Beyond Essential Systems Final Evaluation Report

Phase I Project 2019-2024

15 April 2025

Strategic input on health to the Australian Government

Specialist Health Service

Acknowledgment

The evaluation team would like to thank the many people who have given their time and shared their expertise during the evaluation by participating in interviews, and/or the analysis and validation of findings including: GHD and DFAT Post officers, and representatives from partner countries and regional and multilateral institutions. We would particularly like to thank Kat Knope from DFAT, and Michael Nunan and Emily Porrello from BES for facilitating our access to information and to people, and to Sarah Clarke from SHS for providing guidance and quality assurance throughout the evaluation.

Disclaimer

The Specialist Health Service (SHS) provides health technical assistance to the Australian Government. The SHS is an initiative funded by the Australian Government Department of Foreign Affairs and Trade (DFAT) and managed by Abt Associates Pty Ltd.

This document was produced by the SHS and does not necessarily represent the views or the policy of DFAT or the Commonwealth of Australia.

This document has been prepared solely for the purpose agreed with the SHS and for the information of the commissioning Commonwealth Government Agency and is not to be used for any other purpose or distributed to any other party without DFAT's prior written consent.

The Commonwealth of Australia and Abt Associates Pty Ltd accept no responsibility for any loss, damage or injury resulting from reliance on any of the information or views contained in this document.

© Commonwealth of Australia

Contents

Acronyms

Acronym	Description
ACEO	Assistant Chief Executive Officer
ART	Antiretroviral Therapy
BES	Beyond Essential Systems
CDC	Communicable Diseases Centre
CWM	Colonial War Memorial
DFAT	Australian Government Department of Foreign Affairs and Trade
DHCP	Dynamic Host Configuration Protocol
EOPO	End of Program Outcome
FIMR	Final Investment Monitoring Report
FHIR	Fast Healthcare Interoperability Resources
FP	Family Planning
FPBS	Fiji Pharmaceutical & Biomedical Services
GEDSI	Gender Equality, Disability and Social Inclusion
GHD	Global Health Division
HIMS	Health Information Management Strategies
HIS	Health Information Systems
HIPAA	Health Insurance Portability and Accountability Act
HL7	Health Level 7
HSI	Health Security Initiative
ICD	International Classification of Diseases
ICT	Information Communication Technology
ICTSU	Information Communication Technology Support Unit
IDD	Investment Design Document
IMR	Investment Monitoring Report
IO	Intermediate Outcome
ISO	International Organization for Standardization
IT	Information Technology
KEQ	Key Evaluation Question
KPI	key performance indicators
LIMS	Laboratory Information Management System
LF	Lymphatic Filariasis
MDA	Mass Drug Administration
M&E	Monitoring and Evaluation
MHMS	Ministry of Health and Medical Services
MOH	Ministry of Health
NCD	Non-Communicable Disease
NMS	National Medical Store
NRH	National Referral Hospital
ODA	Overseas Development Assistance

Acronym	Description
ONC	Office of the National Coordinator
OPD	Organisations of Persons with Disability
OSS	Open-Source Software
PATIS	Patient Administration Tracking Information System
PDP	Partnership Development Plan
PHIN	Pacific Health Information Network
PHR	Partnerships for a Health Region Initiative
PICs	Pacific Island Countries
PH	Public Health
RON	Republic of Nauru
RONH	Republic of Nauru Hospital
SHS	Specialist Health Service
SLMC	Second Level Medical Stores
SOP	Standard Operating Procedure
SPC	The Pacific Community (formerly South Pacific Commission)
SRH	Sexual Reproductive Health
STRIVE	Stronger Surveillance for Vector Borne Pathogens project
TOR	Terms of Reference
TTM	Tupua Tamasese Meaole
UHC	Universal Health Coverage
VAHSI	Vaccine Access and Health Security Initiative
WISH	Watershed Interventions for Systems Health
WGQs	Washington Group Questions
WHO	World Health Organisation
WHO-ITU	World Health Organisation and International Telecommunications Union

Executive Summary

This report is an independent final evaluation of the Phase I Beyond Essential Systems (BES) project and covers the period of 2019 to 2024. The objective of the evaluation is to provide an assessment of implementation progress, including achievement of end of program outcomes and overall project performance.

BES is a Melbourne-based company, with a focus on providing sustainable health information systems developed and adapted for the Pacific. The project is managed by the Australian Government Department of Foreign Affairs and Trade (DFAT) Global Health Division (GHD). The GHD commenced funding of BES in 2019 under the Health Security Initiative (HSI) with an initial investment value of AUD2.6 million for three years. The agreement was amended eight times to expand activities, with a commensurate increase in budget, with a final value of AUD21.9 million across the Phase I project. Expansion and upscaling took place in the context of the COVID-19 pandemic which led to an urgent need for strengthening of surveillance databases and immunisation registers, with DFAT that determining the BES was well placed to assist countries with this work through Vaccine Access and Health Security Initiative (VAHSI) funding.

The project vision for health information systems strengthening in Pacific Island countries is for a network of interconnecting digital health systems, providing visibility across the health system; improved access to data and use of evidence for policy and other decision-making; strengthened country responses to disease threats and improved medicines medical supply availability; and a move away from paper-based systems. The project aims to assist partner countries to improve health system data collection, storage and display using health IT platforms, break down data silos and provide systems adapted to the specific country context.

The project's End of Program Outcomes (EOPO) are:

- EOPO 1: Improved information systems for public health decision making in partner countries.
- EOPO 2: Improved access to and use of evidence for policy and other decision-making to strengthen their response to disease threats in partner countries.

Phase I is a multi-country initiative implemented in eight countries across the Pacific, including Fiji, Kiribati, Nauru, Palau, Samoa, Solomon Islands, Tonga and Vanuatu. Under the project, BES developed a range of novel health information systems tools adapted or and designed for the Pacific context and supported Pacific Island countries to adopt them, with the footprint varying across countries. The Phase II BES project, funded under DFAT's Partnerships for a Healthy Region (PHR Initiative), commenced prior to the evaluation of the Phase I project. BES also implements other digital strengthening projects across the Pacific, funded through DFAT bilateral funding and other funders.

The evaluation uses a mixed methods approach to answer five key evaluation questions, including a desktop review, face to face and remote interviews with stakeholders, and a user survey. The evaluation is heavily informed by an in-region mission to four countries, which captured the feedback and perspectives of partner country stakeholders. The evaluation examined the wider country contexts and eco-systems in which digital health systems are implemented to identify contextual factors aiding and hindering results. Thus, while the project title (BES) is the name of the implementing partner, the scope of the evaluation extends beyond that of BES' role and performance to assess the engagement and contributions of other key stakeholders involved in shaping the project and influencing outcomes, including DFAT and country partners.

The overall impression is that this is a well performing project, that has achieved significant results in advancing the transition to digital health systems in the Pacific. This is particularly significant given the complexity of the sector and partners involved, and the constraints in the operating environment. The findings and recommendations are intended to stimulate thought and consideration for how the project approach may be improved further under the Phase II project.

Summary of key findings

Effectiveness

EOPO1 was achieved, resulting in significant improvements in capabilities and functionality over paper-based solutions. EOPO2 was partially achieved, with evidence of use for planning and resource allocation at the operational and management levels, but less so at the strategic level.

- EOPO 1 'Improved information systems for public health decision making in partner countries' was achieved, with the implemented systems offering significant improvement in capabilities and functionalities over previous paper-based solutions, particularly in terms of data collection and accessibility.
- Under EOPO 2 'Improved access to and use of evidence for policy and other decision-making to strengthen their response to disease threats in partner countries', most evidence of data use was found in the areas of planning, patient management, supply ordering and staff allocation, with some improvements observed in patient care and service delivery.
- Notable examples demonstrating use in response to disease threats were found, including for: COVID-19 surveillance and ensuring high vaccination coverage; dengue fever outbreak management; tracking of household health scores to monitor changes at a village-wide scale and direct health resourcing; and management of Non-Communicable Disease (NCD) interventions.
- Maintaining and ensuring data quality was a widespread issue, impacting from a lesser to larger extent across different countries. This issue stemmed from lack of human resources in partner countries, and the lack of clearly defined processes to support the effective use of the systems, coupled with the lack of emphasis on the reintroduced data lifecycle practices.
- Countries with strong adoption that experienced efficiencies and improvements reported high levels of satisfaction and noted BES' high level of responsiveness, and timely and proactive approach to providing support and solving issues. Satisfaction was lower among stakeholders who lacked a clear understanding of the systems' capabilities and benefits.

Efficiency

- **The project was efficiently delivered by BES within its scope of deliverables, which is a low-cost quality provider. However, a lack of clarity of roles and responsibilities and accountability for the project's development-focused components has hindered results.** The project has a strong focus on the technical elements and BES has performed these well. However, the development-focused elements (such as integration of gender and disability inclusion, change management, and analysis of health data for decision making) have not been sufficiently considered by BES and DFAT or embedded through associated project strategies, dedicated inputs or bodies of work, and resourcing.
- While the project has a Program Logic, the roles of BES and other partners (such as ministries of health, hospitals and national pharmacy stores, and public health departments) are not clearly demarcated, and the pre-conditions critical to achieving outcomes, and

functions that must be performed by implementing partners are not specified, resulting in mixed results across countries.

- BES demonstrated good project management, delivery of technical functions and partner engagement. This was supported by quality delivery teams, and a culture of learning and course correction. Areas for improvement include communication on the status of customisation requests; change management; maintaining a focus on use as the end goal; and ensuring users understand the full functionality of systems.
- BES implemented effective training that focused on supporting users to achieve a basic level of use of the system. While users had varying levels of Awareness, Knowledge and Ability to use the system, a key area for improvement lies in building and reinforcing Desire. Effective implementation of robust change management plans is essential to ensure the active engagement of partner countries throughout the process.
- Project resourcing was sufficient in more contained and less complex contexts. Implementation challenges (such as infrastructure, IT connectivity, and human factors and systems affecting adoption) are more pronounced in more complex countries with greater geographical spread, multiple existing digital systems, and multi-level and decentralised health systems. In such settings, project resourcing was insufficient, and the project's focus on pace and scale of delivery has arguably been at the expense of quality of adoption.

Gender Equality, Disability Inclusion and One Health

BES systems have integrated sex disaggregated data sets, and Tupaia visuals are easily disaggregated by sex and reports presented in way that enhances the visibility of disparities. Some systems have integrated functionality to capture impairment-focused data. However, the lack of dedicated project inputs and strategy to support the analysis and use data has meant that efforts have not translated into inclusion outcomes.

- While Gender Equality and Disability Inclusion were cross-cutting priorities for DFAT at the time Phase I was established, this was not a design requirement of the Phase I project in part due to the initial value of the project (AUD2.6 million) and associated requirements and expectations were not triggered and asserted commensurate with the investment value on expansion (AUD21.9 million).
- The project has integrated partner country sex disaggregated data into digital health systems in the transition from paper to digital systems, supporting reporting of sex-disaggregated data sets. However, this data has not been analysed to better understand differences in gendered health needs, disparities and outcomes.
- While increased digitisation provides country partners with enhanced accessibility and potential usability of sex-disaggregated data, additional inputs and expertise are required to ensure data is analysed and used by country partners, such as to compare differences between men and women in access to health services, disease prevalence, risk factors, health outcomes and behaviours, and to understand gender norms and power dynamics that may contribute to health disparitiesfor targeted clinical and public health policy and service delivery in the future.
- Partner country health systems do not typically mainstream the capture of information on disability status. BES digital systems have digitised some patient data, embedding functionality to track data pertaining to health conditions and impairment-focused data. The lack of a dedicated body of work to support country partners to use and analyse data from a disability equity lens has limited results.

- The project's approach has seen BES responding to the informational requests and preferences of partner countries for system content development and adaptation, and advocating for an increased focus, rather that actively implementing a strategy to integrate gender equality and disability equity throughout digital systems and their use. DFAT is encouraged to set clear expectations in this area and explore ways to promote a country-led approach that sees country partners increasingly prioritising and leading on inclusion, with in-house capability developed.
- As project outcomes are not framed at the level of improving access to health services and medical products for populations, changes in access and the impacts of project activities on populations (including on groups who experience inequalities and social disadvantage) are not systematically monitored or reported on. Enhanced monitoring in this area is needed, particularly when paper systems are dismantled, and the new digital system is not yet fully functioning.
- While not a requirement of the project, contributions have been made towards advancing a One Health approach through partnerships with other GHD-funded partners, enabling partners to map interventions to improve water quality, and to roll out improved systems for human and animal health.

Relevance

Australia's investment in strengthening digital health in the Pacific is highly relevant, with project activities strongly aligned with partner country priorities. The model could be enhanced through stronger integration at a country level and linkages with regional institutions.

- Australia's investment in strengthening digital health in the Pacific is highly relevant and responds to the high priority of partner countries who are committed to transitioning to digital solutions. Partner country demands have been well met by the program, and activities closely linked to government priorities.
- The overall scope of the regional project should be made clearer and more transparently reported on in narrative reporting through a clearer delineation between use of regional funding and other funding sources to avoid over-contribution and support DFAT performance management of the regional portfolio, noting that regional funding is intended to support the foundational investment, with bilateral funding supporting country-specific activities based on the priorities of partner governments.
- BES has supported regional collaboration through peer-to-peer learning and building user networks across the region and has made good attempts to increase collaboration with some regional organisations. However, there is opportunity for DFAT to enhance regional ownership by more strongly engaging regional partners such as SPC (the Pacific Community) and the Pacific Health Information Network (PHIN) to support local partners to become more informed consumers of digital health systems and technologies.
- The project model of engaging BES as a development partner which also acts as a vendor in the region through the provision of commercial services (outside of this project) raises potential issues, risks and conflicts of interest that require deeper consideration of and management by DFAT.

Sustainability and Localisation

Sustainability across partner countries varies significantly, with partner countries heavily dependent on BES, creating a critical vulnerability. The gateway to enhanced sustainability lies in

building stronger local ownership, governance mechanisms and informed consumers of digital technology.

- Sustainability is a key weakness of the model, with the project not systematically factoring in sustainability during the design phase or during implementation. Partner countries are heavily dependent on BES for sustainability, and this reliance risks the viability and sustainability of the systems if the external support is withdrawn immediately. Sustainability should be elevated to a critical priority and monitored going forward.
- In areas with high adoption levels, governance committees, and strong leadership and effective change champions were present; these were instrumental in driving progress. Projects in countries such as Samoa, Palau and Nauru, have been advanced by local leaders who have encouraged and mobilised teams to embrace digital products.
- The program model supports localisation through BES' positioning as a partner that responds to country partner requests and direction setting. Recognising that the project is greater than BES, additional effort is required to ensure country partners are fully aware of their important responsibilities in engaging with governance, coordinating internal efforts, leading and oversighting change management processes.
- The adoption of a digital system is a major investment by partners and carries considerable legacy and cost implications if partners seek to sustain the new system, or transition to an alternative one. Country partners are uncertain of the avenues and long-term financial commitment required to sustain the technology, undermining localisation and sustainability.

Phase I Project Recommendations

As the Phase I project has completed, recommendations to strengthen program implementation are not provided. Two key recommendations are provided to address gaps in the sustainability of the Phase I Project:

1. That BES package up and communicate the set of capabilities, equipment, functions and staffing positions required to operate and sustain the systems in each supported country to support partners, including BES to develop transition and sustainability plans.
2. That DFAT assist country partners to explore avenues and options to transition the digital systems to full local ownership, and to develop transition plans[1] that strengthen the sustainability of capability developed under the Phase I project (and beyond to support country partners to gradually take full responsibility). As part of this process DFAT should clarify future funding expectations, including whether DFAT will continue to provide funding for digital system support costs, or at which point countries are expected to pay for support.

In addition, several suggestions are made for strengthening the delivery of Phase II of the project and partnership, and to support the DFAT design and management of regional digital health systems strengthening investments and to enhance Australia's contribution to health information systems support in Pacific Island Countries more broadly in Section 5.

[1] Transition plans should support sustainability and local ownership, with a focus on governance and leadership, workforce capacity, infrastructure and funding requirements needed to maintain the digital health systems and their benefits.

1. Introduction

1.1 Program Background

Between 2019 and 2024, DFAT invested AUD21.9 million in Beyond Essential Systems (BES) to support health information systems projects in Pacific Island countries. The Phase I project is referred to throughout this document as the "project". BES is a Melbourne-based company, with a focus on providing sustainable health information systems developed and adapted for the Pacific. The project is managed by DFAT's Global Health Division (GHD).

DFAT commenced funding of BES in 2019 under the Health Security Initiative (HSI) with an initial investment value of AUD2.6 million for three years, following an earlier small project under the InnovationXchange. The agreement was amended eight times to expand activities, with a commensurate increase in budget, with a final value of AUD21.9 million. This was anticipated in the original design concept for the project, where interest from countries in country-level projects would be funded by bilateral programs. The COVID-19 pandemic also led to an urgent need for strengthening of surveillance databases and immunisation registers, and BES was well placed to assist countries with this work through Vaccine Access and Health Security Initiative (VAHSI) funding.

The project vision for health information systems strengthening in Pacific Island countries is for a network of interconnecting digital health systems, providing visibility across the health system; improved access to data and use of evidence for policy and other decision-making; strengthened country responses to disease threats and improved medicines medical supply availability; and a move away from paper-based systems. The strategy was to assist Pacific Island countries to improve health system data collection, storage and display using health IT platforms, break down data silos and provide systems adapted to the specific country context. It sought to support country-led projects, focussing on upskilling local staff and champions of change, who could then teach and support others in collecting, analysing and using data to support decision-making.

As the initial project value was below AUD3 million, only an Investment Concept (2019) was developed. The goal of the project is to improve regional preparedness and capacity to respond to emerging health threats through better health information systems and increased use of evidence-based public health action and response. While a full Investment Design Document (IDD) was not developed, as the project has expanded, its outcomes and Monitoring and Evaluation (M&E) framework has also adapted and evolved.

The 2019 Investment Concept has three end-of-program outcomes (EOPOs):

1. Higher quality health information is collated and readily available through data visualisations and reports to inform public health and emergency response.
2. Improved functionality in health supply chain strengthening and better integrated public health information.
3. Improved disaster response capabilities.

The project's current EOPOs and Intermediate Outcomes (IOs) are:

- EOPO 1: Improved information systems for public health decision making in partner countries.
    - IO1. 1: Partner country agencies collect quality data, including gender disaggregated where relevant from a range of sub-national data sources.
    - IO1.2 Partner countries have access to integrated data.

- EOPO2: Improved access to and use of evidence for policy and other decision-making to strengthen their response to disease threats in partner countries
  - IO2.1. Partner country agencies have timely access to easy-to-use reporting tools
  - IO.2.2. Health staff incorporate the use of integrated data on clinical and laboratory services, public health surveillance and disaster response, into everyday decision-making
  - IO.2.3. National champions of change are training/supporting others

Intensive support was provided for country level projects in Fiji, Tonga, Samoa, Nauru and Palau. BES is also currently working with Ministries of Health and other HSI/ Partnerships for a Healthy Region Initiative (PHR) partners in Kiribati, Papua New Guinea, Solomon Islands, Tuvalu, and Vanuatu. Under the project, BES developed and implemented a range of novel health information systems, while also supporting the implementation or re-implementation of systems developed by other partners. These systems were adapted and designed for the Pacific context and supported Pacific Island countries to adopt them – with the footprint varying across the countries. These include:

1. Tupaia MediTrak (Data collection and surveys) – developed by BES
2. Tupaia (Data integration, geo-spatial analysis and display, can integrate with DHIS2) - Tupaia is developed by BES, while DHIS2 is developed by University of Oslo
3. Tamanu (Capture individual patient data, and support to long-term consistent care and clinical decision-making) – developed by BES
4. mSupply and Health Supply Hub (Real-time visibility of countries' health supply chain, helping to inform key processes) - developed by the mSupply Foundation
5. Senaite (Laboratory Management Information System) - developed by Nara Labs.

The Phase I regional project has not previously been subject to an external review or evaluation at the whole of investment level. However, an analysis of the achievements against EOPOs was conducted in 2022.

1.2 Purpose of the evaluation

As the Phase II project commenced under PHR prior to this evaluation, the evaluation is primarily being undertaken as an accountability measure. It primarily focused on 'looking back' and assessing performance against the nominated criteria in the Evaluation Terms of Reference (ToR) and Key Evaluation Questions (KEQs) outlined in the Evaluation Plan. Lessons learned and recommendations are presented for consideration by DFAT, BES and country partners as part of adaptive management of the new project.

The primary audience of the evaluation is DFAT's GHD and Posts, BES and in-country partners such as Ministries of Health, hospitals and health centres. Secondary stakeholders include regional bodies such as the Pacific Community, and other partners in digital health e.g. the Australian Institute for Health and Welfare, multilateral organisations including the World Bank and World Health Organisation (WHO) and individuals involved in or interested in digital health systems and strengthening of health systems in the region.

1.3 Scope

The scope of this evaluation covers the project, and its activities funded under the HSI, a total value of AUD21.9 million across eight countries of Fiji, Samoa, Tonga, Vanuatu, Kiribati, Palau, Nauru and Solomon Islands. The evaluation is heavily informed by an in-region mission based on four sampled countries.

The evaluation approach examined the wider country contexts and eco-systems in which digital health systems are implemented to identify contextual factors aiding and hindering results. Thus, while the project title (BES) is the name of the implementing partner, the scope of the evaluation extended beyond that of BES' role and performance to assess the engagement and contributions of other key stakeholders involved in shaping the project and influencing outcomes. This includes DFAT in its role in oversighting the design and management of the project, and partner country partners who also play active roles in oversighting, delivering, and sustaining aspects of the project. The findings of this evaluation cover the collective efforts of BES, DFAT and participating partner country stakeholders. Throughout this report, the term 'project' is used to refer to the broader collective effort, and clarifications made throughout when assessing BES, DFAT or country partner roles and performance.

BES has a wider presence in the region beyond the Phase I project and is supported by a range of donors. In some countries, GHD regional funding is the sole or main funding source, and in other countries, BES implements multiple projects funded by DFAT (regional and bilateral) and other donors and funding sources. In addition to an assessment of BES activities funded directly by the regional program, the evaluation considered BES' broader work in country, and the regional project's complementarity and contribution to BES activities supported through other DFAT funding sources.

1.4 Methodology

This evaluation answers five key evaluation questions using a mixed methods and participatory approach. For each key evaluation question, various lines of evidence were gathered from a range of sources. Data collection consisted of a desktop review; face to face and remote interviews with stakeholders; a user survey; production of an Aid Memoire with summary findings and feedback workshops. A full methodology is provided in Appendix A.

Sample respondents for in-country consultations were selected from four out of eight implementing countries. The selection of the four countries - Fiji, Nauru, Samoa and Solomon Islands – was directed by DFAT. The countries for in-country consultation were selected to cover a range of implementation progress. For example, Fiji, Solomon Islands and Samoa have implemented BES digital health systems alongside existing health information management systems, while Nauru has transferred their health information management entirely, or almost entirely, over to BES digital health systems.

Semi-structured interviews with 101 respondents, each lasting between 45 and 60 minutes were carried out through a regional evaluation mission held between 29 October and 31 November 2024, and a small number of remote consultations. Purposive sampling was undertaken with selection of respondents based on four categories: in-country partners; regional and multilateral stakeholders: DFAT Post Staff; and BES staff. The in-country partner category is further broken down by operational, executive or management level (Table 1). The categories were predetermined to ensure stratification of respondent data minimising risk of bias. Most respondents interviewed were selected based on recommendations from DFAT and BES.

Table 1: Sampled respondents

Sampled respondents by Country (**n=101**)	No.	%
Nauru	21	22%
Fiji	27	28%
Solomons	19	20%
Samoa	31	27%

Sampled respondents by Country (**n=101**)	No.	%
Palau	3	3%

Sampled respondents by category (n=101)	No.	%
In-country partner	88	86%
Regional and multilateral stakeholder	2	2%
BES Staff	8	8%
DFAT Post Staff	4	4%

In-country partner by seniority level (n=88)	No.	%
Operational	53	64%
Management	22	27%
Executive	7	8%
Technical lead	1	1%

An online user survey was administered to partner country user groups (operational level), including doctors, nurses, lab technicians, and pharmacists in supported hospitals and health centres. The survey obtained user experiences and perceptions in relation to Satisfaction and Impact, System Usability, System Functionality, Data Dimensions, and Data Sovereignty. It was completed by 24 respondents, and while open to all countries, was largely completed by users from sample countries – 6 Fiji, 6 Nauru, 3 Samoa, 6 Solomon Islands, 2 Tonga, 1 Kiribati.

The evaluation team consisted of a three-person team, comprising of external team members, including Team Leader, a Pacific Regional Health Specialist, and a Health Information System Specialist. All team members participated in evaluation planning, data collection, analysis and sense making, and report writing. Oversight and quality assurance was provided by the Specialist Health Service. Reporting of this evaluation has been guided by the Consolidated criteria for Reporting Qualitative (COREQ) Research Checklist and in line with best practice in qualitative research practice. Thematic analysis was used to analyse the data presented in the results, with direct quotations representative of the theme extracted to demonstrate and support the findings. Full details on the approach and methodology for this report is provided at Appendix A: Methodology.

There were several limiting factors which need to be considered alongside the findings and analysis presented in this report. The most significant limitations include:

- Sampling was affected due to challenges in identifying which BES activities were funded through GHD regional funding, as distinct from bilateral funding. The evaluation team scheduled consultations based on contacts provided by DFAT and BES, and partners referenced in BES reports to GHD. During consultations, it emerged that some activities under examination were not funded through GHD regional funding (such as mSupply in Fiji). Once the team became aware of this issue, efforts were made to clarify which activities were funded through HSI to guide scheduling in subsequent countries. As these activities were reported on by BES in reporting to GHD and referenced in associated DFAT Internal Monitoring Reports (IMR) to inform on its assessment of the investment's performance, associated findings and analysis are included in this evaluation report.
- The evaluation was constrained through limited time to schedule consultations in the lead up to country visits, and an allocation of 4-5 days for consultations in each country. While attempts were made to engage a broad range of stakeholders, some were on leave while the team was in country, and some meetings could not be secured, including a meeting with the

Pacific Disability Forum. While efforts were made to interview health clinics, most interviews were held in central locations with limited access to rural or remote contexts.

- The evaluation is informed by the views of in-country stakeholders operating in the health sector, who may not have a full or correct understanding of the technical elements of the digital health systems. Stakeholders were invited to share their experiences with and perceptions of the systems, with a series of quotes provided in Appendices B and C. While some quotes may contain minor technical inaccuracies, local perspectives are presented in accordance with DFAT Monitoring and Evaluation (M&E) Standard 10.11[2]. The presentation of country partner perspectives is considered particularly important as program reporting is almost entirely reliant on BES reports and perspectives[3].

1.5 About this document

This document presents the findings of the evaluation. The main report presents summary findings against KEQs, lessons learned and recommendations. More detailed information pertaining to the assessment of sample countries and supporting evidence is presented in Appendix A, the full evaluation methodology.

[2] DFAT Design and Monitoring, Evaluation and Learning Standards, September 2023, Standard 10: Independent Evaluation Reports, M&E Standard 10.11 states 'Alternative views must be presented, especially for important, controversial, or disappointing findings. They must not be immediately dismissed but seriously considered. Key stakeholder views such as those of the partner governments and national partners must be given sufficient attention, and balanced by the implementation team, DFAT or other important stakeholder views.' 10.11 Alternative points of view are presented and considered where appropriate 'Alternative views must be presented, especially for important, controversial, or disappointing findings. They must not be immediately dismissed but seriously considered. Key stakeholder views such as those of the partner governments and national partners must be given sufficient attention, and balanced by the implementation team, DFAT or other important stakeholder views'.

[3] The investment was not subject to an external mid-term review, and BES reporting is not informed by qualitative data collection process that systematically capture the views and perspectives of country partners, and support their participation in the analysis and interpretation of program progress, noting some qualitative positive changes stories were captured.

2. Findings

2.1 KEQ 1: Effectiveness

To what extent has the project achieved its EOPOs, and what is the level of significance and satisfaction with outcomes generated?

EOPO 1 was achieved, resulting in significant improvements in capabilities and functionality over paper-based solutions. EOPO2 was partially achieved, with evidence of use for planning and resource allocation at the operational and management levels, but less so at the strategic level.

Achievement of EOPO 1

EOPO1 'Improved information systems for public health decision making in partner countries' was achieved. The implemented systems offer a significant improvement in capabilities and functionalities over previous paper-based solutions, particularly in terms of data collection and accessibility. The capabilities and functionalities of systems largely met the intended requirements of the partner countries' health systems. This is supported by user survey findings, with 18 respondents reporting that the systems are easy to navigate, while 2 respondents being neutral, and 4 did not respond. Some key functionalities require further development or customisation, but do not pose a critical barrier to uptake, with workarounds implemented as temporary solutions while necessary developments or customisations are underway. The digital systems have not fully replaced paper, and while it is common to keep paper while issues are being resolved and trust is being built[4], in some instances this created a burden.

When compared with the previous paper-based solutions in place, user benefits are vast, with systems receiving a survey rating of 4.4 out of 5 in terms of making users' jobs easier (20 respondents; 4 respondents did not respond). The project facilitated large efficiencies among partner countries, particularly in time and cost savings. For example, in Nauru, the use of Tupaia reportedly saved management 3 months' time in producing the Annual Public Health Report; a significant outcome for a country with limited human resources. The use of the integrated package of mSupply and the Health Supply Hub in Fiji, the Solomon Islands, and the Republic of Nauru (RON) has led to significant improvements, particularly through its procurement and tender functionalities. In Fiji, the tendering process has been reduced from 3 to 4 months to just 1 to 3 days, while in the Solomon Islands, it has been reduced from 3 weeks to 3 days. Similarly, in Nauru, the hospital pharmacy reported experiencing cost savings of more than AUD300,000 on medication purchases, which allowed tendering with a broader range of suppliers and select medications based on cost and delivery timelines. In Samoa, the use of Tamanu has significantly streamlined workflows in the outpatient setting by saving staff time in locating physical paper files when patient records are stored electronically[5]. With electronic access to patient records, staff can quickly and easily retrieve information, enabling them to spend more time on patient care. This also reduces patient waiting times by eliminating delays that were previously caused by locating the physical paper files.

The shift from paper to digital systems is highly significant, particularly in smaller Pacific Island countries. As expressed by a long-time health worker in Nauru *"I thought it would never happen.*

[4] A range of scenarios observed across countries: in Samoa largely off paper (with some paper backups if power goes down); in other places, systems are used in addition to paper with more varying degrees of benefit (i.e. mSupply in Solomon Islands, and Tamanu in Fiji)..

[5] Staff are still required to maintain old paper files unless these records are migrated to Tamanu. However, for new records, there is no need to maintain paper files, as they will be stored electronically.

We've proposed a health information system so many times. Over the years, projects have come and failed us. When it happened, I was shocked; we have it and are actually using it. The good thing about it is that it is flexible and can find ways to make it meet our needs". The project's ability to tailor and customise systems to different country contexts has been key to success. Tamanu's use of a sync model for offline use also brings high benefit and potential, noting that further effort by country partners in addressing wider IT infrastructure and connectivity constraints is required to ensure this functionality is fully realised[6].

Achievement of EOPO 2

EOPO2 is 'Improved access to and use of evidence for policy and other decision-making to strengthen their response to disease threats in partner countries'. EOPO2 was partially achieved, with systems used in planning but not yet widely used for disease response across countries. In answering this KEQ, use for decision making is examined at different levels, spanning operational, management and strategic. In line with DFAT standards, judgements in relation to the achievement of EOPO 2 are made in relation to the outcome wording, which focuses on use for 'response to disease threats'. While the framing of EOPO 2 was perhaps too ambitious for the project's timeframe, the evaluation team is obliged to assess against this stated wording and intent of the outcome statement. However, this section of the evaluation report also outlines other forms of use, including for important everyday decision making, to capture the project's impact more fully.

Most evidence of data use across partner countries was found for operational and management-level decisions such as in planning, patient management, supply ordering and staff allocation. For example, in Nauru, through Tamanu, hospital staff now have easily accessible and updated patient details and are now able to call to let patients know when the clinic is cancelled. In addition to improving supply ordering at the national level, some clinics in the Solomon Islands are now also using mSupply for stock monitoring and management, with system alerts prompting supplementary orders. In Samoa, keen users of the system within clinical departments, such as the Prosthetics and Orthotics Department, use the system to analyse trends in injuries linked to weather and sporting seasons to plan and request resources. User surveys indicated overall good use of data from the systems to inform daily work or decision-making, with 3 respondents reporting "a great deal", 6 reported "a lot", 3 reported "moderate amount", 3 reported "a little", 1 reported "not at all", and 8 did not respond.

The implementation of the systems has resulted in some improvements in patient care and service delivery, with 5 user survey respondents noting this was "much better", 11 "better", 2 "about the same", 1 reporting "no improvement", and 5 did not respond. Improvements were largely in the area of operations and patient management. For example, respondents across multiple countries noted that reduced patient waiting time to be seen by a triage nurse, supported by improved accessibility of patient documentation and transparency of clinical notes. In Nauru, through Tamanu, hospital staff now track attendance and default rates and then follow up on the patients that do not return for medical check-ups. Tools for presenting data such as dashboards and reports such as mSupply dashboards were widely valued by stakeholders, with 13 survey respondents rating these as "either extremely or very useful", 2 reported "somewhat useful", and 9 did not respond.

Use at the executive or strategic levels, critical for informing and developing health policies, services and programs, remained limited. However, some notable examples demonstrating partial

[6] Challenges include servers going down for long periods, lack of tablets and data being lost, lack of funds to buy data and tablets going missing. Even in countries with more successful adoption such as Samoa, purchase of data to run laptops remained an issue, with some hospital staff paying for the data themselves, or using their own phones to run apps, as internet coverage was not proved by the ministry.

achievement of EOPO 2 were found. The project garnered critical impacts across countries during the COVID period. For example, Nauru and Samoa country partners were able to conduct surveillance and ensure COVID-19 vaccination coverage using Tamanu and Tupaia. While not widespread, there are examples of use of evidence for health program planning for other types of disease management and response. For example, respondents in Samoa reported using data to guide dengue fever outbreak management. In Palau, Tupaia's dashboards track overall household health scores to monitor changes at a village-wide scale and is used by health teams to decisions about where to focus resources[7]. Some other partners are now reaching a stage where future impacts in this area can be expected. For example, through Tupaia, Republic of Nauru Hospital (RONH) staff can see trends in respiratory illness outbreaks and patients admitted from a particular district, which will enable them to identify when patient loads are expected to increase, and to send a team to address the outbreak in the district[8]. Systems are also being used to manage Non-Communicable Disease (NCD) in some countries such as Samoa[9], as illustrated by a survey respondent, "*Providing a dashboard of NCD risk factors' screening enables us to get a big picture of people's NCD risk and being able to visualise that, has contributed to more evidence-based interventions from our workplaces and communities*."

EOPO 2 (and associated IOs) is focused on improving access to the use of quality data for decision making. Maintaining and ensuring data quality was a widespread issue, impacting from a lesser to larger extent across different countries[10]. This issue stemmed from lack of human resources in partner countries, and the lack of clearly defined processes to support the effective use of the systems such as Standard Operating Procedures (SOP), coupled with the lack of emphasis on the reintroduced data lifecycle practices—such as collection, cleaning, validation, analysis, interpretation and use—that were either underutilised or non-existent before. Adopting these reintroduced practices requires significant time and effort from stakeholders, and the measures in place were insufficient to facilitate and enforce effective widespread adoption. Across countries, partners stated that a system is only as good as what users put into it, emphasising the importance of human factors and the wider eco-system surrounding the technology. While BES holds that dashboard user engagement rates demonstrate EOPO 2, the evaluation team found this measure to be insufficient in demonstrating its achievement, as it does not capture user trust in the quality of the data or the use of it[11].

---

[7] CHS Reporting Case Studies BES, 2023, Pg. 4.

[8] While respondents highlighted the potential of the digital system and new data available to support outbreak management, no examples were provided during consultations of actual examples.

[9] GHD Reporting Case Studies BES, 2023, Pg. 1. The report notes that in 2023 it was identified that individuals who were being screened for NCDs in the community were not being followed up at rural health facilities as expected. In collaboration with the Samoa Ministry of Health, BES built a report that helped to identify individuals who were expected to visit a rural health facility after screening. The report included the patient details, the primary screening site, their home village, the date of screening, reason for referral, screening results, blood pressure, blood sugar level, and the number of days since the screening took place. up. BES reported that this helped to facilitate more timely follow up and diagnosis of patients, specifically with hypertension and diabetes.

[10] Data accuracy was reported in Nauru to a lesser extent, which multiple respondents reporting that some of the information in Tupaia dashboards did not correspond with data in Tamanu. Data accuracy and quality was reported as a significant issue in countries with more complex geographical contexts which require multiple users to enter data correctly across a system. For example, in the Solomon Islands there is insufficient human resources and structures in place to ensure data is entered to correctly, resulting in inaccuracies in the data displaying in the system. For example, a user may record medical supplies as being sent in the system, however the delivery truck may not leave the warehouse until weeks later.

[11] Using the system is different from using the data generated by the system, especially at the executive/strategic level. BES dashboards user metrics capture usage of the system, but do not capture the quality of the data generated by system and the usage of the data. For example, in the Solomon Islands, stakeholders at all levels widely reported that the data in the mSupply system was inaccurate, and did not match with physical stock supplies. In addition, members of the executive stated that they reports were not providing the data needed, and that they did not trust the data presented.

DFAT's Design and Monitoring, Evaluation and Learning Standards require Overseas Development Assistance (ODA) investments to represent a meaningful contribution to the public, which is feasible given the budget, timeframe, and proposed change pathways[12]. While EOPO 2 was framed in this manner, its ambition was too great given the time required to support the effective implementation and adoption of digital systems in Pacific Island countries. A range of project-related factors also inhibited the achievement of use, including the lack of a clear and shared vision towards use[13]; focus on advancing use for the intended purpose of the system limiting full adoption of the system[14]; and supporting users to make the link between data collection and decision-making and develop the capacity to interpret and understand the data[15].

Additional outcomes

The project has also contributed to additional outcomes beyond the planned EOPOs. For example, through the introduction of Tamanu in Fiji to support the digitisation of COVID 19 patient records, the project enabled the creation of digitised certificates, which reportedly helped Fiji to open its borders after lock downs which significantly affected Fiji's tourism industry.

In the Solomon Islands, BES has reportedly engaged in awareness raising across the national government, DFAT and other donors to increase understanding of the role of the National Medical Store (NMS). The NMS reported that BES had been instrumental in assisting it to obtain a budget increase from SBD 31 to 105 million, supported through its comprehensive supply chain assessment, and behind-the-scenes advocacy work.

Partner satisfaction

Partner satisfaction varied across partner countries, achieving an overall user survey satisfaction rating of 4 out of 5 from a sample of 20 respondents (as 4 respondents did not provide any response)[16]. Stakeholders who had a strong understanding of the systems, the ability to use them effectively, and the desire to support their implementation, reported high levels of satisfaction. These partners also experienced notable efficiencies and improvements, reinforcing their positive perception of the project. For example, all stakeholders in Nauru and Samoa expressed satisfaction with the digital systems, and the support provided by BES. In particular, partners noted BES' high level of responsiveness, and timely and proactive approach to providing support and solving issues.

[12] Standard 3.3: EOPOs represent a meaningful contribution to the public in the operating context, are feasible given the budget, timeframe, and proposed change pathways. The DFAT Guidance Note further states 'The EOPOs represent a meaningful benefit or value to intended beneficiaries. The outcomes are defined as an end-state (not as a way of getting there) and are clear about who and what is expected to change by the end of the investment. The type of change could be change in knowledge, behaviour, or condition. E.g., Boys and girls in primary school in East Bogor improve their literacy and numeracy by 2025. DFAT design and Monitoring and Evaluation Standards, September 2023, Page 20.

[13] BES project staff expressed diverse understandings of the goal and vision of the program, spanning a system 'going live', having a system in place, improved quality, to use for various purposes.

[14] Some users are not fully utilising the system's functionality, possibly due to training gaps, unclear guidelines, ineffective on-boarding, system limitations, or broader change management challenges. As a result, its full potential is not realised. For example, clinics primarily use mSupply for ordering supplies, as required by the supply chain process, but not for stock monitoring – one of its key functions. Similarly, a hospital's dispensing team was primarily using mSupply for printing labels to streamline dispensing but not fully utilising it for optimising the dispensing process or monitoring stock levels.

[15] While the number of system users (presented in BES reports) provides a measure of use, this does not demonstrate that users are using a system properly for its intended purpose. Interviews with users across the sample of countries did not demonstrate good levels of adoption for intended use, with systems not achieving optimal functionality.

[16] A total of 24 respondent provided a satisfaction score according to the following breakdown: Very Satisfied 6 respondents; Satisfied 10 respondents; Neutral 2 respondents; Unsatisfied 1 respondent; Very Unsatisfied 1 respondent, and 4 Did not respond.

In Samoa, BES has built high levels of trust and demonstrated its commitment by continuing to provide support post the project's completion without a contract in place[17].

Satisfaction was lower among stakeholders who lacked a clear understanding of the systems' capabilities and potential benefits, or perceived little desire (personal or organisational value) in supporting the change. Those in environments where the system operates in isolation from an existing, connected system (creating inefficiencies and duplicate efforts) also expressed lower levels of satisfaction. Furthermore, connectivity issues, workforce capacity constraints, and complex and challenging geographical and operational contexts amplified dissatisfaction, influencing their overall perception of the effectiveness of the project. For example, those who continued to face challenges, such as delays in supply delivery and stock outs, at both subnational and national levels, with no noticeable improvement from the system's implementation expressed dissatisfaction. While in many instances this was not due to the technology itself and related to human and infrastructure factors, a lack of understanding of the origins of issues led some partners to blame the technology[18].

2.2 KEQ 2: Efficiency

To what extent has the partnership approach and the program modality and its implementation operated efficiently to achieve the desired results?

The project was efficiently delivered by BES within its scope of deliverables, which is a low-cost quality provider. However, a lack of clarity of roles and responsibilities and accountability for the project's development-focused components has hindered results.

While the project consisted of a DFAT GHD funding grant to BES, a broader suite of partners was engaged in the project's management, delivery and oversight. The assessment of project implementation therefore extends beyond BES, to examine the roles of all key partners involved in the project including BES, DFAT and country partners. The project has a strong focus on the technical elements and BES has performed these well with a focus on supporting the implementation of digital systems and user uptake. However, the development-focused elements of the project have not been sufficiently considered or embedded through the development of associated project strategies and resourcing.

The project uses a partnership approach, with BES and partner countries working in collaboration to achieve project outcomes. BES primarily provides technical services to establish, customise and support the implementation of digital systems in line with partner needs and contexts, and training users of the system. There is a lack of clarity and agreement regarding the roles and responsibilities of BES and country partners for the more development focused aspects of the project such as integration, analysis and use of health data, (including to understand access and inclusion), change management, and governance. In practice, BES encourages and supports these elements, which are perceived to be the responsibility of country partners. While the project has a Program Logic, the roles of BES and other partners are not clearly demarcated, and it is not clear what is inside or outside BES' scope of control. The pre-conditions critical to achieving outcomes, and functions which must be performed by implementing partners are not specified, yet in practice the project relies on partner countries to perform critical elements without providing direct support. This has resulted in

[17] Following the completion of the BES Phase I project, BES has experienced a delay in Government of Samoa approval of a subsequent project, and has maintained a staff presence in Samoa, and provided support without receiving funding. This has been highly appreciated by partners.

[18] For example, mSupply has been operational in the Solomon Islands for several years preceding BES' involvement. As the system has challenges with adoption and data quality, there is concern within the executive that the technology is problematic.

mixed results: countries with intentional change management plans and clear governance structures within Ministries of Health in place achieved stronger results than countries which did not take ownership or have capacity to perform these roles. While the design of a more holistic project from the outset, with funding extending beyond BES' scope and inputs to provide direct support to country partners, and a shared project logic development process may have achieved stronger results, this arrangement is not afforded by the regional model.

The project was efficiently delivered by BES within its scope of deliverables, delivering technical services in a cost-effective manner. Overall, BES has demonstrated good project management, supporting countries to establish and implement systems, evolving its staffing composition to meet country needs, and producing a high volume of reports for country partners. BES has managed the project well within the budget and timeframe, supported by quality delivery teams, and a culture of learning and course correction. Having on-the-ground staff during start up and initial stages of implementation has been essential, supported by the BES regional support function in Fiji. BES facilitated good partner engagement, with partners typically reporting satisfaction with BES in countries with high adoption rates. Some gaps were observed in BES program delivery, including communication with regards to updating partners on requests for functionality and customisation enhancements; maintaining a focus and strategy on analysis and use of data for decision making as the end goal; and ensuring users and decision makers understand the full functionality of systems and causes of barriers to uptake.

The project was managed by GHD, with BES reporting directly to GHD which also linked BES in with other HSI partners. GHD reported high levels of satisfaction with the project and BES' performance, with IMRs consistently rating the investment's Effectiveness and Efficiency as good. DFAT's management is strongly reliant on BES reporting that is not validated or complemented by monitoring visits or feedback obtained through discussions with partners and other stakeholders and is considered weak evidence in the annual IMR reporting matrix. However, DFAT has appropriately identified a range of key issues in its management, such as limitations in disability equity, the need to develop local skills to use available data for decision making, and issues with ministries' having to absorb local staff (funded by the project) into permanent positions within ministries. DFAT has a high reliance on BES internal reporting and is encouraged to carry out or commission due diligence assessments, and independent reviews and evaluations as is standard for DFAT ODA funded projects.

To achieve a seamless transition to digital systems, effective implementation of robust change management plans that ensure the active engagement of partner countries throughout the process, from development to implementation, are required from the outset. BES implemented an effective training approach for users using a variety of methods, including Train-the-Trainer, group training of user cohorts, and 'over-the-shoulder' on the job training. While BES has embedded staff for periods of time after 'go-live' to improve and expand on use of the system and have fostered peer-to-peer learning opportunities and forums, its overarching approach has focused on supporting users to achieve a basic level of use of the system, rather than using the data generated for decision making. There is opportunity for BES to extend its approach to provide tiered training to further upskill staff. This would support building greater awareness of technical functionality and user ability to read, analyse, and interpret data for full optimisation of the system. While users had varying levels of Awareness, Knowledge and Ability to use the system, a key area for improvement lies in building and reinforcing Desire. Desire is a critical element of the ADKAR (Awareness, Desire, Knowledge, Ability, Reinforcement) model[19], as it reflects an individual's motivation and willingness to support and

[19] Components of the Prosci ADKAR (Awareness, Desire, Knowledge, Ability, Reinforcement) change management model that helps organizations guide employees through the process of adopting new processes and behaviours.

participate in the change. Without strong Desire, users may lack the commitment needed to fully embrace and sustain the systems or processes, regardless of their technical understanding or capabilities. For example, in Samoa and the Solomon Islands, the slow uptake of mSupply at the community or district health hospitals/clinics, or at least the challenges with the quality of the data, can be linked to the perception among nurses at the health clinics that inventory stocking and management fall outside their job description or core responsibilities. These tasks are viewed as additional responsibilities/burdens, often secondary to their primary focus on patient care. Change management is a new area for the country partners, and they face challenges in fully understanding and independently driving and sustaining such change. While the ultimate responsibility lies with country partners, the implementing partner should play an active role in managing and supporting the transition process. There is opportunity for BES to enhance support in key areas (beyond building technical competencies to use systems) to support behavioural change and compliance with SOPs, such as by ensuring effective stakeholder engagement at all levels, improving communication, raising awareness about the importance of the change, and fostering a desire among users to actively participate in the change process. In addition, direct funding support from DFAT would enable country partners to address other constraints to adoption such as network connectivity and other infrastructure factors.

Project governance processes varied with a lack of local governance mechanisms established across some countries for initiating and oversighting projects in line with government priorities and directions. These were present in some countries such as Fiji (formally established following BES project implementation) which has a broader national digital health steering committee that guides the appraisal and procurement of digital health services and implementation and coordinates the integration of feedback across user groups. Other project governance committees were established with the support of BES, such as in Nauru with senior level decision makers across partners involved in decision making and project oversight. Local governance structures are essential for effective integration, providing a steer and ensuring local buy-in and sustainability, particularly at the senior level. Ensuring these are established from the outset and beyond are critical in ensuring continuity and local accountability for project decision making[20]. It is also important for project governance to ensure representation of a diversity of users[21] to support participatory planning and decision-making processes or establish complementary committees at the operation and management level. While the project appropriately sought to take a backseat role, with BES working with and behind national counterparts, there is opportunity for DFAT and BES to play a more active role in helping senior decision makers to understand issues from a technical perspective, such as issues affecting data quality and adoption.

Project Monitoring and Evaluation (M&E) and reporting does not tell the full performance story or support performance management[22]. While the project has a program logic and set of IOs and EOPOs that were faithfully reported on by BES, there is an over-reliance on quantitative measures to demonstrate success, such as the number of requests responded to and number of users of the system. While these are important metrics, they are one-dimensional and not adequately complemented by qualitative measures and analysis critical to telling the full story such as: quality of data and level of user trust in the data; whether the new system was a source of truth or served as a

[20] Some executive level staff did not have knowledge on who made the decision to adopt the system or associated costs required to sustain the system, with the lack of governance structures affecting the continuity of information.

[21] This includes users at different levels (operational, management and strategic), locations (i.e. district to national) and user types, spanning nurses, doctors, coders, IT and administrative staff.

[22] While this is contested by DFAT, the statement is made based on information provided in the BES reports, which report quantitative data, but do not adequately capture issues related to data quality, user adoption, and factors affecting implementation in countries.

duplicate system; whether systems provided decision makers with the data needed; progress towards full adoption (i.e. use of system for intended purpose / decision making); and sustainability. BES reports largely covered positive elements and did not adequately examine challenges and barriers. As a result, in some instances reporting did not match with reports on the ground provided by primary stakeholders during the evaluation. An alternative approach such as the use of a rubric to track and analyse progress against key elements of full and sustained adoption, linked to the baseline and level of change expected within a specific country, may serve as a more useful approach. The capture of stakeholder voices in monitoring, including users at different levels, should also be instituted as per DFAT's Design and Monitoring and Evaluation and Learning Standards[23].

The program had a focus on delivery, including 'going live', increasing user numbers, and generating reports for country partners. In more contained and less complex contexts (that do not have multilayered decentralised health systems and expansive networks of islands), this is commensurate of the project's capacity and resources and supported a lasered focus, enabling the project to effect strong results. However, in countries with greater geographical spread, multiple existing digital systems, multi-level and decentralised health systems implementation challenges (such as infrastructure, IT connectivity, and human factors and systems affecting adoption) become more pronounced. In such settings the level of project resourcing was insufficient to achieve optimal results, and the project's focus on pace and scale of delivery has been at the expense of quality of adoption, diminishing results. For example, the successful re-implementation and expansion of mSupply across district medical stores and health clinics in the Solomon Islands is a significant milestone; however, stakeholders have consistently reported data quality issues. A key challenge is the shortage of trained personnel across the supply chain, from the NMS to district medical stores and health facilities. Some staff lack the necessary training to use mSupply effectively, limiting its full utilisation and benefits. Additionally, there is a critical gap in technical support for maintaining mSupply and its infrastructure, such as tablets, printers, and internet connectivity. As the core BES support team is based at NMS, there is no immediate on-site assistance in district stores or remote clinics, leading to delays in issue resolution. Logistical challenges further exacerbate these issues, particularly delayed supply deliveries to health facilities. Orders may be processed and entered into the system as dispatched, but due to a lack of available transport, deliveries can be delayed for weeks[24]. These human resource and logistical constraints, combined with the complexity of managing mSupply across numerous user points, underscore the urgent need for stronger human resource support and improved logistics to enhance system effectiveness. In the setting of targets and management of activities in such contexts, DFAT is encouraged to slow the pace of delivery and enhance monitoring on the quality of delivery and adoption. BES is encouraged to model the number of developers required to support and adapt the systems in line with user-requests and needs, in relation to the volume of users to maintain quality of support, noting that the number of BES software developers is decreasing and BES' systems expanding in the region.

2.3 KEQ 3: Gender Equality, Disability Inclusion and One Health

What outcomes and progress on gender equality, disability equity, and One Health did the program achieve?

[23] "Standard 5.14. The fora for debate, analysis and interpreting program progress are clear and involve stakeholders and partners as appropriate." The evaluation team notes that BES has produced some qualitative change stories.

[24] Conversely, the lack of personnel and digital devices available to enter all dispatches into the system can result in orders being sent without being entered into mSupply, affecting data accuracy.

BES systems have integrated sex disaggregated data sets, and Tupaia visuals are easily disaggregated by sex and reports presented in way that enhances the visibility of disparities. Some systems have integrated functionality to capture impairment-focused data. However, the lack of dedicated project inputs and strategy to support the analysis and use data has meant that efforts have not translated into inclusion outcomes.

Gender Equality and Disability Inclusion were cross-cutting priorities for DFAT at the time Phase I was established, this was not a design requirement of the Phase I project in part due to the initial value of the project, which was AUD2.6 million. As such Gender Equality and Disability Inclusion was not integrated into the project's EOPOs or supported by a documented GEDSI strategy. Associated requirements and expectations were not triggered and applied commensurate with the investment's expanding value, which reached a total of AUD21.9 million.

A basic level of ambition was set for the project to capture gender disaggregated data, as reflected in IO 1.1. 'Partner country agencies collect quality data, including gender disaggregated where relevant from a range of sub-national data sources'. The evaluation team acknowledges the enhanced priority given to gender equality and disability equity by the GHD under PHR supported through increased requirements and supports, and the comprehensive gender equality and disability equity strategy developed by BES under the new phase of the project. This evaluation assesses the integration of gender equality and disability equity under the Phase I project, highlighting factors affecting the integration of inclusion and key considerations, challenges and opportunities. It seeks to assist GHD in considering how to apply gender equality and disability inclusion requirements, within the context of the wider project (beyond BES) with consideration of the differentiated roles and responsibilities of project partners.

In the transition from paper to digital systems, the project has integrated pre-existing partner government sex disaggregated data into digital health systems. For example, clinical data held in patient information management systems, and public health program records (i.e. immunisation) typically capture sex disaggregated data, which in turn is aggregated and presented in Tupaia dashboards. The combination of Tamanu data capture and Tupaia data displays, helps partner countries to increase the accessibility of data available, whereby Tupaia visuals are easily disaggregated by sex and reports presented in way that enhances the visibility of disparities. BES also advises that its systems have captured new sex-disaggregated health data sets in Palau and Nauru.

DFAT has rated gender equality as satisfactory throughout the life of the investment with room for strengthening. IMRs note that BES has integrated sex disaggregated data and advocated for gender disaggregated visuals to ministries of health whenever possible but recognise the need to better communicate the availability and value of the data to country partners. For gender equality outcomes to be realised, sex disaggregated must be analysed such by comparing differences between men and women in access to health services, disease prevalence, risk factors, health behaviours and outcomes, and to understand gender norms and power dynamics that may contribute to health disparities and then used by country partners for targeted clinical and public health policy and service delivery in the future. However, BES does not have a dedicated area of work or strategy to support country partners to analyse and use data (including gender-disaggregated data) which is seen as the role of country partners. While IMR management responses identify that gender equality is an area for strengthening, they do not provide a technical assessment or specify how gender equality could be better advanced.

Disability equity has not been well progressed through the investment. Partner country health systems do not typically mainstream the capture of information on disability status. However, BES digital systems have digitised some patient data in Tamanu pertaining to health conditions and impairment-focused data. For example, in Samoa, Tamanu is used in clinical departments (e.g.

prosthetics and orthotics, and eye and ear). The 2024 IMR also notes that impairment data is tracked in Tonga via the Fanafana Ola project (e.g. relating to amputations resulting from diabetes), and as part of the COVID-19 vaccine delivery program, with BES enabling the MoH to use mSupply to track the disability status of COVID-19 vaccine recipients. However, follow up as part of the evaluation indicates that while systems have embedded this functionality, disability and impairment-focused data is not being utilised as part of monitoring[25]. DFAT IMRs recognise that uptake and interest by country partners in associated data displays has been low. The lack of a dedicated body of work to support country partners to use and analyse the data, including in collaboration with Organisations of Persons with Disability (OPDs), has meant that impairment data sets have not yet resulted in inclusion.

While the project has achieved a basic level of sex-disaggregated data capture and presentation, to achieve inclusion, a greater focus on pursuing other entry points may have augmented gender equality and disability equity outcomes. Within the Phase I project, examples of possible entry points include: enhancing the accessibility of digital health apps (i.e. for accessing COVID-19 results) for people with disability; reviewing existing forms from a gender and disability lens during the customisation or form development process; integrating disability status across patient management systems through the use of the Washington Group Questions (WGQ)[26]; and building the capacity of government and other key stakeholders to interpret and analyse sex and disability data to examine disparities in access of health services, the unmet needs of particular groups, and identify how disability or gender may affect disease prevalence, risk factors, health behaviours and outcomes. Associated data analysis is needed to ensure partners use the data for targeted clinical and public health policy and service delivery that brings about gender equality and disability equity.

The project's approach has seen BES responding to the informational requests and preferences of partner countries for system content development and adaptation and gently advocating rather than driving the integration of gender equality and disability equity throughout digital systems and their use, with some BES respondents stating that this was beyond their role and remit. While ideally, country partners should drive inclusion, technical and structural limitations inhibit country health partners' ability to perform this role. For example, in partner countries, gender and disability typically sit under the purview of other government departments (i.e. social development) and may not feature as a priority under health (i.e. within MoH, hospitals and public health departments). In other instances, while ministries of health may have inclusion focal points and champions, a different set of internal stakeholders may be engaged with through the project (such as the ICT team within a hospital), meaning champions are not always at the table during project discussions. In lower resource settings in the Pacific, government health partners may lack strong technical expertise in interpreting and analysing health data through a gender and disability inclusion lens. The current regional model inhibits DFAT from providing direct support to partners to provide these inputs at a country level, with BES holding responsibility for performing this role. DFAT is encouraged to set clear expectations in this area and undertake associated monitoring to ensure accountability. The evaluation team wishes to highlight that to the extent possible, this should be done in a way that facilitates a country-led approach that sees country partners increasingly prioritising and

[25] While mSupply has an option in the patient registration interface where a checkbox is available to indicate the disability status of a person, the system has not been utilised by the ministry as part of monitoring. Similarly, while Tupaia has the capability to capture aggregated disability data, the utilisation of that data is minimal or absent.

[26] The WGQs are a set of simple questions designed to identify people with a disability. They were designed to collect data that is comparable across different locations and avoid issues of underreporting that arise from asking a direct question, such as: 'do you have a disability?' The questions assess whether people have difficulty performing basic universal activities such as walking, seeing, hearing, cognition, self-care and communication.

leading on inclusion, with in-house capability developed. It is recommended that different options are explored on a country-by-country basis, with a view to enabling bilateral programs to play a stronger role in catalysing progress on gender and disability inclusion within the health sector. This may be achieved by ensuring country partners have access to appropriate technical and capacity building resources and facilitating the engagement of other key local partners such as OPDs women's organisations, and other representative groups in the process.

Project outcomes are framed at the level of improved information systems and use of data for decision making, rather than extending to the next level of improving access to health services and medical products for populations. While this may be appropriate given the project's size and timeframe, it has implications in that flow on results and impacts are not monitored. A small number of country respondents reported instances whereby project activities directly impacted on diverse groups. For example, one participant in Fiji reported that the introduction of mSupply had afforded hundreds of nursing stations with direct ordering access from FPBS, resulting in a three-fold increase in women accessing family planning products such as contraceptives. Conversely, two reports were provided of systems changes negatively impacting access during the transition process, when paper systems were dismantled and new digital system not yet fully functioning[27]. While the veracity of statements could not be verified, these reports highlight the need to enhance monitoring of access and inclusion considerations and risks to ensure the effective safeguarding of groups who experience inequalities and social disadvantage.

One Health is 'an integrated, unifying approach that aims to sustainably balance and optimise the health of people, animals and ecosystems'[28]. While not a requirement of the project, contributions have been made to advancing a One Health approach through partnerships with other GHD-funded partners including Watershed Interventions for Systems Health (WISH) and Stronger Surveillance for Vector Borne Pathogens project (STRIVE). Using surveys administered through MediTrak and Tupaia at the community level, BES supported WISH and STRIVE to expand data collection to incorporate questions relevant to One Health. This enabled the WISH project in Fiji to collect data around the use of land bordering water catchments with respect to the management of animals, supporting WISH to map interventions to improve water quality[29]. BES also worked with Fleming Fund to roll out improved systems for human health and animal health in PNG by implementing the Laboratory Information Management System (LIMS) SENAITE, and stock management system mSupply[30].

2.4 KEQ 4: Relevance

Was the investment the right thing to do, from both Pacific Island country partner and Australian perspectives?

Australia's investment in strengthening digital health in the Pacific is highly relevant, with project activities strongly aligned with partner country priorities. The model could be enhanced through stronger integration at a country level, and linkages with regional institutions.

[27] Report 1) In Nauru, it was reported that the through the removal of paper system, Public Health is no longer immediately informed of cases of notifiable diseases, with this disconnect in the system reducing its ability to respond to quickly to outbreaks. In the evaluation validation process, BES reported that it has subsequently addressed this issue through the introduction of an alter feature spanning RON and the Department of Public Health. Report

[28] One Health High Level Expert Panel definition of "One Health", 2021.

[29] BES Annual Report 2022, Pg. 5.

[30] BES Progress Report (5 (Update January to September 2021), Pg. p8.

Australia's investment in strengthening digital health in the Pacific is highly relevant and responds to the high priority of Pacific Island countries who are committed to transitioning to digital solutions. While countries did not have documented Health Information Management Strategies (HIMS) strategies[31] from the outset, partner country demands have been well met by the program, and activities closely linked to government priorities.

Assessing whether the model of partnering with BES was the right one requires comparison with alternative approaches to strengthening digital health systems in the Pacific. An alternative model would potentially support country-led identification of issues and solutions, and use of a market-based approach to assess a range of vendors, with DFAT potentially supporting multiple, disparate commercial systems across the region. A full comparative study was beyond the scope and resourcing of the evaluation. On balance and based on the information available, the evaluation team holds that the investment may have been the right thing to do in smaller, less complex countries. This section reflects on trade-offs, complexities, and options for pursuing a more integrated model that supports Pacific Island countries to be more informed consumers of digital technologies.

Supporting partner countries to identify needs and go out to the market to procure digital systems and services is core to building government capacity and buy-in and supports partners to be informed consumers. However, this approach is potentially more complex, and providing direct support to a sole partner to serve the region flexibly has been an effective means of supporting the successful transition to digital systems in some countries in a relatively short period. Given that DFAT has invested substantially in the model, and that BES has a strong presence across the Pacific, there are benefits to continuing the model, noting some adaptations are required. The model has a range of strengths that reinforce its relevance. For example, BES systems are free for users, and its technical support costs (such as for patching, upgrading and maintenance) are relatively low. BES has demonstrated strong client engagement and high responsiveness to partner government feedback and changing priorities during the COVID-19 pandemic and beyond. Coupled with strong technical performance, this positions BES as a value for money provider.

The significant results achieved in Nauru, Palau and Samoa over the project period demonstrate the model's effectiveness in smaller, more contained, and less geographically complex countries with absorptive capacity commensurate with the level of investment. It is more challenging to implement when working across large and complex contexts such as Fiji and the Solomon Islands. For example, integration barriers can arise in countries where multiple digital health systems create duplication and limit adoption; a lack of connectivity and tablets can introduce challenges in using digital systems to capture data in public health interventions targeting large populations; and working across vast decentralised health systems can require an extensive range of centres to be connected to and using a system proficiently to produce accurate and useful data. While the model is suited to any country in the Pacific and the technology has the ability to scale, there are risks to scaling the technology, particularly in more challenging contexts. As highlighted by a respondent from a county partner "*My main concern for the long-term sustainability of the system is that data discrepancies could become a bigger issue as the system grows. If these issues aren't resolved, we'll need to spend more time manually checking and correcting the data, which could affect efficiency over time*." In these contexts, additional resourcing would enable BES to work with partners to examine the context-specific issues affecting data quality, adoption and use for intended purpose, including

[31] Some countries have subsequently developed HIMS strategies at country and regional levels, including by the Asian Development Bank.

associated SOPs and the human factors affecting use of the digital system beyond digital competency.

The project undertook country level scoping, targeted activities, and engaged DFAT Posts. However, as a regionally funded project, it was not designed by DFAT as a holistic and integrated project at the country level from the outset. Under PHR, GHD has identified and addressed associated issues experienced under HSI, with a structured design and process to ensure coordination with Posts. To achieve EOPOs and meet ODA requirements under the current regional funding modality, DFAT must ensure that the development-focused components of the project[32] are effectively performed by a single or multiple partners contracted by GHD. Noting the restrictions of the model, DFAT is encouraged to explore alternative or hybrid arrangements that resource and enable local partners to play this role. There is opportunity to increase the role of Posts to enhance the non-technology development elements of the project, which are well positioned through relationships with governments and other country partners. For example, to achieve outcomes, country partners require additional support to design and implement change management processes, integrate GEDSI elements, and to interpret and analyse health data for decision making. This could be supported through bilateral programs using a flexible fund managed by Posts to augment PHR activities in countries, such as by engaging other local development partners and technical assistance. Posts with facilities managing bilateral health and social development programs, supported by PHRGHD coordinator roles, are particularly well positioned to provide these linkages to augment results.

The overall scope of the regional project should be made clearer and more transparently reported on in narrative reporting[33]. DFAT GHD regional funding is the sole or main funding source of BES activities in some countries and is one of several funding sources in countries where BES implements multiple projects funded by sources including DFAT (GHD regional and bilateral funding) and other donors. The evaluation team encountered challenges in disentangling and identifying which BES activities were funded through regional funding due to BES reports to GHD which cover an extensive suite of activities in each country funded by multiple sources, rather than providing a distinct report on the use of regional funding. While it is useful for GHD to have visibility across the full portfolio of BES projects in a country, clearer delineation of regional funding is required to avoid misattribution and to support performance management[34].

In some countries such as Fiji, regionally and bilaterally funded programs are closely interconnected, with regionally funded projects leveraging and augmenting other projects for enhanced results. Posts had different levels of visibility of the regional project, with some viewing it as core to delivering on Australia's country health pillars and priorities, and others viewing it as removed. In addition to delivering discrete projects to achieve EOPOs, GHD could consider using regional funding flexibly to augment bilateral programs through complementary inputs. There is opportunity to bring Posts more closely into the management of projects to support enhanced coordination of investments, and to pursue opportunities for policy dialogue. A representative from one Post suggested that GHD

[32] Development focused components of the project: integration, analysis and use of health data, (including to understand access and of inclusion); change management; and governance.

[33] This finding is contested by the DFAT Project Manager and BES who assert that a clear distinction is made in the reporting of activities funded by different sources.

[34] For example, the 'DFAT Indo-Pacific GHD Regional Health Security Grant BES Final Report 2019-2024' reports on a suite of projects funded in each country through different sources, rather than providing a clear outline of how regional funding was used. This creates risks that results are over-attributed to GHD-funding and created challenges in performance management. This finding is contested by DFAT and BES who assert that a clear distinction is made in the reporting, and performance management enabled.

share summary reports on regionally funded project activities in the country to enable stronger visibility and coordination of efforts.

The model of procuring a single Australian provider is supply driven, with the digital solutions on offer determined by Australia[35], rather than being demand driven by regional bodies. The project seeks to support the development of a suite of open-source[36], global digital goods for health that are suited to the Pacific context and that can be implemented in multiple countries and supported by Pacific peer-to-peer networks of support. Common digital systems across countries have the potential to enhance data systems' integration and reporting across the Pacific region. BES has supported regional collaboration and sustainability well within its scope of control, through peer-to-peer learning trips, regional webinars, and building a network of local super users across the region. The model has also resulted in pockets of practice of local peer to peer support during implementation[37]. BES has also made attempts to share information and increase collaboration with regional organisations such as SPC (the Pacific Community). To enhance regional ownership, there is opportunity for DFAT[38] to more strongly engage and link in regional partners such as SPC and the Pacific Health Information Network (PHIN) to advance digital health policy, architecture and vision at a regional level, screen and validate digital products and partners, and promote regional standardisation. Working in complementarity would support partners to become more informed consumers and enhance regional ownership and sustainability.

The project model presents issues which require deeper consideration by DFAT. Through the project, BES is acting as a development partner implementing an ODA-funded project to build partner systems and capability. Outside of this project, BES also provides commercial services (including support packages for its products and server hosting and data backup services) and can be considered a vendor. While partners are not required to engage BES' commercial services on the completion of the project, the DFAT-funded projects provide BES with a commercial advantage, particularly in relation to providing support functions for BES-developed products Tamanu and Tupaia[39]. DFAT is encouraged to consider and manage potential risks and real or perceived conflicts of interests pertaining to this issue, as well as situations that may occur when BES is providing development services to partner countries and bidding for government contracts[40].

[35] It is acknowledged that BES has its own suite of products, works with other products including the mSupply Foundation, NaraLabs, and the University of Oslo (amongst others) to provide their services/systems, and in some cases has gone out to the market to research the best option and chosen the 'best' option from outside the BES suite of products. However, the suite of products offered to partners is limited to the suite of products that BES can support, with the term 'demand driven' used to highlight this aspect.

[36] An analysis of the source code licensing scheme and contributions environment for BES software products Tamanu and Tupaia carried out as part of the evaluation found that these have not been operating as fully open-source products over the course of the Phase I investment, with issues largely rectified following discussions with BES, as outlined under KEQ 5.

[37] BES reports that Fijian mSupply project officers have supported mSupply rollouts in Cook Islands, Niue, and Samoa, and one officer has pivoted their skills to support the Tamanu implementation in Kiribati.

[38] DFAT is positions to play a brokering role in this area, given its strong relationships with both BES and SPC, and its funding agreement with SPC providing a vehicle to enable it to play a direct and expanded role in the project.

[39] DFAT development projects typically strive to build in-country capacity to sustain benefits, and do not require partners to be dependent on commercial providers. As BES-developed systems, BES has performed support functions for project partners and is most familiar with the systems (having created and supported their development). This positions BES as 'first in market' to provide commercial services when project funding ends. In addition, Tamanu and Tupaia have not been operating as fully open-source products over the course of the Phase I investment which may have discouraged the growth of a community of outside contributors and knowledge holders due to former licensing restrictions and restricted access to up-to-date code.

[40] Stakeholders raised concerns of potential conflicts of interest, including situations in which BES in a position to provide advice to government that enables it to recommend its own products or services, or in which it has access to insider knowledge that give an advantaging in the bidding process, such as conducting surveys of health centres using Tupaia.

The project's funding model, which supports partner countries to adopt particular technologies obliges DFAT to ensure partners understand future resourcing implications and options for sustaining the digital systems. Country partners, including at the executive level, typically viewed BES as a vendor, and were unaware of whether they would be required to pay technical support costs to BES following the cessation of DFAT funding, or what level of funding and human resources would be required if they sought to build these functions internally, or change providers. While BES holds that it is transparent in its pricing[41], and has communicated its support costs clearly to partners (and that these are optional), this understanding was not held by country partners[42]. Digital health systems projects are relatively new, and country partners require a higher level of technical knowledge to understand digital terminology and systems and associated implications and options for maintaining ongoing operations. Patience and proactive communication are required to build the capacity of partner countries who specialise in health and cannot be expected to be cognisant of the technical and legal complexities of digital systems.

2.5 KEQ 5: Sustainability and Localisation

How, and to what extent, will the benefits of BES Phase I activities be sustained beyond the life of the project?

Sustainability across partner countries varies significantly, with partner countries heavily dependent on BES, creating a critical vulnerability. The gateway to enhanced sustainability lies in building stronger local ownership, governance mechanisms and informed consumers of digital technology.

Sustainability across partner countries varies significantly and largely influenced by factors such as governance and leadership, workforce capacity, and infrastructure and funding availability. Countries with high levels of adoption such as Nauru, Fiji and Samoa have embedded some critical elements that can be expected to enhance sustainability. However, the overarching sustainability of the digital health systems implemented remains weak across partner countries, primarily due to the limited local IT workforce, infrastructure and connectivity. Partner countries are heavily dependent on BES for sustainability, and this reliance risks the viability and sustainability of the systems if the external support is withdrawn immediately. Factors limiting sustainability cannot be addressed by current levels of Pacific Island country government funding, are a reality of working in the Pacific, and are beyond the influence of the project. Assessment against this KEQ therefore assesses the project's success in supporting localisation and sustainability within its scope of control.

Sustainability is a key weakness, with the project not systematically factoring in sustainability during the design phase or during implementation and embedding sustainability strategies. Sustainability has been enhanced in some countries through strong levels of adoption, integration and ownership. BES has promoted sustainability to some extent by building the capacity of local partners, and in some countries, partners have developed internal training capability, co-facilitating or leading user

[41] The BES website lists the support services that can be procured for various products and displays some but not all pricing. For example, with regards to Tamanu, prices are listed for server hosting and data backup. A suite of mobile and desktop support packages is listed which no pricing displayed and accompanying text stating 'contact for pricing' (source: https://www.bes.au/products/tamanu/ accessed 12 January 2025).

[42] In some instances, this may be reflective of internal partner government communication channels, and highlights the need for ongoing and repeated communication, particularly upon a change in senior leadership, to ensure partner countries are cognisant of existing agreements and implications.

trainings[43]. However, pathways to embedding and transitioning to sustainability have not been systematically embedded from the outset or end of the project phase. As BES has performed core technical functions necessary to delivering the digital system, some partners lack a clear understanding of the capabilities, functions and expertise required to perform and maintain operations independently. As emphasised by an in-country partner *'[BES] can show good graphs, but we cannot get those graphs from our staff. We want our staff to be able to generate those reports, and for our staff to be trained*'. Some senior government personnel reported not knowing what was required to sustain the system, or whether they are able to do so. BES' technical expertise positions it to work with partners to help them to develop a clear understanding of these elements. This could be achieved by packaging and communicating the set of capabilities, equipment, functions and staffing positions required to sustain the system. This could inform the development of transition plans by government partners, to guide internal budget allocation, or requests for funding by other development partners.

In areas with high adoption levels, strong leadership and effective change champions were present and have been instrumental in driving progress. Projects in countries such as Samoa, Palau and Nauru, have been advanced by local leaders who have encouraged and mobilised teams to embrace digital products. In some countries, this appears to have stemmed from strong individual leadership styles, and in other instances people have become champions upon experiencing the value of a digital system. Noting the project strategy seeks to work with change champions[44], given the critical nature of this component to the program's success, project M&E could embed a greater focus on monitoring local levels of buy-in, and analysing which strategies are most effective in building local leadership. The pace of delivery and project targets could potentially be slowed when local leadership and buy-in is low, with DFAT providing additional supports to support leadership development among government partners tasked with leading the change process.

The program model supports localisation through BES' positioning as a partner that responds to country partner requests and direction setting. Recognising that the project is greater than BES, country partners should be fully aware of their important responsibilities in engaging with governance, coordinating internal efforts, leading and oversighting change management processes, and providing advice and direction to BES to ensure systems are contextually appropriate. Although some country partners have taken steps to establish governance mechanisms[45], these efforts remain insufficient without substantial strengthening. DFAT is encouraged to provide additional direct support to country partners to perform these functions effectively (working with and through Posts) and encouraging country partners to ensure strong levels of representation of users across clinical departments and public health programs.

Uncertainty among country partners regarding the avenues and long-term financial commitment required by partners to sustain the system undermines sustainability and local ownership. The adoption of a digital system is a major investment by partners and carries considerable legacy and cost implications if partners seek to sustain the new system, or transition to an alternative one. A DFAT-led structured partnership brokering process (as has since been instituted under PHR) would have enabled country partners to more fully discuss licences, future costs and implications before

[43] As discussed above under KEQ 2, the project is encouraged to place greater focus on building and sustaining the Desire to support and participate in the change, and reinforcement aspects.

[44] Intermediate Outcome 2.3 is 'National champions of change are training/supporting others'.

[45] For example, Nauru established a senior cross-government steering committee from the outset that has played an active decision-making role across the project.

committing to the partnership, and commit to take over in full knowledge[46]. As digital systems are already in place, DFAT is encouraged to support country partners to develop a stronger understanding of the range of technical support options upon project closure, to ensure partners can plan their own development trajectory into the long term. Ensuring partners are cognisant of the range of avenues and can plan and cost ongoing support requirements is crucial to sustainability and accords with DFAT's locally led development agenda.

The project seeks to support the development of open-source[47] digital systems, which is core to the sustainability of the model. Open-source can encourage the development of a community of contributors and the viability of alternate vendors for development, maintenance, hosting and support. This is important in the context of the project, as it seeks to ensure country partners are not dependent on BES or Australia into the future and can engage IT specialists or other firms to provide ongoing support for the digital health information systems. An analysis of the source code licensing scheme and contributions environment for BES software products Tamanu and Tupaia was carried out as part of the evaluation, and a subsequent discussion with BES took place. While BES indicated it sought to work in the spirit of open source[48], Tamanu and Tupaia have not been operating as fully open-source products over the course of the Phase I investment[49]. This may have discouraged the growth of a community of outside contributors and knowledge holders due to former licensing restrictions and restricted access to up-to-date code. Following discussions with BES as part of the evaluation, these issues have largely been rectified, whereby Tamanu and Tupaia codebases are now covered by an Open Source Initiative (OSI) approved Open-Source Software (OSS) license (GPLv3), with actively developed source code shared publicly. However, challenges remain in relation to one part of the codebase being licensed under a non-OSS license[50], which could prevent third-party providers from hosting the software on behalf of country partners. Additionally, some statements remain published on the BES website, that claim certain restrictions in contradiction of the published license[51]. DFAT is encouraged to implement a contractual obligation to ensure all future funded development is licensed under an OSI-approved license, institute periodic monitoring of OSS licensing and source-code publishing compliance and engage with country partners to ensure they develop an understanding of the different options available for sustaining the software products following the cessation of DFAT funding.

[46] While BES does not change licensing fees and holds that it has communicated its support costs clearly to partners (and that these are optional), partners were not cognisant of these elements. This may be related to turnover of initial leadership and decision makers or challenges in understanding complexities of digital technologies and highlights the need to ensure ongoing and proactive communication at the outset and beyond. The project has supported a non-open source version of mSupply to be introduced in Fiji, with substantive licence fee costs a live issue of concern expressed by a senior representative of the MoH in Fiji.

[47] The Open Source Initiative is the internationally recognised authority in defining the term "open source" and its definition has been adopted by the open-source community, Australian government, and leading institutions working in digital health systems development in developing contexts, such as Digital Square. It states that Open source does not just mean access to the source code, and states that the distribution terms of open source software must comply with ten criteria which are outlined on its website. The OSI definition grants specific legal rights that ensure that other contributors and providers can provide services to country partners.

[48] This includes for example, by ensuring its products are free with no licencing fees, that partner countries can change the code, and engage external consultants to maintain the systems.

[49] The Tamanu codebase has only been covered by an accepted OSS license (GPLv3) for the last 11 months, with no publicly shared source code until 2025 (although some outdated source code was available on GitHub). Tupaia was governed by a non-OSS licence throughout the Phase I project. It was re-licensed to the GPLv3 in February 2025, following discussions as part of the evaluation.

[50] The Fast Healthcare Interoperability Resources (FHIR) Application Programming Interface (in use by some countries) is licensed under the non-OSS Business Source License, which restricts production use; this could prevent third-party providers from hosting the software.

[51] The BES website states that Tupaia is available under a "free and open-source licence for health projects in low and middle-income countries" and a commercial license is required for other use-cases. This restriction does not comply with the selected GPLv3 (or any other OSI-approved) license.

While the transition from paper-based systems to digital health systems has been widely welcomed across the country partners, it has created the critical need for additional local workforce capacity to work across the data lifecycle, particularly in specialised areas such as data management and IT. These specialised roles are critical not only for sustaining the digital health systems but also for ensuring that the benefits generated from these systems are sustained in the long term. The demand from partner countries, and Australia's investment in digital systems, is shaping the region's human resource needs creating need for ongoing IT resourcing and capability and affecting the ecosystem. DFAT is encouraged to explore complementary avenues that support country partners to build specialisation and IT capability over the long term.

3. Lessons Learned

1. Health systems strengthening is an area of need in Pacific Island countries at large. However, it is a relatively new area and requires national governments to invest in ICT resourcing (personnel, equipment and infrastructure) to operate and maintain digital systems.
2. The initial phase of a technology transformation project requires significant technical on-the-ground support, which was appropriately provided by BES. Digital transformations may require significant in-country support in the initial phase, and on an ongoing basis after a system goes live if there is low adoption and or engagement from partner countries.
3. The project scope is wide and requires technical expertise such as logistics specialists, pharmacists, clinicians and program managers. BES has appropriately evolved its staffing complement beyond IT based on learnings to build a more holistic range of resources and functions around digital systems.
4. Committed leadership has proven to be instrumental in driving and maintaining progress, with high levels of adoption evident in countries with effective local change champions, and strong communication at senior levels mandating the priority for departments to adopt a new health system, such as during COVID-19.
5. Change management is a critical component when introducing a new system, and associated strategies and support needs to be included in the program logic, activities and budget.
6. Successful adoption of digital health systems requires not only effective technical implementation but a focus on managing people's expectations and experiences. Ensuring consistent reliability, minimising systems duplication burden, and addressing minor issues promptly is crucial in building and maintaining trust in a system. Minor issues can lead to frustration and hesitancy, and a reversion to old ways. For instance, some respondents indicated during the evaluation that if the system experiences downtime, users may revert to paper-based solutions for the entire day, losing trust in the system and resisting further use.
7. The demand from partner countries for investment in digital systems is driving and shaping the region's human resource needs creating demand and need for ongoing IT people and affecting the ecosystem. Complementary investment in building the Pacific digital cohort is required to achieve sustainability and localisation over the long term.
8. Well-functioning digital systems are dependent on the structures and people around the technology, with stakeholders commonly reflecting 'you get out what you put in'. Digital transformation projects require a dedicated focus on the wider eco-system surrounding the technology, including the structures and human factors affecting adoption.
9. Increasing the funding and scope of BES activities following strong performance in the initial period enhanced responsiveness and results. However, a project redesign and appraisal in relation to DFAT's Design and Monitoring, Evaluation and Learning Standards following a substantial increase in funding would have been beneficial, particularly in strengthening the development elements of the project and linkages with regional institutions.
10. Ensuring strong local governance mechanisms across all countries from the outset is critical in ensuring partner countries become informed consumers and take ownership and accountability for the program, and for ensuring partners develop transition and sustainability plans to ensure they can sustain digital systems in the medium to longer term.
11. Digital health systems are relatively new and introduce a complex eco-system, with additional effort required to ensure DFAT and development partners develop the capacity to navigate technical and legal complexities of digital systems.

4. Recommendations

Two key recommendations are provided to address gaps in the sustainability of the Phase I Project:

1. That BES package up and communicate the set of capabilities, equipment, functions and resourcing (including staffing positions) required to operate and sustain the systems in each supported country to support partners, including BES to develop transition and sustainability plans.
2. That DFAT assist country partners to explore avenues and options to transition the digital systems to full local ownership, and to assist country partners to develop transition plans[52] that strengthen the sustainability of capability developed under the Phase I project (and beyond to support country partners to gradually take full responsibility). As part of this process DFAT should clarify future funding expectations, including whether DFAT will continue to provide funding for digital system support costs, or at which point countries are expected to pay for support.

In addition, several suggestions are made for strengthening the delivery of Phase II of the project and partnership, and to support the DFAT design and management of regional digital health systems strengthening investments and to enhance Australia's contribution to health information systems support in Pacific Island Countries more broadly in Section 5, below. More detailed recommendations are provided for sample countries in Appendices B and C.

[52] Transition plans should support sustainability and local ownership, with a focus on governance and leadership, workforce capacity, infrastructure, and financing strategies and requirements needed to maintain the digital health systems and their benefits, relevant to low-resourced health systems.

5. Suggestions for future phases and programs

Delivery of Phase II of the project and partnership

1. Develop and implement comprehensive Change Management Plans from the outset for all projects, ensuring active engagement of partner countries throughout the process, from development to implementation. Consider adopting the Prosci Change Management Methodology and the ADKAR (Awareness, Desire, Knowledge, Ability, Reinforcement) model to guide the transition. A particular focus should be placed on the Reinforcement aspect and in building and sustaining the Desire to participate in the change. *- BES and partner countries*
2. Establish multidisciplinary governance bodies in all countries[53], ensuring balanced representation from key stakeholders[54], including BES, DFAT, and partner countries. The governance structure should define clear roles and responsibilities for each member, including oversight of the change management process to ensure accountability, efficiency, and effective adoption of the system. *– DFAT (GHD and Posts) and country partners*
3. Develop a communications plan that ensures country partners (users at all levels) understand the full functionality and purpose of the system, pathway to achieving full adoption and use for intended purpose, and that users are updated on all requestions for customisations of key system functionalities, and ensure all requests are included in BES' ticketing system. *- BES*
4. Establish a mechanism to facilitate peer learning and knowledge sharing among countries implementing digital health systems including Tamanu, Tupaia, and mSupply, with regular forums helping partner countries to avoid repeating mistakes, optimise resources, accelerate their learning, and the effectiveness and sustainability of digital health systems[55]. This mechanism could also be used to share lessons on analysis of data to understand access and who is not being reached, or left behind. *– BES (if resources are made available)*
5. Develop a more comprehensive M&E framework and plan that sets benchmarks for success in each country and captures data to tell the full performance story including challenges (technical and developmental) progress towards successful adoption (quality data and full use of systems for their intended purpose including decision making), impact on access to medical services and supplies (including on groups who experience inequalities and social disadvantage), and localisation and sustainability. The M&E system should encompass qualitative metrics and analysis and be informed by direct feedback from partner country stakeholders. *– GHD (at a whole of program level), and BES (at a project level)*
6. Ensure DFAT standards are applied and adhered to (including DFAT design, Monitoring and Evaluation Standards, and Gender Equality, Disability Equity and Rights requirements) and ensure partners have systems and capacity in place to meet ODA requirements and achieve development outcomes, including by conducting associated due diligence, independent reviews and evaluations, and technical assessment where appropriate. DFAT is also encouraged to implement a contractual obligation to ensure all future funded development

[53] Additionally, it is essential to foster continuous engagement from the governance body throughout all project phases —from planning and implementation to ongoing sustainability.

[54] Stakeholders from partner countries should include, but not be limited to, executive-level representatives, finance representatives, key department representatives (such as Clinical Services or Pharmacy, depending on the system and health requirements), ICT representatives, and change management leads.

[55] The approach could build on existing models, such as the Indo-Pacific Digital Health Users Forum hosted by BES in August 2023, where users exchanged lessons learned and solutions to common challenges.

is licensed under an OSI-approved license, institute periodic monitoring of OSS licensing and source-code publishing compliance, and engage with country partners to ensure they develop an understanding of the different options available for sustaining the software products following the cessation of DFAT funding. - *GHD*

DFAT design and management of regional digital health systems investments

7. Establish a complementary flexible funding mechanism, to enable Posts to provide direct Technical Assistance or other forms of support to country partners, or engage other development partners to assist partner countries to implement the non-technical, development aspects critical to the program's success, including change management, governance, inclusion and analysis of health data – in a manner that fosters local ownership and in-house capacity. - DFAT (GHD and Posts)
8. Ensure DFAT involvement (Post and GHD) in early country level partnership brokering for regional projects to ensure a clear demarcation of roles (that includes management and oversight by DFAT) and establishment of governance arrangements (that involve DFAT GHD, Posts, BES and country partners). *– DFAT (GHD and Posts)*
9. Clarify what constitutes a 'regional project' and consider using the GHD regional funding vehicle flexibly to augment bilateral projects through complementary inputs, in addition to funding discrete projects to achieve EOPOs. While maintaining visibility on BES' full suite of projects in the region, DFAT is encouraged to request more clearly delineated narrative reporting from BES, which demonstrates the contribution of regional funding – whether through discrete activities, or in augmenting bilaterally funded projects. *– GHD*
10. Explore opportunities to embed a stronger coordination role by Posts in driving links between BES and partner countries, and other development actors (particularly in areas such as gender equality and disability inclusion, and strengthening analysis of health data) on a country case by case basis, pursue opportunities for policy dialogue, and ensure relevant personnel at posts systematically receive summary reporting on BES activities funded under the regional project[56]. *– DFAT (GHD and Posts)*
11. Increase activity timeframes, and encourage a slower pace of delivery when issues of adoption or data quality are persistent, and bring a greater management and monitoring lens to the quality of data, adoption and use for decision making among users at all levels which is essential for viability and success, particularly across more complex contexts where issues of data quality present issues to scaling. - GHD

To enhance Australia's contribution to digital health system's support in the Pacific

12. Specific technical capabilities are required to support a digital Pacific, however, there is a limited workforce and with migration, this will remain a challenge. DFAT is encouraged to explore options for establishing and growing a local panel of Pacific consultants that can be accessed by country partners for technical support, using cross-country collaboration as a Pacific solution. - GHD in collaboration with Posts
13. Pursue avenues that support country partners to be informed purchasers and consumers of digital projects and engage regional development partners (such as SPC, WHO, and PHIN) to advance digital health policy, architecture and vision at a regional level, and to contribute to

[56] While GHD confirmed this practice is in place, DFAT is encouraged to identify and address any disconnect in communication flows.

the enhancement of existing digital health systems such as through the screening and validating of digital products and partners, and promoting regional standardisation. – *GHD*

14. Raise awareness of the importance of building local IT capacity in the region over the long term in reinforcing development projects (with health being one of many interlinked sectors), advocate for increased prioritisation and investment, and explore avenues to build up the IT digital cohort in the Pacific sustainability in the longer term through other programs, regional mechanisms, or flexible funding pool for partner country capacity building. - *GHD*

6. Conclusion

This evaluation report highlights the key findings of a regional project, implemented in a range of contexts, with multiple partners. The judgements formed by the team were generated through consideration of the data, immersion in the context, and application of comparative experience in other contexts. Through a process of verification and revision through feedback from stakeholders, the evidence and discussion were strengthened. The overall impression is that this is a well performing program, that has achieved significant results in advancing the transition to digital health systems in the Pacific. This is particularly significant given the complexity of the sector and partners involved, and the constraints in the operating environment. Gaps largely relate to the model's design, which focuses on technology, and does not sufficiently consider the development aspects. While the findings and recommendations appear to be far-reaching, the evaluation team acknowledges and expects that stakeholders will receive and respond to suggestions in the context of what is practical, timely and possible in the context of the day. They are intended to stimulate thought and consideration for how the project may be improved even further in the short and long term.

Appendix A. Methodology

Scope

The scope of this evaluation covers the project, and its activities funded under the Health Security Initiative (HISI), a total value of AUD21.9 million across eight countries of Fiji, Samoa, Tonga, Vanuatu, Kiribati, Palau, Nauru and Solomon Islands. This evaluation is based on four sampled countries. The evaluation is undertaken primarily as an accountability measure. The Phase II project (the successor to HSI) commenced prior to this evaluation under the PHR, findings and lessons learned from this evaluation are presented for consideration by DFAT, BES and country partners as part of adaptive management of the new project.

While the project title (BES) is the name of the implementing partner, the scope of the evaluation extended beyond that of BES' role and performance to assess the engagement and contributions of other key stakeholders involved in shaping the project and influencing outcomes. This includes DFAT in its role in oversighting the design and management of the project, and partner country partners who also play active roles in oversighting and delivering aspects of the project. The findings of this evaluation cover the collective efforts of BES, DFAT and participating partner country stakeholders.

GHD regional funding is used by BES differently across country contexts. In some countries, it is the sole or main funding source (such as Nauru and the Solomon Islands) delivering discrete and large-scale activities. In other countries, BES implements multiple projects funded by DFAT (regional and bilateral) and other donors and funding sources (such as in Fiji and Samoa), with regional funding used for either discrete activities or for augmenting bilateral projects. In addition to an assessment of BES activities funded directly by the regional program, the evaluation considered BES' broader work in country, and the regional project's complementarity and contribution to BES activities supported through other DFAT funding sources. However, these are clearly described ensure clarity in the source of funding, for example, the mSupply and supply chain reform work in Fiji is primarily bilateral funded although delivered by BES.

Evaluation team and reflexivity

Handling qualitative data and interpretation involves a level of subjectivity, hence an author reflexivity statement is provided to acknowledge the experiences and role of the evaluation team. The evaluation team consisted of a three-person team lead by a Team Leader, a Pacific Regional Health Specialist and a Health Information Specialist. The evaluation team each possess postgraduate qualifications and substantive field experience in monitoring and evaluation, health information systems and health sector in the Pacific. The Team Leader has ≥20 years of review/evaluation experience in both qualitative and quantitative data analysis and synthesis, and the development of evaluation methodologies. The Pacific Regional Health Specialist has extensive experience and knowledge of health systems in the Pacific, demonstrated knowledge of health sector programs in the Pacific. The HIS Specialist has technical experience in HIS systems in the Pacific with specific experience in use and operations of both BES products and other e-Health solutions.

Design

A Terms of Reference (TOR) guided the design of the Evaluation Plan, which identified KEQs and guiding sub-questions (listed below) and areas to investigate on relevance, effectiveness, efficiency, GEDSI, sustainability, M&E; and One Health and localisation. The areas of query sought to assess if EOPOs were achieved in alignment with DFAT's Design and Monitoring, Evaluation and Learning Standards requirements for ODA-funded programs.

Key Evaluation Questions:

Q1: EFFECTIVENESS: To what extent has the project achieved its EOPOs, and what is the level of significance and satisfaction with outcomes generated?

Sub-questions:

1.1 To what extent have information systems (including in remote and regional health centres) been improved through digitisation (e.g. is the move away from paper-based systems improving efficiencies and cost-savings, workflows, data collection, interoperability, management, analysis, security, privacy, reporting, accessibility, data quality, and overall utilisation)?

1.2 How are the digital health systems being adopted by partners, and what early impacts has resulted (i.e. system adoption in various levels within the health system, sharing of reports for countries to inform changes in policy, systems reforms, decision making, and programs - disease prevention and responses)?

1.3 How satisfied are country partners (i.e. Ministries of Health, hospitals) with the support provided and the outcomes brought about?

Q2: EFFICIENCY: To what extent has the partnership approach and the program modality and its implementation operated efficiently to achieve the desired results?

Sub-questions:

2.1 To what extent did the modality function optimally to bring about outcomes (consider: request initiation and communication processes; harmonisation with partner government systems and regional programs; and governance and decision-making structures).

2.2 How well was the program managed and delivered (consider activity implementation and management of resources, costs, time and risk) and to what extent is the implementing model value for money?

2.3 Did the project's M&E system generate rigorous information that was used for management decision making, learning and accountability purposes?

Q3: GENDER, DISABILITY and ONE HEALTH: What outcomes and progress on gender, equality disability equity, and One Health did the program achieved?

Sub-questions:

3.1 How did the project enable health authorities to collect, understand and address information on gender and disability and how this impacted on access to health services?

3.2 To what extent did the project engage with and support diverse engagement to inform information systems including people with disabilities, and what are the opportunities to support this going forward?

3.3 How, and to what extent, did the project advance a One Health approach in partner countries?

Q4: RELEVANCE: Was the investment the right thing to do, from both Pacific Island country partner and Australian perspectives?

Sub-questions:

4.1 To what extent has the project (that is located within a DFAT-funded regional program) been coherent with DFAT's bilateral programs and been coordinated with other partners?

4.2 How aligned was the project with partner government national HIMS strategies and action plans?

4.3 Did BES demonstrate responsiveness the changing context and priorities (partner governments/DFAT, COVID pandemic)?

Q5: SUSTAINABILITY and LOCALISATION: How, and to what extent, will the benefits of BES Phase I activities be sustained beyond the life of the project?

Sub-questions:

5.1 To what extent are digital health systems likely to be sustained? (Consider the digital health systems that BES has implemented, along with other key areas such as data hardware, workforce, change management. In addition, whether other building blocks could present potential risks that might impact the sustainability of these systems).

5.2 How, and to what extent, did the project advance localisation in partner countries (e.g. transfer of management, promoting local ownership and leadership of project activities; working with and through local systems, and building local workforce capacity to use systems)?

5.3 How can DFAT enhance the contribution of its health information systems support in the Pacific islands?

Assessment framework

The World Health Organization and International Telecommunications Union (WHO-ITU) Framework for a national eHealth vision[57] which identifies seven core eHealth components as foundations for change was used as to develop an assessment framework for the evaluation. These areas and key metrics were identified with criteria for assessment provided at Table 1.

Table 1: Digital Health Systems Technical Assessment Framework

Key Areas	Key Metrics	Criteria
Digital Health Systems	Usability	User satisfaction, ease of navigation, error rate, learning curve, support, accessibility, user-interface
Digital Health Systems	Contextual and Functional Fit	Alignment with business requirements, health priorities of partner country and stakeholders
Digital Health Systems	Interoperability	Seamless data exchange with BES digital health systems (e.g. Medi Trak, Tupaia, Tamanu, Senaite, mSupply), as well as other systems and adherence to foundational standards (HL7, FHIR) and APIs
Digital Health Systems	Scalability	System performance under increased capacity and health needs/priorities
Digital Health Systems	Data Sovereignty	Compliance with national or international legislations, regulations or policies on how data is accessed, collected, stored, used, and disclosed (e.g. ISO, HIPAA, encryption, user authentication, disaster recovery protocols etc)
Digital Health Systems	Customisation	Level of system adaptability to healthcare settings, futureproofing for changes in needs or technology
Digital Health Systems	Infrastructure	Minimum infrastructure required for operation, ability to work in resource-limited settings
Digital Health Systems	Performance	System reliability, efficiency, automation of tasks, minimal downtime

[57] World Health Organization, International Telecommunications Union. National eHealth Strategy Toolkit. Geneva2013.

Key Areas	Key Metrics	Criteria
Data Dimensions	Collection	Data completeness, accuracy, timeliness, and sex disaggregation
Data Dimensions	Integration	Level of integration between systems, reduction of data silos
Data Dimensions	Management	Data organization, tracking, and storage efficiency
Data Dimensions	Analysis	Availability of data analysis tools, dashboards, quality of insights generated, decision-making impact
Data Dimensions	Reporting	Completeness, accuracy, timeliness, accessibility, and sex disaggregation
Data Dimensions	Accessibility	Availability of data to authorised users, ease of data retrieval
Data Dimensions	Quality	Data accuracy, consistency, and completeness
Data Dimensions	Use	Data usage in decision-making processes, impact on public health outcomes
Workforce Development	Capacity to Implement	Workforce Readiness (Competency in skill sets and adequate staffing to implement new digital health systems)
Workforce Development	Capacity to Adopt	Adoption rates, ongoing training programs, user engagement, and staff feedback
Workforce Development	Capacity to Sustain and Enhance	Workforce Readiness (Competency in skill sets and adequate staffing to sustain and enhance the implemented digital health systems), ongoing technical training programs (including knowledge transfer), workforce feedback on sustainability and enhancement needs
Change Management	Effectiveness of Strategies	Success rate of change management strategies, stakeholder engagement, training participation rates
Change Management	System Adoption Improvement	Workforce Readiness (Competency in skill sets and adequate staffing to sustain and enhance the implemented digital health systems), ongoing technical training programs (including knowledge transfer), appropriateness of training and support (cultural sensitivity, inclusive, and fostering of localisation) workforce feedback on sustainability and enhancement needs
Change Management	Resistance Points & Mitigation	Number and nature of resistance points, effectiveness of mitigation strategies, staff feedback

Sampling and data collection

To address KEQs and meet the requirements of the TOR and evaluation plan purposive sampling was undertaken collecting both qualitative and quantitative data. The sampling was commensurate with the evaluation budget and timeframe provided (up to 50 days with more than half allocated for travel covering the four island countries) as well as other evaluations with similar project costs and timeframes allocated.

The evaluation used a mixed methods approach. The evaluation team analysed existing data through a desk review of 114 documents including but not limited to quarterly and country BES reports, past reviews and assessments, country e-Health strategies and documents and financial reports. New data was captured through in-country semi-structured interviews and user survey.

Semi-structured interviews with 99 respondents from four (out of eight Pacific countries) of Samoa, Fiji, Nauru and Solomon Islands were held between 29 October and 31 November 2024. Respondents were based on four categories of in-country partners, regional and multilateral stakeholder, DFAT Post Staff and BES Staff. The in-country partner category were further disaggregated by operational (those who had direct contact with the system, entering data), management (those with operational management capabilities, who may also be users but are Senior Managers), executive (those at Minister, Permanent Secretary or Director level, with decision making capabilities to influence national policy and technical leads (those who have a specific specialisation and lead either at district or national level) (Table 2). The categories were predetermined to ensure stratification of respondent data minimising risk of bias.

Table 2: Sampled respondents

Sampled respondents by Country (**n=101**)	No	%
Nauru	21	22%
Fiji	27	28%
Solomons	19	20%
Samoa	31	27%
Palau	3	3%

Sampled respondents by category (**n=101**)	No	%
In-country partner	88	86%
Regional and multilateral stakeholder	2	2%
BES Staff	8	8%
DFAT Post Staff	4	4%

In-country partner by seniority level (**n=88**)	No	%
Operational	53	64%
Management	22	27%
Executive	7	8%
Technical lead	1	1%

A snowball method was used to identify and approach participants via referral from in-country partners, BES staff and or DFAT Post staff. Verbal consent was provided, and data was collected verbatim via notetaking informed by a pre-determined set of open-ended questions (see below).

Interview Questions

1. What have been the key benefits of the BES program from your perspective?
   Explore
   - Intended outcomes (related to: EOPO1 - How systems are used to collect data, to access data and how disparate systems are integrated; and EOPO 2: Data use, integration, quality, workforce and change management to use data)

- What has changed and why – explore changes in policy, health services and outcomes, links and partnerships bought about by the program (or unexpected benefits)
    a. Why these changes are significant and their implications
    b. Are there any unintended outcomes (positive or negative)?

2. How relevant is the support provided by BES to the health systems' needs of your country? Explore
    - Links to national health strategies or priorities (including but not limited to One Health, gender equality and disability inclusion etc)
    - Links to other relevant development programs (e.g. SPC, World Bank, UNICEF and WHO)
        a. Alignment to Australian Development Plans (such as DFAT Country Development Response Plans or Partnership Development Plans)
        b. The extent to which the support remained relevant over and after COVID (and benefits or challenges of any pivot)

- Have some digital health systems not brought about their expected benefit, failed, or encountered challenges?
  Explore the underlying causes
    c. Governance
    d. Strategy and Investment
    e. Standards and Interoperability
    f. Technology
    g. Infrastructure
    h. Policy and Legislative Compliance
    i. Workforce

3. How satisfied are you with the program? What has and has not worked well about the program and why? (provide specific examples)
   Explore:
    - How requests were initiated and responded to
    - The implementation of particular digital health system or responses to requests for support (most and least effective)
    - Did the program build on existing HIS or other health systems? Did it replace or was it newly introduced?
    - If and how partnerships have enabled high quality support and implementation, and joint / equitable decision making

4. Are you aware of progress in relation to gender and disability, and any specific outcomes in this area (provide specific examples)? Explore:
    - Whether gender and disability were prioritised (why / why not)
    - Instances of health authorities being better able to collect, understand and address information on gender and disability and how this impacted on access to health service
    - instances of integration of sex-disaggregated data or data on disability into digital health systems/ requests

5. How likely is it that the benefits will be sustained, and what factors may impact on future sustainability?
   Explore
    - Elements of BES activities - Data, technology, workforce, change management
    - Building blocks / wider enabling environment (i.e. Governance, Strategy and Investment, Standards and Interoperability, Technology Infrastructure, Policy and Legislative Compliance, Workforce)

6. What lessons and issues have arisen during implementation?
   Explore lessons and success factors (as relevant)
   - Building the capacity of the digital cohort over time.
   - The building blocks required for adoption and sustainability (of software and use of the system and information generated) in Pacific Island countries
   - Implementing digital health systems through regional collaboration, in a context where country partners are offered multiple (and competing) digital health systems by various donors and partners.

7. What could be done differently, and / or how could Australia? improve support for digital health systems in the Pacific Islands?
   Explore
   a. Outcomes / activities / approaches
   b. Delivery partners
   c. Delivery modalities
   d. Regional engagement

Data was collected until saturation between country contexts. Data sources were triangulated with repeat interviews or validation held to confirm with in-country partners, especially for areas where opinions and perspectives differed. This approach ensured the evaluation team had fully captured and properly understood responses provided.

A questionnaire on SurveyMonkey was distributed via email to system users collecting 24 responses capturing insights on levels of satisfaction and experience on using the system. The survey was open to all system users across all eight of the BES countries, and while open to all countries, it was largely completed by users from sample countries – 25% Fiji, 25% Nauru, 12.5% Samoa, 25% Solomon Islands, 8.33% Tonga, 4.17% Kiribati.

Analysis and reporting

Considerations and judgement criteria against different sources of data was pre-determined and used for analysis and included in the evaluation plan with details provided in Table 3 below. The Consolidated criteria for reporting qualitative research (COREQ)[58] has been used to ensure a robust approach to data reporting. Qualitative data was analysed using thematic analysis. Coding and analysis were arranged into themes to aid the answering of KEQs and interview questions.

In relation to the assessment of EOPOs, judgements and analysis was within the scope of the pre-determined criteria of End of Program Outcomes (EOPOs) set by the program and in alignment with the DFAT Design, Monitoring, Evaluation and Learning Standard 5. However, it is acknowledged that understanding of the EOPOs may have differed between DFAT (as provided in the initial TOR) and BES as used in their monitoring and reporting matrixes.

Following in-country data collection, the evaluation team coded and analysed interviews at the end of the day using robust discussions, including differences of opinion discussed until consensus. Where views differed between team members and clarification was needed, the evaluation team conducted follow-up interviews (including with BES staff members where necessary). To protect privacy and

[58] Tong A, Sainsbury P, Craig J. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. International Journal for Quality in Health Care. 2007;19(6):349-57.

confidentiality in discussions, participant IDs have been used to report respondent feedback. Personal names and identifying details against respondent interviews were removed. Data was collected until saturation was reached.

Quantitative data (mainly from the online survey) was analysed using statistical analysis and reported using percentages.

Table 3: Methods for answering evaluation questions

KEQ	Considerations and judgement criteria	Sources of data to KEQ	Data collection method
1 EFFECTIVENESS **To what extent has the project achieved its EOPOs, and what is the level of significance and satisfaction with outcomes generated**	***Considerations:*** ● EOPO1 has a focus on the quality of the technology (i.e. how systems are used to collect and access data and how disparate systems are integrated). ● EOPO 2 has a focus on systems adoption at all levels (Operational, Management and Executive). ● The assessment requires analysis of the needs, resources, contexts and settings at a country level. ● Outcomes changed over the course of the project as it was upscaled. ***Judgement criteria:*** ● Digital Health Systems Technical Assessment Framework ● Use of FIMR criteria (for effectiveness) ● Project largely achieved intended outcomes (current EOPOs), considering project resources, country contexts, and constraints (noting these changed over time),	***Existing*** ● Summary of the range of outcomes achieved to date (5 digital health systems and beyond). ● Project reporting using the M&E framework, which reports results against IOs and EOPOs ***New*** ● Stakeholder views on the outcomes achieved (examples) ● Stakeholder perspectives on which outcomes are most significant and the reasons for this. ● Stakeholder satisfaction with the support provided and level of outcomes achieved.	● Compilation of Results Charts from desk review and refinement through consultations and validation. ● Interviews with all stakeholder groups. ● Country level assessments.
2 EFFICIENCY **To what extent has the partnership approach and the program modality and its implementation operated efficiently to achieve the desired results?**	***Considerations:*** ● Requires analysis of the extent to which various aspects of the project have supported the achievement of outcomes and performance. ● Capture of success factors, challenges, lessons learned. ● Requires an understanding of how M&E was used to inform decision making. ***Judgement criteria:*** ● Use of FIMR criteria (for efficiency)	***Existing*** ● Budgets and expenditure reports ● Activity implementation tracking ● How project requests were initiated, and roles of partners in decision making (BES walk through) ● Project reports detailing the strengths and weakness of project implementation and management arrangements.	● Desk review. ● Interviews with all stakeholders. ● Team analysis based on information obtained in relation to other review questions (i.e. effectiveness).

KEQ	Considerations and judgement criteria	Sources of data to KEQ	Data collection method
	● Investment being largely well directed towards bringing about outcomes ● Effective management of scope, resources costs, time, risk. ● Strong communication, M&E, governance, decision making, harmonisation with government and regional bodies.	***New*** ● Stakeholder perceptions on what did and did not work well and why. ● Stakeholder perceptions on key elements of project and partner (BES) and DFAT role and performance.	
• **GENDER, DISABILITY and ONE HEALTH** **What outcomes and progress on gender, equality disability equity, and One Health did the program achieved?**	***Considerations:*** ● Requires an understanding of the project's strategy to integrating gender equality and disability inclusion. ● One-health was not a requirement of the project, with the evaluation focusing on examples and lessons. ● Requires clarification from GHD on the gender equality and disability inclusion requirements applied to BES. ***Judgement criteria:*** ● Use of FIMR criteria (Gender Equality and Disability inclusion) ● Adherence to the HSI One-Health and gender equality and disability inclusion requirements in place at over the life of the project, balanced with DFAT's broader requirements on gender equality and disability inclusion.	***Existing*** ● The project's gender equality and disability inclusion strategy / approach (BES walk-through). ● Sex disaggregated data, and data on disability and associated analysis detailed in project reports. ● Examples / evidence of people with disability being engaged in projects (if available). ● Examples of the implementation of a One-Health approach in BES reports. ***New*** ● Stakeholder perceptions on how well gender equality and disability inclusion has been integrated (approach, outcomes, lessons).	● Document review (BES reports and HSI gender equality and disability inclusion requirements). ● Interviews with stakeholders.
4: RELEVANCE **Was the investment the right thing to do, from both Pacific Island country**	***Considerations:*** ● Requires an understanding of if and how the context changed overtime, and how the project adapted. ● Requires an understanding of the broader context, including other key actors and partners working in digital health in the Pacific (i.e. regional bodies).	***Existing*** ● How the outcomes and project changed over time, in relation to the context and expanded scope (BES walk-through)	● Review of key Australian documents (HIS objectives, CRPD and PPDs).

KEQ	Considerations and judgement criteria	Sources of data to KEQ	Data collection method
partner and Australian perspectives?	● Closely linked to efficiency, and whether the project model was the right one. ***Judgement criteria:*** ● Use of FIMR criteria (for relevance) – if the EOPOs and the project remained relevant to Australia and PICs.	● Australian and Pacific Island country national health strategies in place at the time ***New*** ● Stakeholder perceptions on how well BES responded to changes in the context (i.e. COVID and health partner environments). ● Regional body perceptions of relevance in relation to regional directions.	● Review of regional and Country national health plans and strategies. ● Interviews with stakeholders.
5: SUSTAINABILITY & LOCALISATION **How, and to what extent, will the benefits of BES Phase I activities be sustained beyond the life of the project?**	***Considerations:*** ● Requires assessment of the enabling environment and core building blocks to ensure sustainability beyond the product itself. ● Requires information relating to likely funding, resourcing and other types of support that partners have or are planning to put in place to address gaps in building blocks. ● Requires an understanding of how requests were initiated and how partners participated and engaged in the project. ***Judgement criteria:*** ● ITU-WHO eHealth Assessment Framework (for core building blocks). ● Use of FIMR criteria (for sustainability and localisation) ● Project has embedded sustainability and localisation within its scope of control. Partners value the systems and have a commitment (funding and plans) to ensure their ongoing implementation and maintenance.	***Existing*** ● Project documentation addressing sustainability elements (strategy to ensure localisation and sustainability - BES walk-through). ● Elements to be sustained through the new partnership (BES walk-though) ***New*** ● Stakeholder perceptions on whether the core building blocks for sustainability are in place (or are likely to be put in place). ● Partner perceptions of the value the systems and their plans to support and extend it. ● Regional bodies or donors interested in supporting aspects of the project.	● Desk review. ● Interviews with all stakeholders. ● Team analysis based on information obtained in relation to other review questions.

KEQ	Considerations and judgement criteria	Sources of data to KEQ	Data collection method
		• Perceptions on how DFAT could enhance sustainability (beyond BES).	

Evidence weighting matrix

An evidence weighting matrix was included to demonstrate how evidence was used to assess and determine performance against specific areas. This informed how the findings were drawn up and the justifications provided. Determination against each criterion was based on the available documentation used for the review with respondents' feedback included to weigh in against areas.

Description	Judgement criteria
Very weak	This is where there is little to no information found either in reports or reported by respondents.
Weak	Evidence is considered weak where there is little information identified by respondents or there is only evidence from internal reports and not collaborated from other sources
Adequate	There is adequate evidence from multiple sources (including reported multiple times from different individuals) and reports to contribute towards the criteria, but evidence is limited and there may be other factors to consider (but within the remit of the project to improve) to meet the criterion.
Strong	There is evidence from multiple sources confirming that the criterion has been met.
Very strong	There is strong evidence from multiple and reliable sources to demonstrate evidence to confirm meeting the criteria.

Validation

The Evaluation Plan identified a collaborative and participatory approach to the findings and recommendations from the evaluation. As such, a part of the evaluation included the validation of findings i.e. discussion with BES and DFAT as primary stakeholders to ensure an iterative approach to the recommendations and to also allow BES to provide additional evidence, where relevant, for 360°-degree feedback. To prevent conflicts of interest and maintain the independence of the evaluation team's findings. Changes to the findings and or recommendations will be at the discretion of the evaluators ensuring that a robust and rigorous approach is used to develop the final report. While using feedback to validate, capture additional data and refine judgements in certain areas, the evaluation team endeavoured to ensure no bias to the findings and data collected were introduced in this process.

1.1 Limitations and strengths of the evaluation

This section describes the limitations and strengths of the evaluation. It is common for evaluations to describe limitations, however, the evaluation team felt it was important to also describe, where relevant, how limitations were managed to give the reader a better understanding of the rigour incorporated into the methodology including the collecting, handling and analysis of the data collected that informed the results and recommendations of this report.

The evaluation team found great difficulty in determining the scope of BES's work in-country, particularly Fiji and Samoa. The team sought clarification from GHD and BES to try and understand the work funded under GHD (DFAT regional funding) from other DFAT bilateral and non-DFAT work BES had undertaken in -country. While it is of benefit for collaborations across development activities, either within DFAT (regional and bilateral) and other development partners (for example, multilateral organisations such as the World Bank, WHO and the UN agencies), it is still important for an evaluation to clearly understand the activities funded under the financial resources for a specific project (and what was not). This lack of clarity resulted in the evaluation team only understanding half-way through the evaluation that all the mSupply work in Fiji, including the supply chain reform was funded under DFAT's bilateral program. Although there were linkages across all that BES was

undertaking in Fiji, it unfolded that only Tamanu, and its activities were directly funded under GHD (i.e. within scope for this evaluation). In saying this, as mSupply was one of the systems implemented by BES within this Project and was reported on by BES in reporting to GHD and referenced in associated DFAT IMRs to inform on its assessment of the investment's performance, it was deemed important to include discussions against it in the evaluation. However, where this was included, narratives have been included to clarify it was funded under the DFAT bilateral program.

Sampled countries (Samoa, Fiji, Nauru and Solomon Islands) were pre-determined prior to the recruitment of the evaluation team which did not allow the evaluation team ability to undertake an intentional approach in selecting the most appropriate context and setting for the evaluation. However, the evaluation team introduced purposive sampling to identify individuals of specific characteristics, which included various stakeholders including in-country partners, regional and multilateral stakeholders, DFAT Post Staff and BES Staff members. In-country partners were further recruited from operational, executive or management level. Hence, although countries were selected based on access and logistical considerations, respondents were intentionally recruited, ensuring responses covered the full range of users, policy and decision makers (in-country), funders or development partners and BES staff. Also, responses were stratified during analysis (i.e. BES staff responses and perspectives on the Project were separately analysed to remove bias). A rigorous approach has been undertaken in both recruitment and analysis, ensuring findings are evidence-based, relevant and applicable to the context. The team also incorporated a fifth country (Palau) via remote consultation to supplement the discussions from other countries. Project implementation Palau is considered a success. This inclusion of Palau was determined to mitigate any bias that may have resulted in an unbalanced negative view in the overall assessment. This approach seeks to ensure that findings are not limited to the four Pacific Island countries selected for in-country consultations and are more truly reflective of the full BES implementation model. The rigour involved in the methodology safeguards the findings and subsequent recommendations.

There was also a lack of a sample denominator - i.e. the total number of potential respondents against respondent category could not be substantiated. However, the evaluation sampling is largely from in-country partners (86%) and operational level respondents (64%), and saturation was reached (i.e. no new evidence reported between country contexts) presenting strong evidence for applicability of findings to contexts and user experiences of BES systems. Moreover, sources for data collection were comprehensive, i.e. included published and unpublished, internal and external country reports, group and one-to-one consultations and a user experience survey, across six of eight Pacific Island contexts. As such, the lack of denominator does not limit the applicability of the findings and recommendations to the context of the countries involved.

Systems within these countries were also comparable. For example, Nauru and Samoa have relatively less complex and smaller health systems compared to Fiji and Solomon Islands, which have larger, multi-level complex health systems. Responses and experiences were found to be reflective of these contexts - i.e. similarities in Samoa and Nauru and similarities in experiences between Fiji and Solomon Islands, although each country did have their own distinctive features and experiences. These countries and activities combined are seen to capture a reasonable proportion of the work that BES has undertaken, hence, the findings of this report are largely representative of the contexts that e-Health solutions are being delivered in the Pacific.

The evaluation is informed by the views of in-country stakeholders operating in the health sector, who may not have a full or correct understanding of the technical elements of the digital health systems. Stakeholders were invited to share their experiences with and perceptions of the systems, with a series of quotes provided in Appendices B and C. While some quotes may contain minor technical inaccuracies, local perspectives are presented in accordance with DFAT Monitoring and Evaluation (M&E) Standard 10: Independent Evaluation Reports, M&E Standard 10.11, which states

'Alternative views must be presented, especially for important, controversial, or disappointing findings. They must not be immediately dismissed but seriously considered. Key stakeholder views such as those of the partner governments and national partners must be given sufficient attention, and balanced by the implementation team, DFAT or other important stakeholder views.' The presentation of country partner perspectives is considered particularly important as program reporting is almost entirely reliant on BES reports and perspectives[59].

The evaluation findings and recommendations deal with a substantive amount of qualitative data which requires a level of subjective and interpretive analysis, which is a common feature of all international development evaluations. Rigorous and multiple qualitative research methods have been used to limit bias, such as using a pre-determined framework for KEQs and assessment, coding by all three members of the evaluation team, the selection of an evaluation team with varied experience and qualifications, and the involvement of validation workshops with DFAT GHD and BES. Authors declare no conflict of interest (i.e. they do not stand to benefit from the publication of findings either positive or negative).

Lastly, it is also important to note the evaluation was delivered within limited scope as determined by the TOR, specified country contexts (four countries selected by DFAT), and limited time in-country and budget. All attempts have been made to undertake a robust and comprehensive evaluation; however, these factors could have resulted in potentially missing key stakeholders (e.g. respondents on leave or on travel while the evaluation team was in country), and most interviews were held in central locations with limited access to rural or remote contexts. The evaluation has had no interactions with OPDs. While strong attempts were made, due to limited time in-country and non-responses from OPD organisations (despite multiple follow-up), no consultations resulted.

[59] The investment was not subject to an external mid-term review, and BES reporting is not informed by qualitative data collection process that systematically capture the views and perspectives of country partners, and support their participation in the analysis and interpretation of program progress, noting some qualitative positive changes stories were captured.