NAURU

NEEDS ASSESSMENT REPORT

Executive Summary

The Republic of Nauru faces strong economic challenges due to the depletion of its phosphate resources, resulting in heavy reliance on imports, foreign subsidies and aid. The country has limited access to sustainable export products, with climate change adding to its vulnerability. Although Nauru faces obstacles in access to payments and infrastructure development, it is working to improve its economic growth, educational opportunities, health services and technological capacity to address its unique challenges. As a democratic government with free and accessible education and healthcare systems, Nauru is committed to further empowering its communities through community digital transformation, particularly leveraging the upcoming deployment of the submarine fibre optic cable and Nauru's investment into the first Starlink Community Gateway in the Pacific.

Smart Villages Smart Islands, a joint programme of the ITU and other UN agencies, aims to improve connectivity and provide sustainable services to disadvantaged island communities by focusing on improving broadband connectivity, making it affordable, enhancing digital literacy and providing digital services. The project aims to improve well-being and livelihoods through digital services and partnerships with organisations such as the ITU, leveraging the National Sustainable Development Strategy. To this end, this systematic need assessment of broadband connectivity, affordability, digital skills and service delivery was conducted to help tailor interventions to the needs of each community.

The needs assessment identifies community needs and root causes in order to prioritise efforts to address Nauru's challenges. The focus is on improving broadband connectivity, last mile connectivity, affordability, e-commerce opportunities, digital literacy and sustainable network services. Challenges include under-investment in telecommunications, regulatory issues and barriers to technology access. Priority needs include improving broadband connectivity, last mile acceleration, e-commerce development, access to digital devices and digital literacy education to empower the community for a more inclusive and prosperous future in the digital age.

The decision phase involves synthesising information from the previous steps to develop potential solutions that meet the community's priority needs in addressing digital challenges in Nauru. Proposed solutions include improving broadband connectivity, promoting digital literacy education, increasing network resilience and providing access to essential digital services. Prioritised potential solutions focus on infrastructure investment, accelerating last mile connectivity and developing digital inclusion initiatives. The Smart Island project in Nauru aims to establish a Digital Inclusion Centre to address the various priorities identified, including improved education opportunities, digital literacy training and digital services implementation for students of all ages and further to the general public of Nauru. Stakeholder mapping involves working with government departments, state-owned enterprises, international organisations, community leaders and others to ensure the success of the project. The next steps for the project include finalising a location for the Digital Inclusive Centre, establishing a task force, identifying digital services, completing procurement processes, setting up the centre and launching it to provide a platform for Digital evolution for all members of the community on Nauru.

SMART ISLAND NAURU - COMMUNITY EMPOWERMENT

Table of Contents

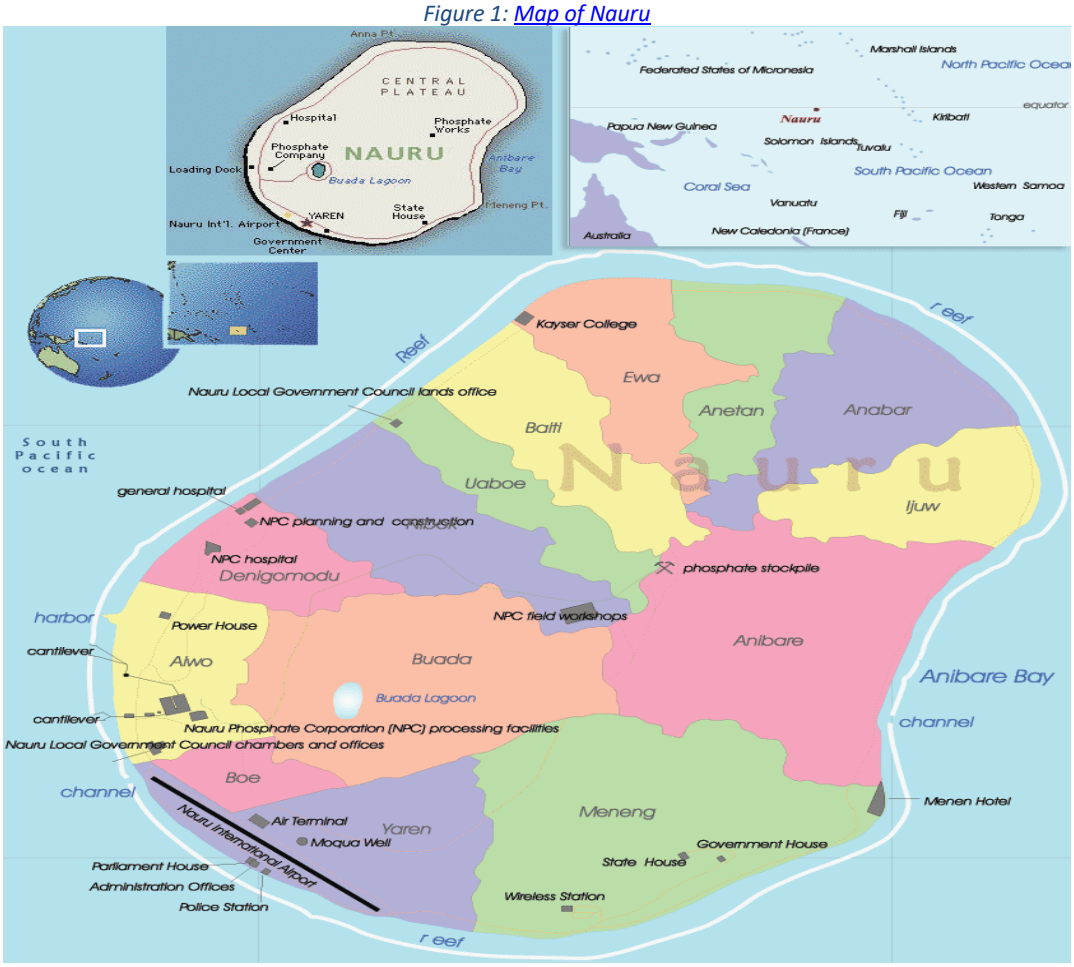
SMART ISLAND NAURU INITIATIVE

BACKGROUND

ABOUT NAURU

The small island nation of the Republic of Nauru, also known as Pleasant island or in the local dialect as Naoero, is situated 42 kilometres south of the equator line. The tiny Micronesian country has an area of only 8.1 square miles with a population of over 13,000 that includes a mixture of locals and foreigners. It is the smallest republic and island nation in the world. Nauru is a matriarchy, where tribal lineage is passed on to the next generation through the mother. Originally, it has 12 tribes as depicted by the 12-pointed star on its flag but unfortunately 2 of the tribes are now extinct.

Figure 1: Map of Nauru



Nauru is unique compared to other island nations as it only has one main island and no outer islands and also does not have villages. Nauru instead has 14 districts that make up 8 constituencies. The 14 districts are listed below:

1. Boe	8. Ewa
2. Aiwo	9. Anetan
3. Buada	10. Anabar
4. Denigamodu	11. Ijuw
5. Nibok	12. Anibare
6. Uaboe	13. Meneng
7. Baitsi	14. Yaren

This uniqueness proved to be a challenge at the start of the Smart Islands project journey as Nauru was different to all the other countries undergoing the Smart Islands project where a remote island or village was selected as the pilot location.

Nauru uses Australian currency (AUD) and its GDP per capita in 2023 was $12,060[1]. Being such a small island surrounded by the ocean, fishing plays an important role in providing both jobs and food on the table for families. This is also because the land of Nauru is not as habitable for large scale farming and planting due to limited land size and phosphate mining.

Phosphate was first discovered on Nauru in 1900 and phosphate mining quickly became the island's main source of income, pushing Nauru to become one of the wealthiest countries back in the 1900s. The reserves however, began to run out and the phosphate mining has slowed down currently leaving the island's topside barren with phosphate pinnacles and about 80% of the land deemed unsuitable for farming and planting. This in turn has caused the nation to depend heavily on importing overseas goods for sustenance. Being so small and surrounded by the ocean, fresh water reserves are also not available on the island and a desalination plant provides the island's main source of water (desalinated).

Governance

Nauru is a democratic country governed by a President and appointed members of his cabinet. Almost a third of the population works within the government. The laws of the country are passed through Parliament where every district is represented by Members of Parliament (MPs) that are elected by voters to represent their constituency for a 3-year term. The 14 districts are divided into 8 constituencies as listed below:

[1] GDP per capita (current US$) - Nauru | Data

1. Boe
2. Aiwo
3. Buada
4. Ubenide – Denigamodu, Nibok, Uaboe and Baitsi
5. Ewa, Anetan
6. AIA – Anabar, Ijuw and Anibare
7. Meneng
8. Yaren

Economy

Nauru's economy faces challenges common to many small island states, including limited size, geographical remoteness and scarce natural resources. The depletion of phosphate resources and land degradation from strip mining have severely limited agricultural potential, leading to heavy reliance on imports for essential goods. The economy is sustained by phosphate mining, processing of asylum seekers in the Australian Regional Processing Centre (RPC), fishing licences, and the Australian Seasonal Workers Program.

Phosphate, despite being Nauru's main export, is no longer as lucrative as licensing foreign fishing vessels in the rich skipjack tuna grounds. The government heavily relies on foreign subsidies and aid, with Australia and New Zealand being primary import sources. The establishment of the RPC in 2001 provided significant financial contributions, comprising nearly 20% of Nauru's GDP by 2007. Though RPC activities were downscaled in FY2023, economic growth is expected to stabilise at 1.8% in FY2024 and 2.0% in FY2025, driven by infrastructure advancements and the Pacific Flights Program.

While agriculture, fishing, manufacturing, and tourism play minor roles in Nauru's economy, the exclusive economic zone and commercial fishing licences have become steady revenue sources. The Australian government's aid and subsidies play a pivotal role in sustaining Nauru's economic stability. Despite limited natural resources and heavy import reliance, Nauru is seeking to boost economic activity through infrastructure development and increased trade links, aiming for sustained growth in the coming years.

The main challenge faced by Nauru is the lack of sustainable export products and services, as its primary phosphate resources are depleting and mining secondary phosphate resources may not be environmentally viable. While the RPC provides employment for Nauru citizens, the overall economic benefits are minimal compared to other sectors. 2The Fisheries sector mainly generates revenue from fishing licences rather than productive activities with small-scale fishermen. As a result, Nauru relies heavily on these sources for short-term revenue, indicating a need for new drivers of growth. The limited availability of land, Nauru's isolation, and the dominance of State-Owned Enterprises over Small and Medium Enterprises have hindered private sector growth.

Education

Education in Nauru is free and accessible to everyone on the island including foreigners. There are 11 public schools across the island located in different districts and attendance to a school is not based on where you live (district). A child that lives in Boe district may attend the infant school in Meneng district and vice versa. Preference is entirely up to the parents/guardians whether it may be due to close proximity of the school to that of their home or if they prefer a teacher at another school.

Secondary education in Nauru consists of compulsory 4 years with the option of two pathways. From Y11 to Y12 students can either opt into obtaining a Queensland Certificate of Educational or go into vocational training (TVET). For those seeking higher education opportunities, many students opt to study in Australia, with English being the primary language of instruction. There are various scholarships available to students who want to further their education overseas.

Nauru also hosts a campus of the University of the South Pacific (USP), where residents can pursue various degree programs and courses, including accounting, management, early childhood education, and computer studies, among others. The campus provides additional opportunities for distance learning to further enhance educational access.

Schools

1. Nauru Secondary School
2. Nauru College
3. Sacred Heart College
4. Nauru Primary School
5. Sacred Heart Infant School
6. Anetan Infant School
7. Nibok Infant School
8. Boe Infant School
9. Yaren Infant School
10. Meneng Infant School
11. Able Disabled Center

Figure 2: Nauru College

Health

Health care services are also free on Nauru with the exception of certain services requiring payment like a medical visa for an overseas student and foreigners seeking medical treatment. There is one main hospital called RON (Republic of Nauru) Hospital where general out-patients and emergency patients go to seek medical treatment and it is also where the hospital pharmacy is located. Nauru also has a public health hospital where services such as family planning, dialysis and baby clinic are located. The health system also has two small dental clinics located in Yaren and Anibare district.

Nauru has become the first country in the in the world where every single clinical encounter in public system, is being recorded in a single national Electronic Medical Record (EMR) system, known as Tamanu, which ensures that every clinical encounter within the public healthcare system is recorded efficiently. This innovative system provides point-of-care access for all clinicians and features a unique architecture that allows for offline usage across multiple facilities. Unlike centralised national health record systems, Tamanu operates with a distributed data model, enabling healthcare providers to function seamlessly even without a connection to the central server. It is the only free and open-source EMR globally that offers this dual online-offline capability and is accessible via both desktop and mobile platforms.

Since the launch of Tamanu at the Republic of Nauru Hospital in January 2023, healthcare workers have eagerly embraced the transition from paper-based records to this efficient digital system. Within just four weeks, there has been rapid migration of patient records, with over 20,000 encounters recorded in

Tamanu, significantly improving the management of patient follow-ups and complex cases. Local health workers have noted the advantages of having a secure system that allows for quick access and sharing of medical data across facilities, enabling patients to maintain a continuous medical history and receive cohesive care when moving between primary healthcare services, hospitals, and specialty clinics.

The deployment of Tamanu marks a significant milestone in Nauru's digital health journey, positioning the country as a leader in e-health transformation in the Pacific. The future of e-health in Nauru looks promising with a scalable and sustainable model almost in place, empowering healthcare workers to better meet the health needs of the Nauruan population while contributing valuable health data that aligns with global health indicators for policy-making.

Finance

Nauru uses Australian currency (AUD) and has only one bank on the island. Bendigo Bank, which serves as the main bank for most Nauruan and is said to be an agency of Bendigo Bank rather than an actual branch. Digital services like mobile payments are not yet available on the island and online transactions as a form of payment are still new to the island. While the majority of people on Nauru still use cash-based transactions, some are getting accustomed to owning and using a bank card for payments at places that offer EFTPOS. Bendigo Bank ATMs are available on the island, with a $2 fee for every withdrawal.

A lack of access to payment gateways is a major obstacle for export-focused businesses and state-owned enterprises in Nauru. The introduction of Electronic Funds Transfer at Point of Sale (EFTPOS) has been well-received by both consumers and businesses, with high adoption rates. The population in Nauru is eager to embrace digital solutions, including digital payments. Bendigo Bank, does not offer loan products due to a lack of a strong savings culture and financial literacy in the country. This has hindered the bank's ability to provide loans, particularly to SMEs. The regulatory environment for credit is underdeveloped, resulting in limited credit options and the prevalence of unsustainable practices like pay-day lending. The absence of an insurance provider in Nauru increases risk for SMEs and hampers investment opportunities.

As a mostly cash-based transaction island, Nauru is still new to digital services in terms of Finance. While few businesses offer EFTPOS as a cashless payment option, the only other cashless payment option is that of a direct online-banking transfer. This has proven to be unsafe, a hassle and risky at times. A customer would have to get the bank account details of whoever they are purchasing a good or service from and then take a screenshot of payment and either show the receiver in person or send the screenshot through social media.

Climate-change related challenges

The state of climate change adaptation and disaster risk reduction in Nauru is being addressed through the Nauru Framework for Climate Change Adaptation and Disaster Risk Reduction (RONAdapt). This framework aims to increase resilience to the impacts of climate change and natural disasters by improving

critical infrastructure such as water infrastructure, conducting community awareness programmes, strengthening technical capacity, implementing multi-hazard early warning systems, establishing data sharing policies, integrating risk assessment with impact-based forecasting, improving observation and monitoring networks, and accessing climate finance.

Nauru is an uplifted fossilised coral atoll, one of three large phosphate rock islands in the Pacific Ocean, with the highest point only 65 metres (213 feet) above sea level. Like most of its neighbouring island nations, Nauru faces the problem of rising sea levels due to climate change. Not only has the sea level slowly risen, forcing the island to build sea walls, but the temperature has also risen. Nauru is naturally humid, being so close to the equator, but as the years go by, the humidity seems to be getting much higher during the dry season. It has also been noticed that rain has become more irregular, with strong winds, which is unusual for the island.

Efforts are needed to address Nauru's vulnerabilities, including geographical isolation, limited land mass, environmental degradation, lack of financial resources and capacity constraints. Nauru's current early warning system involves text messages from Digicel and Nauru Emergency Services (NES) personnel driving around the island in their vehicles (fire trucks, ambulances, etc.) and sounding their sirens. This is not ideal - if there is a power failure on the island or a mechanical problem with the vehicles, neither process would work.

Connectivity

Digital connectivity has seen significant growth in recent years. At the start of 2024, there were 10,600 internet users in the country, representing an internet penetration rate of 82.7 percent.[2] Additionally, 8,400 social media users were recorded in January 2024, making up 65.5 percent of the total population. The number of cellular mobile connections in Nauru also reached 15 thousand in early 2024, exceeding the total population by 117.1 percent.

The telecommunications sector in Nauru is primarily dominated by Digicel, which has been providing mobile and internet services to the country. Despite being a small island nation with just over 12,000 residents, Nauru has a well-established telecommunications infrastructure, with Digicel operating seven active towers covering the entire 21 square kilometre island. The introduction of 3G in 2014 and LTE in 2016 further enhanced the connectivity options available to Nauruans.

Fixed services in Nauru are limited, with Nauru Telecom, the government monopoly, facing challenges in providing reliable services. The fixed landline network is in disrepair, leading most people on the island to rely on mobile phones for voice communications. Fixed broadband internet access is mainly offered to government departments and businesses, with limited availability to the general population.

Nauru has been primarily reliant on satellite links for international internet capacity, with plans in place to connect to an undersea fibre-optic cable in the future, as well the establishment of a Starlink Community Gateway system, which was a turning point in the Telecommunications landscape, making

[2] Digital 2024: Nauru — DataReportal – Global Digital Insights

Nauru the first Pacific country to host a Community Gateway. The country has also seen an increase in data usage, requiring multiple satellite upgrades to meet the growing demand for connectivity. Additionally, the government has taken steps to improve domestic connectivity, with the implementation of a domestic fibre-optic cable connecting key institutions on the island.

Nauru previously had two main internet service providers and one used to serve as the only mobile and data service provider. These are Digicel and a State-Owned Enterprise (SOE) called Cenpac. The majority of the island uses Digicel with only a handful of Government departments and businesses using Cenpac. The recent launch of a third provider, Neotel, has introduced more competition meaning mobile and data costs have gone down. The daily costs of mobile, Wi-Fi and data services were very expensive back when Digicel was the sole provider of such services and connection was poor and unstable. A person used to spend on average $20AUD daily to make calls, texts and to use mobile data. This has changed and the most current price for Digicel plans are listed below:

PLAN	PRICE	INCLUDES
Unli Talk & Text	$3	-Unlimited local voice -Unlimited local SMS -Valid for 24hrs
Super Magmain $5	$5	-5GB Data -10mins local voice -10 local SMS -Valid for 24hrs
Super Magmain $30	$30	-25GB Data -50mins local voice -50 local SMS -Valid for 7days
Super Magmain $55	$55	-50GB Data -100mins local voice -100 local SMS -Valid for 14days
Super Magmain $99	$99	-200GB Data -Unlimited local voice -Unlimited local SMS -Valid for 30days

Figure 3: Digicel Plan prices

There has been a noticeable shift in people communicating with each other through VOIP Apps such as Messenger and Whatsapp, instead of traditional voice call and SMS channels. This has played a pivotal role in increasing the Internet usage and dependency of individuals and households, and the growing demand for more affordable options. The launch of Neotel in early 2025, has introduced 5G mobile

services in Nauru, which has significantly improved speed, quality of service and options for the customers.

PLAN OFFER	PRICE $	VOICE/SMS ON NET	VOICE OFF NET	SMS OFF NET	DATA ANY USE (GB)	VALIDITY DAYS	OUT OF PACK DATA ($/GB)	OUT OF PACK VOICE (¢/MOU)	OUT OF PACK SMS (¢/SMS)
EGOW	4	UNLIMITED VOICE/SMS << >> NEOTEL TO NEOTEL	15	15	10	2	2	20	5
EOKWOE	30		10	10	60	7	2	15	5
EAE	35		NIL	NIL	NIL	30	1	15	5
EAPWE	45		20	20	80	14	1	15	5
IYIBUR	89		100	60	250	30	1	15	5
NEO 5G ROUTER	150	NIL	NIL	NIL	UNLIMITED	30	#	#	#

Figure 4: Neotel Plan prices

CENPAC, used to lease internet bandwidth primarily from Avcomm and distributed it to government and state-owned enterprises. However, since late last year, CENPAC has been distributing bandwidth, obtained through the Starink Community Gateway and using Avcomm as a backup provider. Cenpac also operates and manages Nauru's country code top level domain name (.NR) and has deployed a six-kilometre fibre-optic backbone for government use on the west side of the island. In short, since the activation of the Starlink Community Gateway, Cenpac customers are receiving faster and more stable connection, at much reduced pricing.

The Ministry of Telecommunications is responsible for sector oversight and government's ICT deployment. The Regulatory Directorate of the Department of Telecommunications is responsible for sector regulation. The National Sustainable Development Strategy 2005 – 2025 sets out the goals for the ICT sector, the two main short-term milestones being: i) every household / business has access to a prepaid telephone system based on wireless technology; and ii) district / household level Internet connectivity and fixed line systems are properly maintained for the public service.

ICT Plan, investments, development and ICT's daily operations align to Nauru Sustainable Development Strategy (NSDS). ICT aligns its activities towards NSDS's Priority Area 3: Infra Goal 5: which states to "provide universal and reliable access to internationally competitive communication services and an independent and commercially viable media ''. However, ICT also provides all possible support to other government departments to ensure ICT can enable other departments to achieve their strategic goals.

ICT focuses on providing a reliable and resilient Internet & Network within reach to all government departments and offices, schools and health clinics. ICT is adapting the ITSM framework to improve its performance on service delivery, ensuring the response time to resolve issues are improved. ICT continuously upgrades its IT Infrastructure to ensure its critical services, including the Internet, Email (nauru.gov.nr) & the website, is always available and secure. One of the key steps taken towards this area is the development and establishment of ICT policies for all Government Departments, covering the topics - Email Usage, Software, Sim Cards, Websites and Acceptable Use.

The planned submarine cable project to lay the Eastern Micronesian Cable (EMC) is currently in progress and is expected to be completed in December 2025. The project is funded by Australia, Japan and the United States. The project will deliver an undersea cable connecting the state of Kosrae in the Federated State of Micronesia (FSM), Tarawa in Kiribati and Nauru to the existing HANTRU-1 cable landing point located in Pohnpei in FSM. This will mean a vast improvement in both the costs of internet connection as well as the reliability and quality.

About the Smart Island Project

Smart Villages Smart Islands is a Joint Sustainable Development Goals (SDG) Fund Project designed to provide innovative solutions for enhancing connectivity and delivering scalable, sustainable services to disadvantaged island communities. The project is built around four key pillars:

- Improving Broadband Connectivity
- Making Broadband Affordable
- Enhancing Digital Skills
- Providing Digital Services

Currently, the Smart Villages Smart Islands initiative is being implemented in several Small Island Developing States (SIDS), which face numerous challenges, including geographic isolation, limited human resources, inadequate infrastructure, and vulnerability to external shocks.

Nauru is one of five Micronesian countries that is implementing the Smart Villages Smart Islands project. The five Micronesian countries are Kiribati, Federated States of Micronesia, Marshall Islands, Palau and Nauru. The project seeks to improve the well-being and livelihoods of islanders by connecting them to a range of digitally-enabled services while focusing on the four pillars mentioned above.

With a strong emphasis on the Sustainable Development Goals. Smart Villages Smart Islands has the potential to significantly contribute to several SDGs, including those focused on affordable and clean energy, decent work and economic growth, industry, innovation, and infrastructure, among others.

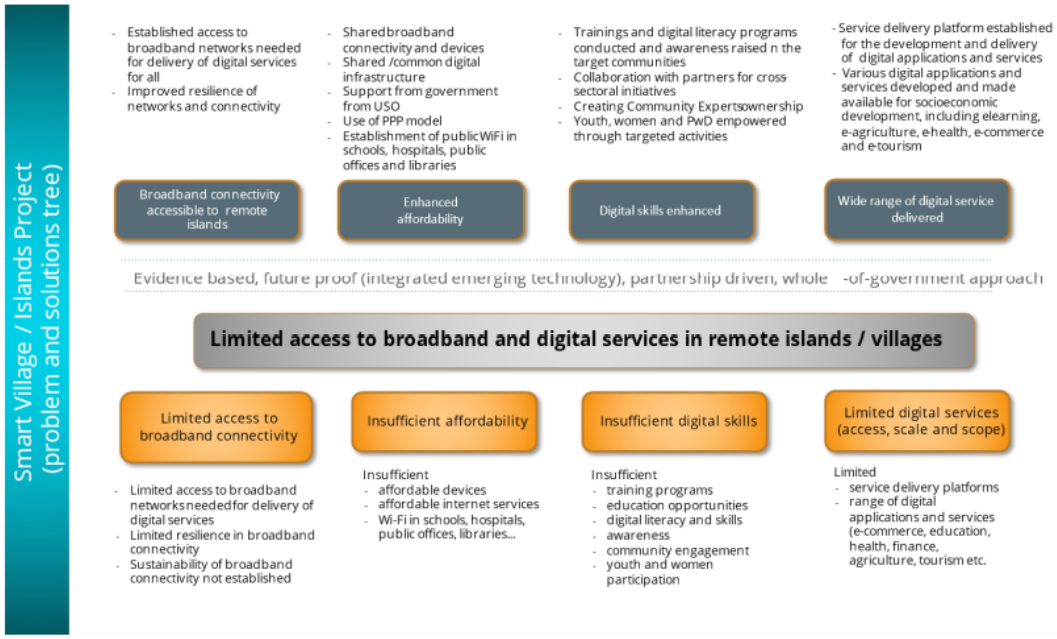


Figure 5: Smart Villages Smart Islands Problem and Solution tree

The Joint SDG Fund Project includes support from Food and Agriculture Organization (FAO), International Labour Organization (ILO), United Nations Office for Project Services (UNOPS), United Nations Office on Drugs and Crime (UNODC), United Nations Educational, Scientific and Cultural Organization (UNESCO), United Nations International Children's Emergency Fund (UNICEF) and International Telecommunications Union (ITU). ITU has partnered with the Nauru's Ministry of Telecommunications and ICT (Information, Communication and Technology) Department to deliver Smart Islands Nauru, striving to provide solutions to Nauru's priority needs and to deliver digital services and skills. This will create new digital opportunities for the people of Nauru, including accessibility to people with special needs and disabilities.

Figure 6: [Nauru's current SDG status]

The Government of Nauru released the National Sustainable Development Strategy 2019-2030 (NSDS) in 2020, following a comprehensive review of the National Sustainable Development Strategy 2005-2025. The document outlines the targets established by the Government of Nauru to monitor progress towards NSDS goals, providing agencies with clear milestones to guide their planning and activities in the near future and over the longer term.

Nauru's National Sustainable Development Strategy (NSDS) 2019 -2030 encompasses 24 goals across 4 sectors:

- Economic Sector
- Social and Community sectors
- Infrastructure sector and
- Cross-cutting sectors

The NSDS aligns with the Sustainable Development Goals and Nauru has been working towards its commitment to achieving each of the 17 goals. The Smart Village Smart Islands project will help accelerate the progress and improve the livelihood of the people living on Nauru.

Economic Sector	Social and Community Sectors	Infrastructure Sector	Cross-Cutting Sectors
Econ-Goal 1: A stable macroeconomic environment conducive to private investment established	**Soc-Goal 1:** Improve the quality and broaden the scope and reach of education	**Infra-Goal 1:** Provide a reliable affordable, secure and sustainable energy supply to meet socio-economic development needs	**Cross-Goal 1:** Strengthen and develop the institutional capacity of the Nauru Public Service
Econ-Goal 2: Increased level of domestic agricultural production aimed at addressing food security and healthy livelihoods	**Soc-Goal 2:** A healthy and productive population	**Infra-Goal 2**: Provide a reliable, safe, affordable, secure and sustainable water supply to meet socio-economic development needs	**Cross-Goal 2:** Strengthen Parliament, Audit, Justice, Law, Order and Border Control
Econ-Goal 3: Enhance development and sustainable management of marine and fisheries resources to provide sustainable economic returns	**Soc-Goal 3:** Enhanced quality of life through Sports for All	**Infra-Goal 3:** Effective management of waste and pollution that minimises negative impacts on public health and environment	**Cross-Goal 3:** A transparent and fair land management system that supports social, economic and private sector development
Econ-Goal 4: Efficient and effective use of mining and quarrying resources for economic and rehabilitation purpose economy	**Soc-Goal 4:** A cultural, socio-inclusive, cohesive and self reliant community with sustainable livelihoods	**Infra-Goal 4**: Improve transport infrastructure and provide reliable and sustainable transport services	**Cross-Goal 4:** Sustainable use and management of the environment and natural resources for present and future generations
Econ-Goal 5: Promote development of small and micro enterprises, foreign investment and economic integration into the global economy	**Soc-Goal 5:** A just society that recognizes and respects the rights of women and children, that promotes equal opportunities	**Infra-Goal 5:** Provide universal and reliable access to internationally competitive communication services and an independent and commercially viable media	**Cross-Goal 5:** Build up resilience to combat the effects of climate change and natural disasters
Econ-Goal 6: Promote Development of small-scale sustainable tourism	**Socal-Goal 6:** Investing in Youth - A sustained future for Nauru		
Econ-Goal 7: An effective, competitive and stable financial system that will enhance economic growth and development	**Soc-Goal 7:** A robust, vibrant and effective civil society for a just and peaceful Nauru		

Figure 7: The 24 Goals in the Nauru Sustainable Development Strategy

THE SMART ISLAND NEEDS ASSESSMENT

The ITU Smart Villages and Smart Islands (SVSI) model seeks to establish comprehensive and beneficial connectivity for communities. To ensure its success, it is crucial to identify the unique needs of each community, as different areas may require distinct aspects of the SVSI approach based on their geographical, demographic, socio-economic, and cultural characteristics. Conducting a thorough needs assessment is essential to determine the most effective and efficient implementation of SVSI initiatives. This process involves examining the specific context of each community and identifying the connectivity features that will be most advantageous. Ultimately, the success of SVSI initiatives relies on a deep understanding of, and responsiveness to, the unique needs of each community prior to implementation.

The needs assessment framework is built around four main pillars:

- Broadband Connectivity: This pillar evaluates the availability, reliability, resilience, and sustainability of broadband networks on the island, considering network costs, device accessibility, and public internet availability.
- Affordability: This aspect examines the costs associated with accessing the network and devices to ensure that connectivity is affordable for all residents.
- Digital Skills: This pillar assesses the level of digital literacy, education, awareness, and engagement with digital technologies within the community.
- Delivery of Relevant Services: This includes evaluating the effectiveness of E-Education, E-Health, E-Government, E-Finance, E-Agriculture, and E-Disaster Management, ensuring that the island's digital infrastructure supports the provision of essential services.

The needs assessment employed a qualitative approach, incorporating document reviews and structured interviews guided by a systematic protocol. During the needs assessment, discussions were held with community members, Government and private sector stakeholders to identify the current priority needs that Nauru is facing. Data collected regarding the digitalization needs of the community focuses on identifying current gaps, needs, and services, as well as potential solutions to address the challenges faced.

Nauru was selected as a Smart Island project because of the unique challenges it faces, including remoteness and limited access to quality services of2 education, healthcare and infrastructure. Despite its geographical isolation, Nauru stands out for its easily accessible and free education and health services. With its small land area, transport is not a major obstacle for residents, as any part of the island can be reached within a short 15-30-minute drive. This is in stark contrast to other islands where residents have to travel long distances to access resources. As a result, while the initial needs assessment was only to assess the needs of four possible pilot sites, it was quickly decided that it would be more beneficial to pilot the whole island, as certain challenges faced by other island nations are not the same as those faced by Nauru.

Needs Identification

The identification stage gathers all essential data for the need's assessment, laying the groundwork for subsequent phases. Thorough data collection is crucial to accurately capture the community's genuine needs and to ensure that proposed solutions can effectively and efficiently address these needs.

The following sections provide a summary of findings from qualitative interviews conducted with members of the Nauru community. Key themes are highlighted and organised according to the primary pillars of the need's assessment.

1. Broadband connectivity

Limited fixed-line network coverage and unstable mobile network connectivity highlight the need to improve accessibility to digital connectivity. Expanding coverage, improving network infrastructure, and addressing dead spots are essential to ensure residents can easily access the internet. Making internet services more affordable is crucial to ensure all residents can connect without financial constraints. The launch of Neotel for Mobile services, Starlink Community Gateway and the planned undersea fibre-optic cable is expected to enhance connectivity resilience, providing faster, higher-quality, and more affordable internet access to support economic growth, development opportunities, and improved living standards in Nauru.

a. Network availability: Sufficient broadband coverage for the establishment of digital services for all is available in the community.

One of the priority goals of the 2019-2030 National Sustainable Development Strategy of Nauru is to provide universal and reliable access to internationally competitive communication services and independent and commercially viable media. Nauru relies on satellite as the primary Internet service provider and mobile operator; internet connectivity on the island is very limited and unstable due to the vulnerability of the network infrastructure to bad weather and limited network coverage, with several blind spots. This has definitely improved by multiple folds since the arrival of the Starlink Community Gateway and launch of the Neotel network, however, the East Micronesia cable launch is expected to make a major impact in this area.

While internet penetration rates are relatively high in Nauru, there are still 17.3 percent of the population that remained offline at the start of 2024. The availability of mobile services, including 4G (5G in 2025) and LTE technologies, has made it easier for people to access the internet on the go. The government, through organisations like Digicel, Neotel and CENPAC, also provides internet services to government and state-owned enterprises, ensuring accessibility to digital connectivity for essential services.

At the time of this writing, the Starlink Community Gateway is already active and the submarine cable is set to usher in a new era for Nauru's digital economy and the opportunities it presents. However, delays

in the project timeline have also postponed advancements in other areas, such as the shift to digital records within the public sector. According to the Nauru National Fibre Cable Corporation (NFCC), the objective is to have the cable deployed in Nauru by the last quarter of 2025. Once installed, it is anticipated that last-mile connectivity will be established relatively quickly. In the meantime, the Government has brought in the Community Gateway by partnering with SpaceX, to bring faster and more reliable internet for now and potentially act as a backup to the submarine cable, once it is deployed. The ICT department has already laid fibre cable around approximately three-quarters of the island in preparation for the submarine cable's arrival. This infrastructure is primarily intended to connect government departments across the island, linking them to the Government network and providing access to essential services like email, network and hardware support. Once the submarine cable reaches Nauru, there will be available fibre cores on this cable that can be utilised for last-mile connectivity.

There are no internet exchange points (IXPs) in the country at the current time, although this may change once the submarine cable arrives in the country. IXPs essentially facilitate shorter, more direct routes for internet traffic and can greatly improve the reliability of the internet. Affordability gains are also a benefit in the medium term. This can help develop both demand and supply sides of the digital economies in the region.

There is a need to accelerate last mile connectivity in light of the imminent roll out of the submarine cable, while conducting due diligence on the affordability gains of high-speed internet in the short-term.

Options for short-term government support to telecommunication providers should be explored to mitigate any impact on affordability. Opportunities should be identified within the E-commerce ecosystem, such as e-government services, access to payment gateways, and e-learning solutions.

b. Network resilience: Broadband networks are available all the time and can withstand common weather events.

A combination of factors makes the system vulnerable to disruptions from natural disasters, global economic fluctuations, and technological challenges. Its lack of resilience hinders its ability to remain stable and functional during such events.

Network connectivity in Nauru is susceptible to disruption or other disturbances due to several factors including reliance on satellite links: Nauru relies heavily on medium earth orbit satellite (O3b) links and Low earth orbit satellite (Starlink) for international connectivity. This means that any disruptions to these satellite links, whether due to natural disasters, strong weather conditions or technical issues, can severely impact internet and mobile services in Nauru. The fixed landline network has largely fallen into disrepair, and there is only limited fixed broadband internet access available mainly to government departments and businesses. This lack of infrastructure can make the network connectivity in Nauru more susceptible to disruptions.

2. Connectivity Affordability

Despite the availability of digital connectivity, internet services in Nauru are significantly more expensive than in developed countries, with broadband costs amounting to 23.3% of gross national income, compared to 4.9% in Australia, as of 2024. Most services are offered through prepaid schemes, limiting access for those unable to pay high prices. The submarine fibre project is expected to address the current high affordability issues of high-speed access. However, it may take some time for this to improve due to operating costs and the small size of the market. Although the new fibre will increase speeds, the cost per mbps may not fall below current satellite connections for some time, as investment payback and maintenance costs remain high. In the short term, government subsidies may be needed to improve affordability.

a. Network cost: The network is affordable to all in the community.

The cost of internet connectivity was quickly identified as the biggest and most common concern on Nauru, with data and wi-fi being very expensive and unreliable. While overall coverage on the island is good, the cost of maintaining a daily connection to the internet is very high and once you are able to access the internet, the quality is very poor and even worse when it is raining. This has improved vastly with the introduction of the Starlink Community Gateway and Neotel as they provided competition for the previous sole provider, Digicel, to improve their services and lower their pricing.

b. Access to devices: Community could access the devices.

At present, the majority of households have access to digital devices. There is a strong push to keep a range of up-to-date assistive devices, equipment, computers and computer software or programmes available for use by teachers and stakeholders. Mobile phones are widely used due to their affordability and accessibility, allowing for essential communication and connectivity. However, the availability of digital devices in homes and public institutions is limited by factors such as the country's small size, scarce resources, and barriers like high costs and lack of technical support. Additionally, insufficient prioritisation and investment in technology infrastructure and education contribute to the lack of access to digital devices. Addressing these challenges through initiatives that promote technology access and digital literacy could help bridge the digital divide in Nauru, ensuring that individuals and institutions can fully utilise the benefits of digital devices.

3. Digital Literacy and Skills

While the majority of households have access to digital devices, there is a lack of knowledge and skills needed to use them properly and to be aware of their risks. The people of Nauru want training in this area to better equip them to protect themselves and their children in the ever-evolving digital world.

Nauru aims to integrate ICT into learning programs to create effective and efficient new ways of learning and to leverage and expand the use of ICT as an access tool to education, including inclusive education and the provision of differentiated pathways. One of the main strategic priorities for Nauru's Sustainable Development Goals and the National Digital Transformation Strategy, is to establish quality learning environments through appropriate pedagogy and new technologies to develop models that emphasise its relevance to industry and the labour market, facilitating opportunities provided by ICT.

a. Digital skills: Community members have the skills necessary to benefit from digital technology.

A lot of locals depend on small business ventures as a source of income for their family. Products varying from food, fresh fish, coconut oil and clothing are being advertised mainly on Facebook group pages. Sales and marketing resources and skills will greatly benefit these small businesses in possibly expanding their business and to ensure they are making a profitable income. Currently, there is a limited presence of digital entrepreneurship activity in Nauru, indicative of the overall weaker trends in SME entrepreneurship. The lack of business incubation services and a nascent innovation ecosystem further hinder growth in this area.

The need for e-commerce development for Nauru's micro, small and medium enterprises (MSME) includes the development of a digital economy roadmap/strategy in alignment with the National Sustainable Development Strategy (NSDS) and the regional e-commerce strategy by PIFS. This would involve creating a digital SME strategy to enhance the business environment and capabilities of the sector

b. Digital literacy education: All community members have the opportunities to increase their digital skills.

At present, students with disabilities do not have access to digital devices and services that can assist in their educational learning. While there is a school catered specific for children with disabilities, it lacks the specific equipment needed to support these children. With the coordination of disability inclusive development by the Child Protection Services Division, it is crucial that individuals with disabilities are not excluded from the benefits of digital transformation. A digital inclusion programme would ensure that resources and services are accessible to individuals with disabilities, allowing them to fully participate in society.

Similarly, with the Women and Social Development Affairs Department mandated to implement programmes across districts and mainstream gender equality in government policies, a digital inclusion programme would ensure that women have equal access to digital technologies and resources. This would help bridge the gender digital divide and empower women to participate in the digital economy on an equal footing with men.

Furthermore, considering the cross-cutting responsibility of multiple ministries and departments in addressing family violence and child protection issues, a digital inclusion programme would facilitate communication and coordination between these entities. By leveraging digital technologies, information

sharing and case coordination could be streamlined, leading to more efficient and effective interventions to protect vulnerable individuals.

In addition, the emphasis on quality school governance and interpersonal skills, underscores the importance of digital literacy and digital skills in educational settings. A digital inclusion programme would ensure that students, teachers, and school administrators have the necessary training and resources to navigate the digital world and harness its potential for learning and growth.

Nauru needs a digital inclusion programme to ensure that digital transformation does not leave anyone behind because of the diverse range of responsibilities assigned to various government departments and ministries in addressing issues such as disability, gender equality, family violence, and child protection. By promoting equal access to digital technologies and building digital literacy skills, Nauru can create a more inclusive and equitable society for all.

c. Awareness and motivation: Community members are aware of the benefits of digital skills and motivated to increase them

Nauru does not have a specific data protection law, but provisions for protecting information and ensuring ethical use are outlined in various regulations including the 2007 ICT Acceptable Use Policy, 2018 Communications and Broadcasting Act, and 2015 Cybercrime Act, with no specific mention of schools. The ICT policy prohibits illegal actions for government departments such as unauthorised access to Internet services or computer systems, disruptions, and threats to safety, as well as emphasising the importance of respecting copyright and avoiding plagiarism online. The Cybercrime Act mandates that Internet service providers and other relevant entities maintain the confidentiality of individuals' electronic data collected through electronic systems. A notable opportunity lies in the development of software applications catering to consumers of government e-services, potentially creating a market for local software developers in Nauru.

As the demand for digital services increases and internet infrastructure improves, there is a pressing need for the digital skills and entrepreneurship infrastructure to adapt promptly to market demands.

d. Community engagement: Community members are engaged and feel ownership of the SVSI project

Not unlike other island communities at the very beginning of digital transformation, few community members in Nauru saw the need for the Smart Island project because Nauru is such a small island. The majority of people said that they were happy and satisfied with the way of life in Nauru, and that there was no need to digitise certain manual services. This may be due to a lack of knowledge about the benefits of technology or due to the resistance to change. However, this perspective is very likely to change with the young generation and it is important to educate them and upskill them to avail the benefits of the rapidly evolving technologies.

However, other members recognised the need for Nauru to move forward with the rest of the world in terms of technology. In order to ensure that the people of Nauru do not miss out on opportunities and get left behind, Nauru must continually adapt to the rapid advances in technology being made in the rest of the world. Nauru is also committed to the fight against climate change, and by promoting digital services that reduce the use of paper, Nauru is working towards the global goal of eliminating the need to cut down trees to make paper, which is good for the planet.

It is thus crucial to raise the awareness of community members on the potential benefits and importance of digital transformation at their level. This includes explaining how digital services can enhance efficiency, provide easier access to government services and reduce environmental impact. By involving community members in decision-making and seeking their input through consultations and workshops, they can feel empowered and have a sense of ownership.

4. Relevant Services

a. E-education: Relevant E-education services are available to the community

In Nauru, the integration of technology into the education sector has faced challenges and this continues to be addressed through government policies. Digital infrastructure and accessibility remain concerns, despite improvements in internet penetration and device availability. Teacher training programs and international partnerships have been crucial in enhancing educators' digital competencies, and the COVID-19 pandemic accelerated the transition to online learning with significant government support and funding.

The department of ICT in partnership with the department of Education, aims to enhance services, increase user satisfaction, and expand product offerings to achieve the vision of e-governance through e-education. They aim to focus on providing a reliable internet network to government departments, schools, and health clinics. The Cyber Security Awareness Team (CSAT) within the Department of ICT is dedicated to educating government departments on cybersecurity.

Global trends have also influenced Nauru's approach to educational technology, leading to the intention to adopt more innovative solutions and modernising the education system. However, limited digital literacy skills can hinder the effective use of technology in education. The integration of technology can potentially boost student engagement, with interactive whiteboards, educational apps, and virtual simulations making learning more dynamic and enjoyable. Additionally, the use of technology could lead to enhanced learning outcomes, with adaptive learning platforms and personalised instruction associated with improved retention and understanding of complex concepts, ultimately leading to improved student performance metrics in schools.

Nauru would greatly benefit from the implementation of e-education services to increase access to education by reaching students of all ages, improving learning outcomes through interactive and personalised learning experiences, increasing teacher capacity through digital training programmes,

improving assessment measures and future-proof education by preparing students for a technology-driven world. These services can overcome geographical barriers and provide students and educators with the tools they need to succeed in a rapidly evolving digital landscape.

b. Healthcare services: Relevant E-healthcare services are available to the community

While the healthcare system is free for the most part with some certain exceptions, the standard of the hospital is not up to international standards, compared to hospitals in more developed countries like Australia. It was identified that although hospital records have recently been digitised, a majority of the hospital's processes and procedures are still paper based.

The e-health service is critical to improving the accessibility, efficiency and quality of healthcare for the people of Nauru. It will help fill gaps in health services and ensure that patients receive the best possible care. Such services are needed to improve the efficiency and effectiveness of the health system. The implementation of the national electronic health record system, Tamanu, needs to be followed by downstream e-health services to facilitate rapid access to patient information by health providers, leading to improved management of patient follow-up and complex cases. It will also help to ensure that patients can maintain a continuous medical history and receive consistent care as they move between different healthcare services.

c. Government services: Relevant e-government services are available to the community

Digital public services play a crucial role in improving people's participation in the governance through various processes such as civil registration, filing of concerns, monitoring of development and public services, and public payment compliance such as taxes. This increase in the use of digital technology in government business can help bridge the information gaps.

Nauru aspires to have a whole-of-government approach to public sector modernization that promotes simple, efficient, and transparent government with the citizen at the centre of reforms. An initiative to design and/or implement digital transformation solutions in the public sector involving the modernization and integration of government systems such as financial and human resource management information systems, public procurement portals, and public investment management systems, as well as the enhancement and digitization of public services and government-citizens interactions.

E-government is an important tool for encouraging consumer side adoption of digital services while improving efficiencies within the public sector. In-spite of the lack of an E-government policy, certain e-services have already been deployed. These include an Integrated Financial Management Information System (IFMIS) at the Ministry of Finance, a leave management system and online attendance for SOE as well as E-Visa services. Issuance of licences and car registration are also areas which have been digitised. Furthermore, centralised travel and catering approvals, with a centralised budget, have also been digitised.

The success of these initiatives largely depends on the availability of stable digital connectivity and qualified revenue administrative personnel. Further potential arises from the arrival of Starlink

Community Gateway and the Submarine Cable. This improved connectivity can not only enhance revenue administration efforts but also create new economic opportunities within the community. To fully maximise the benefits of e-government, authorities must focus on enhancing digital infrastructure and providing technical training to staff.

A unified government portal is needed to link all government websites and e-services. This would smoothen several government processes by linking them with each other and lead to large reduction of time and cost. Consideration should also be given to developing an E-commerce marketplace as a public-private initiative, allowing small-scale exporters to advertise their products domestically and internationally.

d. Financial services: Relevant e-financial services are available to the community

The limited financial services in Nauru are due to lack of business opportunities and high operating costs that make it difficult to assess banking services. There is an apprehension that, in the long run, such limitation could have a big impact on its economy, limiting access to online added values, as well as affecting the sustained utilisation of electricity and water because they rely on imported fuels.

Addressing this issue, there is a need to support facilities that accommodate the handling of credit facilities, insurance products and alternative savings products. Financial literacy programmes can be accelerated, with a particular focus on improving digital financial literacy to interact with international fintech firms such as PayPal and Stripe, and to promote a savings culture among citizens. Access to a digital payment gateway to increase digital transactions needs to be explored as part of the roll-out of fibre infrastructure. Promotion of existing digital payment solutions, including EFTPOS, can be encouraged to increase usage among the population.

e. Agricultural services: Relevant e-agricultural services are available to the community

Agriculture includes crop and livestock production, aquaculture, fisheries and forestry for food and non-food products. Like most islands, Nauru relies heavily on fishing for daily sustenance. Approximately 80 percent of Nauru's territory consists of land that has been mined for phosphate and is therefore uninhabited and unsuitable for agriculture. All of Nauru's people live in the fertile coastal areas, particularly along the south-west coast. Nauru's agriculture is extremely small-scale and cannot provide enough food for the population. Despite being an island, Nauru has no real fishing industry. Agriculture is a tiny part of the economy, with a negligible contribution to GDP. Apart from some horticulture, the only significant agricultural products are coconuts, chickens and pigs for domestic consumption.

Agriculture in Nauru is relatively new and presents more challenges. As the people of Nauru become more aware of the need to improve their food security and nutritional status, agriculture is becoming more important as more people begin to grow crops. Small-scale home gardens and fishing offer a way for people to put food on the table with the resources they have when they are unemployed, and support in this area is widely sought. However, this requires that those wishing to engage in farming have access

to advice and information from the Agriculture Department. It is essential to consider full-time technical assistance along with a carefully designed capacity building and e-agriculture skills training programme.

f. Disaster management services: Relevant e-disaster management services are available to the community

Nauru is not prone to natural disasters such as earthquakes but hazards such as cyclones, tsunamis, and rising sea levels are quickly becoming a concern for the low-lying atoll. Strong winds and heavy rain have also begun to cause flooding problems.

To effectively address the challenges posed by climate change and natural disasters in Nauru, a focus on building resilience and increasing preparedness at all levels, from national to community, to ensure that the people of Nauru are better equipped to deal with the impacts of climate change and natural disasters, is required. For example, the NES has identified the implementation of warning sirens in each district as a solution to these potential problems. An E-disaster management system could be explored to integrate community awareness programmes, strengthening technical capacity, implementing multi-hazard early warning systems, establishing data sharing policies, integrating risk assessment with impact-based forecasting, and improving observation and monitoring networks to help ensure the safety and well-being of people in the face of climate-related risks.

g. Promote tourism

Nauru is trying to start moving towards a sustainable and eco-friendly path including through the tourism industry that is expected to remain focused on niche markets of: historic tourism, exploration tourism and sports tourism. There is potential to create a tourism product centred around historic war sites. Exploration tourism could offer outsiders a perspective into a whole different culture and landscape, that is exclusive to Nauru and Sports tourism stands to gain from Nauru's established presence in certain sports, like weightlifting, and the opportunity to host international events, especially in water sports like fishing. Hosting major events in these sports could open the way to a lot more tourism. However, developing the necessary infrastructure will be crucial for these niches to thrive.

Through the strategic use of social media and an enhanced online presence, Nauru aims to promote its rich culture and unique attributes. Unlike larger island nations like Fiji and Samoa, where the tourism industry has reached substantial scale, Nauru is still in the early stages of tourism development. By promoting Nauru as a tourism destination, there is a significant opportunity not only to showcase the island to a global audience but also to ensure that its cultural heritage and traditions are recorded and preserved for future generations. Therefore, support is essential to develop e-tourism initiatives that will enhance Nauru's online visibility and bolster social media outreach. This effort will help nurture tourism, stimulate economic growth, revitalise the socio-economic fabric of the community, and safeguard the island's cultural legacy for years to come.

h. E-Waste

As connectivity in Nauru continues to grow, it is crucial to prioritise responsible innovation that aligns with environmental and circular economy goals throughout the lifecycle of digital technology. With the expansion of the digital society and an increasing number of electronic devices, the challenges posed by e-waste and ICT-related carbon emissions are likely to escalate. The limited options for repair, recycling, and remanufacturing highlight the difficulties in managing unused digital devices and hardware.

Along with the rise of technology usage, so does the number of digital devices. Currently, Nauru lacks a comprehensive action plan or policy regarding the processing of e-waste. Although the volume is still relatively low, instances of e-waste—such as laptop parts—and hazardous waste, including cooking gas canisters, have been identified in household waste samples, alongside occasional batteries and fishing-related items. This problem is starting to witness a surge, with the increased dependency on the Internet and increased import of electronic devices.

The management of e-waste generated by government departments falls under the purview of the ICT department, supported by the Department of Environment, Management and Agriculture. There is a strong desire to push this further to spread awareness among the general public and establish a robust plan for collection, segregation and disposal of e-waste. For the past four years, e-waste has been temporarily stored in a shipping container on a concrete surface at the Government Warehouse in Meneng district. This e-waste is organised and stacked by type, including printers, computers, screens, and laptops. However, without a clear disposal plan, much of this e-waste ultimately ends up at the island's dump site, where it deteriorates.

To address this pressing issue, it is essential to develop a comprehensive plan outlining proper procedure for the disposal of e-waste, whether locally or through external channels. This plan will help ensure that broken and unused laptops, printers, mobile devices, and other electronic equipment do not accumulate and scatter across the island, safeguarding both the environment and public health.

Needs Analysis

Once all types of needs have been identified, this section presents the needs analysis based on what has been expressed by the community. This involves examining the root causes of these needs in order to prioritise them effectively. By understanding the underlying issues, we can then develop potential solutions to address these needs in a meaningful and sustainable way. This process is critical to ensuring that our efforts within the SVSI are focused on making a real and lasting impact on the community.

Community needs

Based on the community's expressed observations of their daily challenges and the analysis of the prevailing situation on Nauru, the following long list of community -needs have been identified.

1. Improved broadband connectivity to expand coverage, improve network infrastructure, and address dead spots, ensuring all residents can access the internet easily
2. Last-mile connectivity acceleration in light of the imminent rollout of the submarine cable
3. Mitigation of impact on affordability with short-term government support to telecommunication providers
4. Development of opportunities within the E-commerce ecosystem, such as e-government services, payment gateways, and e-learning solutions
5. Enhanced network resilience to withstand disruptions from natural disasters, global economic fluctuations, and technological challenges
6. Sustainable network services for the community without outside intervention
7. Affordability of broadband networks for all community members
8. Access to digital devices for the community
9. Availability of shared internet connectivity for the community
10. Digital literacy education for all community members to increase digital skills
11. Developing a digital inclusion program to ensure equal access to digital technologies for individuals of different backgrounds and circumstances
12. Awareness and motivation programs for community members to understand the benefits of digital skills and be motivated to increase them
13. Community engagement to ensure community members are aware of and feel ownership of the Smart Islands Project
14. Relevant e-education, e-healthcare, e-government, e-financial, e-agricultural, and e-disaster management services available to the community
15. Promotion of sustainable and eco-friendly tourism industry in Nauru
16. Development of e-tourism initiatives to enhance the online visibility of Nauru as a tourism destination
17. Establishment of a comprehensive plan for the proper disposal of e-waste to protect the environment and public health.

Root causes

The root causes of community-needs for digital transformation are multifaceted. These issues highlight the urgent measures to bridge the digital divide, promote economic diversification, enhance education, improve healthcare access, increase climate resilience, and ensure equitable access to digital technologies for all residents in Nauru. Particular situations that become root causes of needs for community-level digital transformation in Nauru include the following:

Nauru's telecommunications sector faces challenges due to inadequate investment in network infrastructure. The country's small market size and lack of competition further compound these issues, leading to high costs of satellite connectivity and import duties on technology equipment. Without sufficient government policies to incentivize network expansion and improvement, the overall cost of living in Nauru remains high, hindering progress in digital connectivity. Several measures have been taken by the Government, at the time of writing, to address this issue and make digital accessibility available and affordable through all, by introducing new mobile and internet service providers into the market.

Geographical challenges also play a role in Nauru's connectivity issues, with a lack of diversification in connectivity options and limited investment in backup systems. Insufficient disaster preparedness and mitigation measures add to the high costs associated with building resilient network infrastructure, making it difficult to ensure reliable and sustainable connectivity for the island nation.

The lack of regulatory oversight and sustainable connectivity solutions in Nauru poses challenges for maintaining and upgrading network infrastructure. Reliance on external providers without long-term agreements and a general lack of prioritisation of connectivity solutions exacerbate the issues, highlighting the need for more sustainable approaches to digital connectivity in the country.

Additionally, the high costs of purchasing devices and limited access to financing options contribute to the barriers to technology access in Nauru. Inadequate government subsidies or incentives for acquiring technology further hinder progress in digital literacy initiatives, as cultural barriers to technology adoption persist and technology education remains a low priority in the country.

In terms of data protection, Nauru faces challenges in raising awareness about its importance and implementing legislation. Limited resources for drafting and implementing data protection laws, difficulties in adapting international best practices to local contexts, and competing priorities for government attention all contribute to the lack of urgency in addressing data protection concerns.

Priority Needs

Based on the pressing issues facing the community and the root causes identified in the previous section, the following are priority needs that, if properly addressed, could empower the community to embrace the digital age and create a more inclusive and prosperous future.

1. Last-mile connectivity acceleration in light of the imminent rollout of the submarine cable
2. Development of opportunities within the E-commerce ecosystem, such as e-government services, payment gateways, and e-learning solutions
3. Access to digital devices for the community
4. Digital literacy education for all community members to increase digital skills
5. Proper plan and management for safe collection, treatment and disposal of E-waste.
6. Development of e-governance initiatives to digitise and link multiple government processes, such as civil registry, driver's license, health records, travel documentations etc.

Decision Making

The decision-making stage involves generating potential solutions to the identified needs and determining which solution to implement. Firstly, information from previous steps is synthesized to develop solutions that meet the community's priority needs. Secondly, potential solutions are ranked based on predefined criteria, considering both internal and external factors.

Proposed solutions

In order to address the underlying issues causing digital challenges in Nauru, a comprehensive approach is needed. This section presents a comprehensive list of potential solutions to the identified needs and root causes. These potential solutions are described at this stage, regardless of their alignment with the issues, their efficacy in solving the problem, and their cost-effectiveness and feasibility.

1. Affordable Broadband Access: Support the affordability of broadband services for all community members through short-term government assistance to telecommunications providers, enabling the community to maintain network services independently once pilot projects conclude.
2. E-commerce community level ecosystem: Create opportunities within the community level e-commerce landscape, including e-government services, payment gateways, and e-learning solutions.
3. Increased Network Resilience: Enhance the network's capacity to withstand disruptions caused by natural disasters, global economic fluctuations, and technological challenges.
4. Community Internet Connectivity: Ensure shared internet access for the community and expand availability of digital devices to promote digital inclusion.

5. Digital Literacy Education: Provide digital literacy training for all community members and raise awareness about digital inclusion programs to ensure equitable access to technology for individuals from diverse backgrounds.

6. Awareness and Engagement Initiatives: Implement programs to educate community members on the benefits of digital skills, fostering motivation and sustained engagement to ensure ownership and involvement in the Smart Islands Project.

7. Access to Essential Digital Services: Ensure the availability of relevant e-services, including e-education, e-healthcare, e-government, e-finance, e-agriculture, and e-disaster management for the benefit of the community.

8. Promotion of Sustainable e-Tourism: Enhance Nauru's online visibility as a tourist destination through eco-friendly e-tourism initiatives that promote sustainable tourism practices.

9. E-Waste Management Plan: Develop a comprehensive strategy for the responsible disposal of e-waste to safeguard the environment and public health.

Prioritised potential Solutions

In the preceding section, the examination of potential solutions was not limited by the number of options, encompassing ambitious proposals that entail substantial policy changes and resources over time. The following section outlines a concise selection of top-priority, high-impact solutions that have been identified based on usage patterns, aiming to enhance the community's quality of life and operational effectiveness.

1. Last-mile Connectivity Solutions: With the deployment of the submarine cable on the horizon, accelerating last-mile connectivity efforts can help ensure seamless internet access for all residents. This could involve deploying networks in communities, leveraging partnerships with development partners to extend coverage, and implementing innovative solutions such as access to low orbit satellites, public internet or mobile hotspots.

2. Digital Inclusion Initiatives: Develop opportunities within the digital ecosystem, such as e-government services, payment gateways and e-learning solutions, to promote digital inclusion. This could include working with various government service providers and development partners to offer online services, providing training and support for e-commerce activities, and creating digital literacy programmes to increase the skills and knowledge of community members. In addition, improving cyber awareness among people by conducting community workshops and training/information sessions to ensure digital literacy, protection and self-care from the potential harms of digital life.

Figure 8: 11 Priority needs identified

SMART ISLAND NAURU DIGITAL INCLUSIVITY CENTRE

Through various meetings and discussions with relevant stakeholders and community members, the initiative for establishing a Smart Island Nauru Digital Inclusivity Centre was agreed. This was identified as a solution to not only one but many of the priorities identified in the need's assessment. An example of a need identified was that an improved education environment with digital devices and support for children with disabilities was needed. Another was that the people of Nauru needed digital literacy and skills training. The Centre would be made available to all citizens and residents of Nauru including Government workers, private sector, students, businesses and communities.

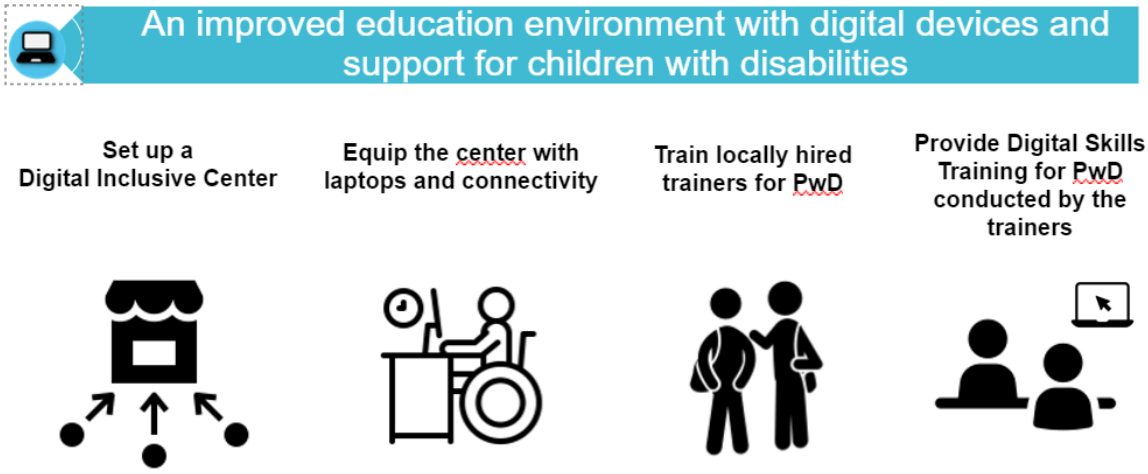


Figure 9: Steps to a solution for an improved education environment with digital devices and support for children with disabilities

The Smart Island Nauru project adopts a whole-of-government approach and is committed to driving change. In its commitment, the Department of ICT is collaborating with ITU and key stakeholders is drafting and developing Nauru's National Digital Transformation Strategy to lay a pathway for next steps forward for Nauru towards digitalization. The draft is targeted to be completed and released by the end of 2025.

Digital Services

Nauru is currently still in progress of identifying which digital services it can and would like to implement. Digital services will reduce the use of paperwork and the need for constant transportation to a location as services will be made available online/digitally. The Smart Island Nauru project aims to implement at least two digital services in Nauru, among the below:

1. Digital payments for purchasing water and electricity as well as topping up a sim card
2. E-learning for students similar to Moodle
3. Telemedicine made available on the island

Priority project activities will be identified by the National Expert working with Nauru's Government and ITU at a later stage in the project timeline.

Digital Skills

A wide range of digital skills needed in Nauru was identified and plans have been put in place to carry out digital literacy and skills training to upskill the people in Nauru. Ranging from basic to advanced skills, the National expert for Nauru in collaboration with ITU will partner with different stakeholders to facilitate these training sessions. Considering the Digital Inclusive Center is still in planning stages and is projected to be completed in end of 2025, the trainings will take place in available venues around the island namely the USP campus, ICT conference room, community halls and workplaces.

Some examples of digital skills needed are Cyber Safety, Online Child Protection, Mobile Usage, Typing Skills and CV builder. There is a need to discuss partnership with (i) Department of Education for in-school trainings for students as well as teachers and (ii) Department of Women and Social Development Affairs for trainings focused on parents and industry workers working with children. The first batch of digital skills trainings to be carried out is aimed at raising awareness on online safety. The goal is to teach technology users on Nauru the possible risks and dangers of using the internet that should be considered when being online.

Stakeholder mapping

The Smart Island Nauru project implementation and coordination will be under the responsibility of the Nauru National expert recruited by ITU, working collaboratively with ITU and the ICT Department. However, to ensure the project is not only successful but transparent, a task force will be brought together to not only assist the National expert but to also make sure all stakeholders are involved accordingly and

are kept up-to-date every step of the way. The taskforce is vital in ensuring the project rollout is smooth and efficient. Each stakeholder will have a representative of theirs in the taskforce so that their expertise in their sectors will guide the project implementation of the initiatives identified ensuring it is aligned with their respective sectors and no one is left behind.

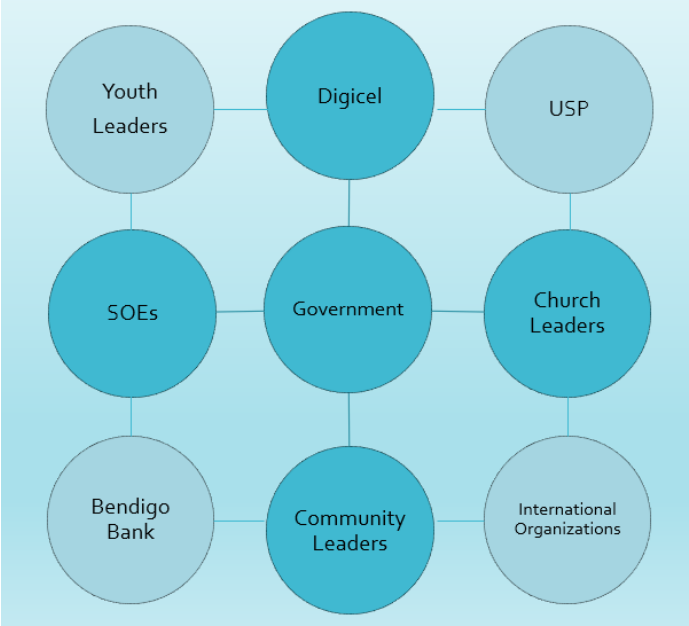


Figure 10: Stakeholder mapping

Government

- Department of Information, Communication and Technology
- Department of Health
- Department of Education
- Department of Climate Change and National Resilience
- Department of Environment, Management and Agriculture
- Department of Women and Social Development Affairs
- Department of Finance
- Department of National Emergency Services
- Department of People Living with Disabilities
- Department of Nauru Police Force
- Others

State Owned Enterprises (SOEs)

- Nauru Utilities Corporation
- Cenpac Corporation
- Nauru Tourism Corporation
- Nauru Fisheries Marine Resources Authority
- Others

University of the South Pacific (USP)

Bendigo Bank

NEOTEL

DIGICEL

Leaders

- Community leaders
- Church leaders
- Youth leaders

International Organizations

- International Telecommunication Union (ITU)
- Food and Agriculture Organization (FAO)
- United Nations Office of Project Services (UNOPS)
- United Nations Office on Drugs and Crime (UNODC)
- United Nations International Children's Emergency Fund (UNICEF)
- United Nations Educational, Scientific and Cultural Organization (UNESCO)
- International Labour Organization (ILO)
- Others

NEXT STEPS

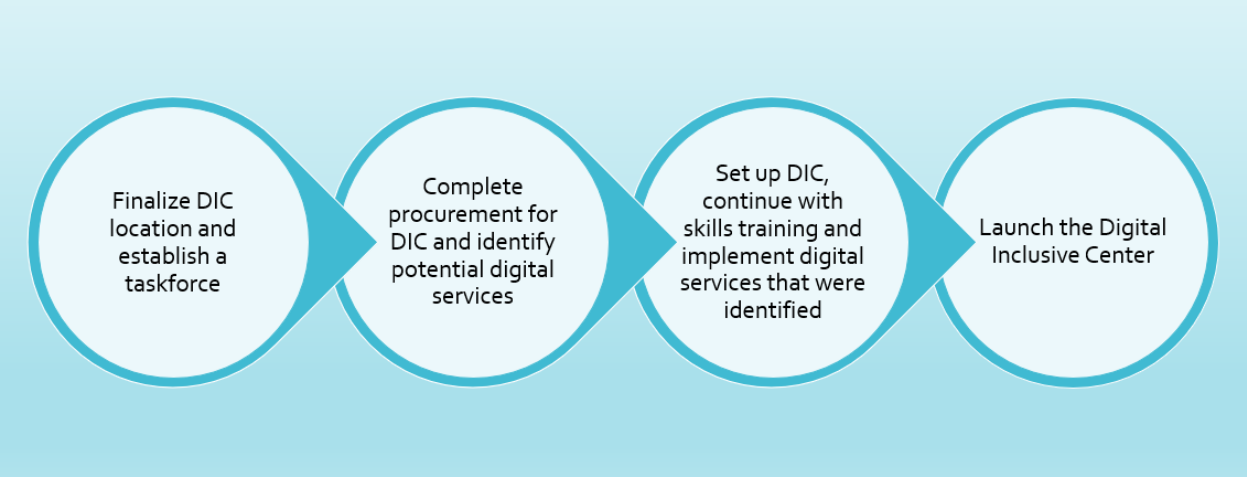


Figure 11: Next steps moving forward

As highlighted in Figure 10, the next steps for the Smart Islands Nauru project are to finalise a location for the DIC and establish a task force that will work together to ensure its successful implementation. Procurement plans and processes can then proceed once the location is confirmed, and in parallel work would be undertaken to identify digital services that can be developed and implemented in Nauru. Once all procurement stages have been completed, set-up and installation can begin. This phase will ensure that the centre is secure, accessible to all and well equipped with the appropriate resources to facilitate the needs of the centre. Ideally, this would be accompanied by the development and implementation of the digital services identified earlier, at least two of which will be made available to the people of Nauru. Last but not least would be the launch and opening of the Digital Inclusive Centre, where all resources would be made available to every sector, household and community in Nauru.

CONCLUSION

At the end of The Smart Island Nauru project, the lives of the people of Nauru will have been positively impacted by the opportunities that have been made available to them. With newfound digital literacy, skills and knowledge gained through trainings, it is expected that people will be better equipped to secure more employment and learning opportunities, as well as ensure their and their family's safety when using the internet and going online. With the opening of the Digital Inclusive Centre, the training and equipment needed to build the island's capacity will be readily available to everyone. A perfect example of the multi-sectoral benefits of the centre would be if training is given on how to learn sign language, then disability workers, parents, teachers, friends and family in the community can all join in to learn so that they can better communicate with those who are deaf and can only communicate through sign language. The intended outcome is to create win-win situations in all areas of Nauru where no one is left behind and everyone moves forward together.

RECOMMENDATIONS

These recommendations are aimed at key stakeholders who can work together to bridge the digital divide, promote economic stimulation, improve access to education and healthcare, increase climate resilience and ensure equitable access to digital technologies to help empower the community to embrace the digital age and create a more inclusive and prosperous future for Nauru.

As the world becomes increasingly digitised, it is vital for the Government of Nauru to prioritise investment in improving broadband connectivity and network infrastructure. By expanding coverage and ensuring seamless internet access for all residents, the government can unlock opportunities for economic growth, education and overall societal development. In addition, providing short-term support to telecommunications providers to make broadband services more affordable for the community will help bridge the digital divide and ensure that everyone has access to the benefit's digital offers. To this end, the Government of Nauru could consider developing a National Digital Transformation Strategy in collaboration with the ITU and key stakeholders. This strategy will provide a roadmap for Nauru to embrace digitalisation, harness technology for innovation and create an enabling environment for digital businesses to thrive. In addition, promoting digital literacy education and training initiatives is essential to ensure that everyone can fully participate in the digital economy and society.

The Pacific Regional Community is encouraged to provide support and resources for the establishment of programmes similar to the proposed Smart Island Nauru project, as it addresses the priority needs identified in the region. This project will not only empower the community in Nauru, but also serve as a model for other Pacific nations to follow in their own digital transformation efforts. Collaboration with Nauru and other regional partners is essential to share best practices and resources for digital initiatives, ensuring that all countries have access to the tools and knowledge they need to succeed. In addition, facilitating knowledge exchange and capacity building opportunities for Nauru in the digital space will help strengthen their capabilities and enable them to fully leverage the benefits of technology for their development.

It is critical for UN agencies to work with the Government and stakeholders in Nauru to support the development and implementation of the National Digital Transformation Strategy to ensure its comprehensiveness, effectiveness and sustainability. Providing technical expertise and resources to initiatives such as the Smart Island initiative is essential in order to bridge the digital divide and promote equal opportunities for all members of the community in Nauru. UN agencies can further raise awareness and advocate for digital inclusion through campaigns and partnerships to educate the public on the benefits of digital technology and the importance of digital skills, thus empowering individuals and communities to participate fully in the digital economy and society.

Other development partners are encouraged to invest in infrastructure development projects in Nauru to improve broadband connectivity and network resilience. In addition, supporting the introduction of digital services such as e-learning and telemedicine will improve access to essential services for the community. Finally, the provision of funding and technical assistance for digital skills training programmes will help upgrade the skills of the Nauruan population and ensure that they can fully utilise and benefit from these digital advances.

Nauru's private sector should work with the government and development partners to invest in digital infrastructure projects and initiatives, and to support the development of e-commerce opportunities and digital services to drive economic growth and innovation in the country. In addition, providing resources and expertise for digital skills training programmes and capacity building initiatives will be beneficial for the overall advancement of Nauru's digital landscape. By working together and investing in these initiatives, the private sector can help drive progress and development in the country's digital sector.

APPENDIX

Figure 12: Community consultation on priority needs