Transformation Authority; Ministry of Communication and Aviation	National ICT policy (2015)	Five-Year ICT Strategic Plan 2019-2023 National Digital Strategy (in progress as of 2023)
Vanuatu	Office of the Government Chief Information Officer	National ICT policy 2013 National ICT Policy 2021 (draft)	Digital Government Masterplan Framework (in progress as of 2023)[424]
Samoa	Ministry of Communications and Information Technology (MCIT)	National ICT policy, 2012-2017	National Digital Transformation Strategy (in progress as of 2023)
Kiribati	Ministry of Information, Communication, Transport and Tourism Development (MICTTD)	National ICT Policy 2019	2021 Digital Government Master Plan Digital transformation strategy (in progress as of 2023)
FSM	Telecommunication Regulation Authority	National ICT and Telecommunications Policy 2012	Digital transformation strategy (in progress as of 2023)
Nauru	Department of Information and Communication Technology (DICT)	No National ICT policy Communications and Broadcasting Act 2018	Digital transformation strategy (in progress as of 2023)
RMI	National Telecom Authority (NTA)	National ICT Policy 2012[425] National Strategic Plan 2020-2030	Digital transformation strategy (in progress as of 2023)

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422   Research shows that there is a National ICT Policy in Fiji, however a public version of the policy is not easily accessible. The Fiji Information Technology Development Policy can be found here: https://www.unapcict.org/sites/default/files/2019-01/fiji_ictdevelopmentpolicy-1.pdf

423   Research shows that Tonga had a National ICT Policy. However, a public document is unavailable.

424   Research shows that there is ongoing work on the Digital Government Plan, known by two different names: Digital Government Masterplan Framework and Digital Government Roadmap Master Plan. However, there is no public announcement regarding these initiatives. See here: https://www.itu.int/en/ITU-D/ICT-Applications/Documents/Smart%20Islands/Smart-Island_VUT_S-Malekula.pdf

425   The National ICT Policy is mentioned in government documents, but a public link is not accessible. The ICT Policy is mentioned in the National Strategic Plan 2020-2030.

COUNTRY	RELEVANT GOVERNMENT ENTITY	NATIONAL ICT POLICY	E-GOVERNMENT/DIGITAL GOVERNMENT STRATEGIES
Palau	Bureau of Communications; Ministry of Public Infrastructure and Industries	National Telecommunications Act 2017 (establishes an ICT regulatory regime)	No digital government strategy
Tuvalu	Government of Tuvalu ICT Department	ICT policy under development	No digital government strategy

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📖 **KEY TERMS | BOX 6:** Digital Government

Digital government[426] refers to the use of digital technologies as an integrated part of government modernization strategies to create public value.[427] Successfully navigating digital transformation requires more than adopting new applications; it requires a shift in processes and attitude toward agile and collaborative decision-making. USAID's digital government framework is built around three core functions: **deliver**, **manage**, and **engage**. The performance of digital government services depends on foundational elements such as change management, human capacity, legislation, policy, regulation, and infrastructure. Investment in these core components and foundational elements helps government bodies become more coordinated, efficient, resilient, proactive, and accountable.

Source: USAID Digital Government Model

2.5.1 DELIVERY OF GOVERNMENT SERVICES ONLINE ARE ON THE RISE THROUGHOUT THE PICS

Digital Government Platforms

Most PICs have digital government platforms that allow citizens and organizations access to government services. This includes government information services, tourism information, fisheries data, geological data, and meteorological forecasts. Each of the islands have some form of online government portal with information and news from government agencies and directories for gaining access to digitalized government services. The most developed in the region is the DigitalFIJI platform, which enhances accessibility to essential government services through online platforms and mobile applications (Box 15).[428] PNG and Samoa provide a range of digital government services. In PNG, website portals exist for most government departments.[429] In Samoa, the most prominent online services provided by the government are the Samoa Business Registry and Samoa e-Tax. An integrated government website portal is operational and contains basic information, media updates, and constitutional documents.[430]

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426   USAID uses the term "digital government;" other sources use terms like "e-government" or "e-services" to describe the same functions.

427   "Digital Ecosystem Framework," USAID, August 24, 2022, https://www.usaid.gov/digital-development/digital-ecosystem-framework.

428   "Digital Government Transformation," Fiji Government, https://www.fiji.gov.fj/digitalFIJI.

429   Bart Hogeveen, "ICT for development in the Pacific Islands," Australian Strategic Policy Institute, February 19, 2020, https://www.aspi.org.au/report/ict-development-pacific-islands.

430   Hogeveen, ICT for development.

BOX 15: DigitalFIJI paving the way as a centralized e-government portal and app

DigitalFIJI is a platform and mobile application launched in 2018 as part of the Digital Government Transformation Programme (DigitalFIJI). Its features include: a Government Directory with contact information of key government officials; an e-services function that allows citizens access to basic government services such as applying for a birth certificate and registering a business; and a Myfeedback feature that allows citizens to ask questions, provide feedback, and report disruptions in receiving public services.[431] Citizens are able to attach documents and photos and track the responses to their inquiries.[432] Fiji secured a comprehensive support package from the Singaporean Government[433] through Singapore Cooperation Enterprise for DigitalFIJI including the provision of technical assistance and administrative support.[434]

Examples of PICs with less developed digital government platforms include Solomon Islands and Tonga. In Solomon Islands, government websites are operational, but the quality of the web portals is insufficient and they are in need of standardization and improved local content.[435] The Solomon Islands Business Registry portal, launched in 2016, is an example of an online service. The registry allows businesses to register as foreign investors, to incorporate companies, and to register business names in one sitting.[436] In Tonga, the government runs a central web portal in addition to individual ministry websites. The portals provide information services but are not presently intended to enable online citizen-facing services.[437]

Despite these developments, the PICs face significant challenges in their government digitization projects. According to interviewees from Tonga, Solomon Islands, and Nauru, citizens across the region prefer offline government services due to a few key factors: limited suite of services available online, constraints around or lack of digital financial services,[438] unreliable or expensive internet access (see section 1.2.2 and 1.3.1),[439,440] and the minimal availability of and preference for human help when one walks into the government service office. Across the region, offline services are perceived to be more effective. In Tonga, online business registration is used by few citizens. The majority of the population opt to physically visit government offices. Implementation of new systems, such as the Samoa Business and Samoa e-Tax registries, faced user uptake challenges due to resistance to change from familiar analog systems.[441] An interviewee from Solomon Islands confirmed citizen preferences for manual service in the absence of efficient and accessible online services.[442]

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431   Pita Ligaiula, "digitalFIJI strategy aims to develop a $1bn digital economy in Fiji by 2030," Pacific News Service, April 1, 2022, digitalFIJI strategy aims to develop a $1bn digital economy in Fiji by 2030 | PINA.

432   Hogeveen, ICT for development.

433   As per Pacific Island Forum, Singapore is a Forum Dialogue Partner among other countries such as the United States, Canada, and European Union. https://www.forumsec.org/republic-of-singapore/

434   Hogeveen, ICT for development.

435   Bart Hogeveen, "ICT for development in the Pacific Islands," Australian Strategic Policy Institute, February 19, 2020, https://www.aspi.org.au/report/ict-development-pacific-islands.

436   Hogeveen, ICT for development.

437   Hogeveen, ICT for development.

438   Digital Transformation Department of Tonga, interview by DECA team, May 2023, online.

439   Regional expert, interview by DECA team, May 2023, online.

440   Department of Information & Communications Technology, Ministry of Telecommunications, Nauru, interview by DECA team, May 2023, online.

441   Anonymous interviewee, interview by DECA team, May 2023, online.

442   Regional expert, interview by DECA team, May 2023, online.

BOX 16: Tuvalu makes plans to become a digital nation in the face of climate change

In 2021, Tuvalu's minister for justice, communications, and foreign affairs, Simon Kofe, attracted significant attention as he addressed COP26, the UN Climate Change Conference, while standing knee-deep in seawater. Tuvalu is expected to be one the first countries in the world to be completely lost to climate change. In response to the looming threat of extinction, Tuvalu initiated the Future Now Project.[443] The project introduces four initiatives aimed at promoting Tuvalu's cultural values, securing Tuvalu's statehood via safeguarding maritime and land territories, creating a digital nation to preserve Tuvalu's history and cultural practices, and undertaking a "strategic, consistent and coordinated approach" to climate change advocacy.[444] Plans to develop a digital nation include the migration of all government services and systems to the cloud as well as the creation of a digital twin of itself in the metaverse. The objective is to enable displaced and future generations of Tuvaluans to exist as a culture and nation, ensuring the preservation of ancestral knowledge, language, and customs. By creating a digital realm that closely emulates real life interactions, Tuvaluans would have the means to interact and maintain their cultural heritage in a virtual space.[445] The first step in Tuvalu's digital twinning efforts starts with the smallest island, Teafualiku Islet. Updates on the project's progress will be shared on Tuvalu.tv.[446,447]

Digital ID Initiatives

Despite some progress, digital IDs across the region are underdeveloped, fragmented, and incomplete. Of the 12 DECA PICs, six countries have digital ID initiatives in progress or are about to begin with assistance from the World Bank and UNDP, based on publicly available information (Table 8).

TABLE 8. Digital ID Initiatives and Associated Programs in PICs[448]

COUNTRY	DIGITAL ID INITIATIVE	DIGITAL ID PROGRAMS AND RELEVANT RESOURCES	PROJECT SIZE (USD MILLIONS)
PNG	Yes	Digital Government Plan 2023-2027	N/A
Samoa	Yes	Pacific Regional Connectivity Program (World Bank, 2015)	20
Kiribati	Yes	Kiribati Digital Government Project (World Bank, 2022)	12
FSM	Yes	Digital Federated States of Micronesia (World Bank, 2020)	30.80
RMI	Yes	Digital Republic of the Marshall Island Project (World Bank, 2021)	28
Tonga	Yes	Tonga Digital Government Support Project (World Bank, 2019)	4.65
Tuvalu	Planned	Plans underway with UNDP	N/A

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443 "An entire Pacific country will upload itself to the metaverse. It's a desperate plan – with a hidden message," The Conversation, November 16, 2022, https://theconversation.com/an-entire-pacific-country-will-upload-itself-to-the-metaverse-its-a-desperate-plan-with-a-hidden-message-194728.

444 The Conversation, An entire Pacific country,

445 Kalolaine Fainu, "Facing extinction, Tuvalu considers the digital clone of a country," The Guardian, June 27, 2023, https://www.theguardian.com/world/2023/jun/27/tuvalu-climate-crisis-rising-sea-levels-pacific-island-nation-country-digital-clone

446 Tuvalu | The First Digital nation, https://www.tuvalu.tv/

447 Stephanie Stacey, "A tiny Pacific island nation threatened by rising sea levels plans to create a digital copy of itself in the metaverse," Business Insider, May 17, 2022, https://www.businessinsider.com/tuvalu-climate-change-make-digital-copy-metaverse-2022-11.

448 Information in Table 8 is based on publicly available information as of July 2023.

COUNTRY	DIGITAL ID INITIATIVE	DIGITAL ID PROGRAMS AND RELEVANT RESOURCES	PROJECT SIZE (USD MILLIONS)
Palau[449]	Piloting	Pilot activities underway	Unknown
Fiji	No	Inclusive Digital Identity Platforms Country Diagnostics (UNCDF 2021)	N/A
Solomon Islands	No	Inclusive Digital Identity Platforms Country Diagnostics (UNCDF 2021)	N/A
Vanuatu	No[450]	Inclusive Digital Identity Platforms Country Diagnostics (UNCDF 2021)	N/A
Nauru	No	No Digital ID Initiative	N/A

UNCDF's Pacific Financial Inclusion Programme (PFIP) conducted a study on implementing digital ID platforms in three countries (Fiji, Solomon Islands, Vanuatu).[451][452] The Government of Fiji completed a data harmonization study, which involved cleaning several national identity databases and the introduction of a single naming system.[453] Since 2019, plans have been underway by the Ministry of Economy to introduce a new national identification system secured by facial recognition and other biometrics, replacing the multiple ID cards and numbers that are used by citizens.[454] Solomon Islands does not have a digital ID system, but a biometric voter registration system was successfully introduced for the 2019 elections. Seventy percent of Solomon Islanders do not have a birth certificate. However, birth registry and voter ID card databases have the highest penetration compared to other registration systems in the country and could be used as a basis for integration of all existing identity databases via a digital ID platform.[455] The occurrence of natural disasters on a frequent basis highlights a strong use case for a digital ID to help identify people in need of financial or humanitarian support. The national ID database lends itself to integration with a digital ID first, but approximately 40% of the population are not included in that database.[456]

Vanuatu has implemented a national ID system and is developing a digital ID prototype.[457] In 2022, the government began to merge the voter registry with the civil registry, establishing a centralized civil registry as the primary source of population data, and issuing national ID cards to its citizens. This undertaking is a vital component of comprehensive electoral reform efforts spearheaded by Vanuatu's Electoral Authorities, in collaboration with the Civil Registry and Identity Management Department (CRIMD) and the Vanuatu Electoral Environment Project (VEEP). The project is funded by the New Zealand Government and overseen by the United Nations Development Program (UNDP). As part of its ongoing efforts, the CRIMD is in the

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449   "Palau ID," RNS, n.d. https://rns.id/. Palau has a digital residency program, primarily aimed at global citizens for purposes other than what national IDs are commonly used for

450   Vanuatu has developed a digital ID prototype and is exploring plans for scalability.

451   Barry Cooper, et al., "An inclusive digital identity platform in the Pacific Islands," Cenfri, June 10, 2021, https://cenfri.org/publications/an-inclusive-digital-identity-platform-in-the-pacific-islands-country-level-diagnostics/.

452   "Inclusive Digital Identity Platforms Country Diagnostics: Solomon Islands, Fiji & Vanuatu," UNCDF Impact Capital for Development, UNCDF, June 8, 2021, https://www.uncdf.org/article/6814/inclusive-digital-identity-platform-country-diagnostics.

453   Bart Hogeveen, "ICT for development in the Pacific Islands," Australian Strategic Policy Institute, February 19, 2020, https://www.aspi.org.au/report/ict-development-pacific-islands.

454   Kori Tadulala, "New ID system to be rolled out within two years," FBC News, July 14, 2019, https://www.fbcnews.com.fj/news/new-id-system-to-be-rolled-out-within-two-years/

455   "An Inclusive Digital Identity Platform In The Solomon Islands: Country diagnostic," UNCDF, January 2021, https://cenfri.org/wp-content/uploads/2021-Pacific-SolomonIslands-digital-ID-country-diagnostic.pdf

456   UNCDF, Inclusive Digital Identity Platform.

457   UNDP, interview by DECA team, March 2023, online.

process of incorporating biometric data, including an ICAO-compliant photograph and fingerprints, into the national ID cards, each associated with a Unique and Universal Identification Number.[458]

Identification for Development (ID4D), a multi-stakeholder and cross-sectoral initiative spearheaded by the World Bank, is helping to develop digital IDs and civil registries in Tonga, Samoa, RMI and FSM. In Tonga, the World Bank's Tonga Digital Government Support Project allocated USD 1.4million for strengthening and modernizing the existing national ID system. The project is introducing digital authentication and legal framework development for data protection and privacy.[459] In Samoa, the World Bank spearheaded the Pacific Regional Connectivity Program Samoa, aimed at laying the initial groundwork for digital government, including establishing digital identification systems. The program offers regulatory technical assistance focusing on two areas: developing and implementing effective regulations for the ICT sector and assessing and updating the existing legal framework.[460] The World Bank Digital FSM Project earmarked USD 6.5million to design and implement a digital ID platform, establishing a single, secure mechanism for individuals to prove their identity online and to facilitate access to digital government services. Legislative reforms around data protection, cybersecurity, and cybercrime are a priority.[461] The Digital RMI Project earmarked USD 6.5M for a nationwide digital ID platform to facilitate authentication of identity online, with the objective to increase access to digital services. The project allocates USD 1million to ensure regulatory support for the long term development of the ICT sector and the legal and regulatory framework for digital government.[462]

In Kiribati, a physical ID card managed by the Ministry of Justice is used as a means of identification in various workplaces, banks, police stations, and other establishments. While the card has a chip, its acceptance in banks and other locations still requires the presentation of a birth certificate.[463] In 2022, the World Bank's Board of Executive Directors approved two projects with a total commitment of USD 31.5 million to enhance the government's online systems and services, including the issuance of digital IDs for up to 20,000 individuals.[464] In PNG, the government completed an assessment for the rollout of a national ID program, aiming to provide all 8.5 million citizens with digital ID cards by 2021. In 2023, the government launched a program called Digital ID Block, which will form the foundational infrastructure for a digital identity service for citizens. It will provide a centralized system for the management of digital identities, including identity verification and authentication.[465]

458 "Digital National ID – A small item in the pocket but a big step for Vanuatu," UNDP Pacific Office, September 6, 2022. https://www.undp.org/pacific/stories/digital-national-id-small-item-pocket-big-step-vanuatu.

459 "Tonga - Digital Government Support Project," World Bank Group. http://documents.worldbank.org/curated/en/473751557713173311/Tonga-Digital-Government-Support-Project.

460 "Pacific Regional Connectivity Program: Phase 3 - Samoa," The World Bank. https://projects.worldbank.org/en/projects-operations/project-detail/P128904.

461 "Digital Federated States of Micronesia Project," World Bank Group, https://projects.worldbank.org/en/projects-operations/project-detail/P170718.

462 "Digital Republic of the Marshall Islands Project," World Bank Group, https://projects.worldbank.org/en/projects-operations/project-detail/P171517.

463 Digital Transformation Office, Ministry of Information, Communications, and Transport, Kiribati, interview by DECA team, May 2023, online.

464 "Boost for Digital Services and Sanitation in Kiribati," World Bank Group, May 25, 2022.

465 "Papua New Guinea Lays Foundation for Digital ID," MobileIDWorld, May 9, 2023, https://mobileidworld.com/papua-new-guinea-lays-foundation-for-digital-id/

2.5.2 USE OF DIGITAL TECHNOLOGIES TO MANAGE GOVERNMENT SYSTEM IS IMPROVING, ALBEIT WITH SEVERE ISSUES AROUND CAPACITY

Government Systems Management

The PICs exhibit varying degrees of system digitalization and integration. Examples of sector specific systems include:

- **Fiji:** In 2006, Fiji's government set up an e-government program with support from a PRC-provided loan. The program included the delivery of government services through an e-government portal and the establishment of the Government Information Infrastructure (GOVNET). GOVNET connects government offices with e-community centers, known as Telecentres, which are located in schools.[466]

- **PNG**: The Department of Education developed a data collection app, MyPNGSchool, that is used to collect student enrollment and teacher data twice a year.[467]

- **Samoa:** The government manages several ministry-centric applications such as FinanceOne for payroll and human resources, an automated system for customs data, education management information system, SAMLII (digitization of land and titles court records), and the Inventory Logistics Management System run by the Ministry of Health.[468]

- **Solomon Islands**: The expansion of SIG Connect and ICT-enabled public financial management are part of the Solomon Islands Governance Program 2017-2021, supported by DFAT. This support included a long-term technical adviser embedded with the ICT Support Unit.[469]

- **Vanuatu**: OGCIO servers host various databases including the Court Management System, Civil Registry information management system, ASYCUDA World (developed by UNCTAD), and the Police Information Management System. The Civil Registry is accessible in all provincial hospitals and municipal headquarters. The Ministry of Finance's Smartstream system for central planning and budgeting is the government's largest system with modules for human resource management, payroll services, donor information, and project reporting.[470] In 2010, Pacific Financial Technical Assistance Centre evaluated the system as one of the best public financial management systems in the region due to the Ministry's active engagement, multiple subsystems, and dynamic architecture.[471]

Despite these national-level developments, government interviewees shared that there are challenges to building interoperable, secure digital government systems. Government personnel trust in digital and siloed adoption of different cloud-based management information systems undermines buy-in and use.[472] One government interviewee noted that a weak understanding of the importance of interoperable government systems strengthens existing siloes.[473]

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466   "Evolution of the institutional ecosystem for e-government in Fiji," E-Government for Women's Empowerment in Asia and the Pacific, 2018, https://egov4women.unescapsdd.org/country-overviews/fiji/evolution-of-the-institutional-ecosystem-for-e-government-in-fiji.

467   Bart Hogeveen, "ICT for development in the Pacific Islands," Australian Strategic Policy Institute, February 19, 2020, https://www.aspi.org.au/report/ict-development-pacific-islands.

468   Bart Hogeveen, "ICT for development in the Pacific Islands," Australian Strategic Policy Institute, February 19, 2020, https://www.aspi.org.au/report/ict-development-pacific-islands.

469   "Solomon Island Government Program Design 2017-2021," Department of Foreign Affairs and Trade, https://www.dfat.gov.au/sites/default/files/solomon-islands-governance-program-design-2017-2021.docx

470   Hogeveen, ICT for development in the Pacific Islands.

471   Hogeveen, ICT for development in the Pacific Islands.

472   Anonymous interviewee, interview by DECA team, May 2023, online.

473   Digital Transformation Office, Ministry of Information, Communications, and Transport, Kiribati, interview by DECA team, May 2023, online.

Government Data Management and Storage

Capacity and aspiration for the use of digital technologies to manage, store, and share government data varies. In general, efforts are fragmented and the lack of data and system interoperability and personnel buy-in pose challenges. In recent years, PNG and Tonga stand out as early adopters of cloud services with their cloud-first approaches (Box 17). In Solomon Islands, a significant amount of information is digitized and stored on the national data center and on the Microsoft 365 cloud whose local team delivers training for government officials.[474] However, according to a government interviewee, Solomon Islands face challenges with cloud services adoption including financial constraints, limited ability to gain access to and modify cloud storage system models, and concerns about security and trust in external hosting.[475] There is also a reluctance to fully embrace cloud services due to the absence of a legal framework governing its use. (See section 2.2 on data privacy and protection.)[476]

> *"Without the right legal frameworks, people default to a closed posture when it comes to sharing data. This has an impact on our desire to advocate for open data; when the necessary policies and legal tools are absent, people are more reserved about sharing data."*
>
> — Sioeli Tonga, Pacific Community, (SPC)

BOX 17: Cloud-first prioritized in PNG and Tonga

In 2020, the Government of PNG adopted a comprehensive Digital Transformation Policy and has since prioritized the strategic shift toward cloud usage involving public and private cloud services. The 2021 Government Cloud (GC) Policy provides guidance to PNG Government departments and agencies, ensuring efficient, secure, and sustainable use of Government Cloud Infrastructure (GCI) services. With the Department of Information and Communications Technology (DICT) as the mandated coordinating agency, PNG aims to maximize the benefits of cloud services; foster collaboration and partnerships across government entities, businesses, and citizens, and effectively manage cloud use, data security, and shared services.[477] PNG is developing an amended PNG Government Cloud Policy 2023, which aims to offer more comprehensive guidance and enhanced security measures for public entities that use cloud services.[478]

In Tonga, the government launched the Tonga Cloud First Policy in 2022 in accordance with the strategy set by Tonga Digital Government Strategic Framework. The government is pursuing a cloud-first approach with the aim of reducing ICT costs, enhancing security measures, boosting productivity, ensuring business continuity, and establishing a well-defined model for engaging with the private sector. In adherence to this approach, all government agencies in Tonga will assess cloud-based services for ICT procurements, considering their suitability, conducting cost-benefit analyses, and evaluating long-term value.[479]

In Samoa, the 5-year ICT Strategic Plan (2019-2023) sets a goal for using data to enhance government decision-making and promote evidence-based governance.[480] In Kiribati, data management across government agencies is fragmented with data stored in silos both manually and electronically, some locally and some in the cloud. There is a lack of standardization and no central data repository, but a project recently started to establish a

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474   Regional expert, interview by DECA team, May 2023, online.

475   Anonymous interviewee, interview by DECA team, May 2023, online.

476   Regional expert, interview by DECA team, May 2023, online.

477   "Government Cloud Policy 2021," DICT I PNG, n.d., https://www.ict.gov.pg/government-cloud-policy-2021/#:~:text=The%20Policy%20provides%20for%20a,to%2DGovernment%2C%20Government%20to%2D

478   "Digital Government Plan," Department of Information and Communications Technology, n.d., https://www.ict.gov.pg/.

479   "Tonga Cloud First Policy," Government of Tonga, September 6, 2021, https://digitaltransformation.gov.to/wp-content/uploads/2022/08/Tonga-Cloud-First-Policy-v.0.2-1.pdf.

480   Regional expert, interview by DECA team, May 2023, online.

data center could address these issues. The project aims to improve the digitization of data across ministries, promote interoperability, and establish a centralized government storage system.[481] In Nauru, the government employs a variety of data storage and management methods. While some departments have embraced cloud storage or use local servers shared by different departments, the majority still rely mostly on traditional paper-based formats.[482]

Limited capacity and skills in ICT ministries across the Pacific undermine more widespread and sustainable development and management of digital government systems and services. SIG ICT Services in Solomon Islands is unable to attract or retain skilled staff, resulting in severe capacity gaps.[483] Similarly, the biggest challenge for Nauru's Department of Information and Communications Technology (DICT) is weak capacity spanning the medium- and long-term.[484]

Open Government Data

PNG is the only PIC member of the Open Government Partnership (OGP), a multi-stakeholder initiative to facilitate and promote transparent government processes. The platform brings together government and civil society champions to engage citizens in public input and oversight, working toward responsive governance. PNG delivered its second Open Government Partnership Action Plan 2022-2024,[485] which aims to improve transparency, accountability, and integrity of government processes and to establish a central data center that collects, stores, processes, and disseminates data to citizens through a secured data exchange.[486]

> ### BOX 18: Pacific Data Hub
>
> The Pacific Community (SPC)[487] maintains the Pacific Data Hub (PDH) with support from the New Zealand Ministry of Foreign Affairs and Trade (MFAT).[488] The PDH is a central repository of data on the Pacific and for the Pacific. The platform is a regional public good that provides a single authoritative point of entry for data on the Pacific. It contains data from statistics generally covered by national statistics offices, including data on topics such as population statistics, fisheries science, climate change adaptation, disaster resilience, food systems, public health, gender equality, and human rights. It aims to strengthen the Pacific data ecosystem by promoting greater coordination in data management, dissemination, and uptake. SPC also works closely with members and development partners to prioritize robust data governance and strengthen data literacy, ensuring that the data resources of members and partners can be shared responsibly and used ethically for the benefit of Pacific people.[489]

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481   Digital Transformation Office, Ministry of Information, Communications, and Transport, Kiribati, interview by DECA team, May 2023, online.

482   Department of Information & Communications Technology, Ministry of Telecommunications, Nauru, interview by DECA team, May 2023, online.

483   Regional expert, interview by DECA team, May 2023, online.

484   Department of Information & Communications Technology, Ministry of Telecommunications, Nauru, interview by DECA team, May 2023, online.

485   "Papua New Guinea Open Government Partnership National Action Plan 2022-2024," Open Government Partnership, March 2022, https://www.opengovpartnership.org/wp-content/uploads/2022/04/Papua-New-Guinea_Action-Plan_2022-2024.pdf

486   "Papua New Guinea Action Plan Review 2022-2024," Open Government Partnership, November 9, 2022, https://www.opengovpartnership.org/documents/papua-new-guinea-action-plan-review-2022-2024/

487   The acronym for the Pacific Community is SPC as it was originally named the South Pacific Commission.

488   Pacific Data Hub, https://pacificdata.org/

489   Pacific Community (SPC), interview by DECA team, June 2023, online.

2.5.3 MINIMAL ENGAGEMENT WITH CITIZENS AND BUSINESSES IN DEVELOPING, DEPLOYING, AND IMPROVING DIGITAL GOVERNMENT SERVICES

Digital government initiatives largely fail to engage citizens and organizations. The PICs rank among the lowest in the world for the United Nations E-Participation Index (EPI). Within this group, Vanuatu ranks first followed by Kiribati and Samoa. Tuvalu, PNG, and Solomon Islands rank lowest (Figure 18). E-participation reflects the e-participation mechanisms that are deployed by the government and composed of three core components: e-information, e-consultation, and e-decision making.[490]

FIGURE 18. PICs E-Participation Index 2022[491]

Country	Value
Tuvalu	0.1705
Papua New Guinea	0.1705
Solomon Islands	0.2159
Federated States of Micronesia (FSM)	0.2159
Palau	0.2273
Fiji	0.2386
Nauru	0.25
Tonga	0.2614
Republic of the Marshall Islands (RMI)	0.2614
Samoa	0.2727
Kiribati	0.2955
Vanuatu	0.3409

World Average
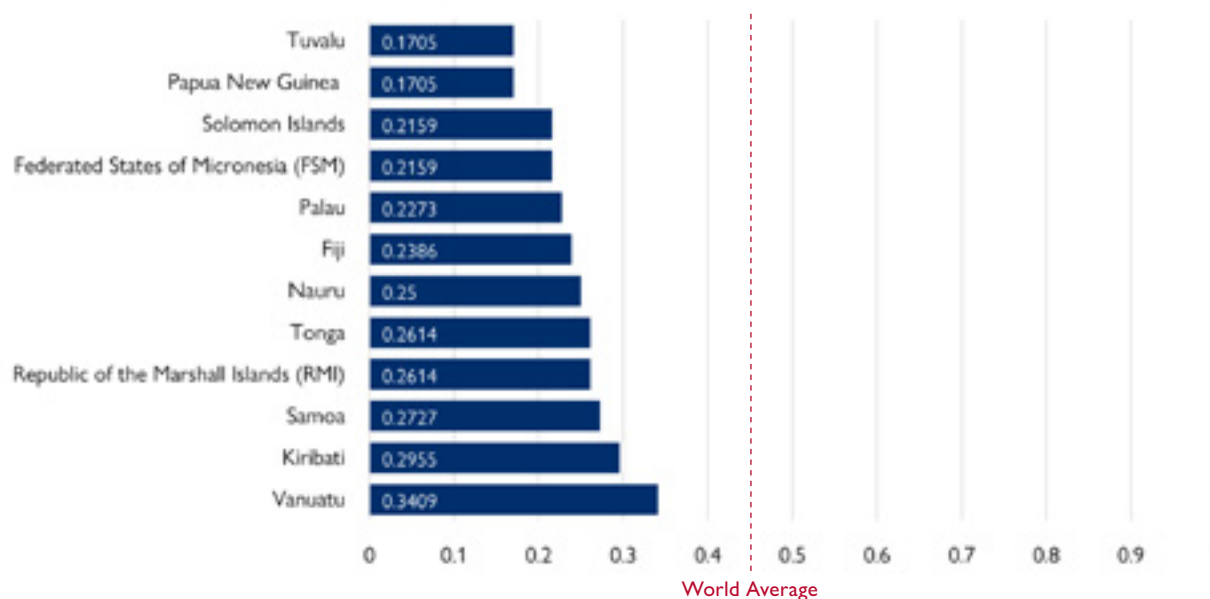
Digital government platforms in the PICs, for the most part, do not engage citizens and organizations in public policy and service design. In PNG— despite the establishment of several government portals—with the exception of the e-VISA service, none of the portals enable interaction with or feedback from citizens or businesses. Fiji is starting to open avenues for e-participation through DigitalFIJI which includes an online government directory and myFeedback, an app that allows citizens to provide instant feedback on their experiences using government services.

2.6 CYBERSECURITY POLICIES AND CAPACITY ARE EARLY STAGE WHILE THREATS ARE ON THE RISE

In recent years, significant advancements have been made in cybersecurity, including the development of cybercrime legislation, the formulation of comprehensive cybersecurity strategies, and the establishment of operational national Computer Emergency Response Teams (CERTs). Several key regional organizations have made this progress possible with the support of donors and development partners (Table 9).

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490 "E-Participation Index," UN E-Government Database, n.d., https://publicadministration.un.org/egovkb/en-us/About/Overview/E-Participation-Index. The E-Participation Index (EPI) is a supplementary index to the United Nations E-Government Survey. The EPI takes into account e-information through provision of public information, e-consultation through engaging citizens in contributions to and deliberation on public policies and services, and e-decision-making that empowers citizens through co-design of policy options and co-production of service components and delivery modalities.

491 "UN E-Government Knowledgebase," 2022, https://publicadministration.un.org/egovkb/en-us/Data-Center.

TABLE 9. Key regional organizations involved in cybersecurity activities

REGIONAL ORGANIZATION	DESCRIPTION & RELEVANT CYBERSECURITY ACTIVITIES
Asia Pacific Network Information Centre (APNIC)	APNIC was established in 1993 as one of five Regional Internet Registry Systems (RIRs). It is a non-profit, member-based organization with the main responsibility of distributing and managing internet number resources in the region. It plays a vital role in enhancing technical skills, supporting internet infrastructure development, conducting valuable research, and actively participating in the multi-stakeholder model of Internet cooperation and governance. APNIC has assisted in establishing national CERTs and continues to offer ongoing technical support.[492]
Council of Regional Organizations in the Pacific (CROP) ICT Working Group	The CROP ICT Working Group, chaired by the University of the South Pacific, offers a shared platform where CROP agencies and stakeholders can collectively address regional priorities in the ICT sector in a coordinated manner. In 2016, the CROP ICT Working Group formulated the Pacific Regional ICT Strategic Action Plan for 2016 to 2020 which promotes social and economic sustainable development, good governance, and security by improving ICT access and utilization throughout the region.[493]
Global Forum on Cyber Expertise (GFCE) Pacific Hub	The GFCE Pacific Hub was established in 2022 following GFCE's first regional Pacific meeting on cyber capacity building in 2020. GFCE Pacific Hub is funded by the U.S. Department of State, New Zealand Ministry of Foreign Affairs and Trade (MFAT), and the UK government. The GFCE Pacific Hub's goal is to assess cyber capacity needs in the region and collaborate with Pacific nations to enhance their capabilities. The hub's activities are aligned with and supported by the GFCE Secretariat.[494]
Pacific Cyber Security Operational Network (PaCSON)	PaCSON, established in 2017, is a cybersecurity network comprised of regional working-level experts in the Pacific. It is funded by DFAT's Cyber and Critical Technology Cooperation Program (CCTCP) with the objective of enhancing cybersecurity capabilities and combating cybercrime. The network facilitates collaboration among Pacific countries to develop collective incident response capabilities, improve technical skills and knowledge, exchange cyber threat information, and adopt best practices to strengthen cybersecurity defenses. PaCSON leads the annual Cyber Smart Pacific Campaign (Box 20).[495]
Pacific Islands Chapter of the Internet Society (PICISOC)	PICISOC represents users in the Oceania and Pacific region, providing impartial advice on internet-related matters. It was established as IT-PacNET in 1994 and become PICISOC when it joined the Internet Society in 2002. All DECA PICs are represented in PICISOC's membership pool of 22 states and territories. It hosts the annual PacINET conference and supports initiatives like Tonga Women in ICT (TWICT) to promote inclusion and talent development in the ICT field.[496]
Pacific Islands Law Officers' Network (PILON)	PILON is actively working to combat cybercrime in the Pacific region by promoting accession by PILON Member countries to the Budapest Convention. The PILON Cybercrime Working Group works on building the awareness of member countries and advocates for the adoption of best practices in legislation, evidence gathering, and international cooperation mechanisms among police, prosecutors, and lawmakers. PILON works with regional and international partners, including the Council of Europe, the Pacific Islands Chiefs of Police's Cyber Safety Pasifika Program and the DFAT's Cyber Cooperation Program (Box 21).[497]

Donors play a large role in the cybersecurity landscape. DFAT's Cyber and Critical Tech Cooperation Program (CCTCP) has a large portfolio of projects with a focus on: countering cybercrime; frameworks and standards; online safety and security; critical technologies; and human rights and democracy. In 2021, the program delivered 47 projects.[498] In 2019, MFAT launched a NZ 10million (approximately USD 6 million) initiative to be carried

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492   Asia Pacific Network Information Center, https://www.apnic.net/about-apnic/organization/vision-mission-objectives/.

493   Pacific Island Forum, https://www.forumsec.org/information-and-communication-technologies-ict/#1506372476053-1c0b256e-a3a8.

494   GFCE Pacific Hub, https://thegfce.org/gfce-pacific-hub/.

495   Pacific Cyber Security Operational Network, https://pacson.org/about-us.

496   "What is PICISOC?" Pacific Islands Chapter of the Internet Society (PICISOC), n.d., https://www.picisoc.org/about-us/what-is-picisoc/.

497   Pacific Island Law Officers' Network, https://pilonsec.org/about/members/.

498   CCTCP 2021 annual report (not public).

out over five years to aid PICs in developing national cybersecurity strategies, securing infrastructure, enhancing online safety, and implementing strong cybercrime laws.[499] A dedicated Pacific Partnership Advisor role was established within CERTNZ to assist PICs with cybersecurity capabilities including as Cybersecurity Workforce Development Program (CWDP) with Tonga CERT[500] and SamCERT technical and equipment cooperation.[501] The Council of Europe and Australia's Attorney General's Office provide assistance across the PICs, including cybercrime policy development and cybersecurity training.[502]

TABLE 10. Regional Alignment for cyber incident response (based on history and geographic location)[503]

REGIONAL ALIGNMENT	PACIFIC ISLAND COUNTRIES	DETAILS
U.S.	RMI, Palau, and FSM	Have laws and partnership that align with US, including support from entities such as the FBI
Australia & New Zealand	Samoa, Tonga, Tuvalu, Kiribati, Nauru, Vanuatu, PNG, Solomon Islands, Fiji	Strong collaboration with: DFAT, MFAT, CERT NZ, AusCERT, Australian Federal Police, NZ Police

The PICs rank low on the e-Governance Academy National Cyber Security Index (NCSI) 2023, which is based on publicly available data and direct contributions from government officials.[504] Vanuatu ranks highest, then Tonga, followed by PNG. RMI, Palau, and FSM rank lowest. As a comparison, the ITU Global Cybersecurity Index (GCI) 2020, which uses surveys and secondary data, ranks Samoa highest, followed by Fiji, then PNG. The GCI focuses on legal, technical, organizational, capacity building, and cooperation measures.[505]

TABLE 11. PICs Comparison of Cybersecurity Index Rankings

COUNTRY	NATIONAL CYBER SECURITY INDEX (NCSI) 2023 RANKING (OUT OF 176 COUNTRIES)[506]	ITU GLOBAL CYBERSECURITY INDEX (GCI) 2020 RANKING (OUT OF 182 COUNTRIES)[507]
Vanuatu	115	152
Tonga	116	128
PNG	122	118

499 "New Zealand contributes to cyber security capacity building in the Pacific," New Zealand Government, Press Release September 13, 2019. https://www.beehive.govt.nz/release/new-zealand-contributes-cyber-security-capacity-building-pacific.

500 "Tongan Cybersecurity Workforce Development Program launches with support from New Zealand," CERTNZ, March 16, 2022. https://www.cert.govt.nz/it-specialists/news-and-events/tongan-cybersecurity-workforce-development-program-launches-with-support-from-new-zealand/.

501 "Cyber security strengthens in the Pacific with the launch of SamCERT," CERTNZ, May 27, 2021. https://www.cert.govt.nz/individuals/news-and-events/cyber-security-strengthens-in-the-pacific-with-the-launch-of-samcert/

502 "Pacific Security Outlook Report 2022-2023," Pacific Islands Forum Secretariat, 2022, https://pacificsecurity.net/wp-content/uploads/2023/02/Pacific-Security-Outlook-Report-2022-2023-1-1.pdf.

503 "Pacific Security Outlook Report 2022-2023, "Pacific Islands Forum Secretariat, 2022, https://pacificsecurity.net/wp-content/uploads/2023/02/Pacific-Security-Outlook-Report-2022-2023-1-1.pdf.

504 "Methodology," National Cyber Security Index (NCSI), n.d., https://ncsi.ega.ee/methodology/. The NCSI is maintained by the e-Governance Academy through direct contributions of data from government officials and publicly available data which measures the preparedness of countries to prevent cyber threats and manage cyber incidents. The index uses contributed and publicly available data to assess baseline and general cybersecurity indicators—in addition to cyber incident response indicators—to arrive at a total score reflecting countries' cybersecurity capacities that are implemented by central governments.

505 ITU's Global Cybersecurity Index assesses a country's level of development or engagement based on five pillars: a) Legal Measures, b) Technical Measures, c) Organizational Measures, d) Capacity Development, and e) Cooperation, which is aggregated into an overall score. https://www.itu.int/epublications/publication/D-STR-GCI.01-2021-HTM-E.

506 "National Cyber Security Index," National Cyber Security Index (NCSI), 2023, https://ncsi.ega.ee/ncsi-index/.

507 "Global Cybersecurity Index 2020," ITU Publications, 2024, https://www.itu.int/epublications/publication/D-STR-GCI.01-2021-HTM-E.

COUNTRY	NATIONAL CYBER SECURITY INDEX (NCSI) 2023 RANKING (OUT OF 176 COUNTRIES)[506]	ITU GLOBAL CYBERSECURITY INDEX (GCI) 2020 RANKING (OUT OF 182 COUNTRIES)[507]
Samoa	151	111
Kiribati	167	145
Solomon Islands	168	166
Fiji	141	112
Palau	175	Not ranked
Tuvalu	171	168
Nauru	162	127
RMI	173	172
FSM	174	182

The Oceania Cyber Security Center (OCSC) completed Cybersecurity Capacity Maturity Models (CPIRTF for 8 of the 12 DECA PICs (Samoa, Tonga, Vanuatu, PNG, Kiribati, FSM, Tuvalu, Nauru).[508] The CMM assessment includes all cyber aspects of the Boe Declaration Action Plan and provides detailed recommendations for prioritized action plans based on the local context.[509] The CMM reports are not publicly available.

> 📖 **KEY TERMS | BOX 7:** Cybercrime and Cybersecurity
>
> *Cybercrime:* According to the United Nations Office on Drugs and Crime[510] (UNODC), there are two main types of cybercrimes:
>
> - Cyber-dependent crime requires a digital infrastructure and is often typified as an attack on critical infrastructure and taking a website offline.
>
> - Cyber-enabled crime is that which can occur in the offline world but can also be facilitated by the online world. This typically includes online frauds, purchases of drugs online, and online money laundering
>
> *Cybersecurity:* The activity or process, ability or capability, or state whereby information and communications systems that support or affect development outcomes, and the information contained therein, are protected from or defended against damage, unauthorized use or modification, or exploitation.
>
> *Source: USAID Cybersecurity Primer*

2.7.1 A MINORITY OF PICS HAVE NATIONAL CYBERSECURITY STRATEGIES

Of the 12 DECA PICs, only Samoa, Vanuatu, and Kiribati have published National Cybersecurity Strategies (NCS) (Table 12).[511] Samoa's NCS is outdated as it covers 2016 to 2021. Fiji's NCS is in draft and has been delayed since its 2015 announcement.[512] PNG published a National Cybersecurity Policy in 2021, which calls for the PNG Government to develop a NCS, led by the DICT. The lack of NCSs across the region demonstrates

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508 "The CMM Approach," Oceania Cyber Security Centre, (OCSC), 2018, https://ocsc.com.au/cmm-and-capacity-initiatives/#cmm-reviews. Global Cyber Security Capacity Centre, University of Oxford, 2021, https://gcscc.ox.ac.uk/the-cmm. OCSC Cybersecurity Capacity Reviews use a Cybersecurity Capacity Maturity Model (CMM). The methodology was developed by the Global Cyber Security Capacity Centre (GSCC) at the University of Oxford.

509 DECA email communication with Oceania Cyber Security Center, July 2, 2023.

510 "Cybercrime," United Nations Office on Drugs and Crime. https://www.unodc.org/unodc/en/cybercrime/global-programme-cybercrime.html.

511 National Cybersecurity Strategies Repository, ITU, https://tinyurl.com/4j2ddamx.

512 "Fiji to work with the CTO on Cybersecurity," Commonwealth Telecommunication Organization, September 21, 2015. https://www.cto.int/news/fiji-to-work-with-the-cto-on-cybersecurity/.

a mixed prioritization of cybersecurity resilience on a national and regional level. In May 2017, Tonga became the first and only PIC to ratify the Budapest Convention on Cybercrime.[513]

On a regional level, cybersecurity was a key component of the regional Boe Declaration on Regional Security signed by PIFS leaders in 2018. [514] The Boe Declaration established a regional concept of security to maximize protections and opportunities for Pacific infrastructure and peoples in the digital age.[515] The Boe Declaration, although not legally binding on nations, serves as a framework for taking action through the Boe Declaration Action Plan supervised by the PIFS. It establishes a regional and national platform for action by encouraging all Forum Island Countries (FICs) to develop and execute both National Cybersecurity Strategies (NCS) and National Security Strategies (NSS).[516] The declaration outlines five proposed actions for cybersecurity: information sharing on cyber threats and actions taken to ameliorate those threats; development of cybersecurity strategies and policies; accession to the Budapest Convention on Cybercrime; work to promote awareness in cyber hygiene and safety; and development of CERTs by each member country.[517]

TABLE 12. Cybersecurity Policies across PICs

COUNTRY	CYBERSECURITY STRATEGY	CYBERCRIME[518]
Fiji	In progress	Cybercrime Act 2021
PNG	National Cybersecurity Policy 2021 (this policy details plan to create a strategy)	Cybercrime Policy 2014; Cybercrime Code Act 2016
Vanuatu	National Cybersecurity Policy 2013 National Cybersecurity Strategy 2030	Cybercrimes Bill 2020
Samoa	National Cybersecurity Strategy 2016-2021	The National Cybersecurity Strategy 2016-2021 calls for the development of a National Crime Prevention Strategy related to Cybercrime.
Kiribati	National Cybersecurity Strategy 2020	Cybercrime Act 2021
Palau	No cybersecurity strategy National Security Strategy addresses cybersecurity	Cybercrime related legislation is codified in Title 17 PNC Chapter 31.
FSM	No cybersecurity strategy exists; executive order establishes the FSM Cyber Security & Intelligence Bureau	No cybercrime legislation
Tuvalu	No cybersecurity strategy	In draft
Nauru	No cybersecurity strategy	Cybercrime Act 2015
RMI	No cybersecurity strategy. RMI Cybersecurity Task Force (est. 2021)	No cybercrime legislation
Solomon Islands	No cybersecurity strategy	No cybercrime legislation
Tonga	No cybersecurity strategy; Tonga National Cybersecurity Framework 2022	Computer Crimes Act 2020; Cybercrimes Bill is under development

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513   "Tonga is first Pacific country to join Budapest Convention on Cybercrime," Papua New Guinea Today, May 10, 2017. https://news.pngfacts.com/2017/05/tonga-is-first-pacific-country-to-join.html.

514   All DECA PICs are PIF members.

515   "Boe Declaration on Regional Security," Pacific Island Forum, https://www.forumsec.org/2018/09/05/boe-declaration-on-regional-security/.

516   Prof. Meg Keen, Dr. Henry Ivarature, "Evolving Security Framing in the Pacific: Connecting the Local with the Regional," Strategic Competition & Security Cooperation in the Blue Pacific, Asia-Pacific Center for Security Studies, 2022, 91-110. https://dkiapcss.edu/wp-content/uploads/2022/09/Blue-Pacific-Security-05-Keen-Ivarature-Framing-1.pdf

517   Pacific Island Forum Secretariat, interview by DECA team, April 2023, online.

518   This refers to whether this is standalone cybercrime legislation; in some countries aspects of other laws may address cybercrime.

Six DECA PICs have cybercrime legislation and Tuvalu is in the process of developing legislation. On the other hand, five countries in the region currently have no cybercrime legislation in place, hindering the region's efforts to effectively address and combat increasing cyber threats such as ransomware, phishing, cyber attacks, and other online scams.

2.6.2 THE FEW NATIONAL CERTS ARE DYNAMIC BUT CONSTRAINED BY LOW ABSORPTIVE CAPACITY AND TALENT RETENTION

The absence of NCSs across the region is reflected in the low number of national CERTs. There are only four: PNG, Vanuatu, Samoa, and Tonga.[519] The Tonga CERT, the first national CERT in the region, was launched in 2016 with support from the Council of Europe and APNIC.[520] [521] It operates under the Ministry of Meteorology, Energy, Information, Disaster Management, Environment, Communications and Climate Change (MEIDECC). Samoa CERT launched in 2021 with support from New Zealand CERT through the New Zealand government's wider Pacific Partnership Program.[522] CERT VU was launched in 2018 with support from the Australian Government and APNIC.[523] PNGCERT is centrally facilitated through the National Information and Communication Technology Authority (NICTA) and financed through a public-private partnership arrangement. It involves representatives from government ministries and agencies, universities, internet services providers, banks, and mobile network operators.[524]

The national CERTs participate in regional initiatives such as PaCSON and the Asia Pacific Computer Emergency Response Team (APCERT). APCERT is a coalition of CERTs and CSIRTs and was established in 2003 with the objective of supporting CERTS and CSIRTs in the region. APCERT aims to strengthen cybersecurity in Asia Pacific by fostering regional cooperation, developing security measures, sharing information, promoting research, and assisting regional response teams.[525] In 2020, CERT Tonga was the first PIC organization to become an operational member of APCERT.[526] CERT VU became an operational member in 2022.[527] PaCSON leads the CyberSmart Pacific Campaign, an annual initiative that increases cybersecurity awareness by working with local organizations, including CERTs, to localize messaging (Box 20). The four national CERTs are not members of the Forum of Incident Response and Security Teams (FIRST),[528] which brings together incident response and security teams from around the world in a peer-to-peer network to share information and collaborate in mitigating security incidents.

In recent years, the region has made progress on establishing National Computer Incident Response Teams (CIRTs). Eleven DECA PICs (all except Palau) established a National Computer Incident Response Team

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519   "National CIRT," ITU, https://tinyurl.com/yft8uxyc.

520   "Tonga launched its first National CERT," Council of Europe, July 15, 2016. https://www.coe.int/en/web/cybercrime/activities4/-/asset_publisher/x72woI58Y7Gv/content/tonga-launched-its-first-national-cert.

521   Dan Fidler, "CERT Tonga mitigates risk with awareness," APNIC, March 9, 2021. https://blog.apnic.net/2021/03/09/cert-tonga-mitigates-risk-with-awareness/.

522   "Cyber security strengthens in the Pacific with the launch of SamCERT," CERTNZ, May 27, 2021. https://www.cert.govt.nz/individuals/news-and-events/cyber-security-strengthens-in-the-pacific-with-the-launch-of-samcert/

523   "The road to a national CERT in Vanuatu," CERTVU, n.d., https://cert.gov.vu/index.php/news/132-the-road-to-a-national-cert-in-vanuatu.

524   "Responding to cybersecurity threats in PNG," The Papua New Guinea Computer Emergency Response Team, CERT, n.d., https://www.pngcert.org.pg.

525   Asia Pacific Computer Emergency Response Team (APCERT) Operational Framework, APCERT, n.d., https://www.apcert.org/documents/pdf/APCERT_Operational_Framework_18Oct2022.pdf.

526   "CERT Tonga first from Pacific Island Countries to become an Operational Member of APCERT," Ministry of Communications, Government of the Kingdom of Tonga, June 22, 2020, https://mic.gov.to/index.php/20-cert-tonga-first-from-pacific-island-countries-to-become-an-operational-member-of-apcert.

527   "Annual Report 2022, "APCERT, 2022, https://www.apcert.org/documents/pdf/APCERT_Annual_Report_2022.pdf.

528   FIRST Members around the world, FIRST n.d., https://www.first.org/members/map.

(CIRT).[529] Fiji announced in early 2023 that it is developing a proposed national critical infrastructure, cyber incident response, and recovery framework that will incorporate a Critical Infrastructure Computer Emergency Response Team (CICERT) and a Critical Infrastructure Computer Security Incident Response Team (CICSIRT).[530] In the absence of effective mechanisms and institutional structures at the national level to reliably deal with cyber threats and incidents, National CIRTs serve as a national focus point for coordinating cybersecurity incident response to cyber attacks in the country.[531]

> **KEY TERMS | BOX 8: CSIRT and CERT**
>
> **CSIRT** (Computer Security Incident Response Team) and **CERT** (Computer Emergency Response Team): these terms are often used interchangeably and refer to organizations that are responsible for coordinating and supporting the response to a computer security event or incident. They are responsible for detecting, mitigating, documenting, analyzing, reducing, and reporting cyber threats and vulnerabilities. The term **CERT** is a designation that was formalized by Carnegie Mellon University in 1997. CERTs tend to have a greater emphasis on partnership with internal or external teams and more of a focus on emerging threat research and on improving incident response as a discipline.[532]
>
> Source: USAID Cybersecurity Primer

CERTs and CIRTs across the Pacific have limited capacity. Major constraints are limited financial and human resources including high turnover of trained personnel. Individual staff often play multiple roles including developing and implementing digitalization plans, overseeing cybersecurity, maintaining IT services, and providing technical support.[533] Lack of available staff prompts agencies to seek external support. CERT Tonga has only three full-time staff, with some contract staff.[534] Introducing new programs or initiatives in these resource-constrained environments adds additional workload to already burdened departments and ministries. Additional funding for personnel, software equipment, legislative maintenance, policy development, and expert advice is required. Most government departments lack the financial and human capacity to absorb ongoing costs associated with new technical cybersecurity requirements.[535]

> *"A lot of workshops require travel, [they are] capacity building support provided at a regional level. However, in cybersecurity, [there is a] lack of human resources; a lack of people to do the work and write the drafts. [There is a] lack of money. I talked to the head of Tonga CERT, they have a proud history of developing support from across public and private sectors, [but] they don't have enough keyboards or computers to do it."[536]*
>
> *– Interview with a regional security expert.*

In most PICs, the ICT sector broadly and the cybersecurity sector specifically grapple with the challenge of talent retention. The already small public sector digital talent pool undergoes training initiatives only to have trained professionals subsequently migrate toward more lucrative opportunities in the private sector. There is a notable depletion of highly skilled ICT experts in the public sector. An interviewee from SIG ICT Services in the Solomon Islands states:

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529   National CIRTs Worldwide, ITU, https://www.itu.int/en/ITU-D/Cybersecurity/Documents/CIRT_Status.pdf .

530   Rakesh Kumar, "Alliance to protect vital cyber systems," The Fiji Times, May 5, 2023. https://www.fijitimes.com/alliance-to-protect-vital-cyber-systems/.

531   National CIRT, ITU, https://www.itu.int/en/ITU-D/Cybersecurity/Pages/national-CIRT.aspx.

532   Ed Moyle, "CERT vs. CSIRT vs. SOC: What's the difference?" TechTarget, January 17, 2024, n.d., https://tinyurl.com/3bzjaftf

533   Anonymous interviewee, interview by DECA team,, March 2023, online.

534   CERT Tonga, interview by DECA team, April 2023, online.

535   Regional expert, interview by DECA team, March 2023, online.

536   Regional security expert, interview by DECA team, April 2023, online.

> *"Most of them [ICT experts] we have to send over to Sydney to do exams, but the challenge is keeping them in the office once they are qualified. The private sector comes in and poaches them. There is nothing we can do, they offer three times the salary. This is a very acute, quite sad, place. It is virtually empty, all -in the last year we lost six of our best highly trained engineers and managers. It's a big drain for us, with more than 33 staff before. We have a new office to accommodate up to 90 staff, we had 33, and nearly two-thirds of that now."[537]*
>
> — Interview with regional expert.

One reason for the insufficient cybersecurity talent pool is that cybersecurity is missing from the national education agendas for the most part. While there are various efforts to build the capacity of existing professionals, there are few initiatives to grow the talent supply coming out of the education systems in the region.[538] When skilled cybersecurity talent leaves, there is no one to fill their positions. The USP recently developed a cybersecurity postgraduate program (Box 19).[539]

BOX 19: The first cybersecurity degree program in the Pacific

In 2021, USP's School of Information Technology, Engineering, Mathematics and Physics launched a postgraduate degree in cybersecurity. The degree is comprised of four course offerings: Cyber Security Fundamentals, Data Analysis and Scripting, Ethical Practices in Cyber Security, and Security Domains and Vulnerabilities.[540] The program is intended to prepare students to identify and mitigate cyber threats to prevent cybercrimes, design and implement organizational security protocol, and fully understand professional and ethical codes of conduct in the sector.[541]

2.6.3 CYBERSECURITY AWARENESS CAMPAIGNS ARE INCREASING WITH SUPPORT FROM LOCAL AND INTERNATIONAL STAKEHOLDERS

Various efforts are underway across the PICs to enhance public and government awareness of cybersecurity issues. Such efforts are facilitated by collaborations between CERTs, local law enforcement, regional organizations, and donors.[542] Programs run by national CERTs focus significantly on cybersecurity awareness-raising. CERT Tonga conducts cybersecurity awareness programs through presentations, leaflets, and interactive sessions where they address topics such as national response teams, cyber hygiene, cybersecurity, and cyber threats. Target audiences include secondary schools, government ministries, and public-private enterprises, with tailored training specific to each audience's needs.[543] CERTVU uses songs in a unique and culturally relevant approach to raise awareness about cybersecurity issues.[544] In Solomon Islands, Women in IT Solomon Island (WITSI) carries out cybersecurity and awareness-raising activities by highlighting access and safety for girls during the annual international Girls in ICT Day.[545],[546] The cybersecurity unit of the Solomon Islands Police raises awareness

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537   Regional expert, interview by DECA team, May 2023, online.

538   Trustwave, interview by DECA team, May 2023, online.

539   Cybersecurity Postgraduate Program, The University of the South Pacific, n.d.. https://tinyurl.com/mvjvk394

540   "Certificate IV In Cyber Security," The University of the South Pacific, n.d., https://www.usp.ac.fj/pacific-tafe/wp-content/uploads/sites/79/2022/01/Certificate-IV-in-Cyber-Security.pdf.

541   "STEMP Introduces Cybersecurity Postgraduate Program," The University of South Pacific, July 15, 2021. https://www.usp.ac.fj/news/stemp-introduces-cybersecurity-postgraduate-programme/.

542   Regional expert, interview by DECA team, March 2023, online.

543   CERT Tonga, interview by DECA team, April 2023, online.

544   Regional expert, interview by DECA team, March 2023, online.

545   Women in I.T Solomon Islands #witsi. https://www.facebook.com/WomenInITSolomonIslands

546   "Girls In ICT Day Goes Robotic," IT Society Solomon Island, May 6, 2021, https://www.itssi.sb/.

through workshops and events like national ICT Day, which attracts significant interest from youth, particularly in cybersecurity and online safety given their prevalent social media use.[547]

📖 **KEY TERMS | BOX 9:** Cyber Hygiene

Cyber hygiene is a key digital literacy skill required to secure data and personally identifiable information on systems and digital devices. Poor cyber hygiene is often the root cause of system vulnerabilities and cyber attacks. Common cyber hygiene practices include: regularly changing passwords, using two-factor authentication, using and updating licensed software, backing up data, and limiting access to systems and platforms.

Source: USAID Cybersecurity Primer

International stakeholders and development partners engage with national governments and local stakeholders to raise awareness. DFAT is the primary donor working in cybersecurity in the PICs. Other donors such as FCDO, USAID and other U.S. Government entities, and MFAT have recently gained prominence and are actively engaged in the cybersecurity space. The Get Safe Online initiative, funded by the FCDO UK Commonwealth Cyber Security Program employs an innovative mechanism to engage with local organizations and stakeholders (Box 20).[548] The Australian Cyber Engagement Strategy in PICs and its corresponding investment have brought about substantial transformations in the cybersecurity ecosystem.[549]

BOX 20: Spotlight on regional cybersecurity awareness initiatives: Cyber Smart Pacific and Get Safe Online

Cyber Smart Pacific and Get Safe Online are two major region-wide cybersecurity awareness campaigns with different approaches to reach and engage local communities. Cyber Smart Pacific is PaCSON's annual awareness program that encourages all PaCSON Member nations to Cyber Up and increase their cyber resilience. The campaign adapted materials from NZ CERT's Cyber Smart Week including posters, short videos, and other informational guides. PacSON collaborates with local CERT (e.g., CERTVU) and regional cybersecurity organizations to create landing pages that promote content.[550] The Get Safe Online initiative is funded by FCDO UK Commonwealth Cyber Security Programme.[551] It has bilingual websites in 7 PICs.[552]

The initiative has a unique way of reaching local communities through its in-country Ambassador and Advocates program. They recruit volunteers, often from underrepresented groups, and train them to go into communities to disseminate cybersecurity awareness materials. These advocates and ambassadors engage on platforms including television, radio, online forums, podcasts, and public events. This allows the program to customize messages on online safety to meet the specific needs and situations of each island country they operate in.[553]

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547   Regional expert, interview by DECA team, May 2023, online.

548   Regional security expert, interview by DECA team, March 2023, online.

549   For comprehensive information on the strategy and DFAT's program in the Pacific Island region, see "Australia's International Cyber and Critical Tech Engagement Strategy, 2021," Australasian Government, 2021, https://tinyurl.com/44n46smd and "Pacific Security Outlook Report 2022-2023," Pacific Islands Forum Secretariat, 2022, https://pacificsecurity.net/wp-content/uploads/2023/02/Pacific-Security-Outlook-Report-2022-2023-1-1.pdf.

550   "Cyber Smart Pacific 2022," PaCSON, 2022, https://pacson.org/cyber-smart-pacific/cyber-smart-pacific-2022.

551   "Get Safe Online launching bi-lingual websites in Pacific region," Get Safe Online, March 31, 2021, https://www.getsafeonline.org/personal/news-item/get-safe-online-launching-bi-lingual-websites-in-pacific-region/

552   Vanuatu, Fiji, Kiribati, Samoa, Tuvalu, Tonga, Papua New Guinea.

553   Get Safe Online, Launching bi-lingual websites.

2.6.4 DONOR SUPPORT SATURATION IN AWARENESS RAISING, POLICY DEVELOPMENT, AND INCIDENT RESPONSE TRAINING

The absence of effective coordination among donors leads to duplicated efforts and saturation in specific cybersecurity domains such as capacity building, policy development, and incident response training. According to a regional expert, the current cybersecurity donor support landscape is deficient in prioritizing long-term operational and organizational capacity building, while placing excessive emphasis on short-term incident response training and online safety programs.[554]

> *"There is too much basic incident response training but next to nothing on actually contextualized and operationally relevant training [for organizations such as CERTs], which is harder to deliver with more time and effort needed to invest in longer term relationships."*
>
> – Klee Aiken, Director, Community and Capacity Building Forum of Incident Response and Security Teams (FIRST)

One interviewee said that there is a disconnect between capacity building efforts and the actual needs of communities and governments. This impairs their ability to formulate locally relevant cybersecurity policies and strategies, and to foster communities of practice. This mismatch is partially attributed to insufficient engagement with locally driven communities and initiatives.[555] An interviewee from the PIFS maintained that to ensure sustainable impact, donor support should direct funds toward local ICT department needs such as facilitating the establishment of fully operational CERTs with ample resources including high functioning computers.[556]

The presence of coordination and advisory bodies including PaCSON, GFCE Pacific Hub, PILON, and to some extent PIFS, highlights opportunities for coordination in the region. During interviews, GFCE Pacific Hub representatives emphasized their organization's commitment to collaborating with existing donors in the PICs. They stressed the significance of actively involving local stakeholders who possess valuable insights and experiences regarding the specific needs and priorities of the PICs.[557] Other locally driven communities are emerging in the Pacific. These communities, such as Tonga Women in ICT (TWICT), Women in IT Solomon Islands (WITSI), Samoa Information Technology Association (SITA), and the PNG Digital ICT Cluster, play a vital role in building interest and capacity within the digital and cybersecurity ecosystems. Their organic, bottom-up approach has greater potential for compounding positive outcomes.[558]

2.6.5 GOVERNMENT SYSTEMS ARE INCREASINGLY TARGETS OF CYBER ATTACKS

Government systems have become prime targets amidst an escalating wave of cyber attacks. Low government staff cyber hygiene and awareness aggravate the situation. Despite the presence of support through programs such as Cyber Safety Pasifika led by Australian Federal Police and NZ CERT, there is a deficiency in well-defined protocol and coordinated steps to effectively prevent, mitigate, and respond to cybersecurity threats.

The Pacific region is an attractive target and base for malicious cyber actors given increasing internet connectivity and limited legislative and operational capacity of law enforcement agencies to respond. Cyber criminals in the region

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554   Regional expert, interview by DECA team, March 2023, online.

555   Forum of Incident Response and Security Teams (FIRST), interview by DECA team, March 2023, online.

556   Regional security expert, interview by DECA team, April 2023, online.

557   GFCE Pacific Hub, interview by DECA team, March 2023, online.

558   Forum of Incident Response and Security Teams (FIRST), interview by DECA team, March 2023, online.

target individuals and organizations with common tactics like hacking, identity theft, spamming, social engineering, data tampering, online fraud, and programming attacks. PICs have also endured notable large scale cyber attacks in recent years that targeted government services and critical infrastructure. These are outlined in Figure 19.

FIGURE 19. Timeline of recent cyber attacks across the Pacific

- **Vanuatu:** In November 2022, the first reports of a malware attack on state networks were announced, causing delays in communication and coordination in this Pacific Island nation of 314,000 people and 80 islands. The attack crashed nearly all government email and website archives, but did not affect civilian infrastructure, such as airline or hotel websites. Amid the disruptions, government officials were forced to use personal equipment and email servers to maintain governance, while citizens used online Yellow Pages or hard copy phone directories to locate government phone numbers and get access to government services.

- **RMI:** In March 2022, internet systems were disrupted by a major distributed denial of service (DDoS) cyber attack on the National Telecommunications Authority (NTA). NTA services were disrupted on and off over a 10-day period.[559]

- **Fiji:** In April 2021, a cyber attack resulted in disruptions to digital government services and networks including GovNet.[560]

- **PNG:** In October 2021, a ransomware attack targeted the payment systems administered by the Department of Finance's Integrated Financial Management System (IFMS). The IFMS manages access to foreign aid money, which was disabled by attackers demanding Bitcoin in ransom payment.

The region is not adequately prepared for cyber attacks. Often, the exact source and impact of the attack remains unknown. In RMI, the NTA failed to attribute the attacks to a particular source in the aftermath of the 2022 attack. Some attacks on RMI were believed to have geopolitical motives, linked to their alliance with the U.S. in the context of the Russian invasion of Ukraine.[561]

> *"We had to shut down the whole thing to isolate and restart the different components one by one; we don't know what hit us; we know it's not having any negative impact on our network since we were able to isolate it and just put it in a safe box somewhere. We can't attribute it to anyone."*
>
> — Interview with anonymous, RMI

In the face of cyber attacks, PICs seek assistance from external cybersecurity experts to recover from and respond to attacks, including experts from Australia CERT and CERT NZ.[562] Incidents involving cybersecurity breaches have been investigated by authorities such as the Australian Federal Police (AFP).[563] PACSON facilitates information sharing on cyber incident response and channels support from international partners.[564] Nonetheless, there is a notable absence of established protocol in most countries concerning a post-attack action plan,

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559   Giff Johnson, "Marshall Islands telecom service hit by cyber attack," RNZ, March 28, 2022. https://tinyurl.com/mwewr3br.

560   Luke Nacei, "Cyber attack disrupts State online services," The Fiji Times, April 14, 2021. https://www.fijitimes.com/cyber-attack-disrupts-state-online-services/.

561   Pacific Island Forum Secretariat, interview by DECA team, April 2023, online.

562   CERT Tonga, interview by DECA team, April 2023, online.

563   Department of Information & Communications Technology, Ministry of Telecommunications, Nauru, interview by DECA team, May 2023, online.

564   "Cyber Security and Safeguarding Electronic Transaction in the Pacific Islands," Pacific Region Infrastructure Facility (PRIF), October 2019, https://www.theprif.org/sites/default/files/documents/cyber_security_report_low_res_rev_5.pdf

including the appropriate channels and contacts for seeking support.[565] Ransomware attacks are increasing across the Pacific, with the 2021 incident in PNG standing out as one of the largest.[566,567,568] Social media platforms are common channels for exploitation by bad actors, which particularly affects the younger generation.

Insufficient digital literacy and inadequate training on online safety contribute to low cyber hygiene across the PICs. Interviewees revealed a lack of strong cyber hygiene in the PICs, particularly regarding cyber bullying, online scams, gender-based online harassment, and ransomware. The COVID-19 pandemic resulted in a larger online population and a rise in scams and frauds targeting individuals with low digital literacy levels. Legislation on cyberbullying is in progress in some PICs, which creates a no consequence opportunity for individuals who negatively exploit the internet.[569] The lack of educational campaigns from government and civil society organizations on internet safety practices is seen as a contributing factor.[570]

> ### BOX 21: Cyber Safety Pasifika: Enhancing Online Safety in PICs
>
> The Cyber Safety Pasifika (CSP) program is managed by the Australian Federal Police (AFP) through the Pacific Police Development Program – Regional (-RP-R). It promotes online safety awareness and baseline training for the broader Pacific community. AFP trains local police officers and teachers to teach basic cyber hygiene and safety to students and communities. The program focuses on three areas: cyber safety awareness and education; development of cybercrime legislation and policy; and enhanced cybercrime investigation skills of Pacific Police. Participating countries include Samoa, FSM, Kiribati, RMI, Nauru, PNG, Palau, Tuvalu, Vanuatu, Solomon Islands, and Tonga.

Cybersecurity for critical infrastructure in the region is fragmented.[571] According to interviewees from GFCE Pacific Hub, there have been few visible activities around cybersecurity for critical infrastructure. There have been more visible efforts around incident response, digital forensics, and public awareness raising.[572]

Across the region, government systems face a significant threat from escalating cyber attacks, exacerbated by the lack of critical infrastructure and low cyber hygiene. There is a pressing need for well-defined protocols and coordinated efforts to effectively address cybersecurity threats and implement mitigation measures.

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565 CERT Tonga, interview by DECA team, April 2023, online.

566 Pacific Island Forum Secretariat, interview by DECA April 18, 2023.

567 "Pacific Security Outlook Report 2022-2023," Pacific Islands Forum Secretariat, 2022, https://pacificsecurity.net/wp-content/uploads/2023/02/Pacific-Security-Outlook-Report-2022-2023-1-1.pdf.

568 Pacific Region Infrastructure Facility (PRIF), Cyber Security and Safeguarding.

569 Anonymous interviewee, interview by DECA team, March 2023, online.

570 Anonymous interviewee, interview by DECA team, April 2023, online.

571 Ministry of Communications and Information Technology, Samoa, interview by DECA team, May 2023, online.

572 GFCE Pacific Hub, interview by DECA team, March 2023, online.

PILLAR 3: DIGITAL ECONOMY

Digital Economy explores the role digital technology plays in increasing economic opportunity and efficiency, trade and competitiveness, and global economic integration. Areas of inquiry include digital financial services (credit or debit cards, payment apps, mobile money, and digital savings and loan products), financial inclusion, regulation of digital finance, digital trade, e-commerce, and the financial technology (FinTech) enabling environment. This pillar also assesses strengths and weaknesses in the local digital talent pool and the tech startup environment. A healthy digital economy requires a supply of ICT skills that match the demand and an ecosystem that promotes technological innovation.

KEY TAKEAWAYS: DIGITAL ECONOMY

FINDINGS

- **Policies, Regulation, and Legislation:** Accelerated focus on e-commerce assessments and strategies at regional level leads to improvements in relevant policies and strategies. Donor support has shifted to soft infrastructure and DFS with Pacific Islands Forum Secretariat (PIFS) in a leading facilitator role.

- **E-commerce:** The Pacific region is experiencing an escalation in economic activity on digital platforms. Most e-commerce activity in PICs is limited to consumer goods, food, handicrafts, and tourism as MSMEs lack the capacity to adopt digital tools to buy and sell goods and services online. Weak seller, buyer, and platform e-commerce ecosystems hamper development in most PICs.

- **Digital trade:** Institutional and infrastructural constraints hinder progress in smaller economies. Despite improved trade infrastructure, weak export competitiveness among Pacific MSMEs is reflected in negligible cross-border trade. Enhanced digitally enabled trade and coordinated trade facilitation efforts mark positive strides.

- **Digital financial services (DFS):** Slow yet growing adoption of DFS is supported by development partners, particularly mobile money and QR code payments. Commercial banks are not interested in DFS due to the small market sizes. Despite challenges like inadequate infrastructure and digital skills, FinTech presents opportunities for financial inclusion and remittances, but regulation is missing.

- **Digital Assets:** Countries are exploring digital currencies and Central Bank Digital Currencies (CBDC) although concerns like volatility and potential for illicit activity abound.

- **Digital talent pool:** Pacific Islands face a limited ICT talent pool, worsened by out-migration. The COVID-19 pandemic boosted e-readiness and demand for local digital skills, particularly among the youth, but talent growth is hindered by a skill deficit and a low appeal of entrepreneurship.

- **Tech startup environment:** The tech startup ecosystem in the Pacific Islands—mainly early stage— is expanding due to rising digital infrastructure and increasing demand for products and services. Growth is restrained by scarce funding for advanced startups. Governments and development partners are key supporters in this small but growing innovation landscape.

RELEVANT RECOMMENDATIONS

9. Cultivate digital engagement by enhancing local capacity for e-commerce in PICs

10. Reduce policy and regulatory barriers to e-commerce and digital trade

11. Build strong foundations for digital skills development that bridge the gaps between demand and supply

12. Promote the safe adoption of digital financial services to increase financial inclusion and economic opportunities

INTRODUCTION

Significant growth and development of the digital economy across the Pacific is driven by increased access to the internet and mobile technologies, government initiatives, and international cooperation. The COVID-19 pandemic accelerated digital transformation in the region with increased adoption of digital tools for remote work, online education, telemedicine, and contact tracing. In the digital economy, this is illustrated by: the establishment of online marketplaces in Fiji, Kiribati, PNG, Samoa, and Vanuatu; the increased use of mobile money and other digital payment systems driven by partnerships between MNOs, banks, payment gateways, and FinTech startups; and the growth of tech startups supported by innovation hubs, startup accelerators, and coding boot camps. The pandemic encouraged the adoption of digital platforms by consumers and businesses and threw a spotlight on the lack of adoption of internationally recognized laws and regulations for e-commerce, digital trade, digital financial services, and more broadly for electronic transactions. Digital transformation in the PICs is guided by various policies, plans, and visions that aim to harness the potential of technology for social and economic development. The adoption of a regional e-commerce strategy by PIFS leaders in 2021 triggered the creation of a sound governance framework at regional and national levels. An increasing number of PICs not only developed national e-commerce or digital economy strategies (Table 13), but have also ensured that these strategies are mainstreamed into national development plans.

TABLE 13. Regional and National E-commerce Strategies developed under the PIFS E-commerce Initiative

NATIONAL STRATEGIES	
Tonga (2021)	Vanuatu (2022)
Samoa (2022)	Solomon Islands (2022)
Tuvalu (2023)	PNG (on-going, 2023)
Kiribati (2023)	
REGIONAL ASSESSMENTS AND STRATEGIES	
Regional E-Commerce Assessment (2020)	Regional E-Commerce Strategy-Roadmap (2021)

Source: PIFS E-commerce Portal (https://www.forumsec.org/2021/02/23/pacific-e-commerce-initiative/)

There are four tiers of e-commerce in the PICs, each corresponding to a different level of adoption of established marketplaces:

TABLE 14. Tiers of e-commerce in the Pacific

	TIER	DESCRIPTION	PACIFIC ISLAND COUNTRIES
Early stage	Tier 1	Informal businesses use social media as a launchpad, only ordering (not transactions) occurs online via Messenger, WhatsApp or Instagram.	Kiribati, Tuvalu, Nauru
	Tier 2	Retail leaders build standalone web shops and sell domestically and across borders.	FSM, Palau, RMI
More advanced	Tier 3	Domestic online marketplaces, a large share of purchases made by the diaspora for delivery in-country.	Samoa, Solomon Islands, Tonga, Vanuatu
	Tier 4	Established online marketplaces that offer cashless payment solutions.	PNG (marketplaces offer first and last-mile logistics options) Fiji (specialized export-focused platforms)

3.1 DIGITAL ECONOMY POLICY DEVELOPMENT AND REGIONAL HARMONIZATION SHOW PROMISE

Accelerated focus by PIC governments and donors on national e-commerce assessments, strategies, and policies is part of a broader push to narrow the digital and trade divide within the PICs and with the rest of the world. Interviewees repeatedly emphasized that frameworks for e-commerce, DFS, and cybersecurity legislation needed to be strengthened, modernized, and harmonized. PICs face challenges in data protection and privacy due to the lack of clear laws and regulations on data protection, as well as the lack of awareness of data protection issues among businesses and individuals. Significant donor support exists for digital economy development, particularly for financial inclusion. Over the last eight years, donor support moved from a focus on ICT (hard) infrastructure to soft infrastructure (policies, strategies, laws and regulations, domestic and international compliance) as connectivity became less of an issue thanks to the growing network of submarine cables.

3.1.1 PICS HAVE A NARROW, RATHER THAN HOLISTIC FOCUS ON THE DIGITAL ECONOMY

For most PIC governments, the concept of digital economy is primarily related to ICT infrastructure, and most national development strategies focus on universal coverage. A holistic focus on the digital economy has not emerged. In recent years, there was an increasing and separate focus on e-commerce via ecosystem assessments and national and regional e-commerce strategies (Table 13). These policies cover a broad spectrum of technical areas including cybersecurity legislation, electronic payment solutions, and e-commerce skills development. Out of necessity, governments and development partners remain dominant players within the digital economy space for the medium to long term.[573]

3.1.2 REGIONAL AND NATIONAL E-COMMERCE ASSESSMENTS AND STRATEGIES GUIDE DIGITAL ECOSYSTEM DEVELOPMENT

E-commerce is a priority area within the PIFS Pacific Aid-for-Trade Strategy (PAFTS) 2020-2025,[574] which reflects the "unprecedented opportunity to narrow distances between Forum Members and the rest of the world, reduce trade costs, and promote export diversification".[575] The Pacific Regional E-commerce Strategy and Roadmap (2021) and the Pacific Regional E-commerce Baseline Assessment (2020) [576] are testaments to this. The Pacific regional e-commerce strategy[577] approved by Forum Trade Ministers in 2021 (Table 13) aims to achieve three outcomes by 2026:

- The number of Forum Island Countries (FIC) consumers transacting on e-commerce websites and the value of their online transactions at least doubled compared to 2021.

- The number of FIC businesses selling on e-commerce websites and the value of their online sales at least doubled compared to 2021.

- Internet penetration for each FIC increased to at least 50% for those with <50% internet penetration in 2021 and at least 75% for those with >50% internet penetration in the same base year.

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573   Digital Development Partnership, The World Bank, 2020, https://www.worldbank.org/en/programs/digital-development-partnership

574   International policy advisor, interview by DECA team, April 2023, online.

575   "Pacific Aid For Trade Strategy (PAFTS) 2020-2025," Pacific Islands Forum Secretariat (PIFS), 2020, https://www.forumsec.org/wp-content/uploads/2020/04/Pacific-Aid-for-Trade-Strategy-2020-2025.pdf.

576   Reports Library, Pacific E-commerce Initiative, n.d., https://pacificecommerce.org/reports-library/?_sector=regional-assessment-and-strategy.

577   "Pacific Regional E-commerce Strategy and Roadmap," Pacific E-commerce Initiative, August 2021, https://forumsec.org/publications/pacific-regional-e-commerce-strategy-and-roadmap-approved.

At the national level, national trade policy frameworks and national export strategies increasingly recognize e-commerce as an important channel for domestic market development, export competitiveness, and regional integration. Governments, assisted by development partners, conducted assessments and strategy exercises to chart a way forward for their respective e-commerce sectors. Eleven PICs[578] conducted E-commerce Readiness Assessments[579], six[580] adopted E-commerce Strategies or Acceleration Plans, and one adopted an E-commerce Policy.[581] These national-level instruments are aligned with the Pacific Regional E-commerce Strategy and Roadmap (2021), and the Pacific Regional E-commerce Baseline Assessment (2020),[582] which aim to improve e-commerce competitiveness through collective action identified by the Framework for Pacific Regionalism (FPR).

BOX 22: The PIFS Regional Pacific E-commerce Strategy: policy areas and thematic outcomes.

The Pacific E-commerce strategy adopted by Forum Trade Ministers in August 2021 lists seven intermediate or thematic outcomes conducive to three overarching outcomes, one for each of the E-Trade Readiness policy areas. Direct impacts are captured through 18 strategic outputs, which are delivered through 54 measures (more details available).

VISION: A transformative Blue Pacific economy where all businesses and consumers actively engage in domestic and cross-border electronic commerce. IMPACT: Transforming Pacific livelihoods through accelerated economic growth that is inclusive and equitable.	POLICY AREA	THEMATIC OUTCOMES
	PA 1: E-commerce Readiness and Strategy Formulation	E-commerce is mainstreamed in national and regional level policies.
	PA 2: ICT Infrastructure and Services	Fast, reliable, affordable, and inclusive, internet connectivity is achieved.
	PA 3: Trade Logistics and Trade Facilitation	Fast, reliable, affordable, and inclusive delivery of online purchases is achieved within and across borders.
	PA 4: Legal and Regulatory Framework	Predictable laws and regulations have encouraged business and consumers to trust marketplaces and engage in E-commerce.
	PA 5: Electronic-Payment Solutions	Digital financial services including payment solutions for E-commerce are widely adopted by businesses and consumers.
	PA 6: E-commerce Skill Development	Better informed, prepared, and confident populations have mastered digital innovation.
	PA 7: Access to Finance for E-commerce	Funding options for businesses seeking to start or accelerate their digital journey have been expanded and diversified.

Source: *Pacific Regional E-Commerce Strategy and Roadmap* (Pacific E-Commerce Initiative, 2021)

3.1.3 THE STATUS OF E-COMMERCE RELATED LAWS IN PICS HAS IMPROVED BUT REMAINS PATCHY

Having clear and comprehensive laws and regulations governing the digital economy can help countries embrace e-commerce and reap its benefits. This is because such frameworks can reduce uncertainty, build trust, and help mitigate potential risks.

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578 Pacific E-commerce Initiative, Reports Library. Solomon Islands, Tuvalu, Tonga, Samoa, PNG, Niue, Nauru, Kiribati, FSM, Fiji, Vanuatu.

579 E-commerce readiness assessments and E-commerce strategies carried out by PIFS follow the UNCTAD eTrade Strategy, that covers seven policy areas: policies and strategies, ICT infrastructure and services, legal and regulatory aspects, electronic payments, access to finance, skills, and trade facilitation.

580 Reports Library, Pacific E-commerce Initiative, n.d., https://pacificecommerce.org/reports-library/?_sector=regional-assessment-and-strategy. Samoa, Vanuatu, Tonga, Solomon Islands are forthcoming and Cook-Islands and Tuvalu are ongoing.

581 MTCIC Kiribati, interview by DECA team, March 2023, online.

582 Pacific E-commerce Initiative, Reports Library, https://pacificecommerce.org/reports-library/?_sector=regional-assessment-and-strategy.

"More and more we are realizing the importance of a legal and regulatory environment that creates trust. Without laws and regulations, you cannot avoid fraud, security threats; we will get to a legal and regulatory level that is much more coordinated."[583]

— Andrea Giacomelli, Aid-for-Trade and Trade Policy Advisor, Permanent Delegation of the Pacific Islands Forum to the United Nations, World Trade Organization, and other international organizations in Geneva.

PIC digital economies are small but poised to grow. Maturity, in terms of technical infrastructure, must be matched with adequate cybersecurity legislation. This is a new topic for most PICs, and there is a general lack of expertise on this in the Pacific (Section 2.6).

The United Nations Conference on Trade and Development (UNCTAD) considers four laws to be essential for e-commerce activities: e-transactions, consumer protection, data protection and privacy, and cybercrime.[584] UNCTAD tracks legislation adoption in more than 194 economies including for most of the PICs (Table 15). The United Nations Commission on International Trade Law (UNCITRAL) is supporting several PICs in developing their e-transaction laws.[585]

"The United Nations Convention on the Use of Electronic Communications in International Contracts has 18 State parties, of which 3 are from the Pacific. Pacific States are really trying to adopt modern legislation on digital trade and have a positive attitude towards the adoption of UNCITRAL text. Ten years ago, there was limited awareness of UNCITRAL. Now, most Pacific countries have laws on electronic transactions, all the laws are based on UNCITRAL texts, and stakeholders are aware of it."[586]

— Luca Castellani, UNCITRAL HQ, Vienna Austria

Consumer protection regulations are outdated for most PICs, dating as far back as 20 years. Countries that have consumer protection legislation include Fiji, Samoa, Tonga, and the Solomon Islands. However, this legislation is geared toward traditional business models and does not include provisions for online or e-commerce transactions. The status of data protection laws in PICs is patchy (Section 2.2). Some countries have comprehensive data protection laws, while others have none. As of January 2023, only one DECA PIC (Vanuatu) has enacted a data protection law with The Personal Data Protection Act, B.E. 2022 (2019). Other Pacific Island countries are in the process of developing or enacting data protection laws, including: Fiji, Kiribati, Marshall Islands, Nauru, Niue, Palau, Samoa, Solomon Island, Tonga and Tuvalu. However, these laws vary in their scope and enforcement. The lack of comprehensive data protection legislation in some PICs is a concern as the region is increasingly connected to the global digital economy, and businesses and individuals are increasingly exposed to data risks (Table 15; see also Section 2.2, Table 6).

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583   International Policy Advisor, interview by DECA team, May 2023, online.

584   "How COVID-19 triggered the digital and e-commerce turning point," UNCTAD, March 15, 2021, https://unctad.org/news/how-covid-19-triggered-digital-and-e-commerce-turning-point.

585   "E-transactions legislation worldwide," UNCTAD, n.d., https://unctad.org/page/e-transactions-legislation-worldwide.

586   UNCITRAL, interview by DECA team, May 2023, online.

"The FSM government has enacted digital safety protocol in terms of consumer protection as well as what illicit content might be and various basic things that need to be in the digital infrastructure in the nation. As far as it affects the entrepreneur, those requirements must be there for a merchant gateway provider and banking institutions to enable them to collect credit card information of people; if you don't have these privacy statements on your website you won't be approved."[587]

– Matt Simpson, Green Banana Paper, FSM

TABLE 15. Adoption of key legislation, 2022[588]

INDICATOR	ADOPTION OF E-TRANSACTION LAWS	ADOPTION OF ONLINE CONSUMER PROTECTION LAWS	ADOPTION OF DATA PRIVACY LAWS	ADOPTION OF CYBERCRIME LAWS
Fiji	YES	NO	NO	YES
Kiribati	NO	N/A	NO	YES
RMI	N/A	N/A	NO	NO
FSM	N/A	N/A	N/A	NO
Nauru	N/A	N/A	NO	NO
Palau	N/A	N/A	N/A	NO
PNG	YES	N/A	NO	YES
Samoa	YES	NO	NO	YES
Solomon Islands	YES	N/A	NO	NO
Tonga	YES	N/A	NA	YES
Tuvalu	NO	N/A	NO	DRAFT
Vanuatu	YES	YES	NO	NO

Source: UNCTAD, Pacific Data Hub.
Note. NO indicates there is no law; N/A indicates the country did not respond to the question.

3.1.4 STATISTICS COLLECTION ON ICT AND MORE BROADLY ON DIGITAL ECONOMY IS A CHALLENGE

PICs are not ranked as part of UNCTAD's E-commerce Business-to-Consumers (B2C) Index and have limited representation for other key indices such as the ITU ICT Development Index and the Universal Postal Union (UPU) Integrated Index on Postal Development. This is partially a function of weak data collection capabilities.[589] The lack of data on the digital economy in general and on e-commerce in particular in PICs (despite recent attempts by SPC and PIFS) is a significant challenge that hinders the understanding and assessment of digital transformation in the region as it is difficult to manage what you cannot measure. Enhanced international cooperation and assistance has played a vital role in supporting PICs in their efforts to gather accurate and comprehensive data on the digital economy.

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587   Green Banana PAPER, FSM, interview by DECA team, April 2023, online.

588   The UNCTAD Global Cyberlaw Tracker is the first ever global mapping of cyberlaws. It tracks the state of e-commerce legislation in the field of e-transactions, consumer protection, data protection/privacy and cybercrime adoption in the 194 UNCTAD member states.

589   "Pacific Islands Forum Secretariat, E-commerce Assessment – Pacific Region, December 2020," Pacific E-commerce initiative, https://forumsec.org/publications/pacific-e-commerce-initiative. "E-commerce statistics," Pacific E-commerce Initiative, n.d., https://pacificecommerce.org/ecommerce-statistics/.

3.1.5 PICS DO NOT PARTICIPATE IN REGIONAL OR GLOBAL TRADE AGREEMENTS ON E-COMMERCE

E-commerce offers Pacific businesses a vital opportunity to participate in regional and international trade. However, PICs often grapple with an inadequate legal framework for e-commerce, hindering their meaningful participation in free trade agreement negotiations. While these regional agreements typically cover a broad range, they often have ambiguous terms for enforcement and implementation. This lack of clarity prevents the adoption of cooperative solutions, like forming shared rules for cross-border e-commerce.[590] The limited awareness and use of technical standards and dedicated laws and regulations that support e-commerce is compounded by the lack of personnel to prepare and carry out negotiations, and their lack of exposure to digital trade negotiations. Regional or plurilateral trade agreements to which PICs are signatories do not include e-commerce, except for the Melanesian Free Trade Agreement (MFTA), which references e-commerce (Part 7, Chapter 6 Trade in Services). International initiatives like the Joint Statement Initiative (JSI) on E-commerce at the World Trade Organization (WTO), which aims to reach consensus and generate mutually advantageous results, is not seeing any uptake by PICs.[591]

None of the PICs participate in the current negotiations on e-commerce taking place at the WTO under the JSI. Similarly, none of the PICs are members of the Regional Comprehensive Economic Partnership (RCEP) or of the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CP-TPP), which include specific provisions on e-commerce.[592]

3.1.6 NATIONAL PAYMENT SYSTEMS LACK SOPHISTICATION

There is significant variation among PICs in terms of the sophistication or even the presence of national payment systems. National payment system laws exist in Fiji, PNG, Samoa, Solomon Islands, and Vanuatu. Kiribati, FSM, and Palau receive support from the Pacific Financial Technical Assistance Centre (PFTAC) to enhance their national banking regulatory frameworks.[593] Most PICs operate a manual payment settlement system and lack laws and technical infrastructure related to automated settlements and national switches, which together promote interoperability. Fiji and PNG have enacted laws and implemented technical infrastructure. Neither Nauru, Tuvalu, nor Kiribati have a central bank.[594] In the case of these smaller economies, the national currency is heavily tied to the Australian Dollar and fluctuations can cause significant uncertainty.[595] Mobile money is a critical tool for financial inclusion in the Pacific in terms of improving access to banking and payment services. However, a key regulatory challenge in most PICs is that governments (or financial regulators) do not issue specific mobile money licenses for payment service providers (PSPs), which causes uncertainty for operators.[596]

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590 "Pacific Regional E-commerce Assessment," Pacific E-commerce initiative, December 2020, https://pacificecommerce.org/reports/pacific-regional-e-commerce-assessment/.

591 "The WTO Joint Initiative on e-commerce," Digwatch, n.d., https://dig.watch/processes/wto-ecommerce.

592 "E-Commerce and the WTO: The Joint Statement Initiative (JSI) and Beyond," World Trade Organization (WTO), 2022, https://www.wto.org/english/tratop_e/ecom_e/joint_statement_e.htm. "The Regional Comprehensive Economic Partnership (RCEP): A New Era for Trade and Investment in Asia," Asia-Pacific Economic Cooperation (APEC), 2022, https://www.adb.org/sites/default/files/publication/792516/rcep-agreement-new-paradigm-asian-cooperation.pdf "The Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP): A New Model for Trade in the Asia-Pacific, Asia-Pacific Economic Cooperation," Australian Government Department of Foreign Affairs and Trade, n.d., https://www.dfat.gov.au/trade/agreements/in-force/cptpp/comprehensive-and-progressive-agreement-for-trans-pacific-partnership.

593 "Pacific Islands Forum Secretariat, E-commerce Assessment – Pacific Region, 2020, "https://www.forumsec.org/wp-content/uploads/2021/02/REGIONAL-ECommerce-Assessment-1.pdf.

594 Information derived from Individual assessments conducted at https://www.forumsec.org/2021/02/23/pacific-e-commerce-initiative/.

595 "PIFS, National E-commerce Assessment - Nauru," Pacific E-commerce Initiative, August 2021, https://forumsec.org/publications/regional-e-commerce-strategy-and-nauru-e-commerce-assessment-shaping.

596 "The Opportunity for Digital and E-commerce Payments in the Pacific Region," UNCDF, 2021, https://www.rfilc.org/wp-content/uploads/2021/09/2021_The-Opportunity-for-Digital-and-E-commerce-Payments-in-the-Pacific-Region.pdf and Tanai Khiaonarong, Terry Goh, "FinTech and Payments Regulation: Analytical Framework, May 29, 2020, https://www.imf.org/en/Publications/WP/Issues/2020/05/29/Fintech-and-Payments-Regulation-Analytical-Framework-49086

3.1.7 FINANCIAL INCLUSION IS A KEY FOCUS OF DOMESTIC POLICY DEVELOPMENT IN LARGER PACIFIC ECONOMIES

Fiji, PNG, Samoa, Solomon Islands, and Vanuatu have national financial inclusion strategies (NFIS). Tonga's is in development. The NFIS aims to enhance reach and quality of DFS; target women, youth, and rural populations as key beneficiaries; and focus on building financial resilience within households and for MSMEs.

3.1.8 REGULATIONS THAT PROMOTE FINTECH INNOVATION ARE EMERGING

Regulatory sandboxes can have a transformative impact on DFS development and adoption by expanding financial access, particularly for the unbanked, and encouraging financial innovation through an evidence-based approach that mitigates risks. Such regulatory frameworks exist in PNG (2019), Fiji (2020), and Solomon Islands (2022). Beyond innovation, the sandboxes often have a financial inclusion dimension. The Fiji regulatory sandbox is broadly focused on credit and debit cards, QR code-based payments, agent banking, online banking, mobile money, and other emerging digital financial services.[597] This broad focus facilitates entry for a wide range of FinTech services that otherwise would not be available or would be delayed.

The Pacific Regional Regulatory Sandbox—developed with the support of the Alliance for Financial Inclusion (AFI) and with the involvement of the central bank authorities from Fiji, PNG, Samoa, Solomon Islands, Tonga, and Vanuatu—is an important regional development. The regional sandbox initiated in 2020 facilitated a joint approach to help financial regulators in the Pacific review potential applicants, easing the application process and allowing successful applicants to simultaneously test their innovative technologies in multiple jurisdictions. FinTechs like FijiPay emerged from the sandbox (2021).[598] This well-defined regional regulatory structure[599] may have improved the business case for investors and innovators to introduce financial services across the region when the individual markets do not offer significant potential for scale. AFI developed guidelines with which individual PICs can align when developing their individual sandboxes.[600]

3.1.9 GOVERNANCE FRAMEWORK AND DONOR COORDINATION ON ICT AND E-COMMERCE PRODUCE CONCRETE RESULTS

Better internet connectivity and ICT policies in the PICs have broadened the attention of donors from supporting submarine cables and ICT policies to soft infrastructure, including entrepreneurship development (incubators and accelerators), payment solutions, and legal and regulatory frameworks. Donor support for digital transformation in PICs combines regional, sub-regional (Micronesia, Melanesia, and Polynesia), and national actions. Australia, New Zealand, the European Union, and the Republic of Korea are strong supporters of the Pacific E-commerce Initiative, along with the World Bank, the Asian Development Bank, and the UN system. The PRC is taking an interest in the sector in the Pacific and issued a position in 2022 indicating support for strengthening synergies between Belt and Road cooperation and the Regional E-commerce Strategy.[601] [602] In

597   "Reserve Bank Launches Regulatory Sandbox, Invites Innovative Solutions for Fiji's Financial Sector 2020," National Financial Inclusion Taskforce, January 17, 2020, http://www.nfitfiji.com/media-releases/reserve-bank-launches-regulatory-sandbox-invites-innovative-solutions-for-fijis-financial-sector/.

598   Pavel Shust, "Pacific sandbox unites regulators in supporting fintech legislation, AFI, January 14, 2022, https://www.afi-global.org/newsroom/blogs/pacific-sandbox-unites-regulators-in-supporting-fintech-innovation/.

599   "Digital finance way forward for Pacific region," AFI, May 21, 2021, https://www.afi-global.org/newsroom/news/digital-finance-way-forward-for-pacific-region/.

600   Pacific Regional Regulatory Sandbox, Facebook, March 2020, https://www.facebook.com/AFI.History/videos/pacific-regional-regulatory-sandbox/210506157906511/.

601   International Policy Advisor, interview by DECA team, May 2023, online.

602   "China's Position Paper on Mutual Respect and Common Development with Pacific Island Countries," Ministry of Foreign Affairs of the People's Republic of China, May 30, 2022, https://www.fmprc.gov.cn/eng/zxxx_662805/202205/t20220531_10694923.html.

most cases, supporting soft infrastructure requires putting in place robust governance mechanisms at both regional and national levels. The ongoing Pacific Digital Economy Programme (PDEP) funded by DFAT and the European Union and implemented by UNCDF, UNCTAD, and UNDP in eight and soon 10 PICs is a concrete example of the potential for coordination and alignment with regional priorities (Figure 20).

FIGURE 20. The Pacific Digital Economy Programme - PDEP (UNDP, UNCDF, UNCTAD funded by Australian DFAT and the European Union)
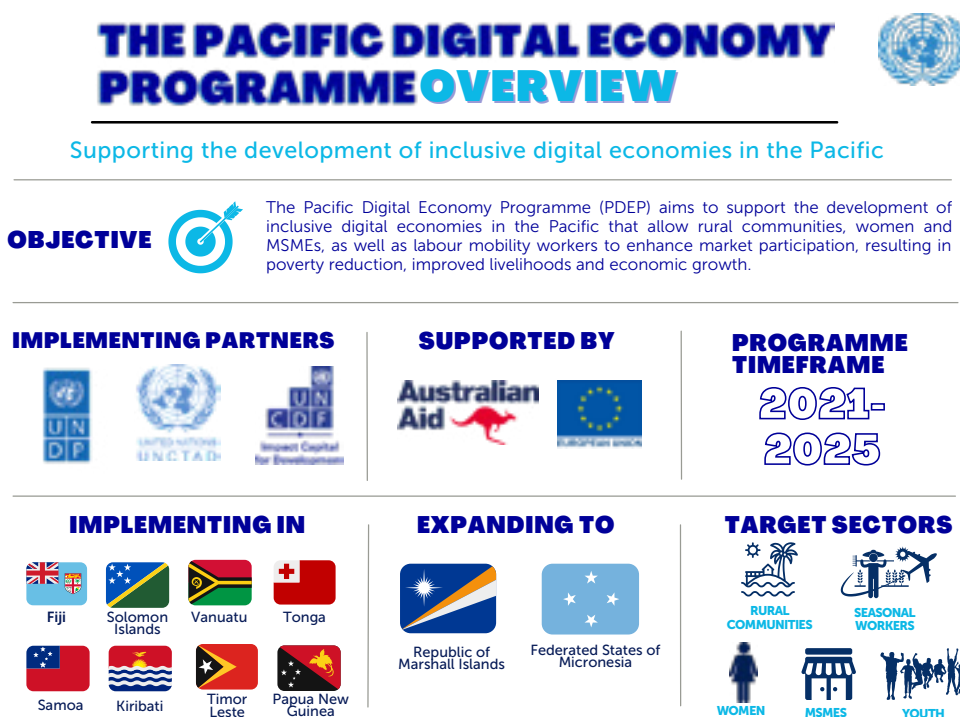
Source: PIFS

3.2 E-COMMERCE AND DIGITAL PLATFORMS PROVIDE OPPORTUNITIES FOR BUSINESSES AND CONSUMERS

3.2.1 E-COMMERCE IS A NEW ENGINE OF DOMESTIC AND FOREIGN TRADE DEVELOPMENT

E-commerce captivated the interest of PIC governments in recent years owing to several factors: a realization of the broader global growth of the sector and the growing digital divide between the PICs and the rest of the world; increasing donor and development partner assistance; and the driving force of the COVID-19 pandemic that underscored the fragility of economic growth and the role that e-commerce can play in domestic and international trade competitiveness.[603]

3.2.2 THE MAJORITY OF B2C AND C2C E-COMMERCE ACTIVITY OCCURS ON SOCIAL MEDIA

Goods e-commerce platforms, whether business-to-consumer (B2C) or business-to-business (B2B), do not exist in most PICs. However, in the relatively more advanced economies of Fiji, Samoa, and PNG, a handful of

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603   Pacific E-Commerce Initiative. "Pacific Regional E-Commerce Assessment." December 2020, https://pacificecommerce.org/reports/pacific-regional-e-commerce-assessment/.

goods e-commerce platforms host merchants. [604] The number of merchants on these platforms is modest, typically ranging between from five to 100.[605] E-commerce platforms that empower individual merchants to directly sell their goods to consumers seem to hold the most promise in the region. VitiKart in Fiji and Maua in Samoa stand as prime examples of such platforms.[606]

> *"The biggest online matching mechanisms for buyers and sellers in the Solomon Islands are social media platforms such as Facebook and Instagram. There are several buy/sell groups on Facebook with thousands of members (including overseas diaspora). They use the groups to advertise, meet, negotiate, and sell a wide range of products, including land and houses. The key advantage of Facebook is its name recognition, generally widespread use among those who use the internet, and user-friendly interface. It is trusted as a reliable and safe platform for commercial interactions."[607]*
>
> –UNCTAD.

The social commerce sector in the region is emerging. Social media platforms serve the key purpose of matching buyers and sellers, and this use-case is prevalent across the Pacific. Significant commercial activity in the Pacific takes place on Facebook, which hosts various groups that serve as informal online marketplaces. Each country in the Pacific has at least one Facebook buy and sell group with membership numbers exceeding 10% of the national population.[608] These groups may be product- and sector-specific, region- or city-specific, or general groups where a wide array of goods or services are advertised. A general buy and sell group in Honiara, Solomon Islands has 60,000 members with hundreds of daily posts.[609] Given the absence of dedicated international or regional e-commerce platforms, Facebook has evolved into a vital platform for regional businesses. According to several interviewees, businesses across the region often prioritize their Facebook presence over their dedicated business web pages, using it mainly as a tool for updating customers about new products and services. Entrepreneurs and small businesses also leverage communication platforms like Viber and WhatsApp to promote their products and interact with customers.[610]

> *"Social media platforms have gained huge popularity in terms of usage, not only for youth but older people, too. Nauru is an isolated island and digital literacy has grown organically rather than through formal education. There is huge growth in e-commerce in Nauru and mostly through social media. Mom and Pop shops use social media as their main platform. People use other platforms to purchase goods directly, but e-trade here is done on Facebook. People can use other external platforms like Amazon, but definitely you see a lot of those Amazon packages coming in and then goods being sold domestically via Facebook".[611]*
>
> – Masau Detudamo, Department of Foreign Affairs and Trade, Nauru.

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604 "The State of E-Commerce in the Pacific Islands," Asian Development Bank (ADB), November 2023, https://www.adb.org/publications/e-commerce-evolution-asia-pacific-opportunities-challenges

605 "Digital Economy Report Pacific Edition 2022: Towards Value Creation and Inclusiveness," United Nations Conference on Trade and Development (UNCTAD), https://pacificecommerce.org/reports/digital-economy-report-pacific-edition-2022/

606 "Digital Economy Report Pacific Edition 2022," UNCTAD.

607 UNCTAD, interview by DECA team, March 2023, online.

608 Pacific E-Commerce Initiative. "Pacific Regional E-Commerce Assessment." December 2020, https://pacificecommerce.org/reports/pacific-regional-e-commerce-assessment/.

609 "Buy and Sell in Honiara (Solomon Islands)," Facebook, n.d., https://www.facebook.com/groups/459226204635487/.

610 United Nations Capital Development Fund. "Perspectives on Emerging E-commerce in the Pacific." October 20, 2021. https://www.uncdf.org/article/7242/perspectives-on-emerging-e-commerce-in-the-pacific.

611 Department of Trade, Nauru, interview by DECA team, May 2023, online.

Facebook is a gateway to the potential benefits of e-commerce for many Pacific businesses and consumers. Experiencing the advantages of a global digital platform can inspire businesses and entrepreneurs to further innovate in the digital space, and could lay the groundwork for local digital entrepreneurship and transition to digital payments and dedicated e-commerce platforms.[612]

3.2.3 NARROW BASE OF PRODUCTS AND SERVICES SOLD ONLINE IN THE PACIFIC

Small goods e-commerce platforms focus on retail merchandise and household items while large goods e-commerce platforms primarily focus on food, household items, electronics, and other consumer goods. In contrast, smaller, niche platforms offer artisanal products like soap and jewelry. Products sold via e-commerce in the Pacific include groceries, retail merchandise, and handicrafts. Services sold online include ride hails, design, web development, logistics and transportation.[613] The tourism sector is an outlier in terms of a relatively high proportion of firms with a digital presence (either via platforms or self-operated) – although presence does not necessarily equate to e-commerce transactions, as most websites are static and do not contain a booking engine or a link to one. The tourism sector in Fiji, Samoa, and Vanuatu anchors e-commerce. Given tourism sector linkages with agriculture, handicrafts, and local transportation in the PICs, e-commerce-led growth in tourism can have strong spillover effects. PIC's geography lends itself to short value chains, and thus smaller merchant-buyer distances and domestic markets are significantly fragmented. In many cases, it can take several days and multiple modes of transport for a rural passenger or product to reach urban areas. MSME engagement in e-commerce is low, one function of low digital readiness and overall supply side capabilities.[614]

3.2.4 AN ESCALATION IN ECONOMIC ACTIVITY ON DIGITAL PLATFORMS

Digital platforms wield substantial influence and employ a range of strategies to fortify and expand their market positions, including acquiring existing or potential competitors and vertically integrating into other sectors. These platforms include digital payment platforms, social media networks, messaging services, goods-centric e-commerce platforms, and service-oriented e-commerce platforms, with a focus on tourism, entertainment, and advertising industries (Figure 21).

Fiji is the most advanced market in terms of several active e-commerce segments including food delivery, ride-hail firms, and marketplaces such as Multi Drua, Post Fiji e-Shop, and Vitikart. Revenue from Fiji's e-commerce market is projected to reach USD 204 million in 2022 and USD 350 million by 2025.[615] With more than 500,000 active Facebook users in Fiji (60 percent of the population), social media is also a big driver in the promotion of B2C transactions.

In 2020 in PNG, the e-commerce sector generated USD 101 million in revenue[616]and is projected to grow annually at a compound annual growth rate (CAGR) of about 13% from 2020 to 2025, elevating the market volume to an estimated USD 184.6 million by 2025.[617] The fashion segment leads the market, with revenue

612   "Digital Economy Report Pacific Edition 2022, UNCTAD, 2022, https://unctad.org/publication/digital-economy-report-pacific-edition-2022.

613   "E-Commerce Evolution in Asia Pacific: Opportunities and Challenges." ADB Publications. November 2023, https://www.adb.org/publications/e-commerce-evolution-asia-pacific-opportunities-challenges

614   "E-commerce evolution in Asia and the Pacific opportunities and challenges," Asian Development Bank, November 2023, https://www.adb.org/sites/default/files/publication/922086/e-commerce-evolution-asia-pacific-opportunities-challenges.pdf.

615   "E-commerce and the Pacific Islands: Opportunities and challenges," UNCTAD, 2019. https://unctad.org/system/files/official-document/dtlecdc2022d4_ch4_en.pdf.

616   "Papua New Guinea - Country Commercial Guide," International Trade Administration (ITA), January 11, 2024, https://www.trade.gov/country-commercial-guides/papua-new-guinea-ecommerce.

617   ITA, Papua New Guinea.

generation at USD 36.0 million in 2020. Over the last few years, new players entered PNG's e-commerce market including ShopSmartPNG, JiveMarket, BorokoMarket, Marketmeri, and Hausples.[618]

The 2022 Samoa E-commerce Strategy notes that online sales, remote work, and contactless deliveries are the norm. Consumers, businesses, and diaspora use platforms like Mad Pacific, Makeki Online, Maua App (Box 23), Seki Eats, My Samoa, Samoa Market, and Talofa Voucher to search for and buy products.

FIGURE 21. Main Digital Platforms, Services Offered, and Key Players in the Pacific

Source: PDEP, *Digital Economy Report 2022*, UNCDF/UNCTAD

BOX 23: SkyEye Pacific, a locally-grown ecosystem enabler in Samoa

SkyEye Pacific, established in 2016, is a company owned and run by Pacific Islanders looking at using technology and innovative ideas to solve some of the pressing issues faced by Samoan and Pacific Islanders. SkyEye Pacific has offices in Samoa, Solomon Islands, Tonga, and Vanuatu. Maua, SkyEye's e-commerce platform, is a complete e-commerce solution built around the realities of many Pacific communities, serving communities without online payment methods, without official addressing systems, and without delivery and logistics support.

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618   "E-commerce in Papua New Guinea: Opportunities and challenges," International Trade Centre (ITC), 2021, https://www.trade.gov/country-commercial-guides/papua-new-guinea-ecommerce.

BOX 23 (CONTINUED): SkyEye Pacific, a locally-grown ecosystem enabler in Samoa

The primary customers are Samoan diaspora buying online for delivery in Samoa. The company is registered in Australia to be able to receive payments from overseas. SkyEye Pacific started out developing services that harness geospatial technology to solve logistical challenges in the PICs. The company has developed a marketplace and a payment solution*, provides onboarding support, and has expanded to other PICs. It leverages local knowledge and grants from actors such as GSMA, UNCDF, and DFAT.

At the end of 2021, SkyEye Pacific launched its payment gateway including MTala, MyCash, and Stripe as payment options. The MauaPay payment gateway has APIs available for any platform that utilizes APIs to enable processing of payments for their products or services.

Source: SkyEye Pacific, interview by DECA Team, March 2023, online.

Tonga is a latecomer to the e-commerce sector as Facebook Garage Sales pages served as the de facto e-commerce platforms for a long time. This recently changed with the development of Made-in-Tonga and EZTonga. Made-in-Tonga is a women-owned marketplace for products made in Tonga by local communities. EZTonga is a full-fledged service platform developed from scratch by a local entrepreneur that now operates out of Perth, Australia after numerous failed attempts to develop the concept from Tonga.

"EZ Tonga operates as a fully integrated marketplace. The potential to expand this system across the Pacific Islands is evident. However, a significant issue arose in that many individuals found it challenging and burdensome to use the platform. In response, we made adjustments to our approach. Currently, we operate as a superstore, undertaking tasks on behalf of our vendors. This includes listing products, conducting marketing, handling deliveries, crafting product narratives, and setting prices. Our platform functions as a comprehensive inventory system, offering real time stocktake for each product and category."[619]

—Talaiasi Tangifua, Founder, EZTonga and Manini Pay, Tonga.

In smaller markets like Kiribati (Box 24) and Tuvalu, the move from social media shops to more established marketplaces is promoted by government agencies through donor-funded projects. The trade ministries are well placed to support the initial offline-to-online journey of small, informal business owners. They are providing training, mentorship and, in some cases, small grants. Marketplaces such as E-mwakete in Kiribati, established by government agencies through donor-funded projects, may offer free onboarding and partnerships with payment and logistics providers.[620] [621]

3.2.5 WEAK FOUNDATIONAL ELEMENTS UNDERMINE E-COMMERCE DEVELOPMENT: ADDRESSING SYSTEMS DO NOT EXIST, INFORMALITY DOMINATES, TRUST IS LOW, AND CASH IS KING

E-commerce development in the Pacific faces multiple supply and demand side barriers. On the supply side, basic foundations such as business formalization, payment gateways, and physical addressing systems are not in place across the PICs, limiting the development of domestic e-commerce. On the demand side, a general lack of trust in online shopping in the Pacific makes it difficult for businesses to attract customers. A lack of awareness about online shopping makes it difficult for businesses to reach potential customers. Visitors tend to use the platforms for product research and availability confirmation, with a preference for completing transactions offline.

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619   EZTonga and Manini Pay, interview by DECA team, April 2023, online.

620   DMTCIC Kiribati, interview by DECA team, May 2023, online.

621   Tuvalu Department of Trade, Tuvalu, interview by DECA team, May 2023, online.

The lack of a physical address system is one of the key challenges impeding e-commerce development in the Pacific. In many PICs, addresses are based on landmarks or village names, which makes it difficult for businesses to deliver goods and services to customers, especially in remote areas.[622] The names of villages and neighborhoods change over time, which further complicates the delivery process. The lack of a physical addressing system makes it difficult for businesses to track the delivery of goods and services. UPU developed the S42 international addressing standards[623] in 1997, that are slowly being rolled out in developing economies, but not yet in the Pacific. The small markets are hampered by high delivery logistics costs, especially in last-mile delivery. With populations often distributed across hundreds of islands, potential customers are hard to reach. These geographic challenges and undeveloped addressing systems lead to delays and lost shipments, damaging customer confidence in e-commerce. The customer base of e-commerce platforms in the Pacific tends to be concentrated in urban areas.[624]

In many PICs, businesses are informal, which means they do not have the necessary legal and financial documentation such as business licenses, tax registration, and financial statements to operate in a formal market. As a result, these informal businesses are often unable to obtain loans or other forms of financing and may face difficulties getting access to e-commerce platforms and digital payment solutions. Their informality may impede access to technical assistance from business support organizations.[625] It may also be difficult for businesses to protect their intellectual property. This can be a major problem for businesses that sell products or services online, making it difficult to prevent counterfeiting and other forms of copyright infringement.[626]

BOX 24: Kiribati E-mwakete E-commerce Project

Kiribati's e-commerce initiative, E-mwakete, received funding from the Australian DFAT E-Commerce Aid for Trade program. The initiative consists of three components: promotion of digital business operations; redesign of the Kiribati Chamber of Commerce & Industry (KCCI) website; and establishment of a national online marketplace/app. It was a one-year project from September 2020 to September 2021. Implementation involved close collaboration between MCIC, KCCI, and local businesses, with guidance from DT Global, the Technical Working Group, and the National Trade Advisory Committee (NTAC) serving as the Project Steering Committee. Expected project outcomes included: job creation; income generation for outer island communities; increased economic opportunities for the private sector and MSMEs in the digital economy; overcoming market barriers; and facilitated business-consumer connectivity. The project aims to transform the perception of internet use as a profitable venture, benefiting not only the business community but also the general public at large. The Kiribati E-mwakete marketplace can be found at https://e-mwakete.com.ki/. Additional details on the achievements and impact of the project include the following: scoping reports for each component and knowledge product; manual guides and video tutorials; advocacy and community outreach reaching a total of 2,400 (46% women and 37% youth) in different locations like Betio, Tarawateinainano (Tarawa Urban area), North Tarawa (Tarawateinaieta), Abaiang and Tab North; Trade and ICT Officials trained as Training of trainers (ToTs) to provide training in the five pilot areas identified; more than 10 percent of businesses registered in the E-Mwakete (180 registered businesses at the KCCI); 3% of marginalized groups are women and youth groups registered online in the E-Mwakete.

Source: MTCIC Kiribati, interview by DECA Team, March 2023, online.

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622 "E-Commerce Evolution in Asia Pacific: Opportunities and Challenges." ADB Publications. November 2023, https://www.adb.org/publications/e-commerce-evolution-asia-pacific-opportunities-challenges.

623 UPU physical addressing standard S42 is used by the Universal Postal Union (UPU) to standardize the way addresses are formatted in international mail (https://www.upu.int/UPU/media/upu/documents/PostCode/S42_International-Addressing-Standards.pdf).

624 "Digital Economy Report Pacific Edition 2022 Towards Value Creation and Inclusiveness," United Nations Conference on Trade and Development (UNCTAD) https://pacificecommerce.org/reports/digital-economy-report-pacific-edition-2022/

625 UNCTAD, "Digital Economy Report Pacific Edition 2022.

626 Team, Small Business. 2017. "The Dangers of Intellectual Property Infringement for Small Businesses." Small Business UK. April 27, 2017. https://smallbusiness.co.uk/dangers-intellectual-property-infringement-small-businesses-2538314/.

Cash on delivery is a common preferred payment option across the Pacific due to a lack of access to banking services or online payment methods among consumers. Restrictions in the integration of online payment gateways in local marketplaces (Section 3.4) limit the businesses that can conduct online sales. The uptake of digital payment solutions has been slow, although the pandemic necessitated some progress in contactless payments. For merchants, accessing international payment gateways and local banks' hesitance to support online payment mechanisms impede e-commerce growth. [627]

3.2.6 MOVING ONLINE DURING THE COVID-19 PANDEMIC

The COVID-19 pandemic led businesses to shift online. However, entrepreneurs in the Pacific that launch digital enterprises struggle to meet regulatory requirements such as needing a physical office address. Only a small fraction of the current consumer market engages in online purchasing. Despite obstacles, during the COVID-19 pandemic entrepreneurs explored online platforms like Vitikart and ShopFiji in Fiji, Samoa Market in Samoa, and EZTonga in Tonga to sell their products locally and potentially internationally in order to stay afloat. These entrepreneurs yearn for more independence and are eager to create and manage their own platforms, provided a payment gateway is available. In response, several business support organizations (BSO) started transitioning their services online and providing training on how to migrate their businesses to the digital realm. While BSOs like PIPSO, YEC (Fiji) or PTI in Australia and New Zealand are keen to exploit digital technologies to reach entrepreneurs beyond urban centers and enhance operational efficiencies, entrepreneurs are reluctant to make the shift, favoring in-person contact.[628]

3.3 PICS MISS OUT ON POTENTIAL BENEFITS OF DIGITAL TRADE THOUGH INFRASTRUCTURE IS IN PLACE

Export-focused e-commerce businesses have started to emerge in the Pacific. They provide local producers with channels to access regional and international markets. Platforms such as Rise Beyond the Reef in Fiji focus on unique, sustainable products and ship worldwide. Other platforms like the Fiji Community Market, MultiDrua, and Shop Vanuatu give producers an online presence, primarily targeting international markets.

3.3.1 TOURISM SECTOR PRESENTS AN OPPORTUNITY FOR DIGITAL TRADE IN AN OTHERWISE LIMITED SPACE

Data gaps restrict an informed analysis of cross-border digital trade in the Pacific. The UNCTAD e-trade readiness assessments and strategies provide some insights.[629] Most traffic goes inward, fueled by the diaspora buying goods and services (using debit and credit cards) for delivery in-country. The presence of Pacific businesses in foreign, regional, or global marketplaces remains limited due to factors such as high onboarding costs, low diversity of products, challenges in regular supply and in inventory maintenance among Pacific MSMEs. Digital trade within the Pacific Islands or between PICs and the rest of the world is extremely limited. Agriculture (primarily for cocoa and coconut) is a sector where some e-commerce activities take place.[630] In Vanuatu, kava

627 "Embracing the E-Commerce Revolution in Asia and The Pacific," ADB/UNESCAP, June 2018, https://www.adb.org/publications/ecommerce-revolution-asia-pacific

628 Team, Small Business. 2017. "The Dangers of Intellectual Property Infringement for Small Businesses." Small Business UK. April 27, 2017. https://smallbusiness.co.uk/dangers-intellectual-property-infringement-small-businesses-2538314/.

629 Reports Library, Pacific E-commerce Initiative, n.d., https://pacificecommerce.org/reports-library/

630 Pacific Islands Forum Secretariat. *Digital Economy Report: Pacific Edition 2022*. Pacific Islands Forum Secretariat, 2022. https://pacificecommerce.org/reports/digital-economy-report-pacific-edition-2022/.

is exported via online platforms[631] and has potential to be sold across borders. (Since December 2021, certain kava products have been permitted as food for sale in Australia.)[632] Other products exchanged are limited to handicrafts, garments, and essential oils. Fisheries remain unexplored from an e-commerce perspective, but are a high potential sector for the PICs.[633]

The tourism sector has the highest involvement in cross-border e-commerce.[634] It is also the sector that offers high potential for helping countries diversify away from extractive sectors such as mining and fisheries. The presence of global tourism e-commerce platforms in the region signifies the sector's importance to some Pacific economies. Major hotels in countries like Fiji, Vanuatu, Samoa, and Tonga feature on several platforms including Booking.com, Expedia, Agoda, and more. Airbnb also has a presence in almost all PICs.[635] In Tonga, it is not possible to book domestic airfare online, passengers must pay in-person at an office.

3.3.2 DIGITAL TRADE FACES NUMEROUS CHALLENGES, BUT A FEW PROMISING TRENDS ARE EMERGING

Engaging in trade within the islands and between provinces (e.g. PNG, Solomon Islands) is challenging and costly, and trading across borders is even more so. Online order fulfillment faces challenges due to the need for multiple modes of transport (roads, inter-island transports, air), which are aggravated by low quality physical infrastructure. Cross-border payment for goods and services are extremely limited due to: the unavailability of payment gateways like Stripe and PayPal in most PICs; the high charges imposed by banks for payment into credit card accounts or for the transfer of payments from accounts in Australian Dollars and New Zealand Dollars into onshore accounts in the same currency; and limitations on international transactions due to strict AML/CFT measures.[636] Despite these challenges a few promising trends are starting to emerge across the region:

- **Using fulfillment centers abroad for non-perishable goods:** South Pacific exporters are trying to build stock in fulfillment centers located in Australia and New Zealand to ship locally whenever there is a demand. Fulfillment centers offer a complete suite of services including storing, packaging, shipping, and handling returns. Similar options are used on the U.S. West Coast by exporters from FSM and RMI.[637] By leveraging these fulfillment centers, PICs businesses can benefit from their efficient operations, reliable infrastructure, and access to larger customer markets in these countries. It allows them to overcome the challenges of limited storage space and logistical constraints in the Pacific Islands.[638] By positioning their inventory closer to target markets, businesses can reduce shipping times and costs, resulting in improved customer satisfaction and cost-effective operations. Partnering with established fulfillment centers in destination markets provides PICs businesses with access to advanced fulfillment technologies, robust

631 Using E-Commerce to Help the Kava Industry in Vanuatu. Pacific E-Commerce Initiative. n.d. https://pacificecommerce.org/library/using-e-commerce-to-help-the-kava-industry-in-vanuatu/

632 "Commercial Kava Imports into Australia." October 31, 2022. Welcome to PHAMA plus Program. https://phamaplus.com.au/resources/fact-sheets/commercial-kava-imports-into-australia-as-at-31-october-2022/.

633 "Kiribati E-Commerce Readiness Assessment." September 2019. Pacific Ecommerce Initiative. https://pacificecommerce.org/reports/kiribati-e-commerce-readiness-assessment/.

634 "Digital Economy Report Pacific Edition 2022:Towards Value Creation and Inclusiveness," United Nations Conference on Trade and Development (UNCTAD), 2022, https://pacificecommerce.org/reports/digital-economy-report-pacific-edition-2022/.

635 "E-Commerce Evolution in Asia Pacific: Opportunities and Challenges." November 2023. https://www.adb.org/publications/e-commerce-evolution-asia-pacific-opportunities-challenges

636 SkyEye Pacific Samoa, Interview by DECA team, March 2023, online.

637 "The Benefits of Using a Fulfillment Center," Shopify, April 6, 2022. https://www.shopify.com/retail/benefits-of-outsourcing-your-order-fulfillment.

638 Green Banana Paper FSM, Interview by DECA team, March 2023, online.

distribution networks, and expertise in international shipping and customs procedures, which enhances their overall competitiveness.

- **Anchoring business success to a reliable diaspora customer base:** cultural proximity and the importance of the Pacific diaspora have made some niche developments possible, either for Compact countries (FSM, Palau, RMI) with the U.S. market or for Fiji, Samoa, and Tonga with the Australian and New Zealand markets. Most marketplaces selling across borders in the Pacific are powered by traffic generated by the diaspora buying goods from PICs marketplaces for delivery in-country for special occasions such as birth, marriage, reunion, and graduation.[639]

> *"With Micronesia being in the Compact of Free Association with the U.S., our postal system has a relationship with the U.S. postal system, so it makes sense to fulfill from here as long as the items are small and economical to ship by air. We used to use a fulfillment center in the U.S., but since the pandemic affected our sales we recalled all of our inventory back to Micronesia. Now our customers wait 2 weeks to receive their order rather than three to five days. International orders cost a lot more to ship. It might be advantageous to use fulfillment centers in the region of the target customers."[640]*
>
> — Matt Simpson, Founder, Green Banana Paper, FSM

- **Taking advantage of the gig economy for service-based e-commerce:** the Pacific region has a low number and small scale of service-based e-commerce platforms, with activities focused in a few domestic markets, such as Fiji, PNG and Solomon Islands. Noteworthy exceptions exist in tourism, entertainment, and advertising. The use of micro-job sites such as Upwork and Fiverr by Pacific service providers for accounting, design, proofreading, and web development has increased over the last five years.

TABLE 16. Platforms used in the Pacific to provide digitally-enabled services

BUSINESS LINK PACIFIC	A private sector development program funded by MFAT. Based in Auckland, NZ and supported by in-country partners in Vanuatu, Fiji, Samoa, Papua New Guinea, Solomon Islands, and the Cook Islands. It provides business advisory support for small-scale service providers in the Pacific.
OUTSOURCE FIJI	A platform for hiring Fijian companies that offer Business Process Outsourcing (BPO) services.
FIVERR	A digital marketplace that facilitates the buying and selling of diverse services worldwide. Sellers offer their services for as little as USD 5, hence the name Fiverr. The services offered on Fiverr are wide-ranging and can include anything from writing and editing to graphic design and web development.
FREELANCER	An online marketplace where businesses and individuals can find freelancers to help with a variety of projects. Freelancers offer their services in a wide range of categories. To use Freelancer, businesses and individuals create a project and specify the services they need. Freelancers then bid on the project, and the client can choose the freelancer they think is the best fit. Once the project is completed, the client can rate the freelancer and leave feedback.
UPWORK	An online freelancing platform that connects businesses and individuals with freelancers who can help with a variety of projects. It is a popular platform for businesses and individuals to find freelancers and for freelancers to find work.

Source: compiled by the DECA team

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639   "Taking Trade Online | Trade for Development News." n.d. Trade4devnews.enhancedif.org. Accessed March 5, 2024. https://trade4devnews.enhancedif.org/en/la-transition-vers-le-commerce-en-ligne.

640   Green Banana Paper FSM, Interview by DECA team, March 2023, online.

3.3.3 INTERNATIONAL COOPERATION ON TRADE FACILITATION IS BEARING FRUIT

International and regional organizations support efforts to make cross-border e-commerce more predictable. The various measures combined (Table 17) can improve clearance times and lower the cost of digital trade. Despite this support, weak institutional capacities restrict progress, particularly in the smaller PICs. There is often little coordination on the digital agenda, and no institutional anchor in line ministries. Most discussions around digital activities center on connectivity, infrastructure, and cybersecurity, not on businesses or platforms. Trade and commerce ministries are under-equipped in terms of personnel and access to information.

TABLE 17. International and regional efforts that support streamlining digital trade

ORGANIZATION	DESCRIPTION OF SUPPORT	RELEVANT RESOURCES	COUNTRIES SUPPORTED
UNCITRAL	Providing Model laws on digital trade	UNCITRAL Regional Centre for Asia and the Pacific	Kiribati, PNG, Tuvalu
Oceania Customs Organization (OCO)	Supporting the implementation of the OCO Framework on Standards on Cross-Border E-commerce	Challenges Remain in E-Commerce for Customs Administrations	All OCO member states can benefit from the support
UPU	Interfacing Postal and Customs Administration for faster clearance of low value shipment and supporting improved physical addressing systems	Workshop on E-Commerce Readiness for the Pacific	Vanuatu, Pacer Plus[641] countries
United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP)	Supporting cross border paperless trade	Readiness Assessments for Cross-Border Paperless Trade	Tonga, Tuvalu [642] [643]

Geographic dispersion and small population sizes are a consistent challenge for companies engaged in cross-border and domestic trade. The 2023 Digital and Sustainable Trade Facilitation Survey conducted by UNESCAP, UNCTAD, PIFS, and the World Bank offer important insights on required trade facilitation measures for the Pacific. The report notes that the Pacific Islands have the lowest implementation rates of trade facilitation measures at 42.33 percent versus the global average implementation rate of 69.59 percent (Figure 22). [644]

Non-standardized and low automation levels of customs procedures present a key challenge, increasing the costs and times of documentary compliance and ultimately clearance of the products. Efforts are ongoing to address this. The ASYCUDA system is implemented in several PICs and supports standardization of customs procedures as well as reduction of manual steps. This is important for eventual standardization across the region. Customs procedures across the Pacific are not aligned with international best practices and result in significant uncertainty for exporters and importers.

Even MSMEs with relatively high export readiness are unable to export full container loads of products by sea. For this reason, Less than Contained Load (LCL) capabilities at ports are being explored for their potential for facilitating multiple consignees per container load. LCL can reduce the cost of shipping for MSMEs and

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641   The Pacific Agreement on Closer Economic Relations (PACER) Plus is a landmark trade and development agreement. New Zealand, Australia, Samoa, Tuvalu, Kiribati, Tonga, Solomon Islands, Niue, Vanuatu and Cook Islands are Parties to the Agreement. Nauru has signed the agreement but has not ratified.

642   UNESCAP, interview by DECA team, April 2023, online.

643   Tuvalu was the first Pacific country to ratify the Framework Agreement. Tonga indicated its intention to ratify in 2023.

644   Digital and Sustainable Trade Facilitation in Pacific Island Developing Economies (PIDEs)," UNESCAP, 2023, https://www.untfsurvey.org/world.

make it easier for them to export their products. The new seaport in Nauru is exploring implementing LCL capabilities as a way to address these challenges.[645]

FIGURE 22. Trade Facilitation and Paperless Trade in PIC (2023)
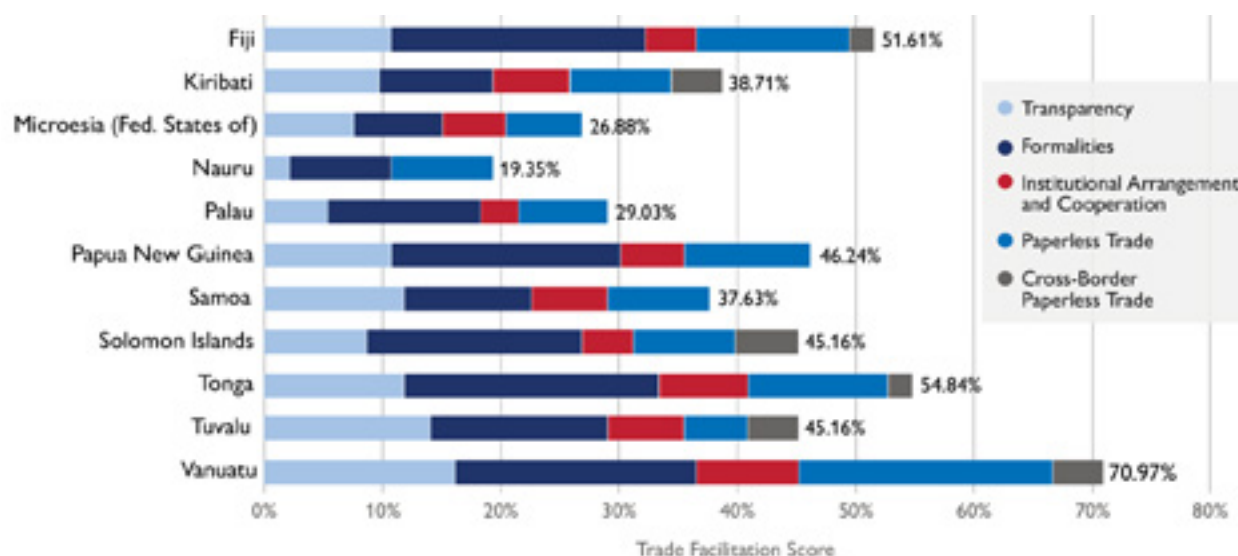
Note. Data for RMI is unavailable.
Source: [UN Global Survey on Digital and Sustainable Trade Facilitation 2023](#)

3.4 DIGITAL FINANCIAL SERVICES (DFS) ARE TRANSFORMATIVE FOR INCLUSION AND ECONOMIC GROWTH

The Pacific Islands face challenges such as limited access to traditional banking infrastructure, low levels of financial literacy, and high transaction costs. DFS can make financial services more accessible to people in PICs who live in remote areas or who do not have easy access to physical banking infrastructure. DFS can be delivered through mobile phones and other electronic devices which are increasingly more common in the region. DFS providers offer a wider variety of products and services than traditional banks, such as mobile money, microloans, and insurance. DFS contribute to the growth of MSMEs by facilitating secure and efficient payment mechanisms, providing access to financing, and fostering a supportive ecosystem for entrepreneurship. DFS help to improve financial literacy in PICs as the same providers can offer financial education programs and tools to help people understand how to use financial services effectively. At present, digital financial literacy is limited as commercial banks do not always see a market for digital payments or internet banking, particularly in smaller PICs like Kiribati, Nauru, and Tuvalu.

Regional banks such as ANZ (Fiji, Vanuatu, Tonga) and BSP (PNG, Vanuatu) jumped on the DFS bandwagon after MNOs, first offering internet banking to corporate customers. In recent years, given the convenience and secure ways to pay for goods and services, banks started to offer DFS under the strict supervision of banking and financial commissions.[646] [647]

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645   "Nauru E-Commerce Readiness Assessment." 2021. Pacific Ecommerce Initiative. Accessed March 5, 2024. https://pacificecommerce.org/reports/nauru-e-commerce-readiness-assessment/.

646   Office of the Banking Commission, RMI, interview by DECA team, May 2023, online.

647   Interim Executive Commissioner, Palau, interview by DECA team, May 2023, online.

"FSM is still a cash-based economy. However, DFS has increased in recent years due to the convenience, accessibility, affordability and to an extent, the security it offers. The two banks in FSM—The Bank of the FSM and the foreign US branch bank (Bank of Guam)—both adopted DFS strategies. Our office has some regulator and /supervisory oversight responsibilities over the banking sector in respect to DFS. The two banks are required to have adequate, sound, and reliable systems and procedures in place to minimize (prevent) inherited DFS risks."[648]

— Office of the Banking Commission, RMI.

Over the past decade, the Pacific Islands have transitioned from no mobile money services to a broad spectrum of mobile-centric financial services including mobile banking, mobile money, microfinance, insurance, and remittances. The COVID-19 pandemic brought forward the benefits of digital payments. Yet, the low banking, low levels of digital skills, weak infrastructure, and regulatory challenges in the Pacific Islands limit the use of DFS. Policymakers are addressing this by improving DFS infrastructure and encouraging FinTech growth, with the support of international organizations. Non-bank providers like M-PAiSA and MyCash are present in larger markets (Fiji, PNG, Solomon Islands, Tonga, Vanuatu). The monetary authorities of the Pacific Islands Regional Initiative made significant progress by establishing the Pacific Regional Regulatory Sandbox Guidelines.[649] Slow government reforms, low interoperability, and weak incentives limit improvements to national payment systems. Only Fiji and PNG have online payment gateways. The further development of national payment gateways is challenging due to small markets and few card holders.

📖 KEY TERMS | BOX 10: National Payment Gateway

A national payment gateway (NPG) is an electronic payment transaction system that allows customers to make secure non-cash payments from any associated financial institutions.

Important considerations for NPG rollout:

- Other potential payment gateway providers should still be able to enter the market.
- The regulator should have the capacity to provide effective oversight to maintain security and efficiency and foster inclusion and competition.
- Some financial service providers may need technical support connecting with the NPG.
- Though specific payment types may initiate the launch (e.g., government payments in the country), ultimately diverse payment types should be enabled.
- Investments in research and insights upfront are important for ensuring viability, security, and inclusivity.

DFS in the Pacific is largely characterized by:

1. DFS are largely mobile-based, as smartphones are becoming increasingly common in the region and MNOs are able to capitalize on their extensive network coverage and subscriber base.[650]

2. Governments play a leading role in the development of DFS in their role as regulators and policy makers. Regulatory authorities have become more positive toward DFS in recent years, accelerated by the COVID-19 pandemic. Governments are also an important client for DFS providers. It is very difficult for DFS providers to serve the Pacific markets profitably due to the small and dispersed

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648   Office of the Banking Commission, RMI, interview by DECA team, May 2023, online.

649   "Pacific Islands Regional Initiative (PIRI),"AFI, n.d., https://www.afi-global.org/activities/regional-initiatives/pacific-islands-regional-initiative-piri.

650   SkyEye Pacific Group, Samoa, interview by DECA team, April 2023, online.

populations. Many Pacific Island governments have initiated payment digitalization including for social welfare payments and tax collection. This has supported DFS in reaching viability. [651]

3. Stakeholders—including governments, financial institutions, telecommunications companies, and NGOs—work together to develop and deliver services. This is particularly useful as DFS in the PICs is subject to a host of regulations that vary between countries, making it challenging for businesses to launch and maintain DFS product offerings for the region.[652]

4. DFS may be a critical lever for economic and social growth in the PICs, in particular for addressing the digital readiness divide.[653]

5. A gradual transition from manual settlement systems to automated systems has taken place or is in process in Fiji (FIJICLEAR) and PNG (KATS). The IFC is supporting Samoa, Solomon Islands, and Vanuatu in establishing an Automated Transfer System (ATS),[654] which will allow interconnections between banks and their respective central banks. Each country will have its own ATS for domestic banks. Interoperability via national payment switches between payment systems such as point-of-sales (PoS), bank accounts, and mobile money solutions is critical as it reduces the burden of developing separate technical, physical, agent banking infrastructures (per institution), and enhances transactions between consumers and businesses regardless of their banking profile.[655]

3.4.1 MOBILE MONEY OPTIONS DOMINATE

Cash remains the dominant method of payment in all countries. Use of debit and credit card solutions is quite limited, although mobile-based solutions (e.g. Mastercard and Vodafone partnership) have picked up in recent years.[656] Several PICs have made voluntary commitments as part of the Better than Cash Alliance, although progress is uncertain.

The market for DFS in most PICs, including mobile money digital wallets, as well as agency banking services, are still in early stages of development (Table 18). This is particularly true for underserved populations, such as women and people living in more rural and remote areas. Mobile money wallets, primarily offered by Vodafone and Digicel, are only partially filling this market gap.

Some wallets, like M-PAiSA in Fiji and Cellmoni in PNG, offer advanced features like integration with merchants on e-commerce platforms, but these services are not available in all markets.[657] DFS providers, particularly mobile money providers, have started to offer merchant payments in their markets. However, successes are few and far between. Public and private sector counterparts will need to work together to create an enabling

651   UNCDF, interview by DECA team, March 2023, online.

652   UNCDF, interview by DECA team, March 2023, online.

653   Fiame Naomi Mata'afa, "Bridging the digital divide in Pacific Island states," The Strategist April 5, 2023, https://www.aspistrategist.org.au/bridging-the-digital-divide-in-pacific-island-states/

654   "Samoa, Solomon Islands and Vanuatu to Introduce Digital Payment Systems," The World Bank, March 4, 2019, https://www.worldbank.org/en/news/press-release/2019/03/04/samoa-solomon-islands-and-vanuatu-to-introduce-digital-payment-systems. The components of this system will include a Real-Time Gross Settlement for large inter-bank payments, Automated Clearing House for retail payments open to non-bank payment service providers, and a Central Securities Depository for government bonds.

655   "Digital Financial Services in the Pacific Islands: An Overview," Asian Development Bank, 2016, https://www.adb.org/sites/default/files/publication/182300/digital-financial-services-pacific.pdf

656   Background: Mastercard and Vodafone Fiji have partnered to launch M-PAiSA Mastercard, a digital payment card that allows Fijians to make payments in-store and online, both at home and abroad. M-PAiSA is a mobile wallet that was launched by Vodafone Fiji in 2010. It is one of the most popular mobile wallets in Fiji, with over 580,000 registered users.

657   ADB, Digital Finance in the Pacific.

environment and incentivize customers and merchants to use mobile payments for markets to unlock the power of merchant payments.[658]

QR Code payments were introduced by Vodafone in 2019 starting with Fiji and expanding to PNG, Samoa, and Vanuatu.[659] M-PAISA QR code payment was initiated to provide a more convenient, secure, and cost-effective way for consumers to make payments. Apart from the services available through M-PAISA such as recharge, data bundles, sending and receiving money, and utility payments, the mobile application comes with a "Scan to Pay" QR Code payment feature, a cashless payment method that allows users to scan a QR code at a merchant's checkout counter to make a payment.[660] It is available for free to consumers (no additional charges or fees are associated with using QR codes). The M-PAiSA app is also zero-rated for data charges, which means that users do not incur any data charges when using the app to make payments. The QR code payment is beneficial for businesses as well, as it is a cost-effective way for businesses to start accepting digital payments. Businesses do not need to invest in any hardware or additional systems to enable QR payments. They can download the M-PAiSA Merchant app and start accepting payments.[661] A one-time registration fee of USD $20 is charged for merchants to use the M-PAISA QR code payment service. Merchants incur a small transaction fee, which is typically around 1% of the transaction amount. This fee is paid to Vodafone, the company that operates the M-PAISA platform. The fee was introduced in 2021 to help offset the costs of operating the M-PAISA platform and to ensure that Vodafone can continue to offer the service to merchants at a competitive price. It is relatively low compared to fees associated with other payment methods such as credit cards and debit cards.[662] The average credit card processing fee in Fiji is 3% per transaction.[663] It is also a secure payment method as all payments are made through a secure and encrypted connection.

TABLE 18. **Subset of prominent mobile based payment solutions and currently employed use-cases**

COUNTRY	KEY SOLUTIONS
Fiji	• Digicel Mobile Money (in partnership with Fiji Post and Westpac) (2010) • Vodafone's M-PAiSA (2010) • M-PAISA QR Code payment • Bank account-to-mobile (Digicel-KlickEx services) or mobile-to-mobile (Vodafone-mHITs[664])
Tonga	• Digicel Mobile Money (2011) • Beep and Go (Digicel and Verifone, 2012) linking (EFTPOS) terminals to mobile money wallets. • Account-to-mobile (Digicel-KilckEx services)

658   "Pacific Regional E-Commerce Strategy and Roadmap." August 2021. Pacific Ecommerce Initiative. Accessed March 5, 2024. https://pacificecommerce.org/reports/pacific-regional-e-commerce-strategy-and-roadmap/.

659   https://www.vodafone.com.fj/about/about-us/media-releases/media-release-2019/m-paisa-qr-mobile-pay-a-big-step-towards-a-cashless-society

660   "M-PAiSA QR Mobile Payment: A New Way to Pay in the Pacific," Vodafone, 2019, https://www.vodafone.com.fj/about/about-us/media-releases/media-release-2019/m-paisa-qr-mobile-pay-a-big-step-towards-a-cashless-society

661   "The Opportunity for Digital and E-commerce Payments in the Pacific Region," UNCTAD, UNDP, UNCDF, July 2021 https://www.uncdf.org/Download/AdminFileWithFilename?id=15514&cultureId=127&filename=2021the-opportunity-for-digital-and-e-commerce-payments-in-the-pacific-regionpdf.

662   Vodafone. "M-PAiSA QR Mobile Payment."

663   CCoFiji. Twitter. February 13, 2020. https://twitter.com/CCoFiji/status/1229239120888598528. Accessed March 5, 2024.

664   mHITs is an Australian FinTech mobile remittance platform. In partnership with Vodafone Fiji, mHITs launched a cross-border remittance service between Fiji and Vanuatu allowing instantaneous cross border transfers between Vodafone M-PAiSA Fiji and Vodafone M-Vatu Vanuatu mobile money services.

COUNTRY	KEY SOLUTIONS
Samoa	• ANZ goMoney (2012) (Pacific App) • EZI Bank National Bank of Samoa (NBS) and Digicel Samoa (2017) • Vodafone Mtala (2019) • Digicel Samoa MyCash (2020) • M-PAISA QR Code payment
Solomon Islands	• YouSave LoMobile micro-pension product • ANZ goMoney (2013) (Pacific App) • BSP mobile banking services
Vanuatu	• Mani e-wallet (Digicel, 2011) • ANZ goMoney (2014) now (Pacific App) • M-PAISA QR Code payment
Kiribati	• M-PAISA

Source: Desk research. Assessment and strategy reports available at the Pacific E-Commerce Initiative Reports Library.

In some cases as in Samoa, companies have gotten around the challenge of not being able to integrate local payment gateways in their e-commerce platforms by registering an overseas bank account and leveraging this to process online payments.[665] Fiji likely has the greatest number of international payment gateways including Payment Express PxPay, PayPal Express Checkout,74 SecurePay, and Cybersource.[666] In the smaller markets like in Nauru where central financial authorities have struggled to get access to a payment gateway, there is a reticence among the international banks to 'switch-on' their payment gateway solutions due to an uncertain business case, security concerns, and the costs involved.[667]

There are a number of cash-in cash-out (CICO) networks in the Pacific. These networks play an important role in providing financial access to people living in remote and underserved areas. CICO networks allow people to deposit and withdraw cash using a variety of methods, including mobile money, ATMs, and retail agents. This can be particularly useful for people who do not have a bank account or who live far from a bank branch (e.g. outer islands). Vodafone Cash, a mobile money service, is available in Fiji, Samoa, Tonga, and Vanuatu. Vodafone Cash customers can deposit and withdraw cash at Vodafone retail stores and at other participating merchants. Digicel Mobile Money is another mobile money service that is available in Fiji, Samoa, Tonga, and Vanuatu. Digicel Mobile Money customers can deposit and withdraw cash at Digicel retail stores and other participating merchants.

3.4.2 DIGITAL FINANCIAL SERVICES (DFS) INCREASE FINANCIAL INCLUSION IN PICS

Information on digital financial inclusion in the PICs is limited, and the data is not always complete or up-to-date. One of the most comprehensive sources of data is the World Bank's Global Findex database. The Global Findex surveys adults in more than 140 countries about their financial access and usage. The most recent Global Findex data for the Pacific islands countries is from 2021. According to the data, account ownership is relatively high in the PICs. More than 80% of adults have an account at a financial institution or with a mobile money

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665   SkyEye Pacific, Samoa, interview by DECA team, April 2023, online.

666   "National E-commerce Assessment: Fiji," Pacific E-commerce Initiative, December 2020, https://www.forumsec.org/wp-content/uploads/2021/02/FIJI-ECommerce-Assessment.pdf

667   "Nauru E-Commerce Readiness Assessment." 2021. Pacific Ecommerce Initiative. Accessed March 5, 2024. https://pacificecommerce.org/reports/nauru-e-commerce-readiness-assessment/

provider. However, mobile money usage is lower, with around 50% of adults using mobile money to make or receive payments in the past year.[668]

Another source of data is the Pacific Financial Inclusion Programme (PFIP). The PFIP is a regional initiative that aims to promote financial inclusion in the PICs. The PFIP collects data on a range of financial inclusion indicators, including account ownership, mobile money usage, and internet access. This data shows that there is significant variation in digital financial inclusion across the Pacific Islands countries. Account ownership ranges from 40% in Nauru to 80% in Fiji and Tonga. Mobile money usage ranges from 20% in Nauru to 60% in Palau and Samoa.

Overall, the data suggests that digital financial inclusion is still in its early stages in the Pacific Islands countries. There is significant potential for growth, as the majority of adults in the region own mobile phones and have internet access (Section 1.2).

UNCDF is conducting a Digital and Financial Literacy Baseline Survey in the Pacific for seven countries: Fiji, Papua New Guinea, Samoa, Solomon Islands, Tonga, Vanuatu, and Timor Leste. The survey is being conducted by UNCDF in partnership with the Pacific Digital Economy Program (PDEP). Results of the survey will be used to help PDEP develop policies and interventions to improve digital and financial literacy in the region. The survey was conducted online and in person throughout 2023[669] and results have been published for Fiji, PNG, Samoa, Solomon Islands, Timor-Leste, Tonga, and Vanuatu.[670] UNCDF is also embarking on a regional project, the Pacific Agent Banking Ecosystem Project in Fiji, PNG, Samoa, Solomon Islands, Tonga, and Vanuatu. The project aims to increase access to mobile money services in the Pacific by developing agent banking networks in multiple countries.[671]

3.4.3 DIGITAL TRANSFORMATION OPENED UP NEW POSSIBILITIES FOR REMITTANCES

Remittances comprise a significant portion of income in PICs. Between 2000 and 2017, Pacific countries received nearly 9.7% of their overall GDP via remittances.[672] There is a keen interest in making these transactions cost-effective, fast, reliable, and universally accessible. All PICs are highly dependent on inward remittances, a function of a large diaspora working in Australia and New Zealand, as well as of the structural challenges posed by relative isolation and geographic fragmentation. Fiji accounted for 40% of the total dollar amount going to countries in the region while Tonga accounted for the highest share as percentage of GDP (37.1%).[673] Remittance transaction costs are significantly higher than global averages. A recent study notes that the average cost of remitting USD 200 to the Pacific Small Islands Developing States (SIDS) from 2011 to 2017 was 11.6% of the transaction value, which is well above the global average of 8.2%.[674] The small remittance amount per transaction, de-risking practices by traditional banks aiming to reduce their potential exposure, and structural challenges are key contributing factors for the high costs. FinTech companies can contribute to reducing these costs.[675]

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668   https://www.worldbank.org/en/publication/globalfindex

669   https://www.uncdf.org/article/7217/rfa-conducting-the-digital-and-financial-literacy-survey-in-seven-pacific-island-countries

670   https://www.uncdf.org/article/8317/assessing-digital-and-financial-literacy-in-fiji-a-survey-on-knowledge-skills-and-access

671   https://www.uncdf.org/article/7977/the-pacific-financial-inclusion-programme-building-the-rails-expanding-access-to-financial-services-in-the-pacific

672   Migration and Development Brief, World Bank, Open Knowledge Repository, n.d., https://openknowledge.worldbank.org/collections/773c2387-4e0f-5b85-a5ab-80abb493dd76.

673   "Finteching remittances in paradise: A path to sustainable development," Asia & the Pacific Policy Studies, 2021, https://onlinelibrary.wiley.com/doi/10.1002/app5.341

674   Asia & the Pacific Policy Studies, Finteching remittances in paradise.

675   Asia & the Pacific Policy Studies, Finteching remittances in paradise.

Remittances made using physical cash are highly prevalent and migrant workers often carry cash from abroad back to relatives in the PICs, presenting security and logistics challenges. There is both a gap and an opportunity in terms of FinTech solutions. A few regional operators such as KlickEx provide cross-border remittance services to markets such as PNG, Samoa, and Tonga. Improvements in internet infrastructure to peri-urban and rural areas, consumer protection frameworks, and consumer awareness are critical enablers for driving adoption of FinTech-led remittances in the region. The cheapest way to send remittances in the Pacific is through mobile money services. Banks are more expensive than money transfer operators, but there is no data available for mobile money transfer costs in the Pacific. The percentage of remittances made via digital payments or by using FinTech in the PICs is relatively low, but it is growing rapidly. According to a 2021 report by the GSMA, only 10% of remittances to PICs were sent via digital channels. The report also projects that this number will reach 25% by 2025.[676] Some of the PICs with the highest percentage of remittances done via digital payments include:[677]

TABLE 19. Remittance flows across PICs in 2022

COUNTRY	VOLUME OF REMITTANCE FLOWS (USD $ MILLION)	IMPORTANCE TO ECONOMY (% OF GDP)	% DONE DIGITALLY[678]
Samoa	568	34.2%	40%
Tonga	402	44.1%	35%
Vanuatu	259	15.4%	30%
Fiji	450	8.5%	50%
Solomon Islands	85	6.1%	25%

Source: World Bank and Asian Development Bank

Despite the high cost of remittances in the Pacific due to low-value transactions and AML obligations, the rise of digital platforms and mobile-based payment channels could lower remittance costs and potentially boost the role of remittances in Pacific economies. Policymakers are encouraging a shift to digital remittances while also mitigating potential risks. The Samoan government launched a financial education campaign to raise awareness of the benefits and risks of digital remittances. The campaign includes a website, a radio and television ad campaign, and a series of workshops for community leaders.[679] The Fijian government enacted a regulation that requires all digital remittance providers[680] to be licensed by the Financial Services Commission. The regulation also requires providers to comply with a number of security and consumer protection measures.[681]

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676 "Using Mobile Technology to Improve Remittances to the Pacific," GSMA, 2021, https://www.gsma.com/mobilefordevelopment/resources/using-mobile-technology-to-improve-remittances-to-the-pacific/

677 GSMA, Using Mobile Technology.

678 These figures are for 2022, the latest year available for full data. The percentage done digitally is an estimate and may vary depending on the source and methodology used.

679 "Assessing Digital and Financial Literacy in Samoa: Survey on Knowledge, Skills and Access." November 6, 2023. https://www.uncdf.org/article/8489/assessing-digital-and-financial-literacy-in-samoa.

680 A digital remittance service provider (DRSP) is a company that uses digital technology to enable the transfer of money internationally. DRSPs typically offer a variety of ways to send and receive money, including through mobile apps, websites, and online banking platforms. Some examples of DRSPs include Wise, Remitly, WorldRemit, Xoom and PayPal.

681 "The Opportunity for Digital and E-commerce Payments in the Pacific Region," UNCTAD, UNDP, UNCDF, July 2021 https://www.uncdf.org/Download/AdminFileWithFilename?id=15514&cultureId=127&filename=2021the-opportunity-for-digital-and-e-commerce-payments-in-the-pacific-regionpdf.

3.5 DIGITAL ASSETS HOLD THE POTENTIAL FOR GROWTH, BUT RISKS NEED TO BE MANAGED

Blockchain and cryptocurrency are gaining increasing traction and attention among PIC governments for their potential to transform the functioning of a wide range of industries. If used properly and with the adequate regulations in place, these technologies can increase the transparency and traceability of goods, data, and financial assets; facilitate market access; and improve the efficiency of transactions and processes.

3.5.1 GROWING ADOPTION OF DIGITAL ASSETS

Digital assets present both a risk and an opportunity for PICs. On the one hand, digital assets can provide a new way for people in PICs to store and have access to their wealth. Digital assets can be used to facilitate cross-border payments, which can boost trade and economic development in PICs.[682] On the other hand, digital assets also pose risks to PICs, including cybersecurity risks (cyber attacks resulting in the loss of funds or personal data), market volatility (prices of cryptocurrencies can fluctuate wildly), and regulatory risks. The regulatory environment for digital assets is evolving, which could create uncertainty for businesses and investors in PICs.[683] Another concern is that digital assets can be used for criminal activity, such as fraud, scams, money laundering, and drug trafficking.[684]

Several countries in the region are considering adopting digital currencies or a Central Bank Digital Currency (CBDC). In 2022, Fiji had the third-fastest rate of cryptocurrency adoption in the world, behind only Vietnam and Cambodia. The main applications driving cryptocurrency adoption in Fiji are remittances and investment. However, due to an increase in the number of scams involving cryptocurrency, the Government of Fiji has taken a strong stance to prevent crypto investments.[685] [686] The role of financial supervisory authorities in developing policies and regulations for digital assets is critical because these assets are a new and rapidly evolving technology. There is a need for clear and comprehensive regulations to protect consumers, investors, and the financial system as a whole.[687] While the adoption of digital assets and digital currencies in the Pacific Islands is in its early stage, some countries in the region showed openness to the exploration of their potential benefits, sometimes unaware of the risks associated with them[688] including high volatility and lack of regulation. There is no government protection for investors in case of fraud or theft. Digital assets are vulnerable to cybersecurity risks such as sophisticated hacking, theft, fraud, and scams targeting investors in digital assets, and it can be difficult for investors to identify them.

As of May 2023, no PICs have officially adopted a CBDC, although a number of countries are exploring the possibility:

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682   UNCTAD, et al., The Opportunity for Digital. https://www.uncdf.org/Download/AdminFileWithFilename?id=15514&cultureId=127&filename=2021the-opportunity-for-digital-and-e-commerce-payments-in-the-pacific-regionpdf.

683   Didenko, Anton N, and Ross P Buckley. 2022. "Central Bank Digital Currencies as a Potential Response to Some Particularly Pacific Problems." Asia Pacific Law Review 30 (1): 44–69. https://doi.org/10.1080/10192557.2022.2045706.

684   U.S. Department of Justice. "The Role of Law Enforcement In Detecting, Investigating, and Prosecuting Criminal Activity Relate dto Digital Assets" September 6, 2022. https://www.justice.gov/d9/2022-12/The%20Report%20of%20the%20Attorney%20General%20Pursuant%20to%20Section.pdf

685   "The 2022 Global Crypto Adoption Index: Emerging Markets Lead in Grassroots Adoption, China Remains Active Despite Ban, and Crypto Fundamentals Appear Healthy," Chainalysis, September 14, 2022, https://blog.chainalysis.com/reports/2022-global-crypto-adoption-index/.

686   Office of the Banking Commission, RMI, interview by DECA team, May 2023, online.

687   Office of the Banking Commission, RMI, interview by DECA team, May 2023, online.

688   FVSC, interview by DECA team, March 2023, online.

- **The Reserve Bank of Fiji (RBF)** has been conducting research on CBDCs since 2019. In July 2021, the RBF announced that it would conduct a feasibility study on a CBDC with a private sector technology partner.[689]

- **The Central Bank of Solomon Islands (CBSI)** is exploring the possibility of issuing a CBDC. In September 2021, the CBSI announced that it would work with the World Bank to develop a CBDC prototype.[690]

- **The National Reserve Bank of Tonga (NRBT)** is conducting research on CBDCs and is considering issuing a CBDC.[691]

- **The Bank of Vanuatu (BOV)** is exploring the possibility of issuing a CBDC. In June 2022, the BOV announced that it would be conducting a study on the potential benefits and risks of a CBDC.[692]

- **Palau** launched a pilot digital stable coin as currency, pegged 1:1 to the United States dollar (USD).[693] As of September 2023, the stablecoin is frozen while the government collects user feedback.[694]

- **The Marshall Islands Monetary Authority (MMA)** is conducting a feasibility study on a US dollar stablecoin[695] backed by government reserves.[696]

As of May 2023, only one PIC had officially adopted a crypto asset as legal tender. In 2018, the RMI adopted the SOV, a digital currency that is pegged to the US dollar (Box 25). However, implementation was put on hold in 2019 due to concerns raised by the international community regarding macroeconomic financial stability and integrity risks. [697]

BOX 25: The Marshall Islands Sovereign (SOV)

The RMI Sovereign (SOV) was a digital currency that was launched in 2018 by the government. The SOV was intended to serve as legal tender alongside the U.S. dollar and was built on Algorand blockchain technology. The government aimed to leverage the benefits of digital currency including faster and more cost-effective transactions, financial inclusion, and reduced reliance on cash.

The SOV failed for a number of reasons. The FATF and the APG expressed concerns about the SOV's potential to be used for money laundering and terrorist financing. The SOV was not well-received by the public in the RMI, and international authorities were concerned about the risks associated with the SOV. It was not backed by any physical or commodity assets, such as gold or silver or the U.S. dollar. The value of the SOV was instead derived from the government's decree that it was legal tender and must be accepted as payment for all goods and services. This made it vulnerable to speculation and difficult to determine its true value.

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689   Fiji CBDC, CBDC Tracker, 2022 https://cbdctracker.org/currency/fiji.

690   Sarwat Jahan, Elena Loukoianova, Evan Papageorgiou, et al., "Towards Central Bank Digital Currencies in Asia and the Pacific: Results of a Regional Survey," IMF e-Library, September 28,2022, https://www.elibrary.imf.org/view/journals/063/2022/009/article-A001-en.xml

691   Tonga CBDC, CBDC Tracker, 2021, https://cbdctracker.org/currency/tonga

692   "GOING DIGITAL: What's Next for Vanuatu in Blockchain Innovation? Pacific Advisory, n.d., https://www.calpnetwork.org/wp-content/uploads/2023/04/going-digital-whats-next-for-vanuatu.pdf

693   Helen Partz, "Palau to freeze USD-backed stablecoin after pilot launch in July," September 7, 2023, https://cointelegraph.com/news/usd-backed-stablecoin-halted-after-palau-pilot The pilot was frozen on September 15, 2023 as the government will be collecting feedback from users to shape the way ahead. (source:).

694   Partz, Palau to freeze.

695   A stablecoin is a type of cryptocurrency where the value of the digital asset is intended to be pegged to a reference asset. An algorithmic stablecoin is a cryptocurrency governed by algorithms (i.e., smart contracts) to dynamically reduce the price volatility of a specific asset (Source: Cointelegraph).

696   Jahan, et al., Towards Central Bank Digital Currencies.

697   "Cryptocurrencies and Blockchain Technology." Bank of Papua New Guinea (Bank PNG). Accessed March 5, 2024. https://www.bankpng.gov.pg/news-events/cryptocurrencies-and-blockchain-technology/.

BOX 25 (CONTINUED): The Marshall Islands Sovereign (SOV)

In 2021, the government announced that it would shut down the SOV project, stating that it made the decision in response to the concerns of the FATF and the APG, along with the lack of public support.

According to a 2022 report by the Marshall Islands Monetary Authority, there was no conclusive evidence to suggest that foreign speculators were buying up the Marshallese SOV. The report found that most SOV transactions were between Marshallese residents and businesses.[698]

Sources: Blockchain and Cryptocurrency News, David Gerard
The promises and perils of central bank digital currencies, Louis Laruek Clement Fontan, Joakim Sandberg
Office of the Banking Commission of RMI, Interview by DECA Team, April 2023, online.
FVSC, Interview by DECA Team, March 2023, online.

As of March 2023, only a few PICs have regulations on digital assets:

- **The Marshall Islands Monetary Authority (MMA)** issued regulations governing the issuance and use of digital assets. The regulations require digital asset issuers to be licensed by the MMA and to comply with requirements such as having adequate risk management systems.[699]

- **Palau** is in the process of developing regulations governing digital assets. The draft regulations, released in 2022, would require digital asset issuers to be licensed by the Palau National Bureau of Statistics and to comply with requirements such as having adequate risk management systems.[700]

- **The Reserve Bank of Fiji (RBF)** is considering issuing regulations governing digital assets. The RBF is looking at ways to regulate digital assets in a manner that protects consumers and minimizes risks to the financial system.[701]

- **The Bank of Papua New Guinea (BPNG)** is considering options to regulate digital assets with a focus on protecting consumers and the financial system.[702]

BOX 26: Vanuatu Unblocked Cash Project by Oxfam: using blockchain technology for good

The Oxfam Unblocked Cash project, implemented in Vanuatu, is a blockchain-powered cash and voucher assistance program designed to enhance the delivery and monitoring of aid to disaster-stricken communities. It represents the first initiative of its kind in the Pacific, using blockchain technology in disaster response to improve the efficiency, transparency, and accountability of cash transfers to beneficiaries. The technology enables Oxfam and local partner organizations to deliver digital cash vouchers to a disaster-affected population. These vouchers can be spent at local vendors that are also part of the program. All transactions are recorded on the blockchain, providing a transparent and efficient tracking system that reduces the opportunity for misuse of funds and ensures that aid is delivered to those who need it most. The platform aims to empower local communities and vendors by injecting funds directly into the local economy and reducing dependence on foreign aid supplies.

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698   Sarwat Jahan, Elena Loukoianova, Evan Papageorgiou, et al., "Towards Central Bank Digital Currencies in Asia and the Pacific: Results of a Regional Survey," Fintech Notes, September 2022, https://www.elibrary.imf.org/downloadpdf/journals/063/2022/009/063.2022.issue-009-en.xml.

699   "'Trojan horse': Palau's bid to become global crypto hub could turn it into scammers paradise, critics ," The Guardian, March 3, 2022, https://www.theguardian.com/world/2022/mar/04/trojan-horse-palaus-bid-to-become-global-crypto-hub-could-turn-it-into-scammers-paradise-critics-warn.

700   "Republic of Palau Stablecoin Program Phase 1 Report." Republic of Palau, 2024. https://www.palaugov.pw/wp-content/uploads/Republic-of-Palau-Stablecoin-Program-Phase-1-Report.pdf. Accessed March 5, 2024.

701   "Fiji's New Prime Minister Is Considering Adopting BTC as a Legal Tender." December 29, 2022. Binance. Accessed March 5, 2024. https://www.binance.com/en/feed/post/140844.

702   "Blockchain | Bank of Papua New Guinea (PNG) Port Moresby, Papua New Guinea." n.d. www.bankpng.gov.pg. Accessed March 5, 2024. https://www.bankpng.gov.pg/blockchain/.

BOX 26 (CONTINUED): Vanuatu Unblocked Cash Project by Oxfam: using blockchain technology for good

The project originated in 2019 in Vanuatu, where the severity of Tropical Cyclone Harold and COVID-19 restrictions resulted in a significant reduction in incomes and livelihoods, particularly among households with pre-existing vulnerabilities. Oxfam, in partnership with Australian FinTech Sempo and blockchain company ConsenSys, piloted the project with the active participation of 198 beneficiaries and 33 vendors across two communities. Once the pilot was received positively, the project was scaled up and is now used across Vanuatu to distribute cash and voucher assistance to more than 35,000 beneficiaries. The project harnessed the capacities of more than 15 partners across government, the private sector, and local and international NGOs. Oxfam has also been in discussion with the provincial governments in Vanuatu for enabling government-to-citizen payments through the Unblocked Cash platform.

Sources: Unblocked Cash Project: using blockchain technology to revolutionize humanitarian aid (Oxfam)
Pacific Group Vanuatu, Interview by DECA Team, March 2023, online.

3.5.2 INTERNATIONAL AND REGIONAL FIDUCIARY GOVERNANCE MECHANISM ENFORCEMENT INCREASED PRESSURE ON PICS TO IMPROVE THEIR FINANCIAL SYSTEMS

Banks in the PICs struggle to keep up with strict anti-money laundering rules. This has made it hard for them to do business with banks in other countries, which hurts trade and remittances (see Section 3.4.3). The strict rules are necessary to prevent criminals from using banks to launder money, but they are expensive and difficult to comply with. This is a problem because correspondent banking relationships[703] are essential for trade and remittances. Without them, it is harder for businesses to do business with one another, and it is harder for people to send money home to their families. The Pacific Islands are working to address these challenges by developing better AML/CFT frameworks and improving their digital identity systems. They are also working with banks in other countries to find ways to maintain correspondent banking relationships.[704,705,706] A lack of capacity and resources has resulted in gaps in implementation of AML/CFT frameworks. Pacific financial institutions have not invested in appropriate compliance infrastructure to establish trust or to complete necessary due diligence with partner institutions like large banks in Australia, New Zealand, and the U.S. Due to weak enforcement capacity, there are gaps in the regulatory and supervisory environments. The relatively smaller volumes and values of transactions are insufficient to justify the required investment by regional correspondent banks to establish technology-based platforms that could be extended to Pacific banks.[707]

The Asia/Pacific Group on Money Laundering (APG) provides support to ensure the adoption, implementation, and enforcement of internationally accepted AML/CFT standards as set out in the FATF Forty Recommendations.[708] The APG established a New Zealand-funded Pacific AML/CFT Capacity Development Programme (PACD) to

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703 A correspondent banking relationship is a financial relationship between two banks, one of which is typically located in a foreign country. The correspondent bank provides a range of services to the respondent bank, such as wire transfers, foreign exchange, and check clearing. Correspondent banking relationships are essential for international trade and commerce. They allow businesses to send and receive payments across borders quickly and efficiently. Correspondent banks also play an important role in facilitating cross-border investments and remittances.

704 Tara Rice, Goetz von Peter, Codruta Boer, "On the global retreat of correspondent banks," BIS Quarterly Review, March 2020," https://www.bis.org/publ/qtrpdf/r_qt2003g.pdf.

705 FSVC, interview by DECA team, March 2023, online.

706 Organizations like the Financial Services Volunteer Corps (FSVC), a not-for-profit organization headquartered in the US, help strengthen bank supervision capacity, improve financial and compliance capacity, respond more effectively to money laundering risks, and reinforce ties to the international financial sector. Since 2016, FSVC has been providing technical assistance to the Republic of the Marshall Islands (RMI) to strengthen its bank supervision and adherence to international best practices in AML/CFT.

707 "Correspondent banking in the Pacific," Reserve Bank of New Zealand, July 1, 2021, https://www.rbnz.govt.nz/-/media/project/sites/rbnz/files/publications/information-releases/2021/correspondent-banking-in-the-pacific.pdf?revision=ed56a3f5-d4eb-49eb-a278-f909b719b058.

708 "FATF Recommendations." November 2023. fatf-Gafi.org. https://www.fatf-gafi.org/en/topics/fatf-recommendations.html.

support Pacific jurisdictions in implementing their AML/CFT agendas. The Financial Actions Task Force (FATF) developed a guidance paper for governments on designing and implementing AML/CFT measures that meet the national goal of financial inclusion without compromising the measures that exist for the purpose of combating crime.[709] In 2019, the FATF added two new definitions to its Recommendation 15: Virtual Asset (VA) and Virtual Asset Service Provider (VASP). The amended FATF Recommendation requires that VASPs be regulated for anti-money laundering and countering the financing of terrorism (AML/CFT) purposes, and that they be licensed or registered, and subject to effective systems for monitoring or supervision. In June 2019, the FATF adopted an Interpretive Note to Recommendation 15 to further clarify how the FATF requirements should apply in relation to VAs and VASPs regarding:

- application of the risk-based approach to VA activities or operations and VASPs;
- supervision or monitoring of VASPs for AML/CFT purposes;
- licensing or registration;
- preventive measures, such as customer due diligence, recordkeeping, and suspicious transaction reporting; and
- sanctions and other enforcement measures; and international cooperation.

Recommendation 15 is a significant development in the regulation of virtual assets. It has the potential to make the virtual asset industry safer and more compliant, and to reduce the risk of money laundering and terrorist financing using virtual assets.[710]

KEY TERMS | BOX 11: FATF and APG explained

The Financial Action Task Force (FATF) is an intergovernmental organization that combats money laundering and terrorist financing. It was established in 1989 by the G7 countries and now has 37 member jurisdictions. The FATF sets international standards for combating money laundering and terrorist financing and monitors the implementation of these standards by its member jurisdictions.[711]

The Asia/Pacific Group on Money Laundering (APG) is a FATF-style regional body that works to combat money laundering and terrorist financing in the Asia-Pacific region. It was established in 1997 and has 39 member jurisdictions. The APG works to implement the FATF standards in the Asia-Pacific region, and also develops its own regional standards.[712]

The FATF and the APG are important organizations in the fight against money laundering and terrorist financing. They work together to develop and implement international standards, and they monitor the implementation of these standards by their member jurisdictions. Fiji, RMI, Nauru, Palau, PNG, Samoa, Solomon Islands, Tonga, and Vanuatu are all APG members.

Source: FATF website, APG website.

De-risking refers to the trend among financial institutions to avoid rather than manage operational and compliance risks by ending business relationships with entire regions or classes of customers. In addition to negatively affecting remittance services and DFS adoption, this practice drives the withdrawal of correspondent banking relationships (CBRs).[713] Loss of correspondent banking services reduces the range of trade and remittance services Pacific banks can facilitate. As a result, bank income and capacity to promote financial inclusion declines.

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709   "Mutual Evaluations," APG, n.d., https://apgml.org/implementation-issues/page.aspx?p=e952cb64-3bcb-4284-893f-f01760b4967f

710   "Virtual Assets And Virtual Asset Service Providers," FATF, October 2021, https://www.fatf-gafi.org/content/dam/fatf-gafi/guidance/Updated-Guidance-VA-VASP.pdf.coredownload.pdf

711   "The FATF Recommendations," FATF, n.d., https://www.fatf-gafi.org/en/topics/fatf-recommendations.html.

712   "Asia/Pacific Group on Money Laundering," APGML, n.d., https://apgml.org/

713   When financial institutions withdraw from certain markets, it can make it more difficult for people in those markets to gain access to financial services. This can have a negative impact on people who rely on remittances to send money home to their families, or for online businesses receiving payment for goods and services digitally.

Recent exits of correspondent banking are largely related to the U.S. dollar. Payments in U.S. dollars require the involvement of a U.S. dollar bank per U.S. regulations. Financial institutions in Vanuatu and Tuvalu lost correspondent banking relationships for other currencies as well. Tuvalu uses the Australian dollar but does not have access to correspondent banking services in Australia. The National Bank of Tuvalu continues to have a CBR with the Bank of Hawaii and signed an agreement with the French bank BRED.[714] Correspondent banking in Vanuatu is affected by perceived risks from customers or potential customers of financial institutions due to Vanuatu's reputation as a tax haven and its recent history in offshore banking. When foreign financial institutions perceive Vanuatu as a high-risk country, they are less likely to offer correspondent banking services to banks in Vanuatu.[715]

> 📖 **KEY TERMS | BOX 12:** Correspondent banking
>
> Correspondent banking is the provision of banking services by one bank to another. It is critical to economic growth and development as it facilitates cross-border movements of funds and enables financial institutions to have access to financial services in different currencies and foreign jurisdictions.

3.6 THE DIGITAL TALENT POOL IS CONSTRAINED BY OUT-MIGRATION AND FACES A SUPPLY AND DEMAND MISMATCH

The digital talent pool in the Pacific Islands is growing rapidly with more and more people acquiring the skills necessary to work in the digital economy. It is dominated by young people who are more likely to have access to education and training and to be interested in working in the digital economy. However, the digital talent pool is limited, and out-migration may be exacerbating this shortage. Growth of the talent pool is affected by a lack of skilled workers, particularly in software development, app development, local content development, and data science.

3.6.1 LABOR SHORTAGES AT ALL LEVELS PERMEATE THE DIGITAL LANDSCAPE

The Pacific Islands are experiencing a youth bulge, with half of the region's population under the age of 23.[716] Countries have been largely unable to match the population growth with productive jobs beyond the agriculture and extractive sectors. Digital skills shortages are pervasive across all levels of seniority, sectors, and gender and geographic segments.[717] The ICT support pool (in terms of professionals and companies offering ICT services) is extremely small. There is competition from the public sector as well. In Solomon Islands, the ICT infrastructure unit of the government (SIG ICT Services) absorbed a high number of IT professionals available in the market. This had an impact on the types of skills the private sector invests in and demands. Senior management teams of most SOEs as well as subsidiaries of international firms in the PICs are often international hires. Information is not readily available on leadership training initiatives for local employees with a clear path to middle-senior management levels. Australia (Seasonal Worker Programme and Pacific Labour Scheme) and New Zealand (Seasonal Employer scheme) offer seasonal worker schemes to offset labor shortages in their markets. The Compacts of Free Association with FSM, the RMI, and the Palau provide these countries with access to the U.S.

714   "Tuvalu: 2021 Article IV Consultation-Press Release; Staff Report; and Statement by the Executive Director for Tuvalu," International Monetary Fund Country Report No. 21/176. August 2021, https://www.imf.org/en/Publications/CR/Issues/2021/08/04/Tuvalu-2021-Article-IV-Consultation-Press-Release-Staff-Report-and-Statement-by-the-463361

715   Jihad Alowazir, Fazurin Jamaludin, Dongyeol Lee et al., "Challenges in Correspondent Banking in the Small States of the Pacific," International Monetary Fund (IMF), April 7 2017, https://www.imf.org/en/Publications/WP/Issues/2017/04/07/Challenges-in-Correspondent-Banking-in-the-Small-States-of-the-Pacific-44809

716   "Demanding the Future: Navigating the Pacific's Youth Bulge." July 8, 2020. Lowy Institute. https://www.lowyinstitute.org/publications/demanding-future-navigating-pacific-s-youth-bulge.

717   Niki Baroy, "Addressing the Digital Skills Gap in the Asia-Pacific: What's in it for the Private Sector?" The Asia Foundation, June 14, 2023, https://asiafoundation.org/2023/06/14/addressing-the-digital-skills-gap-in-the-asia-pacific-whats-in-it-for-the-private-sector/.

market including the ability to export goods and services to the U.S. without tariffs or quotas.[718] The benefit of these schemes is felt in terms of imparting youth with skills, reducing unemployment, and providing employers in source countries with a trained workforce upon their return.[719] The schemes are limited to sectors where the host countries have shortages and do not include ICT. The positive impact on the digital economy is therefore limited. In some growing economies, such as Fiji, these schemes led to labor shortages at home.[720] In Palau, the unrestricted travel to the U.S. has resulted in the emigration of working age skilled labor.[721]

3.6.2 THE EXODUS OF DIGITAL AND ICT TALENTS IS A MAJOR CHALLENGE FOR PACIFIC ECONOMIES

ICT graduates from the Pacific are often lured away by higher salaries and better opportunities in other countries such as Australia and New Zealand. They seldom return home to offer the same skills to local companies, although some of them are using freelancer platforms to offer their services back home. The emigration of ICT specialists can have negative consequences for Pacific economies.[722] These include: loss of innovation as these specialists are often the ones who are responsible for developing new technologies and finding new ways to use existing technologies; reduced productivity if the ICT talents are responsible for running critical systems and processes; and increased costs for local firms and even the government as they need to pay higher salaries and benefits to attract and retain specialists from overseas. Donor-funded programs contributed to the exodus of talent by hiring experts for short- or medium-term assignments and depriving local businesses and public organizations of these talents.[723]

3.6.3 USP CURRICULUM DOMINATES ICT EDUCATION WITH A FEW OTHERS EMERGING

Responsibility for growing the digital talent pool is not limited to educational institutions. Private training institutions, the private sector, vocational training institutes, public-private partnerships, and governments all have a role to play in mitigating the impact of ICT labor, skills shortage, and talent drain. A recent ILO survey notes that "the education sector is under- resourced with ICT facilities and curricula development to keep pace with the rapid development of digital technology in order to prepare the workforce with adequate skills."[724]

"At the moment, curricula are based on desktop and network, that's the basic training you get through vocational institutions including USP. There is nothing on proper ICT or digital project management. I know someone who has been appointed to develop an ICT curriculum for all high school students for tertiary and vocational, but it's basic computer desktop and networking which includes a bit of security, but nothing on app or content development".[725]

— Frederic Samuel, Pacific Group, Vanuatu

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718 "Compacts of Free Association," U.S. Department of the Interior, n.d., https://www.doi.gov/oia/compacts-of-free-association.

719 "Seasonal Worker Programme: Impacts and Lessons Learned," Asian Development Bank, Manila, Philippines, 2017, https://documents1.worldbank.org/curated/en/206071526448586179/pdf/126256-WP-P151959-PUBLIC-15-5-2018-18-28-59-TheSocialImpactsofSeasonalMigrationFinalReportP.pdf

720 "Pacific Labour Mobility," Pacific Australia Labour Mobility (PALM), n.d., https://www.dfat.gov.au/geo/pacific/engagement/pacific-labour-mobility

721 U.S. Department of State input, November 2023.

722 Pacific Group. Vanuatu, interview by DECA team, April 2023, online.

723 Dornan, Matthew, and Jonathan Pryke. 2017. "Foreign Aid to the Pacific: Trends and Developments in the Twenty-First Century." Asia & the Pacific Policy Studies 4 (3): 386–404. https://doi.org/10.1002/app5.185.

724 "A Study on the Future of Work in the Pacific Islands: A Regional Assessment," International Labour Organization (ILO)," May 2017, https://www.ilo.org/wcmsp5/groups/public/---asia/---ro-bangkok/---ilo-suva/documents/publication/wcms_553880.pdf.

725 Pacific Group. Vanuatu, interview by DECA team, March 2023, online.

The USP is the largest regional university, headquartered in Fiji with satellite locations in 11 other PICs. It is jointly owned by the governments of the 12 countries.[726] There are national universities in Fiji, Samoa, PNG, Solomon Islands, and Vanuatu. USP is by far the most experienced and capable in terms of internationally recognized ICT education.[727] Several other universities in the Pacific include ICT skill application in their curricula. Fiji National University (FNU) offers courses on programming languages, web development frameworks, networking tools, cybersecurity software, and other industry-standard digital tools.[728] The PNG University of Technology (UNITECH) integrates digital tools application into its IT program (software development tools, networking simulators, and database management systems), but there is limited focus on practical application. [729] Universities often prioritize theoretical knowledge over practical application of digital skills.[730]

Certificate level training institutions as well as technical and vocational education and training (TVET) are essential to ensuring pathways of learning, upskilling, and entering and re-entering the job market for individuals who cannot afford or are not interested in the traditional university model. Although there are a relatively large number of TVET programs, they do not integrate ICT skills meaningfully or in an industry-relevant way.[731] Resource constraints are significant, but donors responded with increased investments. Between 2002 and 2012, ODA to Pacific TVET increased from USD 14.2 million to USD 29.8 million.[732]

Universities and education institutions in PICs also face resource constraints in terms of funding, faculty expertise, and access to the latest technologies. Limited resources can make it challenging to develop and deliver comprehensive and industry-relevant digital skills programs that align with the specific needs of businesses and governments.

USP transitioned to a remote learning format during the COVID-19 pandemic, resulting in the creation of the USP eLearning Centre. It provides a range of online resources including courses, tutorials, and workshops to students and faculty. The USP Distance Education Program is designed to provide flexible learning opportunities for remote students. The Samoa Information Technology Association (SITA) responded to a request from the Minister of Information and Telecommunication Technologies (ITT) in 2020 to establish an E-Learning platform for schools equipped with computers and internet access. SITA, with its own resources, initiated a pilot project in 2021 at Avele College that used the Moodle learning platform for Year 13 students. UNDP recognized the potential of SITA's E-Learning program and funded its expansion. The program now serves six high schools with a growing number of requests from other schools to participate.[733]

3.6.4 TEACHING ICT AND DEMAND FOR DIGITAL SKILLS: THE PERSISTENT MISMATCH

The most important skills gaps identified in interviews with entrepreneurs and ICT experts are: coding skills; data analytics; cybersecurity; and digital marketing. Besides digital skills, there is also a need for business skills in

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726   "University of the South Pacific," Wikipedia, n.d., https://en.wikipedia.org/wiki/University_of_the_South_Pacific.

727   "ICT for Better Education in the Pacific," Education Links, May 2018, https://www.edu-links.org/resources/ict-better-education-pacific.

728   "Fiji National University (FNU) Bachelor of Computer Science (BCS) Program," Fiji National University, 2023, https://www.fnu.ac.fj/study/program/.

729   "Papua New Guinea University of Technology (UNITECH) Bachelor of Information Technology (BIT) Program," Papua New Guinea University of Technology, 2023, https://www.unitech.ac.pg/department-of-business-studies/dbs-undergraduate-programs/bachelor-of-business-in-information-technology/.

730   "Pacific Regional E-Commerce Assessment." December 2020. Pacific Ecommerce Initiative. Accessed March 5, 2024. https://pacificecommerce.org/reports/pacific-regional-e-commerce-assessment/.

731   "Pacific Regional E-commerce Assessment," Pacific E-commerce initiative, December 2020, https://pacificecommerce.org/reports/pacific-regional-e-commerce-assessment/.

732   Pacific E-commerce initiative, Regional E-commerce Assessment.

733   "Samoa National E-commerce Strategy and Roadmap," Ministry of Commerce, Industry and Labour, May 202, https://www.forumsec.org/wp-content/uploads/2022/10/Samoa-ECommerce-Strategy-Roadmap_FINAL.pdf

the digital sector such as entrepreneurship, project management, and financial analysis. It is likely that education institutions will face challenges in terms of capacity for reacting swiftly to changing market requirements.[734]

There are multiple reasons for the mismatch between education, training bodies, and industry demands. With technology advancing at a breakneck pace, the skills required in the digital workforce are constantly evolving.[735] In the Pacific context, an interviewee mentioned that businesses are not surveyed regularly to identify the skills they need, there are limited opportunities for students to gain practical experience through internships and other work placements, there is an absence of continuing education programs for businesses and professionals, and digital literacy and entrepreneurship are not promoted among students.[736]

Every PIC has its own distinct economic, cultural, and social context, which leads to variations in the digital skills required by each market. These disparities arise due to differences in industries, economic priorities, and local challenges.[737] Universities face challenges when it comes to effectively addressing these diverse needs. Recognizing the importance of building a skilled digital workforce, business associations have launched initiatives to promote digital skills development. (Table 20 and 21). These initiatives include training programs, partnerships with educational institutions and industry, and scholarships to support ICT education and professional development.

TABLE 20. Ongoing initiatives to bridge digital knowledge gaps in selected PICs

THE PACIFIC ISLANDS DIGITAL SKILLS PROGRAM	This program is funded by the Australian government and is designed to improve digital skills. It provides training and support to teachers, students, and businesses. It has been running since 2016 and has trained more than 10,000 people in digital skills. It has developed resources such as online courses and toolkits to help people learn about digital skills.
THE PACIFIC ISLANDS DIGITAL TRANSFORMATION PROGRAM	This program is funded by the World Bank and is designed to help PICs adopt digital technologies. It provides technical assistance and financial support to governments and businesses. It has been running since 2018 and has helped with implementation of several digital transformation projects such as the development of a national digital ID system in Fiji.
THE PACIFIC ISLANDS DIGITAL ECONOMY HUB	This hub is a collaboration between the USP and the University of Melbourne. It provides training and research on digital economy issues in the Pacific region. It has been running since 2019 and has hosted several workshops and conferences on digital economy topics. The hub has produced several reports and papers on digital economy issues.
THE PACIFIC ISLANDS DIGITAL TALENT INITIATIVE	This initiative is a collaboration between the Commonwealth Telecommunications Organization and the Commonwealth Secretariat. It provides training and support to young people in PICs who are interested in careers in the digital economy. The initiative has been running since 2020 and has trained more than 500 young people in digital skills. The initiative has helped to connect young people with internship and job opportunities in the digital sector.
THE PACIFIC ISLANDS DIGITAL SKILLS ACADEMY	This academy is a collaboration between the USP and the University of Technology Sydney. It provides online training courses on digital skills for students and professionals in the Pacific region. The academy has been running since 2021 and has offered more than 100 online courses. Its courses are designed to help people learn about a wide range of digital skills such as coding, data analytics, and social media marketing.

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734 "Pacific Regional E-Commerce Strategy and Roadmap." August 2021. Pacific Ecommerce Initiative. https://pacificecommerce.org/reports/pacific-regional-e-commerce-strategy-and-roadmap/.

735 "Pacific Regional E-Commerce Strategy and Roadmap." August 2021. Pacific Ecommerce Initiative. https://pacificecommerce.org/reports/pacific-regional-e-commerce-strategy-and-roadmap/.

736 Pacific Group. Vanuatu, interview by DECA team, April 2023, online.

737 "Digital Competence Frameworks," UNESCO, n.d., https://unevoc.unesco.org/home/Digital+Competence+Frameworks/lang=en/id=13#:~:text=It%20includes%20information%20and%20data,problem%20solving%20and%20critical%20thinking.

FIJI DIGITAL SKILLS FOR ALL PROGRAMME	The Fiji Digital Skills for All Programme is a government-led initiative that aims to provide digital skills training to 100,000 people in Fiji by 2025. It is being implemented by the Ministry of Education and the Ministry of Industry, Trade, Tourism, and Labour.
PNG NEW DIGITAL SKILLS ACADEMY	The PNG government partnered with the University of Papua New Guinea in 2022 to create a Digital Skills Academy. The academy will offer training courses in a range of digital skills including programming, data analysis, and web design.
VANUATU DIGITAL ENTREPRENEURSHIP CHALLENGE	The Vanuatu Digital Entrepreneurship Challenge (VDEC) is a competition that aims to support and empower young Vanuatuans to develop and grow their digital businesses. The challenge was created in 2018 by the Vanuatu National Information & Communication Technology Authority (NICTA) and the Vanuatu Chamber of Commerce & Industry (VCCI).

Source: compiled by the DECA team

TABLE 21. Ongoing initiatives spearheaded by business associations and chambers of commerce in Pacific Islands Countries

DIGITAL TALENT PIPELINE	This initiative by the Fiji Business Council (FBC) was launched in 2020. It aims to connect businesses with students and graduates who have the skills they need. It works with universities and other educational institutions to identify students and graduates with the skills that businesses are looking for.
PNGCCI SCHOLARSHIP PROGRAMME	The Papua New Guinea Chamber of Commerce and Industry (PNGCCI) has partnered with the University of Papua New Guinea (UPNG) since 2021 to offer a new scholarship program for students who are studying digital skills. The scholarship program will provide financial assistance to students who are studying digital skills, and will also provide them with access to internships and other work placements.
SICCI DIGITAL SKILLS ACADEMY	The Solomon Islands Chamber of Commerce and Industry (SICCI) launched a program called the SICCI Digital Skills Academy in 2022. The academy offers training courses in a range of digital skills, including programming, data analysis, and web design. It also provides businesses with access to mentors and other resources.
VANUATU DIGITAL BUSINESS DEGREE	The Vanuatu Chamber of Commerce and Industry (VCCI) partnered with the University of the South Pacific (USP) in 2022 to offer a new Master of Business Administration (MBA) degree in Digital Business. The degree is designed to provide businesses with the skills they need to succeed in the digital economy.

Source: compiled by the DECA team

3.7 THE TECH STARTUP ECOSYSTEM SHOWS RESTRAINED GROWTH WITH IMPORTED INCUBATOR AND ACCELERATOR MODELS FINDING LIMITED SUCCESS

The tech startup ecosystem in the PICs is growing rapidly. This is driven by the increasing availability of the internet, the growing demand for digital products and services, and the increasing affluence of the region. It is still in its early development stages, largely due to geographic remoteness, lack of enabling infrastructure, and limited access to capital. The tech startup ecosystem is dominated by early stage startups as it is relatively new and there is a lack of funding and support for later stage startups. Government and development partners are the main source of support for startups. The innovation enabler ecosystem is small in terms of incubators, accelerators, coworking spaces, and startup events. Access to market opportunities and access to finance is low.

3.7.1 SLUGGISH MSME SUPPORT ENVIRONMENT, NOT LIMITED TO TECH ENTREPRENEURS

Pacific Island governments encounter formidable obstacles in their efforts to diversify away from extractive industry sectors and promote market development. These challenges arise due to factors such as dispersed populations, small market sizes, and the dominant presence of SOEs.[738] As a result, the MSME and startup development agendas across the region have struggled to take root. Development partners have sponsored sector- or theme-specific startup events in some cases, but the overall startup scene remains in early stages of development. Several entrepreneurs interviewed highlighted the importance of avoiding wasting resources on programs that remain unused due to obstacles like limited market access or weak entrepreneurial advisory capacity.[739,740] Advice suited to a market vendor aspiring to expand its audience through social media may not be helpful to a mature digital business seeking legal advice or access to venture capitalists.

3.7.2 ENTREPRENEURSHIP NOT SEEN IN A POSITIVE LIGHT OR AS ASPIRATIONAL

Entrepreneurship is not always viewed in a positive light in the Pacific. It is often associated with school dropouts and people who cannot find a job, discouraging some from starting businesses. The lack of specialized attention to micro-entrepreneurship is prevalent and typically informal. As a result, micro-entrepreneurs face challenges in expanding their ventures. Altering perspectives and dispelling the negative stigma associated with entrepreneurship is a lengthy prospect.[741]

3.7.3 EXISTING ACCELERATORS AND INCUBATORS TO NURTURE DIGITAL ENTREPRENEURSHIP HAVE LIMITED IMPACT DUE TO PERCEPTION GAPS AND LIMITED OUTREACH

Co-working spaces, accelerators, and incubators designed to nurture digital talent and innovation in the Pacific Islands have had limited impact for many reasons. They require significant resources including financial investment, mentorship networks, and access to connectivity infrastructure.[742] In the PICs, where resources may be scarce, it can be challenging to establish and sustain such initiatives at the scale and level of support necessary to make a substantial impact (see a list of Pacific tech hubs still operating in 2023 in Table 22). The PICs face a scarcity of local mentors, experts, and investors with substantial experience in the digital sector. This shortage of skilled professionals hampers the availability and capacity needed to effectively support entrepreneurs and startups through accelerators and incubators.[743] The size and market potential of the Pacific Islands is small compared to most other economies. This limited market scale can pose challenges for startups and entrepreneurs in gaining access to customers, securing investments, and achieving scalability. It may deter investors and mentors from actively engaging with accelerators and incubators in the region.

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738   "Pacific Island Countries: Addressing the Brain Drain," The World Bank, 2017.

739   YumiWork/V-IDEA, Vanuatu, interview by DECA team, April 2023, online.

740   EZTonga and Manini Pay, interview by DECA team, April 2023, online.

741   "ENTREPRENEURSHIP ECOSYSTEM in the PACIFIC NETWORK ANALYSIS and MAPPING of INSTITUTIONS SUPPORTING ENTREPRENEURSHIP Fiji, Samoa, Solomon Islands, Timor-Leste, Tonga, Vanuatu, and Papua New Guinea." July 2021. https://unctad.org/system/files/information-document/UNCDF_Entrepreneuship-Ecosystem-Pacific-Report.pdf.

742   "Entrepreneurship Ecosystem in the Pacific report," UNCTAD, July 2021, https://unctad.org/system/files/information-document/UNCDF_Entrepreneuship-Ecosystem-Pacific-Report.pdf.

743   "ENTREPRENEURSHIP ECOSYSTEM in the PACIFIC NETWORK ANALYSIS and MAPPING of INSTITUTIONS SUPPORTING ENTREPRENEURSHIP Fiji, Samoa, Solomon Islands, Timor-Leste, Tonga, Vanuatu, and Papua New Guinea." July 2021. https://unctad.org/system/files/information-document/UNCDF_Entrepreneuship-Ecosystem-Pacific-Report.pdf.

TABLE 22. Pacific Tech Hubs

HUB	PROGRAMMES	OPERATIONAL STATUS	HQ COUNTRY
Emstret Space	Mainly Co-working	Active	Papua New Guinea
Kiribati Institute of Technology	Hub with support programmes	Active	Kiribati
Kumul GameChangers	Hub with support programmes	Under Review	Papua New Guinea
Samoa Business Hub	Hub with support programmes	Active	Samoa
The Hub Pacific	Mainly Co-working	Under Review	Samoa
V-LAB	Hub with support programmes	Active	Vanuatu
YHER	Hub with support programmes	Active	Fiji
Youth Entrepreneurship Scheme	Hub with support programmes	Active	Fiji
Yumiwork	Hub with support programmes	Active	Vanuatu

Source: GSMA (2023)

3.7.4 TECH STARTUP AGENDA IS LARGELY LED BY DEVELOPMENT PARTNERS

Development partners in the Pacific Islands foster digital innovation and entrepreneurship through various mechanisms. This includes establishing incubators, accelerators, and innovation hubs; providing grants and funding support for startups; organizing hackathons and innovation challenges; and promoting collaboration between industry, academia, and government. At the regional level, donor-funded initiatives like MFAT funded Business Link Pacific and PIFS supported Pacific Trade Invest have accumulated years of experience supporting local business support organizations and service providers meeting the needs of local entrepreneurs and startups (Table 23). Donor-driven mindsets frequently lack contextualization and localization, leading to missed opportunities. Consequently, programs may not align well with the local context, impeding their effectiveness in achieving desired goals. This mismatch can result in a lack of suitability and efficacy within these initiatives.[744]

TABLE 23. List of accelerators, incubators, and labs supporting digital entrepreneurs in the Pacific

INCUBATOR SPONSORS / LEAD CONVENER	ORGANIZATION	PROGRAM
Development partners	DFAT/MFAT (VIA PIFS)	Pacific Trade Invest (regional)
	DFAT	Strongim Bisnis (Solomon Islands)
	MFAT	Business Link Pacific (regional)
	ILO	The ILO Pacific Innovation Centre (regional, based in Fiji) The ILO Youth Entrepreneurship Hub (regional, based in Samoa) The ILO Startup Lab (regional, based in New Caledonia)
	UNDP	UNDP Pacific Accelerator (regional, based in Fiji) UNDP Regional Innovation Centre for Asia and the Pacific (UNDP RIC), based in Hanoi, Vietnam UNDP Accelerator Labs in Fiji, PNG, Samoa, Solomon Islands Tonga, Vanuatu

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744   "ICT for Better Education in the Pacific," Asian Development Bank, May 2018, https://www.adb.org/sites/default/files/publication/428221/ict-education-pacific.pdf.

INCUBATOR SPONSORS / LEAD CONVENER	ORGANIZATION	PROGRAM
Development partners	UNESCO	UNESCO Creative Economy Hub for the Pacific (regional, based in Fiji)
	Asian Development Bank (ADB)	Pacific ICT Innovation Fund (regional)
	World Bank	Pacific Islands Digital Transformation Program (regional)
NGOs, University	Fiji	Business Accelerator Programme delivered the Fiji Enterprise Engine
	PNG	The PNG Digital ICT Cluster empowers ICT professionals by fostering excellence, knowledge-sharing, and career growth. The Cluster is a member of GIST Innovation Hub, a US Department of State initiative providing innovation support from within an entrepreneur's own community.
	Solomon Islands	The Hub is a non-profit organization that provides support to entrepreneurs and small businesses in Solomon Islands. The Hub offers a range of services, including office space, mentorship, and access to funding.
	USP	The University of the South Pacific (USP) has several initiatives that support digital startups, including the USP Incubator and the USP Innovation Centre.

Source: compiled by the DECA team

3.7.5 DONOR-FUNDED PROGRAMS HAVE A SHORT LIFE SPAN AND USUALLY FOCUS ON LOW-HANGING FRUIT, USUAL SUSPECTS, AND URBAN CENTERS

Business support organizations, incubators, and accelerators in the PICs often rely on donor funding, resulting in inconsistent and overlapping services. Consequently, entrepreneurs face challenges in determining where to seek help and support. These organizations primarily focus on urban centers, leaving those in rural areas with limited access to support. This is particularly pronounced among marginalized groups including women, youth, and LGBTQI+ individuals. Additionally, due to the short-term nature of most digital entrepreneurship programs, local business support organizations, incubators, and accelerators have limited capacity to foster local talent and resources.

There is a lack of information, communication, and coordination among stakeholders within the Pacific region's entrepreneurship ecosystem. This deficiency leads to duplicated efforts, missed opportunities, and stagnant progress. The problem is further compounded by the absence of accessible data and information on entrepreneurship in the region, making it challenging for aspiring entrepreneurs to understand the business landscape, to secure funding, and to connect with fellow entrepreneurs regularly. More established programs and agencies dedicated to business development in the Pacific, like the Pacific Trade Invest Digital Tourism Program (Box 27), have had success in recent years by partnering with e-commerce giants.

BOX 27: Pacific Trade Invest Digital Tourism Program

The Pacific Trade Invest (PTI) Digital Tourism program supports local Pacific tourism operators in building their online presence, streamlining their digital systems, and enhancing their marketing capabilities. The program connects local operators with platforms such as booking.com, Airbnb, and TripAdvisor and has supported development of a payment system (supporting the Pacific Tourism sector) called *hotel link pay* in a partnership between Kovena, an online payment solution provider, and hotel management system, Hotel Link. PTI operates a social media business accelerator programme to assist Pacific tourism operators in using social media for business growth.

Source: Pacific Trade Invest

3.7.6 RARE, CUMBERSOME, AND EXPENSIVE ACCESS TO FINANCE

Tech entrepreneurs in the Pacific have scant options to secure the necessary financing for establishing or expanding their digital businesses, which are often perceived as high risk by financial institutions. This situation is exacerbated by the lack of robust financing instruments tailored to MSMEs and stringent KYC banking requirements for MSMEs. Access to commercial financing is elusive for entrepreneurs who lack collateral, an established business model, and clean financial records. Many entrepreneurs operate informally due to the high cost of business licenses and turn to friends and family or informal community lending solutions for early stage financial support.[745,746]

Compounding these challenges are prevailing sociocultural attitudes that do not tend toward documentation and recordkeeping. In many PICs, knowledge and history are traditionally passed down orally through generations, and customary law (unwritten law based on tradition and precedent) is widely practiced and can be counter to formal recordkeeping. Business and financial skills are typically absent from educational curricula, leading to a lack of financial literacy among young graduates. There is a substantial need for support to build essential financial skills, notably in accounting and bookkeeping among entrepreneurs.[747] While several organizations provide this much-needed support, entrepreneurs often perceive it as an expensive undertaking. The process involves costs associated with acquiring documentation and investing time in organizing financial records. In many cases, there is hesitation to initiate this process due to the fear of regulatory penalties. This poses a seemingly insurmountable challenge for entrepreneurs who are struggling to survive and lack the time to self-educate and acquire necessary skills while still needing to manage their businesses.[748]

3.7.7 ACCESS TO ALTERNATIVE SOURCES OF FUNDING IS DEMANDING AND FRUSTRATING

In this challenging environment, entrepreneurs seek grants to aid them in innovation, testing, and growth. Although some grant funding is accessible, it is inconsistent and often tied to donor-driven programs. Aside from sporadic grants, funding remains a rarity for entrepreneurs, regardless of their business's growth stage. The widespread lack of documentation and recordkeeping among entrepreneurs, coupled with a necessity for donor-funded programs, results in a select few being able to access funding.[749]

The absence of dedicated financial support institutions such as venture capital firms, private equity firms, and angel networks also hampers the ability of entrepreneurs to obtain needed financing. Some mechanisms such as the MFAT-funded Samoa Business Hub's Business Guarantee Scheme offer low interest loans or guarantee funding in select sectors such as agriculture, manufacturing, and tourism, but not in the tech sector.[750] Use of international accelerator ecosystems like those promoted by Seedstars or Startups&Angels, or non-traditional financing mechanisms like venture capital, crowdfunding, and pre-sales of their products are underdeveloped in PICs.

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745   "Financing of Tech Startups in Selected Asian Countries," Asian Development Bank, April 2020 https://www.adb.org/publications/financing-tech-startups-selected-asian-countries.

746   EZTonga and Manini Pay, Tonga, interview by DECA team, March 2023, online.

747   "The Future of Work in the Pacific Islands: A Regional Assessment," International Labour Organization (ILO), 2021.

748   "The Challenges of Financial Management for Entrepreneurs in the Pacific," Pacific Islands Forum Secretariat, 2021.

749   ILO. The Future of Work in the Pacific Islands.

750   "Samoa Business Hub Launches New Business Guarantee Scheme," Samoa Business Hub, n.d., https://www.samoabusinesshub.ws/?page_id=3003.

SECTION 3:

Recommendations

The international development community can work with, support and strengthen the regional and national digital ecosystems in the Pacific Islands in many ways. This section outlines recommendations for specific actions and partnerships as well as general guidance for digitally-enabled programming.

BOX 28: Critical consideration for implementing DECA recommendations in the PICs: ensure coordination and prevent duplication

Across the DECA pillars, a common theme based on interviews was the urgency for increased donor coordination. There is great need for donors to support most elements of the regional and national digital ecosystems. There is an equally great need for coordination of those efforts. Otherwise, certain aspects will become duplicative while others remain untouched. This less than ideal outcome could apply to sub-regions or countries and to topic areas like cybersecurity, digital government, and tech entrepreneurship. It could also apply at a more granular subtopic technical level like Cybersecurity 101 capacity building or digital ID rollout.

BOX 29: Cross-cutting considerations for implementing ICT workforce development and retention activities

The PICs do not have sufficiently large populations for large scale workforce development activities. This is compounded as skilled ICT talent often leave the PICs for higher paying jobs in the private sector abroad, particularly in Australia and New Zealand. These challenges cut across DECA pillars with regard to government IT talent acquisition and retention, cybersecurity talent pool development, and market-driven future proof digital skills development for Pacific Islanders.

Workforce development programs may include:

- Internships, externships, fellowships, and mentorship programs working closely with the private sector;
- Digital skill building training for public sector staff;
- Curricula development and teacher training; and
- Partnerships between foreign universities and higher education institutions in the Pacific (e.g., USP) to bolster technical degree programs.

Workforce retention plans could include:

- Incentives such as career advancement (promotion, pay raise, bonus pay) for Pacific-based staff to participate in ICT skill related professional development and apply those new skills in their current role.
- Financial support (e.g., via grants or subsidized tuition) for degrees or certificate programs in exchange for bonded work commitments in the public sector or Pacific-based firms.

BOX 29 (CONTINUED): Cross-cutting considerations for implementing ICT workforce development and retention activities

Alternative approaches that do not rely on PICs' small workforce with a tendency to migrate:

- Embed technical experts in government ministries.
- Contract with private sector entities for specific IT services such as system and software development, platform management, data storage and management, and cybersecurity operations.
- Facilitate surge support or Pacific peer-to-peer learning and support through regional organizations such as SPC and PIFs.
- Facilitate partnerships between PIC government entities or firms and large Australia- or New Zealand-based private sector actors. Firms outside of the Pacific can supplement the large human and technical capacity gaps.

These considerations are relevant for the following specific DECA recommendations:

- Recommendation 7.A focuses on providing technical assistance and skill-building for government staff.
- Recommendation 8.C has specific suggestions for developing a robust cybersecurity workforce.
- Recommendation 11.B contains details about preparing future generations for the digital jobs of tomorrow.

Table 24 below summarizes each recommendation as follows:

- **What**: links to the detailed recommendation
- **Why**: provides the motivation or intended impact of the recommendation
- **How**: summarizes the suggested approach for implementation

The **detailed recommendations section that follows** provides further explanation of how to implement each recommendation, including:

- Relevant context, recommended partners, and ways to build on existing programming;
- Important considerations such as unknowns and potential challenges;
- Opportunities to draw upon and align with the Principles for Digital Development and the SDGs; and
- A list of relevant resources to dive deeper into relevant topics.

When acting on any of these recommendations, information on best practices in digital development program design can be helpful. The Principles for Digital Development[751] and the USAID Digital Investment Tool are important resources. For guidance or technical support on any of these recommendations, please contact digitaldevelopment@usaid.gov.

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751   These principles are nine living guidelines that provide best practices for every phase of the project life cycle. They were created in consultation with various international development organizations, including USAID.

TABLE 24. Summary of DECA recommendations for USG

WHAT?	WHY?	HOW?
PILLAR 1: DIGITAL INFRASTRUCTURE & ADOPTION		
1 Drive affordable last-mile connectivity solutions that promote digital inclusion	Enhanced connectivity for all including for the most marginalized and remote Pacific Island communities.	Partner with local research and academic groups to collect existing alternative connectivity solutions. Promote Open RAN adoption through knowledge exchange, technical assistance, and funding. Support policymakers in creating enabling environments for last-mile connectivity solutions, including MEO/LEO satellites. Explore community- oriented business models for last-mile connectivity.
2 Build resilient systems at the regional, country, and community levels	More resilient infrastructure and systems to withstand increasing severity of climate change impacts and cybersecurity risks.	Convene stakeholders to identify regional infrastructure gaps. Support organizations in building preparedness and resilience for the long-term. Invest in initiatives that leverage technology to build community resilience.
3 Enhance digital literacy, especially across marginalized groups, to improve digital adoption and online safety	Increased digital adoption and enhanced online safety, particularly for marginalized groups.	Work with partners to engage communities in research to bolster the evidence base for digital literacy needs. Engage with and invest in organizations that deliver digital literacy training to remote communities. Support governments in bolstering digital literacy interventions and designing inclusive digital systems. Pair digital literacy with connectivity intervention rollouts especially in remote, outer islands.
PILLAR 2: DIGITAL SOCIETY, RIGHTS, & GOVERNANCE		
4 Promote training and capacity building opportunities in digital journalism for media professionals	Well compensated and highly skilled media professionals will be well adapted to the digital age, able to cover diverse topics impartially and address the spread of false narratives online.	Conduct workshops on digital skills for journalists. Provide training on media reporting skills. Facilitate fellowships for journalists at local and international NGOs, think tanks, and universities to conduct research on digital media and learn international best practices. Support university-level local journalism programs. Develop professional development opportunities with an emphasis on mentorship, networking, exchange programs, internships, and job rotations through partnerships with the private sector and universities.
5 Support the development of a vibrant, independent, impartial, and sustainable media landscape	Financially viable and independent media organizations can hire, train, and retain the best journalists; cover the news without interference; educate the public; and hold public officials accountable; Fact checking groups counter mis- and disinformation.	Provide financial support paired with training on how to achieve sustainable financial viability. Support public interest media in countering mis- and disinformation through regional partnerships.
6 Enhance civic engagement and the protection of freedom of expression online through policy and grassroots-level initiatives	A weak legal and regulatory environment deprives citizens of data protection, online privacy, and access to information rights; enables social media bans, and stifles traditional media and weakens civil society.	Provide technical assistance for the development of legislation on data protection, online privacy, and access to information. Consider integrating media literacy into national curricula. Provide legal consultations and financial support to enable CSOs and media to better engage with the government. Foster coalition-building among existing CSOs at the national level and coordinate with regional organizations to increase information-sharing and best practices on advancing rights through national legal and regulatory frameworks.

7	Support government system and service digitalization through technical assistance and skill-building	Increased absorptive capacity of government personnel related to digital technologies and improved public service delivery and transparency for citizens.	Provide technical assistance and skill building for government staff. Encourage government initiative on interoperable digital government systems. Advise on effective design and implementation of national digital ID systems. Encourage the use of open-source software and platforms for digital government systems.
8	Increase coordination and decrease duplication in cybersecurity capacity-building with a focus on CERTs, workforce development, regulatory frameworks, and cyber hygiene across the ecosystem	Safer and more resilient digital systems, networks, and citizens that ensure security, privacy, and long-term sustainability of the regional and country digital ecosystems.	Work with existing coordination bodies to create a systematic approach to avoiding oversaturation in cybersecurity capacity building efforts. Complement existing efforts on cybersecurity capacity building and awareness-raising for government officials. Support the development of a robust cybersecurity workforce. Build technical and operational capacity of national CERTs. Design and launch cybersecurity public awareness programs to strengthen cyber hygiene.
PILLAR 3: DIGITAL ECONOMY		
9	Cultivate digital engagement by enhancing local capacity for e-commerce in PICs	Improved quality of products and services sold online, MSME resilience via access to new markets, and market driven economic growth.	Support the development of local e-commerce platforms for small, remote, and disadvantaged communities. Provide tools for the development of locally relevant content (in local languages), the bankability of local products, services, and providers by exposing them to best international practices. Provide assistance for the development of digitally-enabled services that will enable generations of Pacific Islanders to remain on the islands and contribute to local economic development. Support governments in the development and deployment of government G2B and G2C services for businesses and consumers.
10	Reduce policy and regulatory barriers to e-commerce and digital trade	Improved enabling environment for cross-border digital trade and e-commerce via greater predictability and efficiency leading to job creation, increased exports, and more trusted online transactions.	Enhance donor coordination in the Pacific on solutions that make e-commerce and digital trade predictable and cheaper in line with decisions made by Forum leaders. Support a strengthened Pacific E-commerce Portal, accelerate adoption, implementation, monitoring, and upgrade of national digital economy and e-commerce strategies harmonized with the regional framework. Increase the capacity of governments to take part in regional and global negotiations on digital economy agreements. Improve the generation of statistics on e-commerce and support e-commerce-related laws based on UNCITRAL model laws to increase confidence among consumers and businesses and predictability of e-commerce.
11	Build strong foundations for digital skills development that bridge the gaps between demand and supply	Increased workforce capacity to leverage digital skills for improved economic outcomes for all regardless of income or location or other factors.	Support ecosystem builders that can provide local solutions to local problems. Improve secondary and tertiary education curricula to prepare future generations for the digital jobs of tomorrow. Develop policies that support digital skills development and build partnerships with the private sector to deliver digital skills training, making training accessible to all people regardless of income or location. Support the development of online and distance learning programs (ranging from basic digital literacy to more advanced skills such as coding and data analysis).
12	Promote the safe adoption of digital financial services and digital assets to increase financial inclusion and economic opportunities	Greater financial inclusion through easier access to financial services, reduced financial transaction costs, and increased efficiency of the financial system as well as improved risk mitigation.	Support the deployment of non-bank digital payment solutions and alternative sources of finance for e-commerce ventures across the Pacific and to accelerate and improve the disbursement of humanitarian assistance (cash relief) in PICs. Integrate business-friendly digital payment solutions spearheaded by commercial banks and MNOs. Assist governments in developing enabling policies and regulations on DFS and digital assets in compliance with AML/CFT rules. Promote the use of FinTech and explore the potential of DFS for remittances.

DETAILED RECOMMENDATIONS

1. ## DRIVE AFFORDABLE LAST-MILE CONNECTIVITY SOLUTIONS THAT PROMOTE DIGITAL INCLUSION

   While first mile connectivity has progressed, PICs continue to face challenges in last-mile connectivity. Although policy and private sector efforts to accelerate coverage expansion in remote and rural areas yielded some success—with the mobile internet coverage gap decreasing from 33% in 2018 to 14% in 2022[752]—concerted effort is needed to extend affordable and accessible connectivity to the most marginalized communities. The international development community can work together to take stock of and test new technologies and business models to accelerate last-mile connectivity solutions. Options for how to begin this work include:

   A. **Partner with local research and academic groups to collect existing alternative connectivity solutions.** Taking stock of projects and initiatives that leverage alternative connectivity solutions for the last-mile (e.g. Lynk in Palau or Kacific's community WiFi networks across FSM, Kiribati, PNG, Solomon Islands, and Vanuatu) is an important first step in assessing the technologies and business and partnership models that may be most suitable for unique environments across PICs. This could be achieved by partnering with local research and academic groups, such as the University of South Pacific (USP), to review past and existing projects to build an evidence base for making context-specific, cost-effective, and inclusive investments to increase connectivity for underserved and unconnected areas. These efforts could prevent duplicative work and could be made publicly available and regularly updated.

   B. **Promote alternative technologies and business models that address last-mile connectivity challenges and strengthen digital ecosystems.**

      » **Engage with and support a range of MEO/LEO satellite providers:** MEO/LEO satellite technologies have the potential to reduce the digital divide by providing reliable, flexible backhaul that offers high-speed connectivity to underserved or unconnected areas across the Pacific. A range of business models and approaches are being undertaken, each with varying levels of enthusiasm for uptake across stakeholder groups and PICs. Enhanced understanding and testing of different MEO/LEO business models will be important for PIC governments and existing private sector players in building confidence in emerging technologies and allaying fears. International development actors can partner with MEO/LEO satellite internet providers to collect and share lessons on the impact of these emerging technologies across different PIC contexts. Existing projects from other parts of the Asia Pacific can serve as examples. Under the INCENTIVISE[753] program, USAID is working with the Philippine Space Agency (PhilSA) and the Department of Science and Technology's Advanced Science and Technology Institute (DOST-ASTI) to invite satellite companies to conduct tests demonstrating the viability of broadband technology. In April 2023, USAID facilitated PhilSA's procurement of Starlink satellite internet services in three rural and remote areas of the Philippines where traditional connectivity is unavailable.[754]

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752   "The Mobile Economy Pacific Islands 2023," GSMA, 2023, https://www.gsma.com/mobileeconomy/wp-content/uploads/2023/05/GSMA-ME-Pacific-Islands-2023.pdf. The mobile internet coverage gap is the percentage of the population not covered by mobile internet.

753   Introducing Non-Geostationary Satellite Constellations Test Deployments to Improve Internet Service.

754   "U.S.-Supported Satellite Broadband Technology Program Connects Remote Communities to the Internet," USAID, May 5, 2023, https://www.usaid.gov/philippines/press-releases/may-05-2023-us-supported-satellite-broadband-technology-program-connects-remote-communities-internet.

» **Build private sector skills and support knowledge exchange on Open RAN:** With varying levels of understanding of and perceived industry readiness for Open RAN, it is important to build the capacity of telecommunications sector actors regarding skills and know-how. There are several avenues for support, including USAID's Asia Open RAN Academy in the Philippines, which aims to enhance knowledge and accessibility of Open RAN and to promote and maintain standards in Open RAN and the telecommunications industry.

» **Explore public private partnerships for rural connectivity:** Community needs must be at the center of connectivity investments. This can help ensure that connectivity is accessible and affordable for marginalized populations. Exploring the viability of different partnership models and monitoring impact on communities is critical. Internet para Todos (IpT) in Peru is an innovative partnership model between Facebook, Telefónica Movistar, Inter-American Investment Corporation (IDB Invest), and the Development Bank of Latin America (CAF) that brings mobile broadband to rural areas. IpT has connected 1.6 million Peruvians across 10,000 rural communities by leveraging Open RAN architecture, introduced by the Open RAN Project Group and supplied to Telefónica by Altiostar, Gigatera Communications, Intel, Supermicro, and Xilinx. Open RAN will be used to extend 4G and 5G coverage to more than 13,000 remote towns across the country.[755] As part of the USAID/Peru-led CR3CE Alliance, USAID supports IpT's efforts to expand connectivity.[756]

» **Support community-oriented business models for expanded connectivity:** Important elements of expanding connectivity in rural and hard to reach geographies across the Pacific include: enabling local ownership of the technology or the rollout decisions; building trust with key community members; and ensuring that clear use-cases and benefits are developed and communicated. The international development community can consider organizing inclusive internet working groups consisting of representatives from a leading design thinking organization (international or local), selected community members, relevant telecommunications sector actors (MNOs, ISPs, system integrators, satellite providers), and local government. The working groups can include stakeholders at the community level such as youth, women, and people with disabilities. These working groups would together propose connectivity solutions, partnership, and business models that best fit a given community. This format would give space for community members to learn about new technologies and the impact on their communities; share their ideas about such technologies; and suggest alternative models for implementation and sustainability. This approach could result in new formats for community networks, alternative options to enable affordability, and different ways to generate demand. The key to this model is that it relies on local expertise to come up with local solutions.

An example of a community-oriented business model in the Pacific is Kacific's community WiFi network, which builds networks of high-speed WiFi hotspots to provide internet to communities in small packages through a prepaid voucher system. People in remote areas can purchase bandwidth at local shops and roam between hotspots. Additional global examples include Rhizomatica, which is partnering with the IDB in Mexico to offer an opportunity for communities to earn income through management of their community network. Another example that places communities at the center of their work to expand rural connectivity comes from Equitable Origin in Ecuador. The team has plans to develop, together with the local Indigenous communities, a sustainable internet connection management model

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755 "Peru Digital Ecosystem Country Assessment (DECA) Snapshot." *USAID*, October 3, 2022. https://www.usaid.gov/digital-development/peru-deca-snapshot.

756 "Internet Para Todos Y CEDRO Se Unen Para Impulsar Inclusión Digital En La Amazonía Peruana," CEDRO, n.d., https://www.cedro.org.pe/noticia/internet-para-todos-y-cedro-se-unen-para-impulsar-inclusion-digital-en-la-amazonia-peruana/.

and has the support of the national telecommunications corporation. In Zanzibar, World Mobile is piloting a unique model where they partner with a local network provider to use existing fiber optic cables to reach within 65 km of an unconnected village. The Internet Society has pledged to help build 100 community networks worldwide by 2025 and has developed extensive resources to help those interested in building community networks. The Community Network Readiness Assessment Handbook can help determine the viability of deploying and maintaining a community network.

C.   Support policymakers to create enabling policy environments for last-mile technology solutions.

» **Facilitate open discussion between PIC governments, LEO providers, and other ISPs:** An important part of encouraging regulators to create more enabling policy environments for emerging technologies is to address policymakers' concerns about the potentially negative impacts of new technologies on existing market dynamics and digital ecosystems. These include concerns that LEO satellite entrants could undermine government investment in existing infrastructure by siphoning off higher-end customers along with the possible loss of control over cross-border data flows (data sovereignty), which is most acutely felt in PICs with state-owned MNOs and limited competition such as RMI, FSM, Palau and Tuvalu.

International development actors could act as interlocutors between policymakers, existing ISPs, and LEO providers by convening events where discussions could help mitigate risks and build confidence in the transformational benefits of emerging technologies. Instead of localization regulations requiring satellite data traffic to transit via domestic ground stations, there may be other ways to overcome sovereignty and cybersecurity concerns. International community engagement could encourage more enabling and more uniform regulation across the region for LEO providers, incentivizing them to invest in PICs while ensuring that their services benefit Pacific islanders.

» **Support efforts toward streamlined and flexible regional regulation:** Work with regulators to build knowledge and understanding of benefits and risks of emerging last-mile connectivity solutions for PICs. A number of PICs reported limited resources and capacity to keep pace with fast-changing technology advancements, with minimal regulation set-up to cover LEO providers. Licensing regimes for ISPs and satellite providers differ across PICs, so there is a need to simplify policies within and across PICs to remove barriers to entry for connectivity providers.

The international development community can coordinate with actors working in the regulatory space, such as ITU, to encourage forward leaning regulators from larger PICs such as Fiji and PNG with more advanced telecommunications/ICT and digital ecosystems to share best practice policies and lessons learned with smaller PICs. The intention would be to streamline policy where it makes sense. This would help connectivity providers with navigating more harmonized environments.

» **Advocate for policies that support mobile connectivity rollout in remote locations:** New models for deployment are required to address affordability challenges associated with last-mile infrastructure rollout. Infrastructure sharing can avoid duplication of assets and help MNOs extend networks into remote locations, reducing CAPEX and OPEX by between 50-80%.[757] Creating enabling policies that encourage tower sharing between MNOs can enable this.

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757   "Last Mile Connectivity: Addressing The Affordability Frontier, Asian Development Bank, December 022, https://www.adb.org/sites/default/files/publication/847626/sdwp-083-last-mile-connectivity-affordability-frontier.pdf.

More flexible licenses for small ISPs and community networks seeking to provide coverage to low density areas (e.g., below 200 customers) can also incentivize infrastructure rollout into more remote areas. Creating enabling regulations and licensing conditions that will overcome barriers to entry can help these smaller players to close digital divides at the last-mile.

This recommendation details how to drive last-mile connectivity solutions in a way that embodies the Principles for Digital Development "Understand the Existing Ecosystem" and "Be Collaborative.: The recommendation also supports Sustainable Development Goal (SDG) 9c: "Significantly increase access to information and communications technology and strive to provide universal and affordable access to internet in LDCs (least developed countries) by 2020" and SDG 17 to "Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development." about strengthening partnerships to achieve sustainable development goals.

RELEVANT RESOURCES

- Barriers to investing in last-mile connectivity (USAID, 2022)
- Closing the Coverage Gap: How innovation can drive rural connectivity (GSMA, 2019)
- Asia Open RAN Academy (USAID)
- Last Mile Connectivity: Addressing the Affordability Frontier (ADB, 2022)
- Digital Connectivity and Low Earth Orbit Satellite Constellations: Opportunities for Asia and the Pacific (ADB, 2021)

2. BUILD RESILIENT SYSTEMS AT THE REGIONAL, COUNTRY, AND COMMUNITY LEVELS

As social and economic life in the Pacific becomes increasingly reliant on digital ecosystems, the need for resilient infrastructure becomes more vital at the regional, country, and community levels. Resiliency challenges are exacerbated by the region's vulnerability to the impacts of climate change, forcing PICs into response and recovery cycles. The international development community can consider the following to support resilience through the use of digital technologies:

A. **Convene stakeholders to systematically identify regional infrastructure gaps.** Uncoordinated donor support has (in part) led to piecemeal approaches to connectivity infrastructure investment. This is particularly true for undersea cable developments, leaving Tuvalu and Nauru with no operational international cable and numerous PICs with a single cable and limited redundancy. Even for countries like PNG that have more than one cable, terrestrial fiber across the country is severely limited. A coordinated assessment of gaps and priorities regarding resilient infrastructure across the Pacific region is needed.

International development actors can encourage a strategic region-wide approach to resilient connectivity infrastructure by convening donors and government and non-government PIC leaders to coalesce around solutions for the issue. Taking stock of current and future connectivity investments and identifying the most vulnerable regions in terms of infrastructure resilience will allow stakeholders to address the greatest needs collectively and pinpoint optimal solutions to address these needs through policy change, terrestrial and subsea infrastructure, satellite connectivity, or other measures. These efforts could leverage existing multistakeholder programs that collate and prioritize infrastructure projects in the Pacific, such as the National Infrastructure Investment Plans developed by the Pacific Regional Infrastructure Facility.

B. **Invest in initiatives that leverage technology to build community resilience.** Digital technologies can play a vital role in climate change adaptation and disaster risk reduction in the region. Mobile technology can be leveraged for early warning systems (EWS), climate monitoring, and weather forecasting to alert isolated

communities of potential hazards and to support livelihoods that depend on agriculture. There are untapped opportunities regarding the role that mobile technology can play in building community resilience in the PICs.

It is critical to provide support to local organizations to develop innovative technology solutions in support of community resilience. Organizations such as GSMA provide seed funding to nonprofit and for-profit organizations that leverage technology to improve preparedness, promote effective early response, and enable vulnerable populations to adapt to the negative impacts of climate change.[758] International development actors can invest in innovation funds to accelerate testing and scaling of locally-led digital innovations that enhance climate resilience.

> *This recommendation details how to build resilient systems in a way that embodies the Principles for Digital Development "Understand the Existing Ecosystem" and Build for sustainability." It also supports SDG 9a: "Facilitate sustainable and resilient infrastructure development in developing countries through enhanced financial, technological and technical support to African countries, least developed countries, landlocked developing countries and small island developing States;" SDG 1.5: "By 2030, build the resilience of the poor and those in vulnerable situations and reduce their exposure and vulnerability to climate-related extreme events and other economic, social and environmental shocks and disasters.;" and "SDG 13b "Promote mechanisms for raising capacity for effective climate change-related planning and management in LDSs (least developed countries) and small island developing States, including focusing on women, youth and local and marginalized communities."*

RELEVANT RESOURCES

- The Climate Crisis: Mobile-enabled solutions in humanitarian emergencies (GSMA, 2021)
- Moving Toward a Model of Locally Led Development (USAID, 2019)
- USAID Climate Ready program (USAID, 2023)
- USAID's Digital Invest (USAID, 2022)
- Early Warnings for All (EW4A) (ITU, 2023)

3. ENHANCE DIGITAL LITERACY, ESPECIALLY ACROSS MARGINALIZED GROUPS, TO IMPROVE DIGITAL ADOPTION AND ONLINE SAFETY

Foundational digital literacy is a prerequisite for meaningful digital inclusion. Pacific Islanders with limited digital literacy are being left behind, unable to take advantage of the social and economic benefits of connectivity. Marginalized and vulnerable groups, particularly women, with low digital literacy levels are at risk of digital harms. This is a serious, yet broadly overlooked issue across PICs.

The international development community can support programming that extends beyond access to infrastructure and digital devices to enabling communities to participate in the digital ecosystem meaningfully, responsibly, and safely. Ways to enhance digital literacy levels across the region include:

A. **Work with partners to engage communities in research to bolster the evidence base.** A lack of data on connectivity, access, use, and barriers to digital technologies across the PICs prevents effective interventions and policies. Anecdotal evidence suggests that low digital literacy is a primary cause of low digital adoption and increased digital risk and harm across marginalized groups, but end user research is needed to understand

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758   GSMA runs two innovation funds focused on resilience: the GSMA Innovation Fund for Climate Resilience and Adaptation, GSMA, n.d., https://www.gsma.com/mobilefordevelopment/the-gsma-innovation-fund-for-climate-resilience-and-adaptation/ and The GSMA Innovation Fund for Anticipatory Humanitarian Action, GSMA, https://www.gsma.com/mobilefordevelopment/the-gsma-innovation-fund-for-anticipatory-humanitarian-action/.

the nuanced challenges faced by different segments. Further research (including data disaggregated by gender, age, geography, economic status, refugee, and disability status) is critical to understanding and addressing these disparities.

To ensure that digital-related interventions and decisions are based on strong evidence instead of on anecdotal accounts, GSMA produced the Connectivity, Needs and Usage Assessment (CoNUA) Toolkit. It provides tools to measure access, usage, and preferences regarding mobile phones, as well as to understand people's digital skills and concerns they may have around the use of digital services. USAID also has a Gender and ICT Survey Toolkit outlining how to design data collection efforts around gender and technology. This can be leveraged to ensure that an intersectional approach is taken, accounting for gender, geography, age, ethnicity, and other factors.

The international development community can support the adoption and rollout of such Toolkits across the PICs. By collecting consistent data and bolstering the evidence base on the nuanced connectivity and digital literacy needs of individuals across the Pacific, the chances of meaningful, responsible, and safe participation by marginalized groups in the digital ecosystem can be improved.

B.   **Engage with and invest in organizations that deliver digital literacy training to remote communities.**

» **Collate digital literacy initiatives across the Pacific region:** Digital literacy initiatives across PICs are led by a range of actors including the private sector, civil society organizations, and government entities. The region could benefit from having a better view on the kinds of approaches that are being deployed and their relative successes. This would reduce the risk of duplication and identify gaps in support.

International development actors could support this undertaking by partnering with local or regional research organizations or universities to collate digital literacy initiatives, mapping them to existing frameworks such as the EU's DigComp Framework 2.0.[759] Creating a common understanding of digital literacy and skills across multiple stakeholders can identify the biggest gaps and help promote and track progress toward digital skills attainment goals. Distinguishing between cybersecurity trainings, which have proliferated across PICs, and digital literacy and online safety initiatives can also ensure that more emphasis is placed on the latter.

» **Partner with and fund promising digital initiatives that put communities and inclusivity at the center of their work:** A number of civil society organizations work to close digital divides through activities including digital literacy trainings with an emphasis on online safety. I Am Digital Pacific Islands is a unique example of an INGO that partners with a private sector company to deliver digital literacy and online safety trainings across seven PICs, safeguarding children and parents against online abuse and exploitation. Other civil society organizations work with communities focusing on the most marginalized groups, particularly women and girls. Identify organizations delivering the most impact through these initiatives and seek to partner with and fund them in a sustained manner.

C.   **Support governments in bolstering digital literacy interventions and design inclusive digital systems.**

» **Work with governments to embed digital literacy into national ICT curriculums:** Some PICs include a focus on digital literacy and skills in their National ICT Policies, but it is unclear to what

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759 DigComp focuses on a key set of competencies needed for personal development, social inclusion, active citizenship, and employment. It includes five competency areas, including technical and non-technical competencies, specifying knowledge, skills and attitudes required for each area.

extent these policies are implemented.[760] Mainstreaming ICT skills, including mobile skills in school curricula, can build digital skills and confidence among students. Boosting confidence in ICT skills is particularly important for women and girls. International development actors can encourage governments to adopt digital literacy frameworks, such as DigComp 2.2, offering a systematic way for digital skills policy and curricula development to cover critical digital literacy competencies and to provide a means for impact measurement.[761]

» **Support the design of inclusive digital systems:** Building inclusive digital services is critical for people with lower digital literacy and skills levels and those with disabilities, including hearing or visual impairments. This applies to both government digital services as well as to services developed by the private sector, such as mobile money platforms used for utilities payments or humanitarian cash transfers. Providing instant voice response (IVR) helplines and screen-readers and using local languages, icons, symbols, and videos instead of text are a few ways to ensure accessibility. User needs and preferences must be at the center of these efforts, which requires sustained engagement through the design process.

International development actors can partner with and advocate for U.S. big tech companies such as Google[762] with expertise in digital accessibility to support the development of accessible technologies and systems in the PICs. Human-centered design (HCD) organizations such as IDEO would also make strong partners to ensure that digital products and services meet the needs of persons with disabilities. Introductions and knowledge exchange between big tech companies, HCD organizations, local PIC innovators and government personnel could be facilitated.

D. **Pair digital literacy with connectivity intervention rollouts in remote, outer islands.** Across the PICs, investments made in connectivity infrastructure have not been complemented by necessary attention and investment in digital skills and literacy. International development actors canadvocate for adequate investment in digital literacy alongside connectivity intervention rollouts to ensure that inclusive and safe access to digital services is achieved. Rollout interventions should focus on ensuring that people have the necessary access to equipment (handsets, charging, ICT centers), and also on equipping people with the prerequisite skills to safely and equitably make the most of digital technologies.

Last-mile coverage efforts by private sector organizations could benefit from complementing connectivity offerings with digital literacy trainings for community members. Mobile operators often have extensive agent networks that can be leveraged to support rollout of digital literacy trainings. The Mobile Internet and Skills Training Toolkit[763] (MISTT) is a set of free resources that teach the basic skills people need to gain access to and use mobile internet. It has been deployed in multiple contexts around the world and can be adopted by private and public actors to train people on specific skills and knowledge they need to use a mobile phone effectively. Importantly, it includes training on accessibility features to ensure inclusivity for persons with disabilities.

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760 FSM, Kiribati, Samoa, Solomon Islands and Vanuatu include integration of ICT curricula in schools and vocational programs in their policies.

761 Frameworks provide a starting point for how digital literacy interventions can be shaped. It is necessary for governments and education authorities to review relevant frameworks, adapt them to specific contexts, and develop corresponding learning resources. Implementation strategies must be aligned with user needs and must respond to existing motivations to learn.

762 "Get in Touch," Google, n.d., https://www.google.com/accessibility/get-in-touch/.

763 MISTT uses a train-the-trainer approach consisting of short lessons in PDF format that can be adapted to local contexts and languages.

This recommendation details how to enhance digital literacy in a way that embodies the Principles for Digital Development "Design with the User" and "Be Data Driven." It also supports Sustainable Development Goal (SDG) 8.2, which aims to "Diversify, Innovate and Upgrade for Economic Productivity" achieve higher levels of economic productivity through diversification, technological upgrading and innovation and SDG 5b: "Enhance the use of enabling technology, in particular information and communications technology, to promote the empowerment of women."

RELEVANT RESOURCES

- Digital Literacy Primer (USAID, 2022)
- DigComp 2.2 (EU, 2022)
- Mobile Internet and Skills Training Toolkit (GSMA)
- USAID's Digital Asia Accelerator (USAID)
- Gender and ICT Survey Toolkit (USAID, 2019)
- Connectivity, Needs and Usage Assessment (CoNUA) Toolkit (GSMA, 2023)

4.   **PROMOTE TRAINING AND CAPACITY BUILDING OPPORTUNITIES IN DIGITAL JOURNALISM FOR MEDIA PROFESSIONALS**

Media professionals in the Pacific face low pay and high turnover rates, with few professional development opportunities to advance their skills in the digital age. Female journalists face online threats and harassment which, sometimes leads to offline violence, and has negative consequences for women's long-term participation in their chosen professions. The international development community can consider the following approaches in support of a free, open, online information space in the Pacific:

A.   **Conduct virtual and in-person workshops in partnership with the private sector on digital skills for journalists.** These workshops could include topics on engaging in mobile journalism, building a social media presence, creating engaging online content, and monetizing followers. It will be important to integrate a gender lens in these trainings.

B.   **Provide virtual and in-person training on media reporting skills.** Important skills to cover include fact-checking; addressing censorship and surveillance; countering mis- and disinformation; conducting online investigative journalism; and reporting on gender-based violence. Consider virtual training options rather than in-person trainings to minimize the risk of over-extending limited human resources. Build on existing fact-checking initiatives carried out by local media associations such as the Media Association of the Solomon Islands and the Media Association of Tonga funded by the Pacific Media Assistance Scheme (PACMAS).

C.   **Facilitate fellowships for journalists at local and international non-profit organizations, think tanks, and universities.** Fellowships can be for conducting research on the development of digital media in the Pacific and learning international best practices in digital journalism. Explore opportunities that specifically target women journalists and how to safely engage online and offline with readers and interview subjects. Consider building on, supporting, or working with the Pasifika Journalism Fellowship, which supports Indigenous journalists across the Pacific with small stipends, virtual training, and networking opportunities. There may also be opportunity for coordination with the Dart Asia Pacific Fellowship that supports Pacific journalists and editors to travel to Australia to learn about reporting on topics such as climate change, violence, natural disasters, civil unrest, and war.

D.   **Support university-level local journalism programs.** Support can include the provision of equipment, curriculum refinement, opportunities to upskill professors, and grants to ensure adequate staffing. The

University of the South Pacific offers an undergraduate degree in journalism and a Diploma in Pacific Journalism for working media professionals and journalists. USP's Journalism program lacks resources to hire additional full-time professors to teach undergraduate courses or the ability to purchase required broadcasting and digital media equipment.

E.   **Develop continuous professional development opportunities for journalists.** Professional development opportunities can include mentorships, networking, exchange programs, internships, and job rotations, which could be facilitated through partnerships with the private sector and universities. National Public Radio's (NPR) Next Gen Radio pairs aspiring journalists with experienced professionals who mentor participants and allow them to build relationships in the media industry, while learning skills in digital journalism. The Hubert Humphrey Fellowship Program offers mid-level professionals a fully funded 10-month opportunity to pursue non-degree graduate level study, receive leadership training, mentorship and networking opportunities at Arizona State University's Walter Cronkite School of Journalism and Mass Communication.

RELEVANT RESOURCES:
- USAID Development Innovations (Cambodia)
- USAID Strengthening Democratic Governance in the Pacific Islands (Bougainville, Papua New Guinea)
- USAID Boresha Habari –Media and Civil Society Strengthening Project (Tanzania)
- USAID Strengthening Transparency and Accountability through Investigative Reporting program (Armenia, Belarus, Georgia, Moldova, Ukraine and the Western Balkans)
- USAID MEDIA: Increasing Accountability through Independent Media (Indonesia)
- USAID Central Asia Media Program (Kazakhstan, Tajikistan, and Uzbekistan)
- USAID's Disinformation Primer

> *This recommendation embodies Principles for Digital Development, "Design with the User," "Understand the Existing Ecosystem" and "Build for Sustainability." It is most aligned with Sustainable Development Goal (SDG) 4 "Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all," 8 "Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all," 16 "Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels", and 17 "Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development."*

5.   **SUPPORT THE DEVELOPMENT OF A VIBRANT, INDEPENDENT, IMPARTIAL, AND SUSTAINABLE MEDIA LANDSCAPE**

Media organizations face financial challenges. They are unable to hire, train, and retain the best journalists. Media outlets are ill-equipped to participate in the digital age and capitalize on revenue from digital advertising and online subscriptions. To counter some of these challenges, the international development community can consider the following actions:

A.   **Provide financial support to independent media.** This can be done through pairing financial support with training on how to achieve sustainable financial viability. Training can emphasize how to capitalize on new, digital-enabled revenue streams such as online subscriptions and digital advertisements.

B.   **Support public interest media to counter mis- and disinformation and government overreach on freedom of expression and freedom of the media.** This can ensure that the public has free access to factual and high quality news and information. National broadcasters play an important role in providing news from the

national perspective in the Pacific. Potential partners include Radio New Zealand and the Australian Broadcasting Corporation, which provide independent, fact-checked and free news coverage of the Pacific.

RELEVANT RESOURCES:
- USAID Disinformation Primer
- International Fund for Public Interest Media (global)

> *This recommendation embodies Principles for Digital Development, "Design with the User," "Understand the Existing Ecosystem," "Build for Sustainability" and "Be Collaborative." This recommendation is most aligned with Sustainable Development Goal (SDG) 4 "Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all," 16 "Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective e, accountable and inclusive institutions at all levels," and 17 "Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development."*

6. ENHANCE CIVIC ENGAGEMENT AND THE PROTECTION OF FREEDOM OF EXPRESSION ONLINE THROUGH POLICY AND GRASSROOTS-LEVEL INITIATIVES

PICs require more developed legal and regulatory frameworks in terms of right to information laws and data privacy and protection legislation. Vanuatu and Tonga are drafting data protection and privacy legislation. Fiji, Palau, and Vanuatu have standalone legislation on right to information laws. PNG, Samoa, FSM, and Kiribati are making progress in drafting right to information laws. Some PICs governments regulate the media and require licenses for journalists. The region has a weak civil society with few organizations advocating for digital rights or fighting digital repression. The international development community can consider the following to improve the policy and regulatory environment for digital rights:

A. **Provide technical assistance for the development of legislation on data protection, online privacy, and access to information.** Consider providing model laws from other jurisdictions and international best practices to serve as examples for the development of local legislation on data protection and freedom of information. The Council of Europe provided assistance in drafting Vanuatu's data protection legislation and there may be an opportunity for coordination and sharing lessons learned. Supporting Transparency International's efforts in the Solomon Islands to advocate for the passage of a draft access to information bill is an opportunity for the international development community. Samoa is drafting its Right to Information Policy with assistance from the United Nations Educational, Scientific and Cultural Organization (UNESCO).

B. **Provide legal consultations and financial support to media and civil society.** International development actors can consider providing legal consultation and guidance to media and civil society on how to better engage with governments during policy consultation periods and times of political opening. Supporting the establishment and continued independent operation of media councils and media associations that advocate for the rights of journalists and media organizations, will aid the establishment of an open and safe online space in the Pacific. For example, strengthening the Media Council of PNG in terms of staffing and financial support is an opportunity to positively shape the legal and regulatory environment in PNG. Fiji recently repealed the 2010 Media Industry Development Act. Preserving open media in the country will require continuous support for CSOs and news organizations such as reinstating the Fiji Media Council (defunct since 2010).

C. **Foster coalition-building among CSOs to increase information-sharing about digital rights protection.** This can be done by convening CSOs at national levels and by coordinating with regional organizations such as

the Pacific Islands Forum Secretariat (PIFS). The PIFS 2050 Strategy for the Blue Pacific Continent calls for the engagement of civil society in delivering on regional priorities. USAID PROJECT Governance's Blue Pacific Governance Gateway could serve as a mechanism where civil society organizations can share resources and tools online and foster peer-to-peer learning.

D.   **Integrate media literacy into national curricula.** The proliferation of the internet, social media, and digital media has left some people ill-equipped to consume online information critically and safely, and some are prone to believe dis- and misinformation. The Center for Media Literacy defines media literacy as "the process of understanding and using the mass media" with an "informed and critical understanding of the nature of the media." Partnering with schools, universities, and civil society organizations to integrate media literacy into educational curricula could raise awareness and counter the spread of dis- and misinformation.

RELEVANT RESOURCES:

- USAID's Digital Literacy Primer
- Center for Media Literacy
- USAID's Information and Communication Technology for Education (ICT4E) How-to Note
- USAID Media: Increasing Accountability through Independent Media (Indonesia)
- USAID's Civil Society Assessment Toolkit
- International Covenant on Civil and Political Rights
- IREX's Learn to Discern and IREX's Balkans Regional Media Literacy Network (Albania, Serbia, North Macedonia, Kosovo, and Montenegro)

This recommendation embodies Principles for Digital Development, "Design With the User," "Understand the Existing Ecosystem," "Design for Scale," "Build for Sustainability" and "Be Collaborative." This recommendation is most aligned with Sustainable Development Goal (SDG) 4 "Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all," 16 "Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels", and 17 "Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development."

7.   **SUPPORT GOVERNMENT SYSTEM AND SERVICE DIGITALIZATION THROUGH TECHNICAL ASSISTANCE AND SKILL-BUILDING**

Most of the 12 DECA PICs are in the early stages of formulating strategies for digital government development. Digital ID initiatives are fragmented and incomplete. The international development community can serve as key partners for PICs in government digital transformation through the following approaches:

A.   **Provide technical assistance and skill-building for government staff.** Interviewees across the region emphasized the need for technical assistance such as equipment, digital skill-building of government officials, and awareness raising on the potential of digital technologies in transforming governance through the transition from analog to digital service delivery. Digital literacy (#3) and digital skill building (#11) recommendations can address this issue in the long term. In the short term, international development actors can work with various ministries to initiate training programs on digital skills for civil servants. Training topics can include data analysis for data-driven policy decisions; project management equipping individuals with the tools to effectively plan, execute, and monitor digitalization initiatives; safe and secure use of open-source software; and digital policy landscape awareness, including legal frameworks and ethical considerations. Work with

partner country governments to offer government employees opportunities for career advancement, such as promotions and pay raises, as a result of their participation in digital technology training. This could effectively encourage civil servants to pursue professional development opportunities.

There is widespread capacity building fatigue in the PICs. Ministries and departments are severely short-staffed and struggle to retain talent. When government employees are temporarily removed from their jobs to participate in training it aggravates an already stretched thin team. It is important that this dynamic is at the forefront of any training or technical assistance provision. Training can be provided at the regional level and offer opportunities for peer-to-peer intra-Pacific information sharing. Virtual asynchronous training could also be developed.

B.   **Encourage government initiatives to build, use, and maintain interoperable digital government systems.** As governments across the Pacific draft their digital government strategies (and equivalents), international development actors can provide technical assistance during design and implementation. Advocate for interoperability across all administrative bodies of PIC governments. Government staff across the region will benefit from learning about the importance of interoperable digital government systems to streamline operations and service provision. Government interviewees mentioned that government staff buy-in for new digital systems and platforms is sometimes low due to a lack of awareness of the value-added provided by interoperable digital systems. There is also a need for technical assistance to develop and provide training on the maintenance and use of such platforms and systems.

C.   **Advise on effective design and implementation of national digital ID systems, a key government service delivery enabler.** An official ID can transform a person's access to services and representation. Digital ID systems must be designed responsibly, prioritizing safety and security. Digital ID initiatives in the PICs are fragmented and incomplete. As countries in the region embark on digital government transformation projects, it is crucial to provide technical assistance to the governments in facilitating the rollout of digital identification systems. The World Bank and UNDP already support digital ID initiatives in the region. Additional support should complement and coordinate with these efforts and can fill gaps in countries where these donors are not already working (World Bank digital ID initiatives exist in Samoa, Kiribati, FSM, RMI, Tonga). Before doing so should coordinate to gather lessons learned from ongoing efforts. Actors can cooperate with the World Bank and UNDP to advise governments on informing citizens of the purpose and benefits of a national digital ID, ensuring easy access to enrollment in the program, and interoperability with essential services such as digital/online banking, public social support programs, and voter registration, among others.

D.   **Encourage the use of open-source software and platforms for digital government systems.** Digital Public Goods, as recognized by USAID, is a driving force for achieving the Sustainable Development Goals. The Principles for Digital Development emphasize using open standards, open data, open source, and open innovation. The incorporation of free and open-source software holds considerable potential for expediting the digital transformation of PICs, and of PICs digital government systems and services. DECA interviews with government stakeholders revealed a general openness to exploring open source software and platforms, but technical expertise and guidance is needed to (1) select the appropriate platform or software; (2) tailor and develop the platform to meet contextual needs; (3) use it effectively across the government (not just by the IT department); and (4) maintain it sustainably. PICs national digital ID initiatives could leverage open-source technology like the Modular Open-Source Identification Platform (MOSIP), which could be instrumental in enabling governments to establish cost-effective, secure, and scalable digital ID programs. Explore the possibility of piloting digital government projects that use or build on open source software or platforms. In

collaboration with The Pacific Community (SPC), engage in outreach and advocacy initiatives, fostering widespread awareness. Facilitating uptake programs that impart essential training to government officials will equip them with the necessary skills and knowledge to successfully implement digital development projects using open-source software.

> *This recommendation supports the Principles for Digital Development "Design for Scale," "Be Collaborative," "Use Open Standards," "Open Data," "Open Source," and "Open Innovation," and aligns with SDG 17 "Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development."*

RELEVANT RESOURCES:
- Digital Government Model (USAID, 2022)
- USAID Digital Strategy 2020-2024 (USAID, 2020)
- UN E-Government Survey 2020 (UN, 2020)
- Open Government Partnership Digital Governance (Open Government Partnership)
- The Charter for Digital Public Goods
- Digital Identity and Inclusive Development
- Principles for Digital Development
- ID4D program (World Bank)
- Promoting American Approaches to ICT Policy and Regulation (ProICT) project (USAID)

8. **INCREASE COORDINATION AND DECREASE DUPLICATION IN CYBERSECURITY CAPACITY BUILDING WITH A FOCUS ON CERTS, WORKFORCE DEVELOPMENT, REGULATORY FRAMEWORKS, AND CYBER HYGIENE**

    The PICs face cybersecurity vulnerabilities due to the absence of comprehensive national cybersecurity strategies and CERTs. These vulnerabilities are especially apparent given increased connectivity and online activity over the last five years, due in part to the COVD-19 pandemic and connectivity infrastructure developments. Governments and international donors have initiated efforts in policy development, cybersecurity awareness, and incident response, but there is still a need for enhanced coordination to strengthen the region's cybersecurity ecosystems. While this need has been recognized by regional organizations as demonstrated by efforts to increase coordination and decrease duplication (e.g., undertaken by the GFCE Pacific Hub, PRIF and OCSC), it should still be stressed as a priority in the realm of cybersecurity. The following steps can be considered to support cybersecurity across different PIC ecosystems:

A. **Work with existing coordination bodies to create a systematic approach to avoiding oversaturation in cybersecurity capacity building efforts.** Interviewees highlighted the significant problem of program duplication and the lack of coordination with local stakeholders to address specific local needs. It is critical to work with existing advisory bodies to avoid program oversaturation and to design programs that address specific country needs. Existing groups include APNIC, Pacific Cyber Security Operational Network (PaCSON), GFCE Pacific Hub, Pacific Islands Law Officers Network (PILON), and Pacific Island Forum Secretariat (PIFS). GFCE Pacific Hub aims to increase transparency and coordination among stakeholders when identifying and setting programming objectives, defining delivery timelines, and determining precise capacity building requirements. The international development community can build on existing coordination efforts and collaborate with other actors such as the Partners in the Blue Pacific (the U.S. is a member), World Bank, UNDP, DFAT, and MFAT, to explore how collective action across projects can contribute to improving cybersecurity in the region. This could be done by convening regular meetings on cybersecurity or through setting up a shared platform or database to facilitate coordination, transparency, and deduplication.

B. **Complement existing efforts on cybersecurity capacity building and awareness-raising for government officials.** Across the region, interviewees emphasized the varying degrees of cybersecurity capacity and awareness gaps among government officials. They also spoke of the brain drain when talent leaves the public sector or the region. Capacity building efforts targeted at government officials can focus on next level (beyond cybersecurity 101) cybersecurity skill development. The OCSC conducted Cybersecurity Maturity Model (CMM) assessments for nine of the 12 DECA PICs using the Global Cyber Security Capacity Center CMM. These assessments, while not public, are key inputs for country government cybersecurity gap identification and strategy development. These capacity and skill-building efforts must pay particular attention to talent retention in government across the region. Providing career development and advancement opportunities for skilled government professionals can help address the issue of brain drain, fostering a stronger and more resilient cybersecurity workforce.

C. **Support the development of a robust cybersecurity workforce.** This can be done through partnerships with higher education and global cybersecurity institutions to develop cybersecurity curricula. Interviewees from across PICs indicated a clear absence of cybersecurity professionals in the region. International development actors can provide technical assistance to local higher education institutions, such as the University of South Pacific (USP), to design cybersecurity curricula and teacher training programs. The curricula could focus on providing cybersecurity students with practical, hands-on experience (through access to labs, cyber ranges) as well as on career opportunities after they complete their degrees or certificates. Consider facilitating these opportunities through connections to regional (Pacific, Australia, New Zealand) and U.S. private sector cybersecurity companies.

D. **Build technical and operational capacity of national CERTs to serve as cybersecurity focal points.** The four established CERTs (Tonga, PNG, Vanuatu, Samoa) in the region show potential for being critical local focal points of all things cybersecurity; awareness-raising, skill-building, prevention, and response among others. However, the CERTs are short staffed and in early stages of development. Consider partnering with APNIC and Forum of Incident Response and Security Teams (FIRST) to enhance the technical and operational capacity of existing national CERTs.

E. **Design and launch cybersecurity public awareness programs to strengthen cyber hygiene.** Programs can be targeted toward a variety of stakeholders including government employees, civil society organizations, and the general public. Existing initiatives such as Cyber Smart Pacific, Get Safe Online, and #IamDigital can provide partnership opportunities, valuable resources, and lessons learned. Get Safe Online's Ambassador Scheme successfully engages citizens to share key tips and good cyber hygiene practices. National CERTs can play a significant role in design and implementation of public awareness programs. Tonga CERT conducts awareness campaigns with community leaders while Vanuatu CERT circulates songs and videos that spread critical cybersecurity awareness information to citizens. In designing these awareness programs, it is important to prioritize locally relevant content and mechanisms of information dissemination. These programs can be incorporated into digital literacy initiatives (see Recommendation 3). Adopting a user-centered design approach when designing and launching these campaigns is essential to maximize their effectiveness.

F. **Support development of cybersecurity strategies and cybercrime action plans across the ecosystems in PICs.** Interviewees across the region noted the lack of national cybersecurity strategies. (Only three cybersecurity strategies have been published in the region in Samoa, Vanuatu, and Kiribati over the last few years). There is a need for assistance in developing cybersecurity strategies and in their implementation. International development actors can provide guidance to government institutions and other relevant

organizations regarding best practice for regulations, policies, and practices for the successful establishment and implementation of cybersecurity strategies. Consider working with Pacific Island Forum Secretariat (PIFs), the supervisory body of the Boe Declaration of Regional Security's Cybersecurity dimension which outlines five proposed action plans for cybersecurity capacity development in the region, including development of cybersecurity strategies and policies. Given the complex nature of cybersecurity and cybercrime, a comprehensive regional approach to cybersecurity capacity building may be pertinent .

G.   Safeguard PIC government networks and data by advocating for cloud based cybersecurity solutions. Government networks and data across the globe and specifically in the Pacific are vulnerable to damage or disruptions caused by natural disasters and acts of aggression. To mitigate such risks advocate for the adoption of cloud based cybersecurity solutions (with servers located in a third country). In the interest of cost effectiveness and practicality, PIC governments could be supported to use private sector cloud providers in outside countries where the servers are secure (e.g., Australia). The National Institute of Standards and Technology (NIST) provides best practices for cloud based cybersecurity.

> *This recommendation supports the Principles for Digital Development "Be Data Driven" and "Address Privacy & Security," and is most relevant to Sustainable Development Goal (SDG)11 "Make cities and human settlements inclusive, safe, resilient and sustainable," and 12 "Ensure sustainable consumption and production patterns."*

RELEVANT RESOURCES:
- Cybersecurity Primer (USAID, 2022)
- Cybersecurity Capacity Review (University of Oxford/OCEANIA Cyber Security Center)
- NIST Online Informative Reference Catalog (NIST, 2022)
- National Capabilities Assessment Framework (European Union Agency for Cybersecurity, 2020)
- NIST Cybersecurity Framework – Success Stories (NIST, 2021)
- Integrating Cyber Capacity into the Digital Development Agenda (GFCE, 2021)

9.   **CULTIVATE DIGITAL ENGAGEMENT BY ENHANCING LOCAL CAPACITY FOR E-COMMERCE IN PICS**

Products and services transacted online in the PICs are limited to consumer goods, food, handicraft, garments, and tourism. Most businesses and consumers in Tier 3 (Palau, FSM, RMI) and Tier 4 (Kiribati, Nauru, Tuvalu) (see Pillar 3 Introduction for Tier delineations) buy and sell on social platforms and have very little incentive around interest in more established markets.[764] The low quality of local products and distance to international markets call for more local solutions to serve local needs and communities first, before moving to more established segments. However, the weak enabling environment for e-commerce clearly hampers e-commerce development in most PICs. It is therefore critical to build the capacity of MSMEs and communities to adopt digital tools to buy and sell goods and services online. The international development community can consider the following approaches:

A.   Support the development of local e-commerce platforms for small, remote, and disadvantaged communities. This allows products to reach customers and enables payment through digital means (Kiribati, Solomon Islands, Tuvalu are the main targets). In addition to addressing gaps in digital infrastructure and ensuring reliable electricity supply, this should include collaboration with local entrepreneurs, technology experts,

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764   The report categorizes countries based on the level of development of e-commerce, with Tier 1 being the least developed and Tier 4 the most developed.

and community leaders to develop user-friendly e-commerce platforms tailored to the unique contexts of each of these communities. Consider targeting the inclusion of women-owned businesses to support women's participation in the digital economy.

B. **Support onboarding of local entrepreneurs to local platforms and marketplaces.** Local webshops and e-commerce platforms in the PICs should account for local languages, cultural nuances, and unique product categories. They must also integrate secure digital payment methods, including mobile money, which are widely used and accessible. It is crucial to provide training and support to local entrepreneurs and community members to equip them with the skills required to use e-commerce platforms effectively, facilitate customer service, and manage online businesses. Project Kirana, a partnership between Mastercard and USAID in India, serves as a replicable model for larger Pacific Islands such as PNG and the Solomon Islands. Consider arranging knowledge-sharing sessions and workshops where successful international e-commerce practitioners can share their experiences and best practices with local communities. In tandem, there should be an emphasis on enhancing the skills and competencies of local entrepreneurs, including a focus on product quality, service delivery, customer service, business management, product development, and customer engagement strategies. Adherence to international best practices, such as transparent review and rating systems, clear product descriptions, high quality photos, secure payment methods, and reliable delivery options, can build trust in the marketplaces. This approach is particularly valid for Tier 1 and Tier 2 countries with more established domestic marketplaces and webshops, and vendors already selling online across borders, such as Fiji, Samoa, and Vanuatu.

C. **Provide assistance for the development of digitally-enabled services that will enable generations of Pacific Islanders to remain on the islands and contribute to local economic development.** The presence of Pacific service providers on freelancer marketplaces is still limited, although it increased during the COVID-19 pandemic. It is important to raise awareness through workshops and seminars to educate service providers about the benefits and opportunities offered by freelancing platforms such as Upwork, Fiverr, and Freelancer and illustrate how these platforms provide a global marketplace without requiring physical migration. More advanced training could equip service providers with the necessary digital skills and competencies to successfully navigate and utilize these platforms from setting up a profile, and writing an effective proposal, to advanced skills like project management, client communication, and bidding strategies.

D. **Support governments in the development and deployment of government G2B and G2C services for businesses for consumers.** Many potential examples of digital G2B and G2C services can be developed by governments in less-developed PICs such as FSM, Kiribati, Nauru, Solomon Islands and Tuvalu to increase adoption of digital tools by businesses for consumers, based on successful services in Fiji and Samoa. Examples of such services include: a digital business registration portal that would make it easier and faster for businesses to start operating; a digital tax filing system; a digital payment system for customs payment; and, more generally, a digital government portal to provide a single point of access to all government services. This last example would make it easier for businesses and consumers to find the information and services they need. Any G2B and G2C services supported by international development actors would need to be designed with the user, ensuring that they are easy to use and understand, are secure and protect the privacy of users, and are sustainable and affordable to maintain by host governments. For eligible countries, the experience of the Smart Cities Coalition (SCC)[765] could be put to good use. The Smart Communities Coalition (SCC), co-chaired by Mastercard and USAID, is a public-private effort that aims to transform the operating model in humanitarian contexts to enable innovative, sustainable approaches to the delivery of basic services.

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765 "Digital Finance," USAID, n.d., https://www.usaid.gov/digital-development/digital-finance.

> *The recommendations support the Principles for Digital Development including "Design with the user," and "Understand the Existing Ecosystem." They also support Sustainable Development Goal (SDG) 1 "End poverty in all its forms everywhere," 4 "Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all," and 8, "Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all."*

RELEVANT RESOURCES

- PIFS E-commerce Initiative (2017)
- PIFS Pacific Regional E-commerce Strategy and Roadmap (2021)
- UNCDF/UNCTAD Digital Economy Report Pacific Edition (2022)
- USAID's Alliance for eTrade Development (2022)
- USAID's Expanding Developing Country Small Businesses' Use of Online Platforms for Trade (2018)
- USAID's Private Sector Engagement Policy (2022)

10. REDUCE POLICY AND REGULATORY BARRIERS TO E-COMMERCE AND DIGITAL TRADE

Over the past two decades, PICs have developed policies that deal primarily with ICT at the national and regional levels. Strategy formulation on digital government, e-commerce, and digital trade is at a very initial stage. One of the greatest challenges faced by PICs in this policy area is the lack of an enabling regulatory framework for e-commerce. According to the UNCTAD Global Cyberlaw Tracker, all PICs are in the early stage of e-commerce legislation in the four core areas of e-transactions, consumer protection, data protection and privacy, and cybercrime. Harmonized adoption of relevant model legislation and regional capacity building for Pacific digital trade negotiations are the key solutions. Some capacity building initiatives have been spearheaded by UN agencies and funded by DFAT. Supporting the adoption of global and regional solutions that increase transparency and predictability while reducing transaction costs for digital trade is critical. Most recommendations below support implementation of the Pacific Regional E-commerce Strategy and Roadmap. The measures identified below make more sense if approached at a regional level through the forms of collective actions as identified by the Framework for Pacific Regionalism (FPR).[766]

A. **Accelerate adoption, implementation, monitoring, and upgrade of national digital economy and e-commerce strategies harmonized with the regional framework provided by Pacific Forum Trade Leaders.** In recent years, PICs have derived significant value from e-commerce assessments and national strategies. However, for the majority, a comprehensive vision for e-commerce development has not been established. The PIFS Regional E-commerce Strategy and Roadmap serve as a strategic framework for PICs to shape their national e-commerce strategies using standardized language and methodology.[767] International development actors could offer technical and financial assistance for implementing the Pacific Regional E-commerce Strategy and national e-commerce strategies in Pacific Island Countries. This can include capacity building efforts, facilitating partnerships, and advocating for supportive policies. Additionally, consider supporting the establishment of robust monitoring and evaluation mechanisms, and promote knowledge- sharing to ensure that strategies are effectively executed and their impacts accurately assessed.

B. **Increase the capacity of PIC governments to take part in regional and global negotiations on digital economy agreements and on e-commerce provisions in free trade agreements.** PICs need to be able to protect their interests in regional and global negotiations on digital economy agreements and to understand the implications

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766 "The Framework for Pacific Regionalism," Pacific Islands Forum, May 2014, https://www.forumsec.org/wp-content/uploads/2018/02/Framework-for-Pacific-Regionalism_booklet.pdf.

767 Reports Library, Pacific E-commerce Initiative, n.d., https://pacificecommerce.org/reports-library/.

of e-commerce provisions in free trade agreements. These agreements can have a significant impact on the way PICs do business online. They can affect the rules for cross-border data flows, intellectual property protection, and taxation. PICs need to be able to participate in these negotiations in order to ensure that their interests are protected. International development actors could build the capacity of PICs governments through training workshops on digital economy negotiations, technical assistance during negotiations, and the formation of specialized government teams. This could be augmented by knowledge-sharing exchanges with experienced countries. Post-agreement support, such as assistance with domestic law and regulatory development and commissioning impact research can further strengthen this process. With increased understanding of digital economy frameworks and trade provisions, governments will be better equipped to make informed decisions that can advance their national e-commerce strategies, obtain favorable trade terms, and potentially open up larger markets for PIC goods and services traded online. Future negotiations will facilitate a greater degree of harmonization with global digital economy standards, which can reduce trade barriers and improve interoperability. PIFS initiated a comprehensive online training program on e-commerce disciplines for negotiators from Pacific WTO members[768] which could be amplified and replicated.[769]

C. **Improve the generation of statistics on e-commerce, digital payments, and more broadly on trade in services.** This should start with developing and enforcing a uniform set of standards and protocols for data collection across all PICs, using specific metrics that align with global e-commerce indicators and data privacy and security measures. The international development community can do this by helping to enhance the capabilities of national statistics offices and relevant organizations (such as the Oceania Customs Organization for customs statistics; the Universal Postal Union for postal statistics; and the Pacific Community (SPC) for regional statistics); improve collaboration with private sector stakeholders; and support development and enactment of legislation and regulation to support data collection and use. As observed in other fields (SPC) collaboration with international bodies is essential. SPC and PIFS have been working jointly since 2021 on developing and maintaining a set of e-commerce indicators under the SPC's Pacific Data Hub.[770]

D. **Support development of e-commerce-related laws based on UNCITRAL model laws, plus other international standards and best practices.** UNCITRAL has compiled a comprehensive range of legislative texts aimed at empowering and streamlining engagement in commercial activities through electronic means. These texts have been adopted in more than 100 countries including Kiribati, PNG, and Tuvalu.[771] As ongoing advancements in ICT give rise to new digital trade technologies, they inevitably lead to novel legal challenges. It is vital that PICs adopt best practices and globally recognized standards. Doing so will foster an environment of trust and confidence for investors, encouraging increased investment and economic growth in PICs.

E. **Strengthen the Pacific E-commerce Portal through collaboration with PIFS and SPC and member state institutions to strengthen the Pacific E-commerce Database.** By collaborating with organizations like PIFS, SPC, other CROP agencies, and member state institutions, international development actors can contribute to enhancing the technical skills and knowledge necessary to operate and benefit from the E-commerce Portal. Consider also providing technical assistance to help ensure that the portal is up-to-date and inclusive, and to facilitate the development of cooperative solutions to shared challenges.

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768 As of July 2023, only six PICs are members of the WTO: Fiji, PNG, Samoa, Solomon Islands, Tonga, and Vanuatu. https://pacificcommerce.org/materials/introduction-to-e-commerce-disciplines-training/.

769 "E-commerce Disciplines for Policy Makers: Online Course," Pacific e-Commerce Initiative, n.d., https://pacificcommerce.org/training-materials/.

770 "E-commerce Statistics," Pacific E-commerce Initiative, n.d., https://pacificcommerce.org/ecommerce-statistics/.

771 "Uncitral Texts on E-Transactions and E-Signatures," Pacific E-commerce Initiative, April 22, 2022, https://pacificcommerce.org/wp-content/uploads/2022/06/24.-UNCITRAL-texts-on-e-transactions-and-e-signatures.pdf.

> *The recommendations support the Principles for Digital Development "Understanding the Existing Ecosystem," "Design for Scale," "Be Collaborative," and "Be Data Driven." They also support Sustainable Development Goal (SDG) 8 "Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all," 10 "Reduce inequality in and among countries," and 17 "Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development."*

RELEVANT RESOURCES

- OCO Oceania Customs Organizations (2022)
- PIFS E-commerce Initiative (2017)
- PIFS Pacific Regional E-commerce Strategy and Roadmap (2021)
- UNCDF/UNCTAD Digital Economy Report Pacific Edition (2022)
- UNCTAD ASYCUDA Pacific Programme
- USAID's Alliance for eTrade Development (2022)
- USAID's Digital Asia Accelerator (USAID)

11. BUILD STRONG FOUNDATIONS FOR DIGITAL SKILLS DEVELOPMENT THAT BRIDGE THE GAPS BETWEEN DEMAND AND SUPPLY

The regional and national digital economies of the Pacific are growing rapidly, and there is increasing demand for digital skills across the region. At the same time, there is a gap between the demand and supply of digital skills in PICs that can hinder economic growth and development. Digital skills are essential for economic growth. The digital economy is growing rapidly, and countries that are able to harness the power of digital technologies are at an advantage. Digital skills can help reduce poverty and help people find better jobs locally, reducing the need to find jobs overseas, which in turn can lead to higher incomes and a better standard of living. Young people are the most likely to be affected by the digital skills gap, and they are also the most likely to benefit from digital skills training. The right digital skillset can help people start their own businesses, which can create jobs and boost economic growth. Digital technologies can be used to improve the quality of education, and can also be used to reach out to students who are not able to attend traditional schools. Creating an enabling environment for digital skills development and providing access to quality digital skills training is essential and must be delivered in ways that are accessible to everyone.

A. **Support ecosystem builders—accelerators, incubators, co-working spaces—that provide local solutions to local problems.** Local initiatives that incubate and accelerate innovative businesses are indispensable, providing vital mentorship and guidance to budding e-commerce startups. The existing incubation and acceleration programs in the Pacific are not only limited in number and capacity, but they are also isolated from the larger business support network. (There is no formal network in existence.) Local incubators and accelerators face time, capacity, and budgetary constraints that hinder their ability to offer comprehensive business and technical support. The international development community can help remedy this problem by acting as conveners in the construction of a robust innovation ecosystem at the national level: an environment that cultivates synergy between academia, the private sector, financial institutions, and the public sector.

B. **Improve secondary and tertiary education curricula to prepare future generations for the digital jobs of tomorrow.** This could take the form of a targeted Future-Proof Education Initiative education improvement program. The program could involve collaboration with PICs educational institutions at secondary and tertiary level and with relevant government departments to develop and implement comprehensive, future-oriented curricula focused on digital literacy, e-commerce, data science, artificial intelligence, and other fields relevant to the digital economy. It must include the training of educators to effectively teach these new curricula and to use technology as a tool for instruction.

C. **Work with governments to develop policies that support digital skills development.** International development actors can do this by supporting governments in developing policies that promote the use of digital technologies in education and training, and by creating incentives for businesses to invest in digital skills training. A digital policy and skills enhancement initiative could host a series of policy development workshops with government officials to identify gaps in current policies and regulations pertaining to digital skills and education. This initiative should feature collaboration with ICT and digital technology experts, managers from leading ICT firms, and digital entrepreneurs to provide input into the policymaking process and ensure that the policies and regulations developed are in line with global best practices.

D. **Build partnerships with the private sector to deliver digital skills training, for instance working with businesses to develop and deliver training programs, and to provide opportunities for people to gain hands-on experience with digital technologies.** In order to work and offer a winning solution for all, partnerships should be established with chambers of commerce, associations, and prominent private sector companies, especially startups and digital firms, for co-creation and delivery of digital skills training programs. Training should be delivered and facilitated by recognized service providers, such as incubators, accelerators, and service providers recognized by Business Link Pacific.[772] Internships or workplace training programs should be built in and lead to certification or formal recognition.

E. **Make digital skills training accessible to all, regardless of income or location.** This should include the development of online and distance learning programs that make digital skills training more accessible. Projects that develop training programs for different skill levels, from basic digital literacy to more advanced skills such as coding and data analysis, could be funded. Target participants and accessibility should not be limited to capital cities or main islands, but should reach out to disadvantaged groups in rural areas, as well. The Mobiles for Education (mEducation) Alliance is a USAID-founded and supported initiative that promotes the use of technologies, particularly mobile technologies, to improve learning outcomes in formal and non-formal education across all levels, especially in low-resource and hard-to-reach areas. USAID's Innovation, Technology, and Research Hub builds and supports innovative solutions to development problems, often by partnering with local organizations and entrepreneurs. One example is the Development Innovation Ventures initiative which has funded 277 innovation grants in 49 countries since 2010.[773] The role of the Pacific diasporas should not be forgotten. USAID-funded programs like: MicroMentor, a free, easy-to-use social network that connects entrepreneurs and volunteer mentors to solve problems and build businesses together; Raíces, an investment platform that empowers Latin American diasporas to fund enterprises in their home countries while earning both a social and financial return; and Homestrings, an online investment and social media platform that channels diasporan capital into equity for transformative investments in development and technical assistance to growing diaspora-run businesses could be emulated in the Pacific with a focus on digital adoption.

> *The recommendations support the Principles for Digital Development "Design with the user,", "Be Collaborative," and "Build for Sustainability. They also support the Sustainable Development Goal (SDG) 1 "End poverty in all its forms everywhere," 4 "Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all," and 8, "Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all."*

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772 Business Link Pacific, https://businesslinkpacific.com/.

773 "Development Innovation Ventures, USAID, n.d., https://divportal.usaid.gov/s/.

RELEVANT RESOURCES

- Digital Literacy Primer (USAID, 2022)
- PIFS E-commerce Initiative (2017-)
- PIFS Pacific Regional E-commerce Strategy and Roadmap (2021)
- UNCDF/UNCTAD Digital Economy Report Pacific Edition (2022)
- USAID's Alliance for eTrade Development (2022)
- USAID'S The Role_of_DFS_in_Accelerating_USAID_Education_Goals (2018)

12. PROMOTE THE SAFE ADOPTION OF DIGITAL FINANCIAL SERVICES TO INCREASE FINANCIAL INCLUSION AND ECONOMIC OPPORTUNITIES

Digital financial services (DFS) and digital assets have the potential to transform the financial sector in PICs by making it easier for people to gain access to financial services, reduce the cost of financial transactions, and increase the efficiency of the financial system. Mobile money is the most widely used digital financial service in PICs and it has the potential to reach millions of people who are currently excluded from the formal financial system. DFS can boost economic growth by providing businesses access to financing and reduce poverty by providing people with access to savings and credit, making it easier for them to participate in the formal economy. While the flexibility and versatility of digital assets have a strong appeal to PIC governments (Palau, RMI, Vanuatu) they also present many risks (fraud, cybercrime, and money laundering). Better information, awareness, and regulations are needed to fully grasp their potential. Working with governments to address the risks of digital financial services and digital assets is essential.

A. **Support the deployment of non-bank digital payment solutions and alternative sources of finance for e-commerce ventures across the Pacific.** Traditional banks may not fully understand or be willing to assume the risk associated with e-commerce and tech startups, particularly for startups and small businesses. Alternative financing solutions such as crowdfunding and peer-to-peer lending for more advanced players (in PNG, Samoa, Tonga and Vanuatu) can provide essential capital for these ventures to grow and innovate. A significant proportion of the population in many PICs do not trust traditional banking services, creating barriers to participation in e-commerce activities. Non-bank digital payment solutions (mobile wallets, digital wallets, cashless transactions, cash vouchers) can extend financial services to unbanked or underbanked populations. Also consider incorporating digital payments into emergency response plans to ensure rapid and efficient aid distribution in the aftermath of a disaster.

B. **Integrate business-friendly digital payment solutions spearheaded by commercial banks and mobile network operators (MNOs) in the e-commerce ecosystem.** Development of digital payment applications in PICs have largely been driven by MNOs. Traditional banks consider that a critical mass is not available in most markets to invest in payment gateways or in the integration of bank-based payment solutions for e-commerce and startups. MNOs have the technology and reach, especially in remote areas, while banks have the financial expertise and the stringent KYC. Their combined strengths could offer powerful, wide-reaching digital payment solutions. This requires addressing any gaps on Cash-in Cash-out (CICO) networks, either on the regulatory side or on the infrastructure and business model sides. International development actors can support PIC governments in PNG, Samoa, Tonga and Vanuatu to work toward developing and enhancing regulations that encourage and support the integration of digital payments in the e-commerce sector.

C. **Provide assistance to governments to address regulatory gaps affecting DFS adoption and to ensure compliance with AML/CFT rules promoted by APG and FATF.** International development actors can provide technical assistance to PIC governments in drafting and updating legislation and regulations around DFS that align with international standards. This could involve bringing in legal experts to work with government

officials. The framework for information-sharing and cooperation among PICs, as well as with international bodies such as the APG and FATF, should be reinforced, for more advanced economies such as Fiji, PNG, Samoa and Vanuatu, international development actors could support the strengthening of local institutions like Financial Intelligence Units (FIUs) that are tasked with implementing and enforcing AML/CFT regulations. Another example worth considering is the RegTech for Regulators Accelerator (R2A), created to improve awareness and understanding of how financial authorities can deploy regulatory technology (RegTech) to advance key priorities like financial consumer protection and financial integrity.

D.　**Promote the use of FinTech for remittances.** Digital financial services, if monitored and regulated properly, can be used to send remittances more cheaply and efficiently than traditional methods.[774] At the regional level, international development actors can provide technical assistance to help local institutions and businesses understand and leverage FinTech. Consider establishing partnerships with leading FinTech companies active in the region and resident banks (such as ANZ, Bred Bank, BSP) to provide accessible, affordable, and secure remittance services in the PICs. These partnerships could lead to the creation of pilot projects to test innovative remittance solutions. To ensure an update of these solutions by the populations—consumers, businesses, and the diaspora—awareness campaigns should be launched to educate the public on the benefits and risks of using FinTech for remittances. This could increase public trust and use of these FinTech.

> *The recommendations support the Principles for Digital Development of "Design for Scale,", "Build for Sustainability," "Be Collaborative," and Design with the user." They also support Sustainable Development Goal (SDG) 1 "End poverty in all its forms everywhere," 8, "Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all," and 10, "Reduce inequality within and among countries."*

RELEVANT RESOURCES

- Promoting Fair Competition in the Digital Economy: A technical brief for international development practitioners (USAID, 2023)
- Examining Virtual Currencies: Risks and Uncertainties of a Novel Payment Technology in International Development (USAID, 2022)
- Primer on Blockchain (USAID, 2022)
- Building Resilient and Inclusive Digital Ecosystems: A Toolkit for Using Digital Payments in Development Programs (USAID, 2020)
- FinTech Partnerships Playbook: How Donors Can Pursue PSE to Strengthen Digital Finance Ecosystems (USAID, 2019)
- IMF Pacific Islands Monitor (2022)
- PIFS E-commerce Initiative (2017)
- PIFS Pacific Regional E-commerce Strategy and Roadmap (2021)
- UNCDF Pacific Financial Inclusion Programme (2022)
- UNCDF/UNCTAD Digital Economy Report Pacific Edition (2022)
- USAID Financial Sector Transformation (2021)
- USAID's Alliance for eTrade Development (2022)
- USAID's Digital Finance (USAID, 2020)
- USAID's Digital Invest (USAID, 2022)
- USAID's Digital-connectivity-and-cybersecurity-partnership (2020)
- USAID's M-Star (Mobile Solutions Technical Assistance and Research (2017)

774　"The rise of digital remittances: How innovation is improving global money movement," Visa Economic Empowerment Institute, n.d., https://usa.visa.com/content/dam/VCOM/global/ms/documents/veei-the-rise-of-digital-remittances.pdf.

Appendices

A. UNDERSEA CABLES IN DECA PICS[775]

SUBMARINE CABLE NAME	CABLE DEPLOYMENT SCOPE	ROUTE AND RELATION WITH OTHER CABLES	YEAR	OWNERSHIP	FUNDED BY	LAID BY
Southern Cross Cable Network	Intercontinental	**Australia to US via Fiji and Hawaii**	2000	Privately owned	Private company based in Bermuda, New Zealand, and Australia	Alcatel Submarine Networks and Fujitsu
A branch off the Southeast Asia - US (SEA-US)	Intercontinental	**Micronesia to Guam** Branch off the continental cable SEA-US cable (US to Hawaii, Guam, Indonesia, and Philippines)	2017	SOE (Branch)	World Bank (branch funding)	Nippon Electric Company
A branch off SEA-US	Intercontinental	**Palau to Guam** Branch off continental SEA-US cable (US to Hawaii, Guam, Indonesia and Philippines)	2017	SOE (Branch)	ADB through a loan (branch funding)	Nippon Electric Company
Hawaiki	Intercontinental	**Australia to New Zealand, American Samoa, Hawaii, and US**	2018	Privately owned	Private company from New Zealand	SubCom
Southern Cross NEXT	Intercontinental	**Australia to New Zealand, Fiji, Tokelau, Kiribati and the United States**	2022	Privately owned	Private company based in Bermuda, New Zealand, and Australia	Alcatel Submarine Networks

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775   DECA compilation based on UNCTAD report (*Digital Economy Report Pacific Edition 2022*) and DECA research.

SUBMARINE CABLE NAME	CABLE DEPLOYMENT SCOPE	ROUTE AND RELATION WITH OTHER CABLES	YEAR	OWNERSHIP	FUNDED BY	LAID BY
A branch off Echo	Intercontinental	**Palau to Guam** Branch off the continental cable Echo (US to Guam, Indonesia and Singapore) owned by Google and Meta	Q3 2023	Not known for branch	Australia, Japan, and the US	Nippon Electric Company
PIPE Pacific Cable-1 (PPC-1)	Interregional	**Australia to PNG and Guam**	2009	Privately owned	Private company from Australia	Tyco Electronics
Coral Sea Cable System	Interregional	**Australia to PNG and Solomon Islands**	2020	PNG and Solomon Islands	Australia. Funding also provided for a domestic cable within Solomon Islands	Alcatel Submarine Networks
Samoa-America Samoa	Intraregional	**Samoa to American Samoa**	2009	Privately owned	Government of American Samoa and a US private company	...
HANTRU-1	Intraregional	**Guam to Micronesia and Marshall Islands**	2010	SOE and privately owned	A US private company; the Micronesia section financed by a loan from the US	SubCom
Tonga Cable	Intraregional	**Tonga to Fiji**	2013	Tonga, SOE and privately owned	World Bank, ADB, a Tongan SOE, and a private company from Ireland	Alcatel Submarine Networks
Interchange Cable Network 1	Intraregional	**Vanuatu to Fiji**	2014	Privately owned	Vanuatu based consortium	Alcatel Submarine Networks
Tui-Samoa Submarine Cable	Intraregional	**Fiji to Samoa** with a landing point in Wallis and Futana	2018	Privately owned	Private company from Samoa, with an ADB loan and grants from WB and Australia	Alcatel Submarine Networks

SUBMARINE CABLE NAME	CABLE DEPLOYMENT SCOPE	ROUTE AND RELATION WITH OTHER CABLES	YEAR	OWNERSHIP	FUNDED BY	LAID BY
Manatua Cable constellation	Intraregional	**Samoa to Niue, Cook Islands and French Polynesia**	2020	SEOs and privately owned	Consortium: Three Pacific SOEs and a private company from Samoa, with Cook Islands component supported by New Zealand and ADB	SubCom
Gondwana - 2	Intraregional	**New Caledonia to Fiji**; after Gondwana-1, the second international cable to secure Internet bandwidth to New Caledonia.	Q3, 2022	SOE	New Caledonia SOE	Alcatel Submarine Networks
Pukpuk 1	Intraregional	**Indonesia to PNG**	Not finished	SOE	China, through Exim Bank concessional loan	HMN Tech (former Huawei Marine Networks)
East Micronesia	Intraregional	**Micronesia to Nauru and Kiribati**	Not finished [2025]	...	World Bank and ADB. US, Australia, and Japan	...
PNG LNG	Domestic	**PNG** (two landing points)	2014	SOE	PNG Government and private companies (oil and gas platforms)	
Tonga Domestic Cable Extension	Domestic	**Tonga** (three landing points) Domestic extension of Tonga Cable to Fiji.	2018	SOE	Savings from initial World Bank and ADB funding of the Tonga Cable; plus funding from Government of Tonga	Alcatel Submarine Networks
Kumul Domestic Submarine Cable System	Domestic	**PNG** (14 landing points) Indonesia (one landing point)	2019	SOE	PNG Government and Exim Bank loan (China)	HMN Tech
Chuuk-Pohnpei Cable	Domestic	**Micronesia** (two landing points)	2019	SOE	Government of Micronesia and the World Bank	Nippon Electric Company

B. DIGITAL ECOSYSTEM CHALLENGES IN PNG

	CHALLENGES	DIGICEL INITIATIVES
Physical geography	The mountainous terrain, disparate islands, and basic infrastructure (including roads and electricity) present challenges for connectivity infrastructure, particularly for maintenance, pushing up OPEX costs. Helicopters are often the only way to deliver fuel and equipment for tower maintenance.	
Power	Reliable, affordable energy is needed to power towers and charge devices. PNG has the lowest electrification rate across the Pacific region,[776] with less than 15% of the population connected to the grid.[777] This has major implications on the ability of individuals to charge their phones. Digicel estimates there are only around 1.5 million smartphones in the country because most people opt for basic phones with batteries that last more than five days.	Digicel developed solar charging systems with 40 USB ports and rolled them out across small shops in villages, with the ability to charge 300,000 devices per day (including phones and laptops).
Security	PNG has major challenges with security, law and order, and landowner disputes,[778] affecting the development at all levels of the digital ecosystem. MNO equipment, including fuel and solar panels at base stations, are at risk of being vandalized or stolen. Instances of solar panels being stolen multiple times from the same sites result in communities going without connectivity for long periods.[779] Digicel PNG states that, during its time in PNG, more than 93 of their sites have been vandalized beyond repair.[780] High rates of handset theft are also a challenge, with Digicel reporting 100-130 people purchasing new phones every day because their phones have been stolen.	
Affordability	As one of the poorest PICs, with low employment levels (formal employment rate at 13%),[781] paying for connectivity (broadband data, handsets, and charging costs) is a challenge for the majority of PNG citizens. PNG has the least affordable internet rates across the Pacific[782] and the lower income of women makes the internet less affordable as a proportion of earnings.[783]	Digicel has designed 2G phones which are subsidized and sold for as low as USD 3, and low-cost smartphones with 2GB RAM and 16GB memory, costing USD 28.
Low adult literacy rates and education	PNG has one of the lowest rates of literacy in the Pacific with the literacy rate for adults at 72%.[784] Although it has increased over the last two decades, it has done so at a marginal rate.[785]	Digicel Foundation built 680 classrooms across the country over 12 years. They have a TV program providing three hours of primary school education every morning which aims to make education more accessible across the country. The shows are also available on Digicel's extensive TV network, OTT application and messaging app, Bip. Teacher training is also delivered through the Foundation.

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776   USAID Climate Lead, interview by DECA team, June 2023, online.

777   Ryan Murdock, "Disconnected: Electrification in Papua New Guinea," Harvard International Review, May 16, 2022, https://hir.harvard.edu/electrification-in-papua-new-guinea/.

778   "Disgruntled landowners burnt Digicel Tower equipment in Bougainville," Tech Pacific, February 14, 2019 https://tech.pngfacts.com/2019/02/disgruntled-landowners-burnt-digicel.html.

779   ANU, interview by DECA team, April 2023, online.

780   Digicel PNG, interview by DECA team, May 2023, online.

781   Digicel PNG, interview by DECA team, May 2023, online.

782   "ICT for development in the Pacific Islands: An assessment of e-government capabilities in Fiji, Papua New Guinea, Samoa, Solomon Islands, Tonga and Vanuatu," E-Governance Academy, Australian Strategy Policy Institute, February 2020, https://ega.ee/wp-content/uploads/2021/08/ICT-for-development-in-the-Pacific-islands.pdf.

783   "Pacific Digital Gender Scorecards, Regional Synthesis Report," A4AI, September 13, 2022, https://a4ai.org/research/pacific-digital-gender-scorecards-regional-synthesis-report/.

784   GSMA Mobile Connectivity Index, GSMA, 2022, https://www.mobileconnectivityindex.com/index.html#year=2022&zoneIsocode=PNG,WSM,VUT,FJI,TON&analysisView=PNG

785   Kilala Devette-Chee, "Illiteracy: A Growing Concern in Papua New Guinea, PMGRI, June 2021, https://pngnri.org/images/Publications/Spotlight_Vol_14_Issue_7.pdf.

C. PACIFIC ISLAND COUNTRY DESCRIPTIVE STATISTICS

FIGURE 23. Pacific Islands sub-regions: Melanesia, Micronesia, and Polynesia
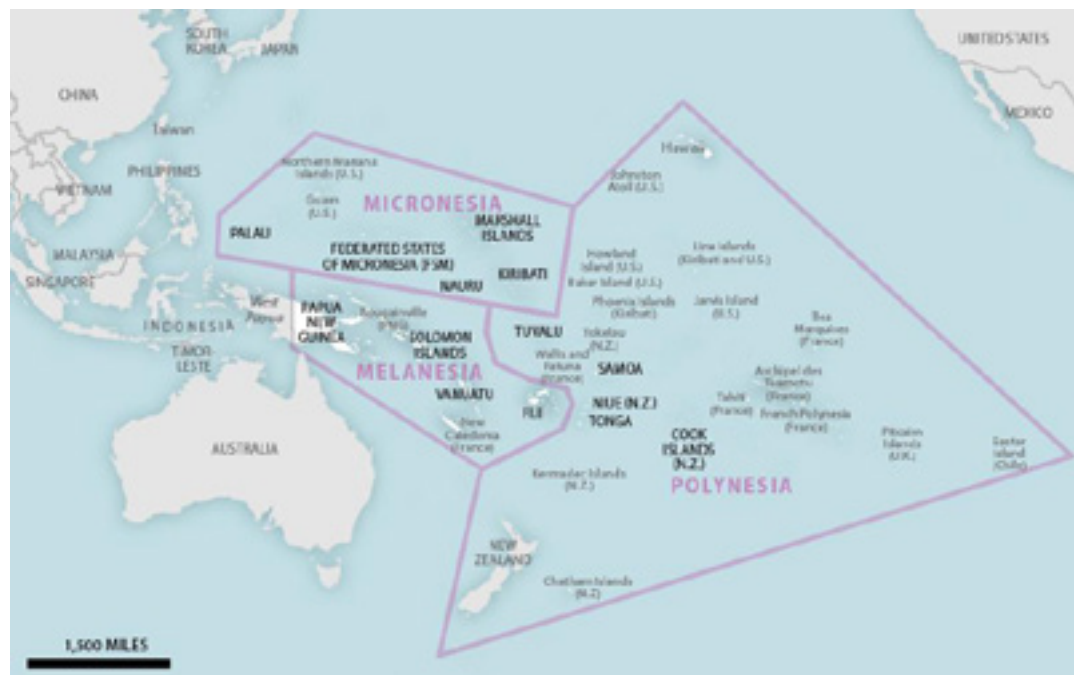
Source: *Congressional Research Service*
Note: *Pacific Island entities in bold are fully independent states and freely associated states.*

TABLE 25. Population by Country, 2022

COUNTRY	POPULATION
Tuvalu	11,312
Nauru	12,668
Palau	18,055
Republic of the Marshall Islands (RMI)	41,569
Tonga	106,858
Federated States of Micronesia (FSM)	114,164[786]
Kiribati	131,232
Samoa	222,382
Vanuatu	326,740
Solomon Islands	724,273
Fiji	929,766
Papua New Guinea	10,142,619

Source: *World Bank Data Bank, 2022*

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786   The FSM preliminary census results may indicate a significantly lower population due to out-migration.

FIGURE 24. Rural Population (% total population) in PICs, 2022
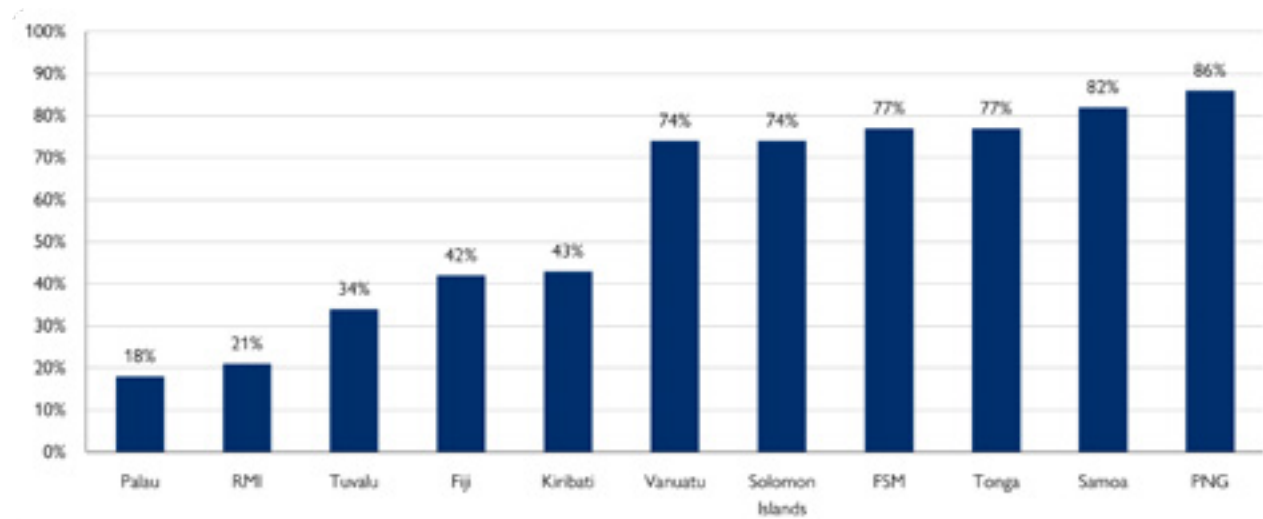
Source: World Bank Data Bank, 2022. Note. Data is unavailable for Nauru.

FIGURE 25. GNI per capita (PPP, current international $ - World Bank)
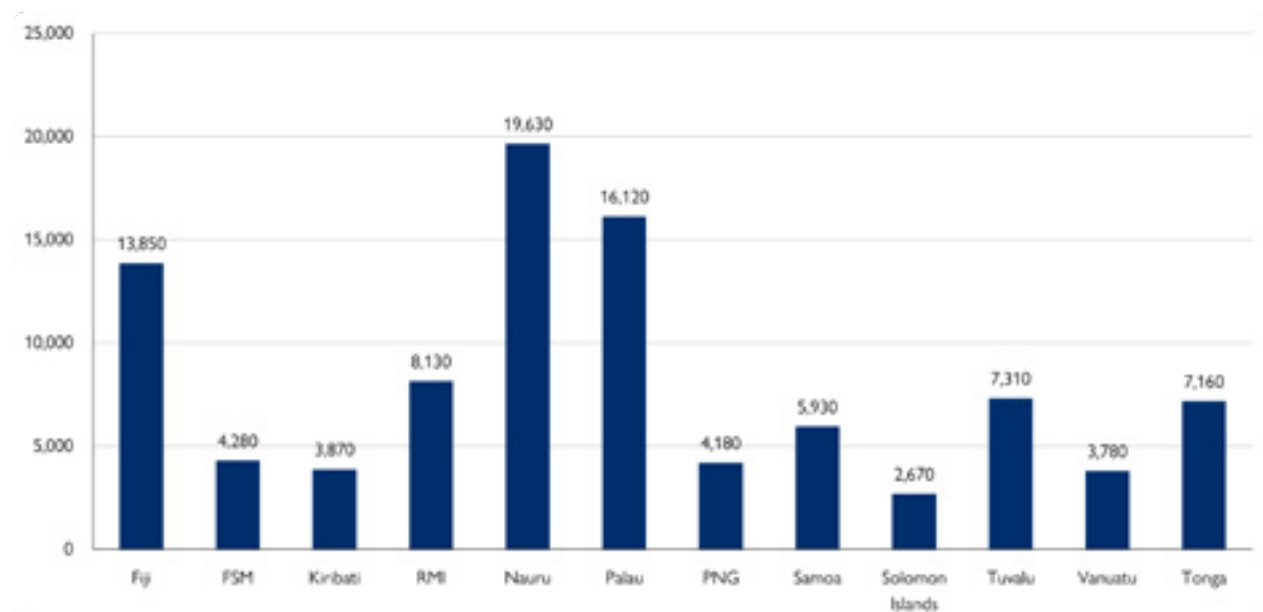
Source: World Bank Data Bank, 2022. Note. Data for Tonga and Palau is 2021 as 2022 data is unavailable.

D. DEFINITIONS

Definitions from the USAID DECA Toolkit unless otherwise mentioned.

Affordability: Whether a person can afford the cost of data relative to their income, measured as gigabytes (GBs) of data per percentage of monthly income. The Alliance for Affordable Internet (A4AI) uses a "1 for 2" measure for affordable internet. Affordable internet is where 1GB of mobile broadband data is priced at 2 percent or less of average monthly income.

Agent/Branchless banking: The delivery of banking services outside conventional bank branches, usually through a network of agents equipped with Point of Sale (PoS) devices or mobile phones. Agents can take many forms including individuals at small shops, petrol stations, and supermarkets. Financial services provided by agents can include cash-in and cash-out points, credit, loans, insurance, bill payment, and person-to-person transfers.

Artificial Intelligence (AI): The science and technology of machines that perform activities normally thought to require human intelligence. One subset of AI is Machine Learning (ML), a technique in which computers "learn" to recognize patterns in existing data, creating systems that can be more flexible, responsive, and adaptable than previously possible. Some AI systems use computers to make decisions automatically, while others create recommendations for human decision-makers.

Blockchain: An example of a distributed ledger technology (DLT), which is a type of shared, peer-to-peer computer database that enables all network participants to agree on a set of facts or events without needing to rely on a single, centralized, or fully trusted intermediary party. Blockchains are the most common form of DLT, and require data on the "chain" to be structured in linked, sequential "blocks."

Civil Society Organization (CSO): Organizations including formal non-government organizations (NGOs) as well as formal and informal membership associations (labor unions, business and professional associations, farmers' organizations and cooperatives, and women's groups). CSOs articulate and represent the interests of their members, engage in analysis and advocacy, and conduct oversight of government actions and policies.

Cyber Hygiene: The practices and steps that users of computers and other devices take to maintain system health and improve online security. These practices are often part of a routine to ensure the safety of identity and other sensitive details that could be stolen or corrupted

Cybersecurity: The prevention of damage to, protection of, and restoration of computers, electronic communications systems, electronic communications services, wire communication, and electronic communication, including information contained therein, to ensure its availability, integrity, authentication, confidentiality, and non-repudiation.

Data Governance: Policies, strategies, frameworks, and practices that governments implement to regulate data collection, management, use, and sharing in the public and private sectors. This broad topic can include data privacy practices, data sovereignty, data stewardship roles and authorities, cross-border data flows, regulations on AI, and data infrastructure (e.g., open data portals and interoperability layers).

Data Privacy: The right of an individual or group to maintain control over and confidentiality of information about themselves. Data privacy can be at risk both from unintentional sharing and from undue or illegal gathering and use of data about an individual or a group.

Data Protection: The practice of ensuring the protection of data from unauthorized access, use, disclosure, disruption, modification, or destruction, to provide confidentiality, integrity, and availability.

Digital Divide: The distinction between those who have access to the internet and can make use of digital communications services, and those who are excluded from these services. Multiple and overlapping digital divides stem from inequities in access, literacy, cost, or the relevance of services. Factors such as high cost and limited infrastructure often exacerbate digital divides.

Digital Economy: The use of digital and internet infrastructure by individuals, businesses, and government to interact with one another, engage in economic activity, and obtain access to both digital and non-digital goods and services. As the ecosystem supporting it matures, the digital economy might grow to encompass all sectors of the economy, a transformation driven by the rise of new services and entrants, as well as backward linkages with the traditional, pre-digital economy. A diverse array of technologies and platforms facilitate activity in the digital economy; however, much activity relies in some measure on the internet, mobile phones, digital data, and digital payments.

Digital Financial Inclusion: The use of digital technology to reach financially excluded and underserved populations with a range of formal financial services suited to their needs, responsibly delivered to customers, and sustainable for providers.

Digital Financial Services (DFS)/FinTech: Financial services enabled by or delivered through digital technology (e.g., mobile phones, cards, the internet). DFS (e.g., payments, credit, insurance, savings, advisory) can be offered by a range of providers, from banks to a host of non-bank financial institutions, such as microfinance institutions, digital credit providers, payment providers, technology vendors, and electronic money issuers.

Digital Government: the use of digital technologies as an integrated part of government modernization strategies to create public value. Successfully navigating digital transformation requires more than adopting new applications; it requires a shift in processes and attitude toward agile and collaborative decision-making. USAID's digital government framework is built around three core functions: deliver, manage, and engage. The performance of digital government services depends on foundational elements such as change management, human capacity, legislation, policy, regulation, and infrastructure. Investment in these core components and foundational elements helps government bodies become more coordinated, efficient, resilient, proactive, and accountable.

Digital Identity: A set of attributes that uniquely describe an individual or entity. Digital identification (ID) systems often require registering individuals into a computerized database and providing certain credentials associated with each individual (e.g., birth certificates, identifying numbers, cards, digital certificates) as proof of identity. Digital ID systems sometimes use biometrics (fingerprints, iris scans, etc.) to identify individuals, but many advanced systems do not. Government actors can set up these systems to create foundational, national ID programs, and donors and NGOs can set them up to identify beneficiaries, for example, for humanitarian assistance and service delivery.

Digital Literacy: The ability to gain access to, manage, understand, integrate, communicate, evaluate, and create information safely and appropriately through digital devices and networked technologies for participation in economic, social, and political life. This may include competencies that are variously referred to as computer literacy, ICT literacy, information literacy, and media literacy.

Digital Payments: Payments initiated or received by electronic means. For an end user, these payments might be made through a text message, mobile application, website, or merchant-level point-of-sale device, such as a dongle or QR code. A financial institution—bank, switch, MFI, or payment service provider—might facilitate these payments to or from a range of instruments that could include: prepaid wallets (i.e., electronic

money accounts), cards, transaction or bank accounts, and other instruments that serve as stores of value and permit payments.

Digital Repression: The use of digital tools and technology to suppress internet freedoms; includes five techniques: surveillance, censorship, social manipulation and harassment, internet shutdowns, and targeted persecution of online users. This term can include offline actions taken to penalize online speech (e.g., arrests, physical violence), as well as online actions that aim to suppress freedoms in online and offline spaces.

Digital Rights: The fundamental rights and freedoms that individuals can exercise online,[787] as well as a respect for privacy and ownership of data.[788]

Digital Trade: The delivery of products and services over the internet by firms in any industry sector, and of associated products such as smartphones and Internet-connected sensors.

Disinformation: False information that is deliberately created or disseminated with the express purpose of causing harm. Producers of disinformation typically have political, financial, psychological, or social motivations.

E-Commerce: The sale or purchase of goods or services, conducted over computer networks by methods specifically designed for the purpose of receiving or placing orders.

Emerging Technologies: Technologies with which ethical, policy, and regulatory frameworks struggle to keep pace at the rate of technological progress. They often lack rigorous testing in the real world, so their implications on people and societies remain less understood. These include artificial intelligence (AI), the internet of things (IoT), blockchain, drones, and 3D printing, among others. As these technologies become more affordable and widespread, they may have a significant impact on digital ecosystems and on development.

Information and Communications Technology (ICT): Diverse set of technological tools and resources used to transmit, store, create, share, or exchange information. These technological tools and resources include computers, the internet (websites, blogs and emails), live broadcasting technologies (radio, television and webcasting), recorded broadcasting technologies (podcasting, audio and video players, and storage devices), and telephony (fixed or mobile, satellite, videoconferencing, etc.).

Internet Freedom: The online exercise of human rights and fundamental freedoms regardless of frontiers or medium. Where internet freedom is respected, the rights that people have offline are also protected online.

Internet Service Provider (ISP): An organization that delivers access to end users using both fixed-line and wireless technologies. Wireless ISPs (especially those in rural areas) often take advantage of low licensing and equipment costs by delivering service using unlicensed spectrum. ISPs range in size and scope from small local providers to providers with international and even global reach.

Interoperability: The ability of computer systems or software to exchange and make use of information from other systems. Interoperable data systems allow for data-sharing and reuse with common formats and definitions, and interoperable payment systems allow digital transfers of money between different financial service providers.

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787 International Covenant on Civil and Political Rights," United Nations Human Rights Office of the High Commissioner (OHCHR), March 23, 1976, https://www.ohchr.org/en/instruments-mechanisms/instruments/international-covenant-civil-and-political-rights https://www.ohchr.org/en/instruments-mechanisms/instruments/international-covenant-civil-and-political-rights.

788 UN OHCHR, International Covenant.

Internet Governance: The development and application by governments, the private sector, and civil society, in their respective roles, of shared principles, norms, rules, decision-making procedures, and programs that shape the evolution and use of the internet.

Last-Mile Connectivity: Where end users gain access to the internet using devices (mobile phones, laptops, tablets, computers) through local access networks.

Malinformation: The deliberate publication of private information for personal or private interest, as well as the deliberate manipulation of genuine content. Malinformation is based on reality but is used and disseminated to cause harm. An example is a report that reveals a person's sexual orientation without public interest or justification.

Media Literacy: The ability to gain access to, analyze, evaluate, create, and participate with messages in a variety of forms—from print to video to the internet. Media literacy builds an understanding of the role of media in society as well as essential skills of inquiry and self-expression needed for citizens of a democracy.

Misinformation: Information that is false, but not intended to cause harm. Individuals who do not know that a piece of information is false may spread it on social media in an attempt to be helpful. Disinformation, a type of misinformation, refers to misinformation that is spread with malicious intent.

Mobile Money: A technology that enables people to receive, store, and spend money using a mobile phone. Can also be referred to as a mobile wallet or e-money.

Mobile Network Operator (MNO): An entity that provides voice and data services primarily via wireless terrestrial networks. MNOs typically use licensed spectrum bands, which tend to deliver a higher quality, more reliable (and more cost-intensive) service because they are not shared.

Open Government Data: A philosophy—and increasingly a set of policies—that promotes transparency, accountability, and value creation by making government data available to all.

Radio Spectrum: Refers to the range of frequencies of electromagnetic radiation that are used to deliver radio transmissions. A critical function of telecommunications sector regulatory authorities is to designate specific frequency ranges (or bands) for different purposes, including telecommunications (but also for applications such as radio astronomy or other industrial uses). Some bands (e.g., WiFi) are unlicensed, meaning that anyone can use them without seeking explicit prior permission.[789] Licensed spectrum requires users (e.g., commercial cellular networks or FM radio broadcasters) to secure a regulator's approval prior to use. Licenses are typically assigned through spectrum auctions, which seek to establish the economic value of spectrum as it is a finite natural resource.

Universal Service Funds (USF): A mechanism designed to promote network infrastructure development in areas that commercial access providers deem uneconomical. Essentially established as subsidy programs, USFs are resourced through contributions drawn from the revenues of telecommunications operators. USF funds are often applied to help de-risk or otherwise complement network investments in underserved or unserved areas. In many cases, USFs target projects that serve schools, hospitals, and other anchor institutions where demand for services can be aggregated.

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789   While permissions are not required for unlicensed spectrum use, users are typically limited to technical parameters such as transmission power or antenna specifications.

E. METHODOLOGY

The regional PICs DECA included three components:

A. U.S. Government (USG) engagement:[790] USG designated key Points of Contact (PoCs) who helped identify stakeholders; reviewed relevant documents during planning, interviews, and the analysis and report writing stages; attended select interviews during the interview phase; and helped organize three DECA presentations to socialize the DECA across various USG offices. This engagement was important for ensuring an appropriate mix of interviewees and for building the Research Team's understanding of USG priorities.

B. Desk research: The desk research used a standardized template organized around the three DECA pillars and included: 1) review of USG priority documents (e.g., strategic framework) and digitally relevant programming; 2) quantitative analysis of open-source data and indices to produce regional comparisons; and 3) internet research guided by high level questions under each pillar. The Research Team shared the desk research with the USG PoCs before interviews and used it to inform interview guides.

C. Interviews: The Research Team collaborated with USG to compile a list of target stakeholders across civil society, academia, international organizations, the private, and public sectors. Interviewees were also selected with the intent of representing all 12 DECA PICs as well as regional perspectives as evenly as possible. The Research Team and USG networks secured initial interviews. Additional interviewees were added throughout via referrals from completed interviews. The Research Team conducted anywhere from two to four virtual interviews per day during the 10-week interview period. All interviews were attended by at least two team members, with a lead interviewer and a notetaker. To triangulate findings and test different interview styles, team members rotated. Each interviewee was asked a general set of questions, which were developed before the interview phase, tailored to the interviewees' background, and improved based on learnings from previous interviews. To ensure a diverse mix of interviewees, the Research Team evaluated the list of scheduled interviews and conducted additional outreach in an attempt to fill identified gaps. The graphs below and Appendix F show the 108 interviews by sector and country. Interviews included 42 female interviewees, and 84 male interviewees.

FIGURE 26. PICs DECA Interviews, by Sector

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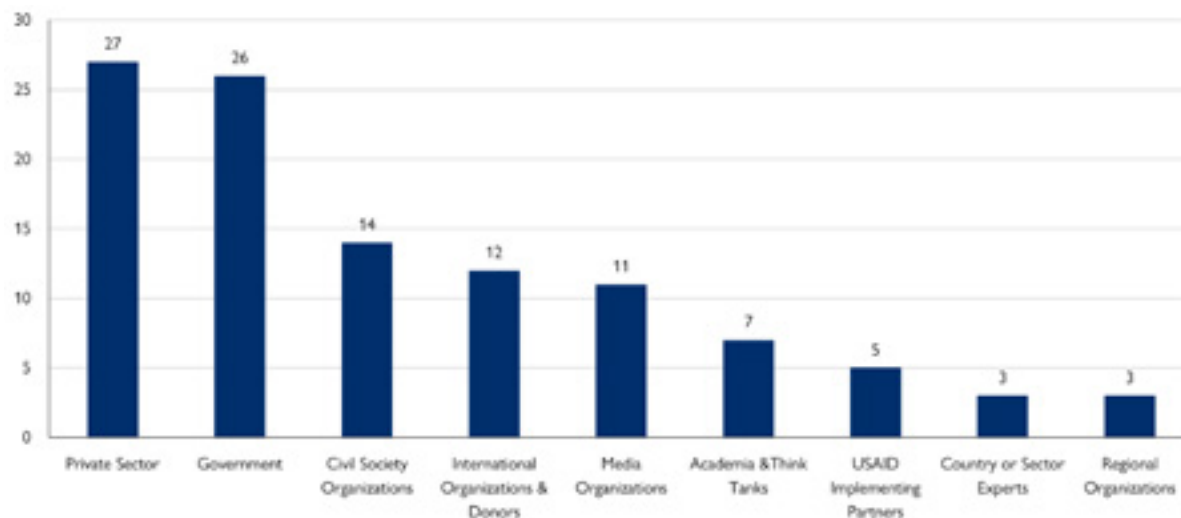
790   The PICs regional DECA was funded by the U.S. Department of State via the Digital Connectivity and Cybersecurity Partnership (DCCP). The DECA Research Team worked with representatives from USAID Philippines, Mongolia, and Pacific Islands, U.S. Department of State East Asia Pacific, and U.S. Department of State Bureau of Cyberspace and Digital Policy. Throughout the methodology section, these stakeholders are collectively referred to as U.S. Government (USG).

FIGURE 27. PICs DECA Interviews, by country
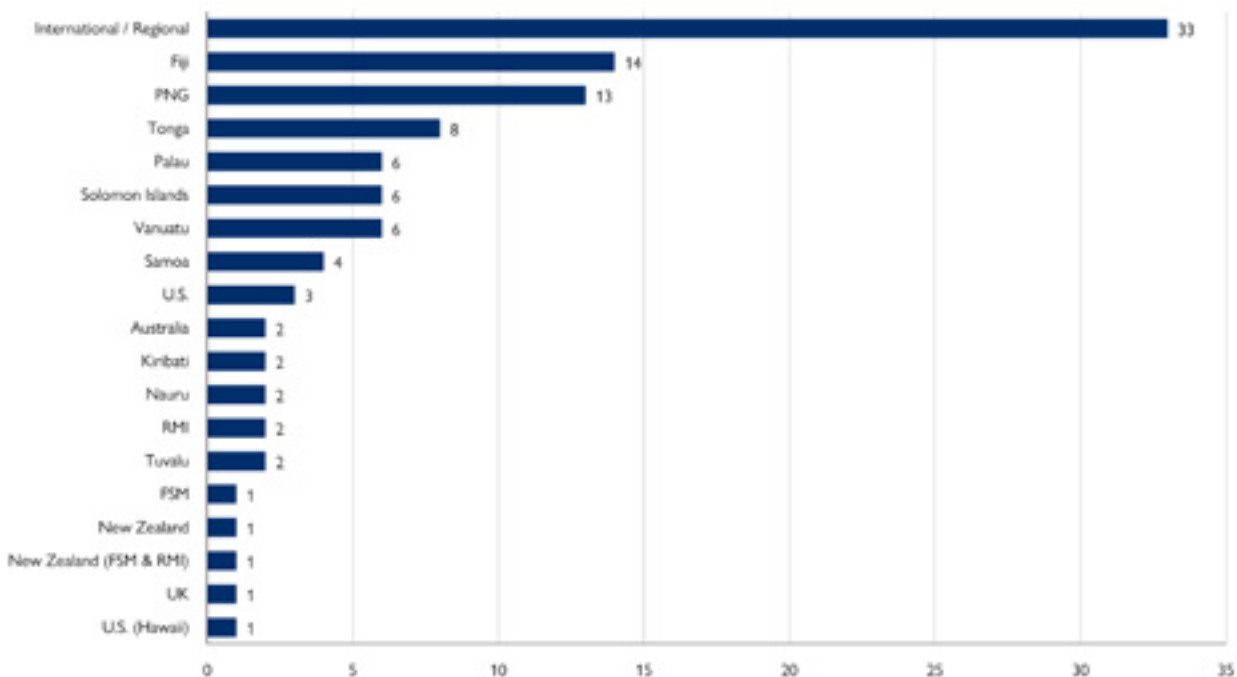
Analysis

The Research Team conducted the preliminary analysis during the virtual interview phase. The team held weekly debriefs, which ensured that all team members were briefed on each interview and facilitated triangulation of emerging themes to be tested in subsequent interviews. Midway through the interviews, the team identified emerging themes based on these initial findings. Upon completing the interviews, the team convened to revisit these themes, confirmed their validity against interview notes, and organized the findings around the three DECA pillars outlined in this report.

Limitations

Research Team members were limited, to an extent, by their technical expertise. Team members were selected to provide coverage of key technical areas given the context and USG priorities, particularly around digital infrastructure, cybersecurity, and digital trade. This may introduce some bias—weighting the specializations of team members more heavily than areas such as digital government and digital financial services, for example. Many interviewees were selected through USG and Research Team networks, which may have excluded stakeholders who are less comfortable engaging with USG representatives. Not all 12 DECA PICs were equally represented by interviewees due to factors including smaller interviewee pools in smaller PICs, scope and quantity of interviews constraints, and interviewee response rates. All interviews took place virtually. As a result, information is limited to interviewees who were able to join virtually. Rather than rigorous qualitative methods (e.g., thematic coding), analysis of interview notes depended on Research Team members triangulating findings and attempting to balance thematic gaps by consulting technical experts and seeking additional interviewees.

Research team

The Research Team was composed of digital development generalists and specialists with technical expertise in digital infrastructure and inclusion, cybersecurity, and digital trade with a range of expertise in the PICs. Team members who were technical experts attended all interviews that were relevant to their expertise.

F. INTERVIEWEE LIST

Country Or Sector Experts (Academics/Think Tanks)	
1	Oceania Cyber Security Center
2	East West Center
3	The University of the South Pacific
4	The University of the South Pacific (2)
5	Department of Pacific Affairs, Coral Bell School of Asia Pacific Affairs, Australian National University
6	Department of Pacific Affairs, Coral Bell School of Asia Pacific Affairs, Australian National University (2)
7	Australian National University (3)
8	Telco2 Limited
9	Fiji Disabled People's Federation
10	Venable LLP
11	Independent Industry Consultant
Public Sector (National and Local)	
12	Telecommunications Authority of Fiji
13	Kiribati Ministry of Commerce, Industry, and Cooperatives
14	Kiribati Digital Transformation Office
15	Nauru Department of Information and Communications Technology
16	Nauru Ministry of Foreign Affairs and Trade
17	Papua New Guinea National Information and Communications Technology Authority
18	Papua New Guinea Department of Information and Communications Technology
19	Papua New Guinea CERT, National Information and Communications Technology Authority
20	Belau Submarine Cable Corporation (Palau)
21	Palau Financial Institutions Commission
22	Palau Ministry of Public Infrastructure and Industries
23	Palau Ministry of Public Infrastructure and Industries (2)
24	Republic of Marshall Islands Office of the Banking Commission
25	Republic of Marshall Islands National Telecom Authority
26	Samoa Ministry of Communications and Information Technology, SamCERT
27	Samoa Ministry of Finance
28	Solomon Islands Ministry of Education and Human Resources
29	Solomon Islands Government ICT Services (SIG ICT Services)
30	Tonga Ministry of Trade and Economic Development
31	Tonga Digital Transformation Department
32	CERT Tonga
33	Tuvalu Department of Trade, Ministry of Fisheries, and Trade
34	Tuvalu Ministry of Justice, Communications, and Foreign Affairs
35	Vanuatu Ministry of Trade
36	Tonga Cable Ltd
37	Solomon Islands Broadcasting Corporation (SIBC)

Donors, International NGOs, International Development Organizations, Multilateral Organizations	
38	Forum of Incident Response and Security Teams (FIRST)
39	Vanuatu Internet Governance Forum
40	Internet Corporation for Assigned Names and Numbers (ICANN)
41	BEACON
42	Emergency Telecommunications Cluster (ETC)
43	Asian Development Bank (ADB)
44	United Nations Conference on Trade and Development (UNCTAD)
45	United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP)
46	United Nations Commission on International Trade Law (UNCITRAL)
47	United Nations Development Programme (UNDP)
48	United Nations Impact Capital for Development (UNCDF)
49	Asia Pacific Telecommunity (APT)
50	International Telecommunication Union (ITU)
51	Pacific Regional Infrastructure Facility (PRIF)
52	Permanent Delegation of the Pacific to the UN and WTO in Geneva, Pacific Islands Forum Secretariat in Geneva
53	Pacific Islands Forum Secretariat
54	Pacific Islands Forum Secretariat (2)
55	Global Forum on Cyber Expertise Pacific Hub
Civil Society/Media	
56	Tonga Women in ICT
57	Women in IT Solomon Islands
58	Pacific Data Hub
59	International Land Coalition
60	The Asia Foundation
61	Transparency International Papua New Guinea
62	Transparency International Secretariat
63	Transparency International Solomon Islands
64	Civicus
65	Smart Sistas
66	Melanesian News Network
67	The Pacific Newsroom and the Australia Asia Pacific Media Initiative
68	Organized Crime and Corruption Reporting Project
69	Communications Fiji Limited
70	Pacific Cooperation Broadcasting Limited - Pasifika TV
71	Australian Broadcasting Corporation Pacific (ABC Pacific)
72	Media Council of Papua New Guinea
73	Talanoa 'o Tonga
74	The National Newspaper (Papua New Guinea)
75	Financial Services Volunteer Corps (FSVC)

Private Sector	
76	Niunet PNG Limited
77	Bank of Papua New Guinea
78	NiuPay
79	Palau National Communications Corporation (PNCC)
80	Meta
81	Telecom Fiji
82	Vodafone Fiji
83	Digicel Samoa
84	Pacific Islands Telecommunications Association (PITA)
85	Green Banana Paper
86	TreSeable
87	Pacific Group
88	Mastercard
89	EZTonga (Manini Pay)
90	Maua App and Pay App
91	Crysan Technologies
92	SES Networks
93	Kacific
94	Pacific Horizons Consultancy Group Ltd
95	Digicel Pacific
96	Digicel Vanuatu
97	Digicel Papua New Guinea
98	Telstra
99	Trustwave
100	Lynk
101	One Web
102	BSP
103	GSMA
Private Sector: Startups/Accelerators	
104	YumiWord (Incubator)
USAID Implementing Partners	
105	PROJECT Governance, Human Rights and Social Development Division, Pacific Community (SPC)
106	USAID-PNG Electrification Partnership Activity
107	Climate Ready
108	Pacific American Fund

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